

GENERATION OF FOOD SECURITY SENSITIVE REGIONAL
DEVELOPMENT STRATEGIES THROUGH AGRICULTURAL COMMODITY
VALUE CHAINS – CASE OF SOUTH EASTERN ANATOLIA REGION WHEAT
VALUE CHAIN

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COMMODITY VALUE CHAINS – CASE OF SOUTH EASTERN
ANATOLIA REGION WHEAT VALUE CHAIN**

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ABSTRACT

GENERATION OF FOOD SECURITY SENSITIVE REGIONAL DEVELOPMENT STRATEGIES THROUGH AGRICULTURAL COMMODITY VALUE CHAINS – CASE OF SOUTH EASTERN ANATOLIA REGION WHEAT VALUE CHAIN

Gümüş, Müge

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Currently, dramatic increase in world population, rapid urbanization of world population, changes in food demand and dietary composition, increasing pressure on limited natural resources, escalating climate change effect and fluctuating food prices result in a huge emphasis on food security studies as a contemporary issue .As a subject, food security studies tend to be considered at national or household level in a top-down approach and they are likely to handle the issue as restricted to a single sector (mostly agriculture) boundary. The aim of this study is to integrate the food security improvement efforts to the regional development strategy generation processes creating an embedded food security tool for regional development strategies using a value chain-based approach

Keywords: Regional Development Strategies, Food Security, Value Chain, South Eastern Anatolia Region, Wheat Value Chain

ÖZ

TARIMSAL ÜRÜN DEĞER ZİNCİRLERİ YOLUYLA GIDA GÜVENLİĞİNE DUYARLI BÖLGESEL KALKINMA STRATEJİLERİNİN GELİŞTİRİLMESİ - GAP BÖLGESİ BUĞDAY DEĞER ZİNCİRİ ÖRNEĞİ

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Günümüzde, dünya nüfusundaki çarpıcı artış, dünya nüfusunun hızlı kentleşmesi, gıda talebindeki ve diyet kompozisyonundaki değişiklikler, sınırlı doğal kaynaklar üzerindeki baskının artması, iklim değişikliğinin etkisinin artması ve gıda fiyatlarının dalgalanması çağdaş bir sorun olarak gıda güvenliği çalışmalarına büyük önem vermektedir. Güncel bir konu olarak gıda güvenliği çalışmaları ulusal veya hanehalkı düzeyinde yukarıdan aşağıya bir yaklaşımla ele alınma eğilimindedir ve konuyu tek bir sektör (çoğunlukla tarım) sınıрыyla sınırlı olarak ele almaktadırlar Bu çalışmanın amacı, değer zinciri tabanlı bir yaklaşım kullanarak bölgesel kalkınma stratejileri için gömülü bir gıda güvenliği aracı oluşturarak gıda güvenliği iyileştirme çabalarını bölgesel kalkınma stratejisi oluşturma süreçlerine entegre etmektir.

Anahtar Kelimeler: Bölgesel Kalkınma Stratejileri, Gıda Güvencesi, Değer Zinciri, Güneydoğu Anadolu Bölgesi, Buğday Değer Zinciri

To the Anatolia

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LIST OF ABBREVIATIONS

SAPR: Southeastern Anatolia Project Region

SAPRDA: Southeastern Anatolia Project Regional Development Administration

UN: United Nations

FAO: Food and Agriculture Organization

FAOSTAT: Food and Agriculture Organization Statistics

SDG: United Nation Sustainable Development Goals

TURKSTAT: Turkish Statistical Institute

IREA: Integrated Resource Efficiency in Agriculture and Agri-Based Industry in Southeastern Anatolian Region Project

TMO: Turkish Grain Board

TOBB: The Union of Chambers and Commodity Exchanges of Turkey

WAR: Western Anatolia Region

CHAPTER 1

INTRODUCTION

1.1. Aim of The Study

Currently, dramatic increase in world population, rapid urbanization of world population, changes in food demand and dietary composition, increasing pressure on limited natural resources, escalating climate change effect and fluctuating food prices result in a huge emphasis on food security studies as a contemporary issue. As these conditions ascend, governors, NGO's and experts from different disciplines direct their efforts to understand and deal with changing situation of food security. In 2017 the worldwide investment for food security programs reached nearly 3 billion USD (FAOSTAT, 2017), as United Nation's 2030 Agenda for Sustainable Development Goals has set a target to end hunger and improve the accessibility to "safe, nutritious and sufficient food" for all people, especially for vulnerable groups (UN, 2015). As these efforts are achieved, according to UN, at 2018 there are a remarkable regression in the situation of food security in comparison with the 2015. The proportion of undernourished people increase 0,5 % between 2015 and 2018, as the aid to agriculture sector decreased 70% between 1980-2016 (UN, 2018, p.4).

When the food security issue evaluated for Turkey, it is seen that Turkey have several food security problems like obesity and diabetes which are diet and nutrition related health diseases. On the other hand, Turkey have problems in balancing of food prices.

As a subject, food security studies tend to be considered at national or household level in a top-down approach and they are likely to handle the issue as restricted to a single sector (mostly agriculture) boundary. But in recent years, it has been recognized that food insecurity is more than a sectoral production improvement problem. Food security studies are getting more aware and sensitive about the social and geographical

dimensions of food security related conditions. As a result, recent efforts about food security improvement are getting pay more attention on the socioeconomic development of food security suffered nations. On the other hand, doing this efforts, food security improvement policies and organizations tend to be blind to the regional (sub national) level-oriented conditions of food security and they are often conducted at national or household level. However, regional development remains as an attention-deserving issue in improvement of the food security. After the 1990's, the studies of planners about considering the food in the community and urban planning context are regarded as a remarkable step for the exploration of regional level-oriented food security improvement efforts.

The aim of this study is to integrate the food security improvement efforts to the regional development strategy generation processes creating an embedded food security tool for regional development strategies using a value chain-based approach. With respect to this aim, study will define the strategic framework for food security sensitive regional development strategies through the selected strategic commodity value chain of SAPR, using value chain approach as a framework.

The aim of the study requires asking questions as below:

- 1) Which agricultural commodities has a strategic role in terms of both food security and regional development in SAPR?
- 2) What kind of relationship exists between food security and regional development through selected strategic commodity value chain of SAPR?
 - a. Who are the actors of selected strategic commodity value chain of SAPR and what are their roles in terms of food security sensitive regional development?
 - b. What are the challenges for food security and regional development through the selected strategic commodity value chain of SAPR?

3) How food security could be improved as regional development is generated through selected strategic commodity value chain of SAPR?

1.2. Justification of The Study

The concept of food security, which encompasses a situation where people have access to the minimum level of nutrient and human health food that they need to survive, is at risk of extinction on a global scale with the impact of increasing urban populations, climate change, political turmoil, and diminishing natural resources. Many humanitarian organizations are working to ensure food security and to carry out activities against hunger and malnutrition on a global scale. In 2015, the United Nations set a goal of eliminating hunger and malnutrition worldwide by 2030 under the Sustainable Development Goals. However, in the following period, statistical data giving clues to the performance of the studies carried out in the name of combating hunger and malnutrition show that these studies are inadequate. As of 2018, 821 million people suffer from hunger worldwide, and this figure shows that there has not been a decrease in the number of people who are starving since 2015, in contrast there has been an increase of 0.5%. Potential food supply crises due to global warming and increasing political turmoil indicate that food security will become increasingly difficult throughout the world.

When the Turkey's place in the picture is evaluated in terms of food security worldwide, according to the statistical data which is analyzed, although generally Turkey seen as performing well in terms of food security, several parameters show low performances. Based the statistical data obtained under the study "Global Food Security Index", Turkey is ranked 48 among 113 countries in total. According to the evaluation of the sub-components in the index study, As Turkey's food security performs best at financing for farmers, nutrition standards, the population living below the global poverty line, food safety, fluctuations in agricultural production, urban absorption capacity (GDP growth rate / urban population growth rate), participation to the global safety food nets as it have low performance at public investments devoted

to agricultural research , per capita income and political stability risk, respectively. When the data analyzed for Turkey in general, it appears that agricultural production financing is strong, people are considered by following the standards for the nutrition, the capacity to absorb natural risks from the urbanization of urban areas is higher than in the world , the overall distribution of income has better conditions compared to world, and thus in Turkey a positive picture is drawn in terms of food security.. Apart from these data, according to FAO statistics overview in Turkey, since 2010 food inflation of Turkey steadily remained above the consumer price inflation. By the June of 2019, food inflation, which is 26.4%, remained above the annual inflation figure which is 19.88% . On the other hand, Obesity and cardiovascular diseases which are the most important consequences of Food insecurity are increasingly common in statistical data from Turkey. In addition to these, the population of Turkey is increasing rapidly both through natural increase and by intensive external migration. This case shows that, the food need of Turkey will be increase with respect to population growth of Turkey. When the situation of agricultural production Which is the most basic source of food is examined for Turkey, the share of agricultural land in country's total surface area is gradually decreasing. The share of land which is arable and not cultivated in total agricultural land was 1.3% in 2006 and 1.6% in 2016. In addition, the number of farmers has decreased by 38% since 2000 according to Social Security Statistics of Turkey. While these situations occur for agricultural resources, the efficiency of agricultural production has followed an unstable way which has increased and decrease time to time. However, Turkey have lower performance than world in terms of financing the R&D investments for increasing the efficiency of agricultural production and this situation reflects as food supply risks related to probable yield decreases in the future. On the other hand, due to the food crisis which are results of increasingly globalized food trade, the countries which are integrated to the global food value chains share the risks of food crisis in different levels. Turkey, as a country which has an important role trough global food trade, must take a position which is sensitive to the escalating global food crises. On the other hand, globalized food supply creates food supply crises due to the unpredictable political turmoil in

countries and includes risks for each country in this respect. Therefore, even Turkey perform well in terms of food security, also strategies for food security must be always improved and updated for Turkey.

When the concept of food security is examined, it is seen that this concept has very strong links with economic development. The parameters used to measure food security are largely related to development indicators. In fact, the “UN human development index” showing the level of human development and the “per capita income level” showing the purchasing power are used as a parameter to assess the current state of food security. In other words, it is seen that the level of development should be increased in order to increase food security. In addition, food trade, which has rapidly become global since 1980, has created an economic structure that obliges producers to keep up with competition conditions at global and regional scale. Within the scope of this economic structure, food producers in each region can meet the food needs emerging at national and global scale in line with their capacity to produce. In this case, it is critical for each region to produce strategies that will strengthen the producers in the food production items to compete in terms of ensuring food security at national scale. On the other hand, the competitiveness of the agricultural sector, which is the source of food, with other sectors is another situation that should be considered in these regional development strategies. Because, the problems of the agricultural sector in competition with other sectors will decrease the production in this sector and indirectly reduce the food security due to the decrease in the competition of food producers. Precisely at this point, the necessity of a regional development strategy that considers food security is emerging.

When the role of the regions in terms of food security is examined, it is seen that each region competes by specializing in its own food products and thus provides economic development. This requires the development of specific competitiveness and food security strategies for the food products produced in each region and the integration of these strategies into regional development strategies. Various approaches are envisaged for conceptual and strategic frameworks that will enable this integration.

The most important approach emerging in this context is the urban and regional food systems approach. The value chain approach to the management and development of agri-food value chains is another example. When these methods are compared, the food systems approach is more comprehensive than the value chain approach but the emphasis on economic development and competition provided in the value chain approach is not sufficient in food systems. In addition, with the sustainable urban and regional food systems approach, all actors involved in food-related processes taking place in a region are handled with cultural, political, environmental, technological and institutional dimensions (Westhoek et al, 2014). The value chain approach, which makes it easier to deal with, makes it possible to develop a competitive strategy for products specific to the region, together with the specific identification and intervention of the food security issues that need to be addressed in each food product. Therefore, adopting the value chain approach in food safety sensitive development strategies to be made at regional scale will be advantageous for the studies.

All the basis of these findings, the need of a Turkey-specific food security-sensitive regional development strategy study has been reached. In this context, the SAPR region, which specializes in the production of food products based on its agricultural production, has been identified as a case study. In this study, the effort to develop a comprehensive development strategy for the SAPR region is irrelevant and within the scope of the study, only a limited proposal that can be integrated into a comprehensive development strategy will be produced. The study will be finalized by suggesting how this section can be articulated in the most effective ways to a comprehensive development strategy.

1.3. Context of The Study

Study is limited among selected strategic commodities' value chain located in South Eastern Anatolia Region of Turkey and based on field surveys which are consist of unstructured in-depth interviews with selected strategic commodity value chain actors located in SAPR. In the study, field study findings have been analysed with qualitative

method which is based on value chain analysis. In the qualitative analysis, findings' evaluations are limited to components of food security which are accessibility, availability sustainability and acceptability. As a result of analysis, a food security sensitive regional development strategic framework through selected commodity value chain in SAPR has been generated.

1.4. Methodology and Indicators

Literature research: This stage will establish the theoretical basis of the study explaining the interaction between “value chain concept”, “regional development” and “food security concept”. As compatible with the aim of the study, there will be explanation of the theoretical relations between food security concept and regional planning as the value chain concept will be used as a theoretical template for explanation and analysis. On the other hand, regional development will be the Thus, first, this chapter will begin with explanation of the value chain concept to create theoretical basement. This explanation will also cover the implementation possibilities of value chain approach to the regional development and food security studies. In order to understand the theoretical pattern of the study, a matrix was generated.

Table 1.1. Matrix for Theoretical framework of the study

	Food Security Concept	Regional Development Perspective	Value Chain Concept
Food Security Concept	(1.1) The Food Security Concept, Its Components and Its Indicators	(1.2)Relationship between food security and regional development and different approaches to relate the two topics.	(2.1)The use of Value chain concept for food security issues
Regional Development Perspective	(1.2)Relationship between food security and regional development and different approaches to relate the two topics.		(2.2)Value chain from regional development perspective
Value Chain Concept	(2.1)The use of Value chain concept for food security issues	(2.2)Value chain from regional development perspective	(2.1)Definition of Value chain Concept

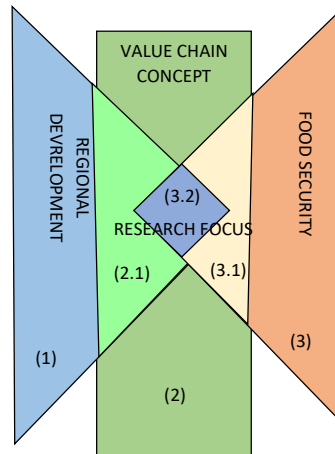


Figure 1.1. Context of theoretical framework

Field Study Findings for SAPRDA Wheat Value Chain:

The scope of the study requires an extended field research in order to conduct the value chain analysis which constitutes the conceptual framework of the study. This field research has been conducted as a part of a project which is called “Integrated Resource Efficiency in Agriculture and Agri-based Industry of SAPRDA” and borrowed as a source for the study. The field study consists of four main sources of knowledge through value chain: agriculture actors, industry actors, logistics actors and value chain service actors.

The agriculture point of value chain field research includes a summarized compilation of ideas from an agriculture actors meeting which has been conducted in the context of the IREA project.

The second source of field study are 10 open-ended in-depth interviews with 10 different wheat based industrial enterprise agent and it includes the different wheat-based product enterprises agents in order to well representation of interaction between different value chain actors. The 10 applicants are volunteers who responded to the call of SAPRDA through its regional communication networks in order to supply information for the IREA project.

Analysis:

As findings are evaluated, they will be summarized and clustered under the main findings. Analysis will be conducted among main findings and, sub findings will be considered in terms of indicators.

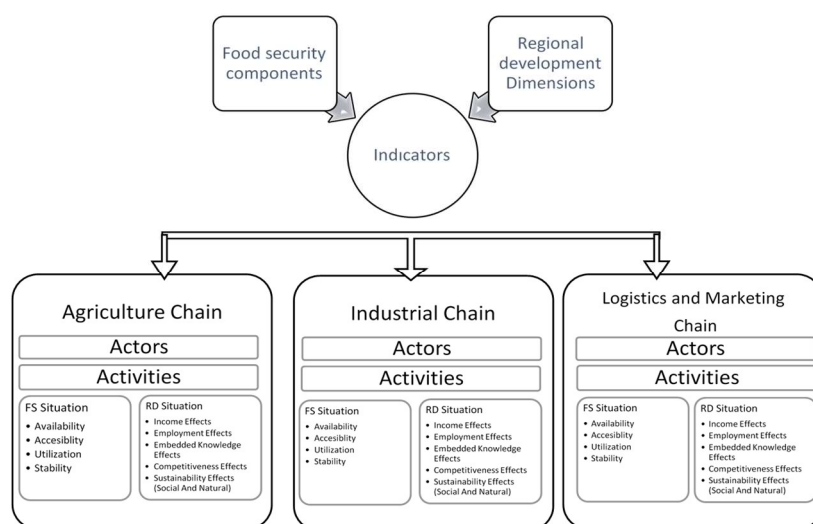


Figure 1.2. Schematic description for analysis process of the study

Synthesis of Findings:

As the findings evaluated in terms of indicators, each indicator considered as compulsory and equally weighted. Also, each finding will be considered in terms of balance among different points and actors of value chain.

Findings Will Be Classified As

- Negotiation/Conflict Points: (+,-) (-,+)
- Cooperation Points (-,-) (+,+)

Strategy Development:

Strategies will consist of

- Core strategies for SAPR wheat value chain
- Supportive Cooperation Improvement Strategy Suggestions

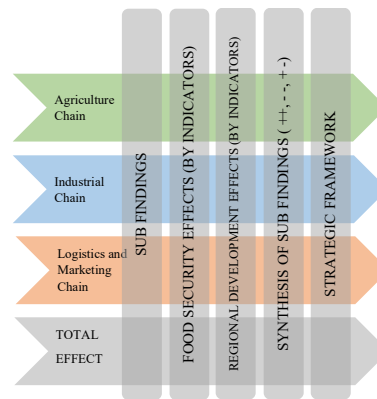


Figure 1.3. Flow chart of study development process

1.5. Content of The Study

According to this scope, the second chapter of study “Theoretical Framework” will include the conceptual definition of food security and its different dimensions. This will be followed by the literature research which presents the linkage between food security and regional development. Then, as the third, value chain approach and its relations with food security and regional planning will be defined.

The third chapter of the study “Methodology and Findings” will consist of two main parts. The first part will explain the systematic structure and methodology of field studies. This will be followed by the methodology definition of value chain analysis. Then, as the output of the previous parts, the findings for wheat value chain of SAPRDA will be reported. In the last part, the findings for the wheat value chain of SAPRDA will be analysed using value chain analysis approach.

The fourth chapter “Evaluation of Analysis Results: Definition of Food Security Sensitive Intervention Points for Regional Development Strategies through Wheat Value Chain in SAPRDA” will include the systematic strategic framework for regional development in order to integrate food security and regional development.

In The last chapter “Conclusion”, the proposed strategic activities through wheat value chain which improves food security as they enable regional development in SAPRDA will be defined.

CHAPTER 2

THEORETICAL FRAMEWORK

2.1. The Concept of Food Security

2.1.1. Food Security Definition and Its Components

Through the plenty of different definitions, according the most adopted definition of FAO, Food insecurity has been explained as “A situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life.” (Napoli, 2010/2011). In the light of this definition, FAO has generated four important dimensions for food security (FAO, 2006):

- Availability: “The availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports”
- Access: “Access by individuals to adequate resources (entitlements) for acquiring appropriate foods for a nutritious diet.”
- Utilization: “Utilization of food through adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met”
- Stability: “To be food secure, a population, household or individual must have access to adequate food at all times.”

2.1.2. Different Approaches to Food Security Concept

Although the food security problem realized by most of scientists and experts, there are different approaches to this issue. As a food security problem, the famine had handled by Amartya Sen (1981) in a critical way differing from the mainstream

approaches to this phenomenon. He established a different approach which is called as “Entitlement Approach” to food security issues in order to handle the issue in a critical way. In this approach, basically, he points the socio economical condition of society as the real origin of famine and starvation. This approach is simply considering the ability of a person to reach sufficient food sources to survive and it points out this ability of person in order to solve the food security problems. On the other hand, Sen states some reasons for the limit of this approach. According to Sen, this approach can be insufficient in order to understand the food security problems because of the complexity of the systems, for example in industrialized societies (Sen, 1981, p. 45-51). With this situation, this approach doesn’t drive us far from the consideration of food production processes in order to handle and solve the food security problems.

After the Sen, there are several additional studies for criticism of mainstream food security approaches. One of these studies, which is conducted by Shepherd (2012) has a criticism about the most adopted food security definition of FAO. In this study, Shepherd criticize the vague points of the most adopted definition of FAO. He also criticizes the FAO definition because of the deficiency of an actor analysis for food security. According to Shepherd, this deficiency results in an indefinite environment to point out the necessary actions for solution points in order to achieve the food security situation. In addition to this, Shepherd criticize the FAO approach because FAO degrades the food security problem only as an economic issue. Shepherd states that, with the “demand”, “supply” and “to make supply to meet the demand” trilogy of FAO approach is problematic because its tendency to overemphasize the orthodox economic literature which includes “protectionism” and alternative approach to the market structure (Shepherd, 2012, p.197(4))

On the other hand, the changing situation of world is pointed out as a cause of several changes for the approaches of international organizations to the food security issue. 2008 global food crisis is stated as a change point for the common approaches of international organizations and this change has been defined as an upgrade to a new institutional establishment for food security. The establishment of CFS, CFA, G8 and

G20 organizations has been addressed as outputs of this changes by the statements of study which is conducted by Margulis (2012) According to him, the global food security became more pluralist with this changing situation of global institutional approach. But, in this statement, there isn't any clue for a change of the economically reductionist approach of global organizations, unlike it seems that the economic approach emphasize on food security has been strengthened.

Michael Carolan is another scientist who explains the evolution of food security approach through history. His historical perspectives to food security easily show the importance of the measurement of food security for its epistemology. According to his statements, the first stage of food security has begun with the green revolution which refers to a technology-based yield and production boom in agricultural production among world after World War II. This stage is called as "calorie-ization of food security" by him which refers to a calorie taking based approach to monitor and evaluation of food security. According to that, the increase of production amount has been considered as a food security improvement way through the "calorie-ization of food security" stage. In addition to this, according to Carolan, although they approve the insufficiency of one dimensioned production-oriented view, the protectionists who are the follower of "calorie-ization of food security" approach consider the market mechanism as a way of efficient allocation of produced food. Carolan defines the second stage of food security as "Neo-liberalization of Food Security" which refers to an era in which the necessity of being self-contained in terms of food production for countries has eradicated. His refers to the elimination of small-scale farmers out of agricultural production and decreased incentives of countries for support of domestic agriculture in order to identify this era pointing out the rose of foreign direct investment policies (FDI). According to that, this process resulted in the dissolve of the localized and seasonal based structure of agricultural production and it brought emphasize on profit maximization of agricultural production. As the third stage of the evolution of food security, Carolan stated the "Empty Calorie-ization of Food Security" as he refers to the change in the profitability and market structure of newly

developing food businesses in accordance with the rising FDI based international food industries. This stage created a “cheap calorie boom” according to Carolan. He also shows the clue that in this era the consumption of food outside of the home has been increased and states the changing food choice patterns through consumers. But the most critical link of this era is the increased health disease such as obesity in accordance with the increasing “empty calories”, according to Carolan (2012, p. 177-180). This brief analysis for evolution of food security directly shows that the mainstream economic based approaches of policies failed to improve the food security situation of world.

2.1.3. Urban and Regional Development and Food Security Issue

Originating from the need of a territorial perspective to food security, a study conducted by the OECD in 2016. This study has an aim to clarify the local and territorial dynamics and to find out the new pathways of food security development efforts through territorial perspective. The study strongly emphasizes the spatial disparities and contradictions through the production and consumption patterns of food and directs a need of a territorial understanding for these findings about the current situation of food security. Study indicates the need of a country level perspective in addition to the urban-rural and global south/global north segregations for a well understanding of regional disparities of food security. With this, study emphasize the importance of national level for food security. In accordance with this finding, study proposes a conceptual framework to handle the food security issues in a territorial approach. In this conceptual framework, firstly study shows the different approaches including “single sector approaches”, “diversification approaches” and “spatially blind approaches”. According to the study, as the single sector based approach focus on the specialization on a single sector and mostly emphasize the development of agricultural sector in rural areas, the diversification approach includes a multi-sectoral development for both rural and urban areas and it considers the urban-rural linkages. In addition to these approaches study defines “the spatially blind approaches” as a “one size fit all” approaches which is depending basically on the

economic agglomeration for countries. After these definitions, study calls a need of a holistic approach to the food security and nutrition policies in the territorial perspective. Study depends on five basic strategic point of view. These are:

- 1) *“Robust institutions and multi-level governance can help promote policy coherence”*: This Strategy refers to the understand and strengthen the vertical and horizontal linkages between institutional capacity of territories. Study considers the institutional networks as important in order to build a territorial food security and nutrition policy.
- 2) *“Integrating social policies and competitiveness agendas”*: This strategy is emphasizing the social policy-based approach for territorial perspective to improve food security related policies.
- 3) *“Addressing food security and nutrition in different regional typologies”*: This strategy is proposing a special classification among different typologies of regions in terms of food security. These are: Metropolitan Regions, Adjacent Rural, Remote rural regions. Study defines the Metropolitan Regions as the regions which are not self-sufficient in terms of food production and shows high connectivity and market integration. The challenges of this typology are defined as food insecurity of poor population. The “adjacent rural” regions are defined as self-sufficient in terms of food and with connectivity to the external markets. Study define the higher food prices and intermitted food insecurity situations as a challenge for this typology. Remote rural regions are defined in different sub-typologies. The self-sufficient, semi self-sufficient or not self-sufficient remote rural regions have different challenges in terms of food security. Malnutrition and hunger are defined as challenge for this typology.
- 4) *“Linking food security, the stage of development and territorial differences”*: With this point of view, study creates for templates to classify the food security problems for different development stages and their different territorial typologies. Study has a claim that it is important to identify the differences among different development stages and different territorial typologies.

- 5) *“Integrated policies to address food security and nutrition”*: This strategic viewpoint clarifies the importance of support and integration of different policy issues to the food security policies.

As an outcome of these strategic points, OECD have defined a strategic framework to direct the territorial food security policies. This strategy is as below.

	<i>“Traditional (old) approach to food security and nutrition”</i>	<i>““New” territorial approach to food security and nutrition policy”</i>
<i>“Objectives”</i>	<i>“Providing relief to citizens suffering from food insecurity and malnutrition”</i>	<i>“A sustainable development solution to food insecurity and malnutrition”</i>
<i>“Key target sector”</i>	<i>“Increasing food production and improving productivity of (small-scale) agriculture”</i>	<i>“Various sectors of rural economies (i.e. rural tourism manufacturing ICT industry etc.)”</i>
<i>“Main tools”</i>	<i>“Subsidies (e.g. conditional cash transfers)”</i>	<i>“Investment in development opportunities (knowledge pooling piloting policy complementarities between social and competitiveness agenda)”</i>
<i>“Key actors”</i>	<i>“National governments and donor agencies”</i>	<i>“All levels of government (national regional and local) various local stakeholders (public private non-governmental organizations) international co-operation”</i>
<i>“Target geography”</i>	<i>“Urban and rural areas are addressed by different policy approaches and are often disconnected.”</i>	<i>“Recognizes and capitalizes on the benefits of urban-rural linkages”</i>

With these outcomes, this study shows the importance to consider the regional scale and typological differences in food security improvement efforts.

On the other hand, considering the whole literature research, there is a big emphasis on importance of urban planning in order to fight against food insecurity. Food security has been defined as essential criteria in order to consider a city as a healthy

city in most of the studies which are related with Food security and healthy cities. According to Morgan (2009), urban planning professionals took place usually in a position in which planning is apart from the food issues among essential needs of human (i.e. air, water, soil etc.) till The APA (American Planning Association) have been conducted a new study called “Policy Guide on Community and Regional Food Planning” in 2007.

According to Morgan (2009) there are 5 important phenomena about food issues which have force the governors to be more sensitive about food security. They are called Food equation and consist of:

- *“The food price surge of 2007–08,”*
- *“Food security has become a national security issue”*
- *“Climate change effects”*
- *“Land conflicts are escalating”*
- *“Rapid urbanization”* (Morgan, 2009)

It has resulted in a situation in which urban planners are easily conducts their works in the light of food security concerns as well as the other concerns. Finally, as an important step, AESOP (The Association of European Schools of Planning) has established the thematic “the sustainable Food Planning Group” in order to discuss the planners’ role in theory practice and policy. These discussions including the question “who are the food planners?” result in a multidimensional food planning community definition which includes “social justice, public health, food security and ecological” issues. In addition, food issue has been much more a topic in planning literature after this stage. All this process has created its early examples for food planning attached to urban planning in the most important metropolitan regions of America and Europe (Morgan, 2009).

With the rising emphasis on city about food security, FAO has conducted a work called “Food into Cities” which has the aim of establish an interaction between food security and urban planning in 2000. In this work, contributors have established a

framework which includes recommendations for urban planners in order to relate food issues in food planning. In addition, RUAF Foundation (Resource Centers on Urban Agriculture & Food security) is another organization which has the aim of producing and serving knowledge for urban planners in order to make urban planning process food security sensitive. For this purpose, they conduct a brief research about the city examples for the successful planning experience in Food planning.

2.2. Value Chain Approach

2.2.1. Theoretical Basis of Value Chain Approach

The concept of value chain was firstly conceptualized by Michael Porter in order to define a strategic framework for management of a corporation's operations to make a corporation more competitive. As this way, the value chain concept seems to be related more about microeconomics, but it has been adopted by lots of macro level development and management studies and trigger the emergency of some concepts like agri-food value chains. As the value chain literature is considered, it is seen that the value chain literature is too wide and complex to handle it as whole in a single chapter of the study. So, it is inevitable to line off the value chain literature review in the light of the needs of study. Thus, in this chapter, after a shallow definition of the value chain concept described by Porter, the most remarkable macro level study examples which adopt the value chain concept will be summarized. As doing this, the most remarkable macro level study examples for agri-food value chains will be the focus of literature review because of the main purpose of the study. As a result, a shallow description of Porter's value chain concept will be used, because the study uses a modified version of value chain concept which is originated by Porter's value chain but beyond it to be more suitable for macro level agri-food industry analysis.

In 1985, Michael E. Porter generated the value chain concept in order to understand a firm's competition capacity through its activities. According to him, it is important to analyze the generation of costs through a firm's activities in order to develop strategies for competition. The value chain concept, handling a firm in a fragmented way in

terms of its strategic activities, tries to explain the creation of value and the firm's differentiation potential through its activities (Porter, 1985, p.33)

Porter grouped a business unit's activities into two main title: Primary activities and Support Activities. According to grouping of Porter, a business unit conducts several activities which are related to physical production and physical deliverance of the goods or promote the production and delivery process of the goods. Primary activities refer to the tangible production and promotion related activities which encapsulates the whole process bringing a good from its raw material to the user of goods. Support activities include the indirect activities which promote the primary activities and they conclude several activities like human resource, purchasing and technologic development activities. (Porter, 1985, p.38). Porter's value chain scheme shows that primary activities are inbound logistics operations, outbound logistics, marketing and sales and services, while the support activities are firm infrastructure, human resource management, technology development and procurement (Porter, 1985, p. 46). Porter also point out that each of the activities defined by him can be differentiated by type of organization or sector (Porter, 1985, p. 39). In addition to this grouping, Porter also defined another grouping for the activities of the firms. According to this grouping, activities of a firm can be considered in three different type: direct activities, indirect activities and quality assurance. Direct activities include the direct value creation activities as indirect activities comprise the activities which are promoting the needs of direct value creation activities. Quality assurance activities refer to the firm activities which are related to increase of quality in both direct and indirect activities. This activity types are relevant for both primary activities and support activities (Porter, 1985, p. 44)

As the literature is searched, there are several studies which handles agricultural value chains in the development perspective. The Humphrey's study (2003) is one of them. This study has reached a result that to enhance a volatility resilient value chain there is a need to vertical integration through the value chains.

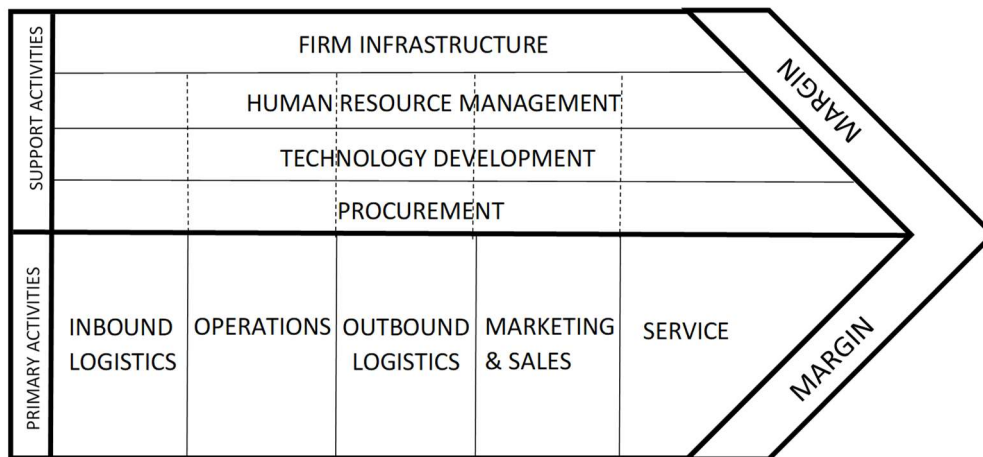


Figure 2.1. Porter's scheme for a generic value chain (Porter, 1985, p. 46)

On this scheme (Porter, 1985, p. 40):

- Inbound logistics covers the storage and pick up of the input materials,
- Operations refer to the production operations which create the physical end-product using the inputs,
- Outbound logistics includes the activities like storage, shipping etc. which are related to the delivery of the end products to the users,
- Marketing & Sales are the activities which are related to improve or promote the sale and marketing activities for example advertising, fair, trading etc.
- Service activities are the activities related with the user of products for example user feed-back desks, product use information desks etc.

According to Porter, it's important to expose the relations between different activities of value chain components in order to understand a firm's competition potential. Thus, Porter has suggested several necessary elements in the description process of a specific value chain. Porter's suggestion for the description of a value chain requires definition of linkages and flows among value chain. It makes necessary to define each value chain activity according to its position within the value chain. After the activities are

defined and fragmented properly in terms of their value chain positions, it's time to consider them in terms of flows and linkages (Porter, 1985, p. 45).

According to Porter, value chain is a “system of independent activities” and the linkages between independent activities create this system. In this description, linkages refer to an influence between the performance of different activities among the value chain. According to Porter, these tie-ups have a critical role on competitiveness of a firm within the value chain and they manage the competition potential in two dimensions; optimization and coordination. It is possible to improve a firm's competitive advantage organizing and optimizing the linkage of a firm's activity according to their linkages (Porter, 1985, p. 48).

As Porter define the value chain concept as a tool to improve competitiveness of firms, Kaplinsky and Morris define the value chain concept as a heuristic tool but they also stated that the value chain theory is on the way of being an analytical tool which is useful to understand the global income distribution and the adequate policy implications to improve this distribution. According to this, value chain provides three main function as an analytical tool:

- *“Definition of rent distribution and its dynamic structure”*
 - *“Definition of government type and governor actors through value chain”*
 - *“Definition of accumulation and relationship types through value chain.”*
- (Kaplinsky and Morris, 2000, p.25)

Following this definition, Kaplinsky and Morris defines a methodology for value chain analysis in a more generalized way, adding that there is not any strict way of analysis because the different natures and contexts of value chains. This methodology requires the following steps:

- *“The point of entry for value chain analysis”:*
- *“Mapping value chains”*
- *“Product segments and critical success factors in final markets”*

- *“How producers access final markets”*
- *“Benchmarking production efficiency”*
- *“Governance of value chain”*
- *“Upgrading the value chain”*
- *“Distributional issues”* (Kaplinsky and Morris, 2000, p.25)

2.2.2. Implementation of Value Chain Approach to the Food Security and Regional Development Issues.

As an approach, value chain has been considered as a tool to improve food security situation. In the online source “Value Chain Wiki” of Marketlinks Organization (2019), the value chain approach is defined directly related to three components of food security which are “availability”, “accessibility” and “utilization”. The study claims several reasons which are make value chain approach useful in food security studies. First, the study points out the successful incentive direction effect of value chain approach. According to this, value chain approach leads the incentive promotions in an efficient way, and it results in more desired outputs in term of sustainability. Second, the value chain has been evaluated as an income enhancing tool for producer households and this situation has been related to food security improvement effects of value chain. Third, the systemic approach of value chain has been observed as an advantage to address food security improvements to the right points. As the fourth, the value chain approach has been identified as a sustainability tool to improve food security. As the last, the leverage focused structure of value chain approach has been added a reason to be useful in food security improvement studies. (URL1, 2019)

In a different study which is addressing the nutrition and food security in the basis of value chain, Allen and Brauw (2018) defines the theoretical background of a nutrition sensitive value chain approach. In this study, a consumer oriented economic rationale model of nutrition has been defined. This model briefly shows an equilibrium of consumer nutrition choices between high calorie foods and nutrient-rich foods under

some given price and economic conditions. As one of the outcomes of this model, to allow consumers to follow more healthy diets it is necessary to decrease the prices of more nutritious foods. Study describes the current situation of world food price trends and related incentives in the light of this model and as a result they stated that the current trend to support of the grain agriculture and price reduction efforts at the opposite of the healthy diet promoting price compositions. In addition to this, they consider the transportation costs of food as an alternative factor to change consumer choices in a healthy composition in terms of high energy dense foods and nutritious foods. Continuing in accordance with this finding, study defines three possible treatments to change consumer diets in a healthy way. The first one is defined as inform of consumer about healthy diet choices. The second one is described as tax implementations for nutritious dietary compositions. And the third one is defined as financial support for producers of more nutritious foods. Study is continuing with some given implementation examples for these three possible value chain interventions to create more healthier diets (Allen and Brauw, 2018)

In another value chain addressing nutrition study, Maestre and colleagues has searched for a value chain-based nutrition improvement strategy for vulnerable populations. In this study, the conceptual framework has been developed in a way which emphasize the role of actors of value chain to make food value chain more nutrient for vulnerable groups. The study points out the need of a consensus between business and public actors as it defines the role of business on creating more nutritious value chain mechanism for vulnerable groups. To achieve this, study promotes the public private partnership model as a solution. the study considers the value chain concept as a useful analytical tool to evaluate the possible contributions of private sector to nutritious agri-food value chains. In the rest of the study, authors describe the points of interventions through the value chain. (Maestre et al, 2012)

There are some example studies which are use value chain concept for a single commodity in the food security perspective. The study of Ahmed and her colleagues is one of the important examples for this study. In this study, the global wheat value

chain has been handled in terms of food security perspective in the specific regional approach which contains the Middle East and Africa. This study follows a methodology in which the global wheat industry, the industrial organization of global wheat value chain, the wheat value chains of selected countries including Egypt, Iran, Saudi Arabia, Syria and the United Arab Emirates and the key value chain challenges and strategies for maintaining a staple wheat supply in these countries issues have been handled. Study analyses firstly the global wheat industry using the word wheat trade trends, wheat related industrial organizations and major firms of global wheat industry. Secondly, study go through the analysis of global wheat value chain, which is considering the value chain map, inputs, production, country elevators, milling, marketing and trade. The study is continuing with the food insecurity analysis of MENA countries (The Middle East and North Africa Region). In this analysis, the current food insecurity situation of MENA countries has been analyzed in three main category which are: acute food insecurity, moderate food insecurity and low insecurity and this countries are grouped by their economic production models which are comprising as “Resource-Poor and Labor Abundant”, “Resource-Rich and Labor Abundant”, “Resource-Rich and Labor Importing”. In addition to this, study considers three main issue for food security of MENA countries from the global value chain viewpoint. According to this, environmental constrains which are affecting the production is the first GVC issue for MENA countries in terms of food security. The second issue for MENA countries in terms of food security is the role of the state in the global value chain perspective. The last food security issue proposed by study is food pricing in global value chain perspective. Study is ended with the five countries cases for wheat value chain industry and as result of study there are several findings which shapes the food security situation in terms of global wheat industry. These are

- Firms dominating the global wheat value chain: Five firms dominate the global wheat value chain with the 90% of market share

- Different food security policies among MENA countries: Several countries support their domestic production as some of them is investing in offshore production.
- Common problems among all cases: Environmental constrains especially water scarcity is a common problem among five case. In addition, the controlling position of state and storage capacity improvement efforts the other common issues.
- Institutional Structure: All cases includes strong legal basis on institutional management of value chain including governmental control mechanisms.
- Diversification efforts for supply mechanism: Some of case countries are investing in offshore production mechanism. (Ahmed et al., 2013)

In Turkey, one of the most important value chain study is conducted in SAPR in 2011 for organic agricultural production clusters. In this study, the organic value chains for selected 10 organic agricultural products have been described and analyzed in terms of clusters. In the study, for each value chain, demand trends, market path and key players, profits, value drivers, vertical/ horizontal integration and benchmarking have been searched. As a result of the study, in accordance with the findings forum value chain analysis, the critical points in terms of organic cluster strategy has been defined for SAPR. (GAP ORGANİK, 2011)

In a different study conducted by İstanbul Chamber of Industry, a general value chain view is conducted for Turkish agri-based food sector. The main purpose of this study is stated as analyzing the Turkish agriculture-based food sector in value chain perspective and generating an alternative value chain model for this sector which including the strategies for integration of the small and medium sized agricultural enterprises to value chain. Study considers the value chain analysis as a critical analytical tool to build up a small-scale agricultural producer-based strategy because of its strategic cost management facility. (Yazıcı et al, 2017)

CHAPTER 3

METHODOLOGY AND FINDINGS

3.1. Meteorology Proposal for Food Security Sensitive Regional Development Strategies

The general structure of study reflects a classical flow of a strategy development process. The first step is data collection, which includes the obtainment of secondary data and handling of the field study results. The analysis step follows the data collection process which is based on value chain concept. After the analysis process, results will be synthesized in terms of regional development and food security impacts. Synthesis results lead the strategy development process.

3.1.1. Strategy Development Methodology

Most of the food security improvement achievements are encapsulating a comprehensive approach in terms of different food products as they focus only a single sector like agriculture sector or industrial sector. In this study, this situation will be everted using a single food product based inter-sectoral comprehensive approach due to the value chain analysis methodology. The reason behind this approach is to embody the regional development and food security improvement together through the value chains of most strategic food commodities in terms of global and national food security.

In fact, the buyer driven structure of food value chains (according to findings from the theoretical framework chapter) forces this process to be bilateral between producer and buyer. But, in this study, the additional regional development focus is a reason to conduct producer driven value chain analysis.

On the other hand, according to a study of Attaie and Fourcadet, raw material chains and consumer market chains use different pathways in terms of direction in focusing to the product flow. A consumer market chain focus uses a direction from the consumer product to the input of raw material, as the raw material chain focus uses a flow from the input to the end-product which is bought by end-consumer (Attaie et al, 2003). In this study, the focus is considered as same as raw materials chains because raw materials are the common point for both regional development and food security issues. So, the methodology will be established on a flow which is took from the input to the end-product which is bought by the individual consumer or consumer industries. In the light of this assumptions, the methodology of the study has the steps which are arranged below.

- 1) **Identification of the Region's role in terms of international, national situation for selected food related strategic agricultural commodity:** To achieve this step, it is necessary to ask the question “ What is the most important food products producing in a region which are strategic for national, international and regional food security. In general, this identification process should be conduct both for producer and consumer position of a region. This is because a region can compensate its commercial production sacrificing its natural resources which results as a danger of losing its own food security. For example, a region which's economy depends on crop production lose its grasslands and forests changing them agricultural crop lands. In such a situation, the food security of region can damage because grasslands depended farming products can be less available for both regional consumers. On the other hand, it is important to evaluate the strategic position of an agricultural commodity considering both its food security and regional development reflections. In fact, this pre-analysis process presents a general upper scale value chain analysis which is including the benchmarking process.
To achieve this step, it is necessary to identify the strategic food commodities for international, national, and regional level. So, it is necessary to define a

methodology in order to define an agricultural commodity as strategic in terms of both regional development and food security. In this methodology it is useful to define an indicator function which uses the parameters as counted below.

- **The production area proportion among whole agricultural production area of a food related agricultural commodity in region, country and world. (P):** An agricultural commodity can be considered as strategic for a nation or a region when the production area proportion of this commodity has a higher value than the other commodities' production area proportion. This parameter is important for both the food security and regional development because production reflects the availability of a food as it creates employment and economic impact which are the parts of the regional development. So, this parameter has a positive reflection on the indicator function. But on the other hand, it is important to compare the production proportion at different scales in order to identify the difference between strategic situation of an agricultural commodity for different scales. Because, a commodity can be strategic at national level, but it can have a non-significant production proportion at global level. At these circumstances, production proportion, which is symbolised as "P" in indicator function, should consider as a multiply parameter and, in addition to this, the difference between the production proportion at different scales also should be add to the function as multiply. For this parameter, the commodity production database from FAOSTAT and Agricultural Production Database from TURKSTAT will be use as data source.
- **The food related consumption amount of a food related agricultural commodity in country (C):** This parameter is useful to identify the strategic situation of an agricultural commodity in terms of food security in a robust way. It also represents the regions consumer position in the indicator function. It is apparent that this parameter has a positive relationship with the strategic situation of an agricultural commodity in

terms of food security because it is causally related to availability and accessibility of a food source. So, this parameter should be as a multiply in the indicator function. This parameter will be symbolized as “C” in the indicator function. The difference between different scales also should be considered in function as same as it applied for production proportion parameter. For this parameter, FAOSTAT Food Balance Database will be used as data source as raw for global and national level. For regional level, national level values will be multiplied with population proportion of the region by national population.

- **The proportion of production value of a food related agricultural commodity in region, country, and region (V):** This parameter has a critical role for regional development. The more a region create value producing a commodity the more this region will be developed. So, the most value creating agricultural commodities are the most strategic agricultural commodities in terms of regional development. On the other hand, it is important to consider the proportion of this value of the agricultural commodity among total agricultural production value in order to understand whether an agricultural commodity is strategic or not. So, in the indicator function, this parameter will be use as a multiply of value proportion for agricultural commodity. This parameter will be symbolised as “V” in the function. For this parameter, the FAOSTAT agricultural production data and TURKSTAT agricultural production data of each commodity will be multiply with the commodity prices per unit at global, national, and regional level. For global commodity prices, FAOSTAT database will be used. For national and regional prices per unit, TURKSTAT agricultural prices database will be used.
- **Employment generation capacity of a food related agricultural commodity in region and country (E):** An agricultural commodity became a strategic commodity for a region when it triggers employment creating economic activities within a region. On the other hand, every

region or country has a specific capacity of employment creation for each commodity because of its current production structure in the related industries. Thus, in the strategic commodity indicator function it is useful to consider the employment creation capacity for each commodity. To achieve this, it is necessary to use the employment creation ratio for each commodity which are evaluated for country. This parameter should be considered as a multiplier through the strategic commodity indicator function with the symbol of “E” This parameter does not have to differ among different regions of a country, so, it is adequate to add a country specific employment rate parameter to calculate the strategic position of an agricultural commodity for each region. For this parameter, currently Turkey does not have any enough study which embodies the country specific employment creation ratio for each agricultural commodity. So, in the study, an international study which calculated the employment creation ratio for some agricultural commodities will be used as data source. In the study, the employment effect of commodities is undermined for the commodities with the negative values. On the other hand, as an assumption, in case of the lack of relevant information, the employment effects of some commodities are considered as same with the similar commodities within the same agricultural commodity groups.

- **Value added product diversification of a food related agricultural commodity in region, country, and world(D):** Product diversification capacity reflects the strategic position of an agricultural commodity for a region in terms of both regional development and food security. The more commodity related food products are diversified the more this food product related commodities production is demanded in a region or a country. This demand capacity determines the strategic position of the agricultural commodities in terms of regional economic development. On the other hand, the diversification of an agricultural commodities related products increases the food security in terms of utilisation parameter. As a result,

product diversification should be considered as a multiplier in the indicator function. In this study, TOBB Industrial Information Database will be used as a data source. The parameter will be symbolised as “D” in the indicator function.

- **The trade volume of the food related agricultural commodity for region, country, and world (T):** International, National, and regional trade volume of an agricultural commodity influence the strategic position of an agricultural commodity because of this commodities’ effects on regional development. The trade volume of an agricultural commodity means as the supply and demand potential of this commodity. A region can assure regional development as this region having control on the trade volume of a more tradable commodity as another mean, having a big proportion among the global trade volume of a commodity. On the other hand, the more a commodity have a big trade volume proportion among whole agricultural commodity trade volume, the more this commodity is strategic for both international, national and regional economies. As a result, this parameter should be represented as a multiplier in the indicator function as diversified by international national and regional level. This parameter will be symbolised as “T” in the function. For this parameter, FAOSTAT agricultural trade database.

The defined parameters don’t include the sustainability parameters because these parameters are considered as initial for each commodity and all the commodities should be consider in terms of sustainability in a commodity-specific strategical way.

As a result, the indicator function for determination of “I” strategic commodities for region can be formulated as below:

$$S_i = (P_G * P_N * P_R) \times (P_R - P_G) \times (P_R - P_N) \times (P_N - P_G) \times (C_N) \times (V_G * V_N * V_R) \times E \times D \times (T_R * T_N * T_G)$$

In this function box, the purple parts are related with both regional development and food security as the red parts represent the food security effects. The blue parts are related with regional development.

2) Conduction of Value Chain Analysis of the region for selected food related strategic agricultural commodities: During the value chain Analysis, the methodology of Kaplinsky and Morris have been considered as a start point but this methodology have been modified in the light of needs of the study, as compatible with the statement of Kaplinsky and Morris about the flexible structure of value chain analysis.

- Secondary data Collection and Pre-Determination of SAPR Wheat Value Chain: The first aim of secondary data collection is to determine the general activities through the wheat value chain of sear. But before it, it is necessary to define the production capacity and variation based on wheat. After that, data collection process continues for production and distribution activities related to wheat and wheat-based products of SAPR. Using the production activities, the main actors who have role in this production activities can be identified. As the last step of secondary data collection process, the linkages between SAPR wheat value chain actors have been defined using the actors and activities data.

Secondary data sources consist of four main types;

- Statistical data sources
- Academic and other scientific studies
- NGOs reports
- Policy Notes (Regional and national)

The secondary data-based value chain analysis constitutes a pre-defined draft of real value chain analysis of SAPR.

- **Field Study Based Advanced Value Chain Analysis:** In this study, it is considered as necessary to handle the information about the current situation of value chain as raw as possible. So, the general method for field study designed as unstructured in-depth interviews with several actors of value chain in order to serve a wide range of information about the current situation of value chain.

The field study includes open ended unstructured interview results with 10 industrial production firm agents and 12 support activity related institutional agents. In addition to the interviews, a survey conducted with the 81 agricultural enterprises. The field studies are output of the “Integrated Resource Efficiency in Agriculture and Agri-based Industries in the Southeast Anatolia Region Project.” The field research participants are reached via call of SAPRDA in order to supply the knowledge for IREA project.

Field studies carried out in order to obtain data on the current situation of the wheat value chain were carried out in two different method. These methods include in-depth interviews conducted to understand the local dynamics of businesses in the value chain, business surveys conducted to understand the activities taking place in the value chain of products and stakeholder meetings in order to define the prospects of the wheat value chain actors about value chain development strategies.

	In-Depth Interviews	Agri-business surveys
Related Actors	Pasta Industry Enterprises Bulgur Industry Enterprises Wheat Flour Industry Enterprises	Wheat producing Agricultural enterprises

During the in-depth interviews conducted with the enterprises, open-ended questions were asked in order to obtain the specific situation of the wheat value chain in the region and local and each answer was noted during the interviews. The questions included in the in-depth interview are elaborated under three main headings that investigate the views of the enterprises towards the production, processing, and marketing rings in the value chain. In addition, in each company interviews, information on the status of services supporting the value chain in the region was obtained and open-ended questions were asked in this context. A total of 10 interviews were conducted in Gaziantep, Şanlıurfa, Mardin and Adıyaman in the GAP Region for in-depth interviews. All of the enterprises are industrial enterprises and they consist of 3 flour, 1 flour and bulgur, 4 bulgur and 2 pasta producing industrial enterprises.

The agri-business surveys are conducted as an online internet survey form and this online survey form are called for regional agribusiness enterprises through SAPRDA using its administrative networks. There are 85 wheat producing agricultural enterprises who attended to this survey. 4 of the attendants did not answer the survey properly and they are determined as invalid in terms of research. As the distribution of agricultural enterprise survey attendants evaluated, it is seen that 48% of attendants are from Mardin, 26% from Diyarbakır, 10% from Batman, 8% from Gaziantep, 5% from Kilis and 1% from Adıyaman.

- 3) Identification of Problematic Issues for Regional Development and Food security issues through Selected Commodity Value Chains**
- 4) Strategy development process for food security sensitive regional development through selected commodity value chains**

3.1.2. Data Collection Methodology

The theoretical framework of the study determined the general structure of data need and its collection process. According to this, the field study and secondary data

collection process designed based on value chain concept. Before the field study, a secondary data-based wheat value chain has been defined in terms of its general structure, actors, activities and linkages. Using this pre-determined wheat value chain structure, the methodology of the field study conducted.

3.2. Research Results

3.2.1. Identification of the Region's Role in terms of international, national situation for selected food related strategic agricultural commodity

To select a commodity to conduct value chain analysis for SAPR, the index function which is defined above used. According to results, wheat is the most strategic commodity in terms of food security and regional development for SAPR.

Table 3.1. *Strategic Commodity index results for SAPR*

	P	C	V	E	D	T	Ind	Source no
1 Wheat	0.508149	0.135544	0.000704	0.3	8	3688619.00	429.265370	(Nolte and Ostermeier, 2017)
2 cotton	0.115036	0.006452	0.000126	0.24	7	1452550.00	0.227894	(Nolte and Ostermeier, 2017)
3 Grapes	0.068254	0.021433	0.000039	1.62	4	555954.00	0.203475	(Zalk, 2019)
4 tomatoes	0.003284	0.086853	0.000067	3.5	4	434983.00	0.116808	(Zalk, 2019)
5 Chillies and peppers	0.009433	0.01867	0.000005	3.5*	2	101353.00	0.000677	(Zalk, 2019)
6 Sheeps	0.048112	0.01536	0.000069	0.01	7	66723.00	0.000239	(Zalk, 2019)
7 olives	0.038576	0.003036	0.000001	0.75	4	179358.00	0.000092	(Zalk, 2019)
8 Pistachios	0.199412	0.001344	0.000003	0.75**	1	67253.00	0.000038	(Zalk, 2019)
9 Barley	0.206262	0.000597	0.000004	0.29	3	80861.00	0.000036	(Nolte and Ostermeier, 2017)
10 Lentils dry	0.143052	0.004182	0.000000	0.3***	1	553893.00	0.000026	(Nolte and Ostermeier, 2017)
11 Watermelons	0.007741	0.032262	0.000002	3.5*	1	15054.00	0.000022	(Zalk, 2019)
12 Chickpea dry	0.003708	0.004033	0.000004	0.3***	1	71137.00	0.000001	(Nolte and Ostermeier, 2017)
13 cucumbers and gherkins	0.00077	0.01404	0.000001	3.5*	1	28701.00	0.000001	(Zalk, 2019)
14 Goats	0.018754	0.023125	0.000006	0.01****	1	293.00	0.000001	(Zalk, 2019)
15 Walnuts	0.001417	0.00224	0.000000	0.75**	2	194196.00	0.000000	(Zalk, 2019)
16 Melons, other	0.003526	0.01516	0.000000	3.5*	1	5099.00	0.000000	(Zalk, 2019)
17 cherry	0.001301	0.004107	0.000000		3	182541.00	0.000000	(Zalk, 2019)
18 figs	0.000385	0.000373	0.000000	3*****	1	251806.00	0.000000	(Zalk, 2019)
19 Vetchs	0.005013	0.142758	0.000000	0.3***	1	74.00	0.000000	(Nolte and Ostermeier, 2017)
20 Almonds	2.06E-18	0.000896	0.000000	0.75**	1	128050.00	0.000000	(Zalk, 2019)

Employment considerations

* same as tomatoes ** same as olives

*** same as wheat **** same as sheep

***** same as cherries

3.2.2. Secondary and Primary Data Based Research Results: Secondary and primary data-based Wheat Value Chain of SAPR

As the food security issue considered at national scale, with the 181 kg per person/year consumption value (TURKSTAT, 2016), wheat is the most important crop in terms of food security. On the other hand, wheat is the widest crop among crop production area of Turkey. In 2016, the share of wheat cultivation area is %32 among whole cropland of Turkey (FAO, 2016).

Table 3.2 The share of crop production in Turkey in terms of cultivation area

	Crop type	Area harvested (ha)	Share (%)
1	Wheat	7609868	32
2	Barley	2700023	11
3	Olives	845542	4
4	Sunflower seed	718317	3
5	Maize	679537	3
6	Hazelnuts, with shell	436869	2
7	Grapes	435227	2
8	Seed cotton	416002	2
9	Chickpeas	351687	1
10	Sugar beet	321953	1

In addition, Turkey is one of the most important countries among wheat and wheat-oriented food product trader countries at international scale. According to statistics; Turkey is the 12nd largest importer of wheat, 1st largest exporter of wheat flour, 3rd largest exporter of pasta products and 8th largest exporter of bread, pastry and biscuit products (ITC TRADEMAP, 2017). This position of Turkey makes wheat a strategic valued crop in terms of both economy and food security.

When the 2016 wheat production statistics of FAO is analyzed, it is seen that China is the world's top wheat producing country with 126,215,211 tons wheat production.

With this production amount, China meets 17% of the world wheat production by itself. India follows China with a production share of 13%. Turkey, producing 19 million tons of wheat in 2016, have met the 3% of world wheat production and has been ranked 11th in the world. Germany and France are the two countries with the highest productivity values among the leading countries in wheat production. Turkey is the most inefficient country among the leading wheat producer countries with its 2429 kg / ha with yields of wheat production.

Table: Leading countries in world wheat production in 2016

	Country	Production area (ha)	Production Amount (ton)	Production Share (% of World prod.)	Yield (Kg/ha)
1	China	24071629	126215211	17	5243
2	India	30470000	95850000	13	3146
3	Russia	23907772	59711382	8	2498
4	USA	18771550	55147120	8	2938
5	France	5297210	38950202	5	7353
6	Canada	9461900	29280800	4	3095
7	Germany	3219700	27784700	4	8630
8	Pakistan	9199318	25979399	4	2824
9	Australia	12613226	25303037	3	2006
10	Ukraine	6010600	24113970	3	4012
11	Turkey	7820750	19000000	3	2429
	World	220419954	729018982		

According to the 2018 report of Turkish Chamber of Agricultural Engineers, Turkey is producing the %3 of the total wheat production of the world. But, though the yield performance of Turkish wheat production is getting better in time, the yield and quality of the Turkish wheat agriculture is under the world average. In addition to this, the wheat production area is decreasing year by year since 2000. There was 92 million da of wheat production area in 2000, as there are 77 million da in 2017. The most

important problems about the wheat production is reported as decrease of wheat production areas, increasing agricultural input costs, insufficient incentives for wheat, reduced tariffs for imported wheat, the wheat procurement policy of Turkish Grain Board, increase of unused wheat production areas and unawareness of agricultural producers about the licensed wheat storage services (URL, 2020¹). When the SAPR related secondary and primary research findings are considered, most of the problems are similar with the general wheat production areas of Turkey.

Wheat agriculture in most important wheat exporting countries: According to an expert's study presented in TUSAF 2017, Russia has a great wheat production and trade potential thanks to its very high qualified wheat production. According to the presentation, the Kuban region of Russia, which has the richest farming lands in terms of soil properties, has 7000 tons per ha yield for its wheat production as the general average wheat yield of Russia is recorded as 2500 tons per ha. Russia is reported as the second most cost effective country after Ukraine because of its low costs for pesticide, fertilizer, land and labor inputs (URL, 2020²).

According to a report of European Parliamentary Research Service (2019³) European Union has the highest values of wheat yield in the world due to its natural advantages and high production technics but it is evaluated that EU reached its theoretical natural boundaries in yield value of wheat. In addition, the climate change has been reported as the most striking challenge against the durum wheat production with its quality and yield decreasing effect on European wheat agriculture. On the other hand, it has been reported that for European Union has difficulties to compete in the production costs especially the higher wheat supply terms of agricultural production.

¹ http://www.zmo.org.tr/genel/bizden_detay.php?kod=30125&tipi=17&sube=0

² <http://tusaf2017.org/wp-content/uploads/2017/04/Sergey-Chumak-ENG.pdf>

³

[http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/640143/EPRS_BRI\(2019\)640143_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2019/640143/EPRS_BRI(2019)640143_EN.pdf)

In wheat and wheat-based food products production, TR5 – Western Anatolia Region and TRC - South Eastern Anatolia Region are the main production sites both by quantity and economic value. In 2016, TRC SEAR has produced %18 of whole Turkey wheat production and covers the % 16 of wheat cropland of Turkey; as the TR5 - WAR has produced the 17% of Turkey wheat production by amount and covers the 17% of wheat cropland of Turkey. In addition, SEAR is the most important durum wheat producer of Turkey with its %35 share in Turkey durum wheat production (TURKSTAT, 2016). On the other hand, SEAR and WAR regions are home to significant amount of wheat based industrial production unit and they cover a huge portion of wheat based industrial production capacity of Turkey. SEAR includes the 25% of wheat based industrial employment of Turkey, as WAR includes %16 of wheat based industrial employment of Turkey (TOBB, 2019).

Table 3.3. *The share of SAPR in Turkish Wheat Industry and its comparison with WAR (Source: TOBB Industrial Statistics Database)*

Wheat Flour	Producer Unit	%	Employment	%	Capacity(kg)	%
SEAR	119	21%	2898	19%	6340355421	25%
WAR	66	12%	2577	17%	3903912756	15%
Turkey	572	100%	15309	100%	25705106627	100%

Pasta	Producer Unit	%	Employment	%	Capacity(kg)	%
SEAR	17	24%	2005	33%	1085550901	85%
WAR	10	14%	1097	18%	184172200	14%
Turkey	72	100%	6119	100%	1279701285	100%

Bulgur	Producer Unit	%	Employment	%	Capacity(kg)
SEAR	62	0,626263	1069	0,3876	5,14E+08
WAR	5	0,050505	367	0,133067	*
Turkey	99		2758		9,17E+08

But, according LQ analysis, wheat and wheat-based industry is more important in SEAR than in WAR.

Table 3.4. *LQ Analysis of Wheat and Wheat Based Production (Source: by own calculations)*

	SEA R	% in SEAR	LQ of SEAR	WAR	% in WAR	LQ of WAR	Turke y	% in Turkey
Wheat Production (area)	1206 8696	49%	1,29288	1305 4879	38%	1,0213	7671 9448	38%
Wheat Flour Ind.	2898	0,14%	2,56794	2577	0,09%	1,7026	1530 9	0,05%
Pasta Ind.	2005	0,10%	4,44496	1097	0,04%	1,8133	6119	0,02%
Bulgur Ind.	1069	0,05%	5,25796	367	0,01%	1,3459	2758	0,01%
Total Wheat Industry	5972	0,29%	3,34958	4041	0,14%	1,6899	2418 6	0,09%

This analysis shows that, in SAPR, it isn't possible to develop a sustainable regional development strategy without considering the wheat and wheat-based food production sector. As results of these consequences, it is necessary to develop a food security sensitive regional development strategic framework in SAPR which is based on wheat value chain.

3.2.3. Secondary and primary data-based Wheat Value Chain of SAPR

3.2.3.1. Agricultural Production Process:

According to surveys and secondary data research results, in the agricultural node of wheat value chain, agricultural node actors consist of agricultural producers, middlemen, Turkish Grain Board, Grain Exchange Organizations, Agricultural Input Suppliers the Chamber of Agricultural Engineers, Logistic Agents. Ministry of Agriculture and Forestry and South-eastern Anatolia Project Regional Development

Administration. As the agricultural producers, middlemen, Turkish Grain Board, Grain Exchange Organisations, Agricultural Input Suppliers the Chamber of Agricultural Engineers, Logistic Agents are directly influence the value creation in the agricultural production node, Ministry of Agriculture and Forestry and South-eastern Anatolia Project Regional Development Administration supports the value creation process supporting the production and agricultural commodity trade using regulative and supportive policy tools.

As they are the core group of agricultural node actors, it is important to classify agricultural producers by their types. Production scale, production method, employment structure, business approach are the key factors to classify the types of agricultural enterprises. There isn't any official statistical database which shows the distribution of wheat producing agricultural enterprises by their types. At this point, agricultural enterprise surveys have supplied the data which is needed to understand the structure and distribution of agricultural actors according to their scale and activity type.

Production and farm scale are an important definition dimension for agricultural enterprise type. Scale of the enterprise shapes the market links of the enterprises by influencing the cost of farming activities and price formation through value chain. The most important scale-oriented issue is the logistic service and its limitation effect on market links. There are two different parameters to identify the scale of an agricultural enterprise. The first is the size of farm area as the second is the annual income amount of the enterprise. According to survey results from the 75 of the surveyed 81 enterprises which are informed about their size of their farm area, these agricultural enterprises mainly shows a small and middle-sized agricultural enterprises profile which is accumulating between 15-100 da. In an act of parliament called "Toprak Koruma ve Arazi Kullanım Kanununda Değişiklik Yapılması Hakkında Kanun", the sufficient farm area sizes in order to make profitable agri-business are determined for each district of Turkey (see Appendix 2). As the surveyed farms are evaluated in terms of this determined sizes, it can be seen that 35% of the surveyed farms has not enough

farmland to make profitable business. On the other hand, as the surveyed agricultural enterprises are grouped by their annual income, it can be seen that 96% of the enterprises have annual income under 333000 TL, which are categorized as small and medium sized agricultural enterprises. 42% of enterprises have annual income under 26000 TL which can be categorized as small size enterprises. This numbers indicates that the small sized agricultural enterprises have weight in the wheat production of SAPR in terms of number. But when the amount of production evaluated, the amount of wheat production created by small sized agricultural enterprises are evaluated only as % 2 of total wheat production. In addition, it is important to classify the agricultural enterprises by their annual production amount, because the linkages with the market is very sensitive for the production scale of enterprises. Although, it is hard to name a critical limit of production amount for an enterprise in order to consider whether it produce sufficient amount of product or not. Because all enterprise has a unique case in market conditions in terms of their production quantity related marked connectedness. To deal with this obstacle, it is useful to evaluate the economic sufficiency levels of enterprises taking the minimum levels of farm area which is determined by land protection regulations and yields of towns for each enterprise to evaluate their production amount in terms of their market connectivity ability. Even this analysis does not give any clue about market connectivity ability it can be consider in order to structure the farmer unions strategies. When the result of survey analysed according to these variables, it has been reached that %35 of agricultural enterprises cannot produce enough wheat to be considered as economically sufficient. The economically insufficient enterprises condense in centre district of Batman, Beşiri (Batman), Sason (Batman), Bağlar (Diyarbakır), Çermik, Çüngüş (Diyarbakır), Eğil (Diyarbakır), Ergani (Diyarbakır), centre district of Kilis, Dargeçit (Mardin) and Mazıdağı (Mardin). In addition to the scale, the type of business is an important factor to understand the structure of agricultural enterprise of region. According to the results of the survey, the 87% of the agricultural enterprises conduct their agricultural activities as a family business.

The second actor group of agricultural nodes is middlemen. There are not any open statistical sources to identify the exact number of middlemen who trade the wheat in SAPR. On the other hand, according to the results of the survey, which is conducted for agricultural enterprises, it has been found that 75 % of the agricultural enterprises sell their products to the middlemen instead of Turkish Grain Board. As the 52 % of agricultural enterprises sell their products to the middlemen 17 % of them sell their products to both middlemen and Turkish Grain Board.

Turkish Grain Board is another important actor which dominates the prices and manages the flow of agricultural output. This organization has a duty to buy the produced wheat in a minimum level of prices. Turkish Grain Board sets a minimum level of price to buy wheat and it controls the price of wheat. Using this Turkish Grain Board performs its duty which is to protect wheat producing agricultural enterprises. Turkish Grain Board has an organization structure which consist of central and remote organization structure. As the central organization sets the national policy of the institution, the remote organization units perform the institutional policy related institutional activities which includes; the purchasing and procuring wheat, managing the import of wheat by the request of industrial enterprises. The Remote organization units of Turkish Grain Board make contracts with local licensed storage units to perform its purchasing and trade activities. This contracted licensed storage units also serves to agricultural and industrial enterprises for quality and control services. With these organization structure, Turkish Grain Board performs its policies purchasing wheat from agricultural enterprises, grain exchange organizations and free middlemen and procuring wheat for industrial enterprises with import or national oriented wheat stocks (TMO, 2017).

Grain Exchange Organizations are the other actors which have influence on trade of wheat. These organizations perform as a product-based stock exchange system and provides a proper environment for transparent formation of prices to trade of the produced wheat. In addition, they link the providers and suppliers of wheat in an efficient way. Moreover, they supply an alternative way of utilizing the produced

wheat for agricultural enterprises instead of selling it to the middlemen. On the other hand, they facilitate the trade of wheat using electronic trade system. This situation also creates the opportunity to procure the necessary input easily for industrial enterprises. The grain exchange organizations supposed to disseminate the operation of agricultural products as future instruments similarly as it is in the developed countries (Gaziantep Commodity Exchange, 2015). In SAPR, there are two main grain exchange organizations which are specialized for wheat exchange. These two exchanges are Şanlıurfa Commodity Exchange and Diyarbakır Commodity Exchange. In addition, there is a Turkish Agricultural Commodity Exchange organization which has 8 agencies in SAPR provinces. These agencies are:

- Adıyaman Commodity Exchange
- Batman Commodity Exchange
- Diyarbakır Commodity Exchange
- Gaziantep Commodity Exchange
- Kızıltepe Commodity Exchange
- Nizip Commodity Exchange
- Nusaybin Commodity Exchange
- Şanlıurfa Commodity Exchange

In SAPR, agricultural input and service suppliers have a significant role in the agricultural node of wheat value chain. As they serve the agricultural input to the region, they also supply technical agricultural consultancy for farmers. Their role makes it necessary to consider their geographical distribution to understand the interaction among the actors of value chain. There are several types of input supplies in SAPR region as they can be classified in 5 groups according to their type of trade, they can be also classified in 5 groups according to the type of input which they supply. As the suppliers are classified according to their type of trade activity it can be said that in region there are input producers, input wholesalers, input retailers, input renters and agricultural service suppliers. The classification of input suppliers according to the type of input they supplied are; seed suppliers, fertilizer suppliers, agricultural

chemical suppliers, agricultural machine and equipment suppliers, agricultural land suppliers and agricultural technical service suppliers. According to TUGSAŞ (URL2, 2019) there are 19 fertilizer retailers in Adıyaman, 36 in Diyarbakır, 13 in Gaziantep, 7 in Mardin, 6 in Batman and 36 in Şanlıurfa; as there are not any **fertilizer** retailers in Şırnak, Siirt and Kilis. According to TSÜAB, which is the main board for the seed producers and seed industry enterprises, there are 5 grain **seed** producers in Gaziantep as there are 13 in Şanlıurfa, 8 in Adıyaman, 38 in Diyarbakır, 4 in Batman, 2 in Şırnak, 2 in Siirt and 5 in Mardin. There are not any seed producers in Kilis and Şırnak. Most of the seed producer institutions are consist of private enterprises as only 3 of 75 producers in SAPR consist of state organization institutions (URL3, 2019). In addition to this, TODAB, which is the main legal board for the seed distributor enterprises, reports that there are 459 recorded seed distributor institutions by the year 2017 in SAPR (TÜBİTAK TÜSSİDE, 2017). On the other hand, another type of actor group for agricultural input suppliers is the land renters. The land renters rent their land depending on a contract to the farmers. According to the result of the survey, the 16 % of the agricultural enterprises which are responded to the question, conducts their agricultural activities as a tenant on agricultural land.

Logistic and storage agents are another important type of actors in the agricultural node of wheat value chain. The newly developing licensed storage amenities in SAPR has a critical role for the development of wheat value chain. They facilitate the trade of produced wheat in SAPR working in coordination with the Commodity Exchange Organizations as they supply the guarantee of the quality of wheat using licensed storage technologies for both producers and wheat traders. According to the records of the Republic of Turkey Ministry of Trade, In SAPR there are 57 licensed grain storage institutions; 3 of them are located in Adıyaman, 3 of them in Batman, 16 of them in Diyarbakır, 8 of them in Gaziantep, 1 of them in Kilis, 15 of them in Mardin, 1 of them in Siirt and 10 of them in Şanlıurfa. There is not any licensed grain storage facility in Şırnak. On the other hand, only 23 of them has a legal licensed storage capacity; one of them located in Adıyaman, 2 of them in Batman, 5 of them in

Diyarbakır, 6 of them in Gaziantep, 5 of them in Mardin, 4 of them in Şanlıurfa. There is not any legal licensed storage capacity in Şırnak, Kilis and Siirt. The total established storage capacity is 2630822 kg for SAPR, and 769597 kg of this capacity has legal storage license. Licensed Grain Storage enterprises have to make a contract and with an authorized classification laboratory to conduct its legal licensed storage activities (T.C. Resmi Gazete, 2013). In addition, there are several logistics firms and logistics organizations which are conducting the wheat agriculture related logistics activities. There are several logistics firms which supplies road transportation service at several range of load scale. They have a key role to enable the linkage of the farmers to the market. Logistics services is an important determinant for the costs of farmers and traders.

There are several NGOs in the SAPR which are contributing and intervening to the mechanism of SAPR wheat value chain. There are several sectoral enterprise chambers, associations and unions which shares the knowledge and improve the quality of activities in agricultural node of wheat value chain. The **Turkish National Chamber of Agricultural Engineers** is the one of the important NGOs which supplies technical support and policy development works. They conduct several educational and implementational projects in order to improve the quality agricultural implementations in Turkey (URL4, 2019). The other important organization is **Turkish National Grain Council**. This organization has an aim to put together the whole grain value chain actors on a common platform. They have also the aim to contribute the policy making processes which are related to grain agriculture, grain industry and grain and grain-based products trade (URL5, 2019). Another important NGOs actor group are **chambers of commerce** which are specialized for different provinces in SAPR. In SAPR, according to TOBB records, there are 16 chambers of commerce; one of them is in Adıyaman, one of them is in Diyarbakır, 3 of them are in Gaziantep, 3 of them are in Mardin, one of them is in Siirt, 3 of them is in the Şanlıurfa, one of them is in Batman, 2 of them are in Şırnak and one of them is in Kilis.

Administrative Actors are Ministry of Agriculture and Forestry, Ministry of Trade, South-eastern Anatolia Project Regional Development Administration, Regional Development Agencies, Municipalities, General Directorates of State Hydraulic Works. They are regulating and intervene to the agricultural node of value chain using the legislative, financial, and infrastructural tools. The Ministry of Agriculture and Forestry regulates the agricultural production directly with the related laws, regulations, and technical specifications. The Ministry of Agriculture and Forestry also supports directly to the production process using technical and financial support tools and research & development activities. The Ministry of Trade is a regulator institution which has a substantial influence on the agricultural node of wheat value chain. Ministry of Trade intervenes the trade of agricultural input and output trade using its legislative tools. South-eastern Anatolia Project Regional Development Administration and regional development agencies in SAPR generate regional strategies which support the agricultural node of wheat value chain. They use their financial and infrastructural tools as they support the agriculture node related activities on wheat value chain. They also coordinate the linkages between the regional actors of wheat value chain of SAPR. General Directorates of State Hydraulic Works supports and control the irrigation related infrastructure investments of Region.

Southeastern Anatolia Project Regional Development Administration is a national institution which has been established in 27 October 1989 in order to be responsible for the management of the regional development based on agricultural irrigation projects called as “Southeastern Anatolia Project” which includes an investment plan for 22 dams and 19 hydroelectric power plants and development of irrigation infrastructure on 1,8 million ha area through the 9 provinces. The region, which constitutes also the geographical context of the study, gained a special status as a regional development administration in order to create regional development based on agricultural development in Adıyaman, Diyarbakır, Gaziantep, Mardin, Siirt, Şanlıurfa, Şırnak, Batman and Kilis. The SAPRDA became an institution which responsible to enable the socio economic and infrastructure development through the

region. It has a regional development approach which consider the human welfare and the sustainability of regional natural and social sources in an innovative way. (URL, 2019) With this role, SAPRDA has a huge impact on agricultural node of wheat value chain. SAPRDA, which has a development approach with emphasis on agriculture-based development, conducts a lot of projects and investment programs related to agricultural development. The most important project of SAPRDA is the irrigation projects which are also the core of development administration. In addition to this, there are 15 different projects for agricultural sector which have been carried out by SAPRDA between the years 2007 and 2019. The most important projects which are worth to consider in terms of their impacts on wheat value chain are “GAP Agricultural Training and Extension Project (GAP TEYAP)”, “Organic Agriculture Cluster Development Project (GAP ORGANİK)”, “Dissemination of Precision Farming and Sustainable Applications Project”, “Integrated Rural Development Project”, “Rural Development Project for Central Village and Return to the Village”, “Increasing Public Income Level in Non-Irrigated Areas Project”, “Agricultural Research Project”, “GAP Region Livestock Development Project”, “Contracted Kilis Goat Breeding Establishment Project”, “Afforestation and Erosion Control Project”, “Development of Agriculture and Non-Agricultural Activities Project”, “Operation Maintenance and Management Project of GAP Irrigation Systems”, “Irrigation Investments Impact Assessment Project”, “Integrated Resource Efficiency Project in Agriculture and Agriculture Based Industry”, “Entrepreneurship and Innovation Needs Analysis Project”. (GAP, 2019)

As a general review, the current situation of agricultural node actors has a diversification in terms of scale and type of business. But it is seen that there is a condensation on the family business type small and middle scaled agricultural enterprises. This situation makes the cooperative activities critical for the region. On the other hand, the generation of the new business types through region such as licenced storage based agricultural commodity market serves a new potential for the wheat agricultural sector of the SAPR. The most important problematic points about

the actors of agricultural node is the type of actors according to their land ownership patterns. First, the landowners as agricultural enterprises supposed to be more sensitive about the quality and productivity of soil, as a result they supposed to use the land in a more responsive way in order to consider the quality and sustainability of soil reserves. The renting of agricultural lands can interrupt the responsiveness of farmers to the soil reserves. The higher rate of tenant farmers creates a risk on the soil reserves of Region. On the other hand, the rent amenities of agricultural land allow the farmers without land to attend the production and this situation has a key role in terms of regional development because of its poverty reduction effects. This situation constitutes as a conflict point between food security and regional development. As second, the land size of an agricultural enterprise determines the efficiency of its business because of the scale of the operational costs. As the distribution of regional agricultural enterprises is considered, it can be seen that most of the enterprises comprise as small and medium size agricultural enterprises. As this land ownership pattern characteristic effects, the food security negatively decreasing the efficiency related availability and accessibility of wheat, on the other hand it decreases the profit of enterprises and creates negative effects in terms of regional development generating a poverty risk for agricultural enterprises.

The most important challenges facing Turkey's wheat production are drought, shortages in tillage methods, high fuel costs, the decline in the area planted, because farmers consider that it would be more profitable to plant fruit trees in those areas. The farmer population which is too old is another reason why agricultural land decline. Burning the stubble, inadequate irrigation, bureaucracy, support costs, middlemen's monopolization, are the other problems. As a positive advancement, an increase in the use of certified seeds can be pointed out. On the other hand, innovation in cultivation techniques and mechanization also provide an increase in efficiency. According to a similar study, the presence of a large number of certified seed varieties in the GAP region was found to be a negative factor for the productivity of wheat produced in the region (İpekçioğlu et al, 2014).

The production activities of wheat differ by the different production technic of wheat. There are several technics for wheat production which are differing by its usage aim and the type of the inputs which are used during the production. The most known segregation for production technic is conventional, good agriculture and organic farming technics for wheat farming. In addition, there are different production technics which aims the several output like soil protection and input usage reduction. Protective Tillage based cropping systems contains an alternative production technic for wheat agriculture.

According to the information obtained from the researches carried out in the SAPR region, for the conventional farming system the processes carried out during the processing of wheat in the region and the distribution of these processes by months are as follows. (Monis et al., 2014)

- Deep Ploughing (July)
- Tillage (September)
- Harrow (September)
- Fertilizer application (2 times in February)
- Agricultural spraying (2 times in March)
- Irrigation (3 times in March)
- Harvesting (June)
- Handling (June)

During the cultivation activities, the timing and management of activities important in terms of quality of agricultural products. According to the statement of a wheat based industrial firm member, a secondary crop cultivation and cultivation without fallow decreases the quality of wheat production.

There are two alternative production methods for wheat agriculture which are differing in terms of the usage of input and ecologic services. The good agriculture applications for wheat is one of the alternative production methods for conventional wheat farm.

Good agricultural applications comprise the reduced input use and ecology-friendly protection concerns for natural resources. The general principles of good agricultural applications include;

- Application of soil erosion reducing production methods
- Selection of disease-resist varieties of crops considering the geographic and climatic conditions
- Quality guaranteed certificated seed usage
- Regularly soil and leaf analysis (at least one time per year)
- Regularly Record of the fertilizer, water, pesticide, and chemical usage
- Usage of efficient irrigation systems
- Usage of quality water resources and regularly water source analysis
- Usage of integrated pest control methods including biologic pest management methods, reduction of chemical based pest control methods
- Risk evaluation for pesticide management
- Regular Pesticide remain analysis
- Waste management, waste sources and waste type determination
- Hygienic conditions for harvest
- Pollution evaluation and management
- Education of agricultural labor members for pesticide management and first aid
- Certification of products by an authorized institution for good agricultural applications (URL6, 2019)

As these principles are considered during the wheat production, the conventional wheat production systems are certified for good agriculture applications.

The organic wheat agriculture is the other alternative production method for wheat production. According to a study which explains the organic production methods for grains, the activities during organic wheat production should be as below;

- Crop Rotation
- Tillage

- Field and Seed Bed Preparation
- Fertilizers and Fertilization
- Sowing and Planting
- Weed Control (Management)
- Irrigation
- Harvesting and Threshing Operations
- Supply to Market (Kolaş & Er, 2012)

According to the organic wheat value chain study conducted for SAPR, the most of organic wheat production is carried out through the non-irrigated rain fed lands. On the other hand, in this study, it is stated that, the market share of irrigated organic agriculture-oriented wheat is higher than non-irrigated because of the yield advantage of irrigated agriculture of organic wheat. In addition, study shows that (GAP ORGANİK, 2011).

ORGANIC WHEAT PRODUCTION IN SAPR BY PRODUCTION AMOUNT -2018

■ ADIYAMAN ■ BATMAN ■ DİYARBAKIR ■ GAZİANTEP ■ KİLİS ■ MARDİN ■ ŞANLIURFA

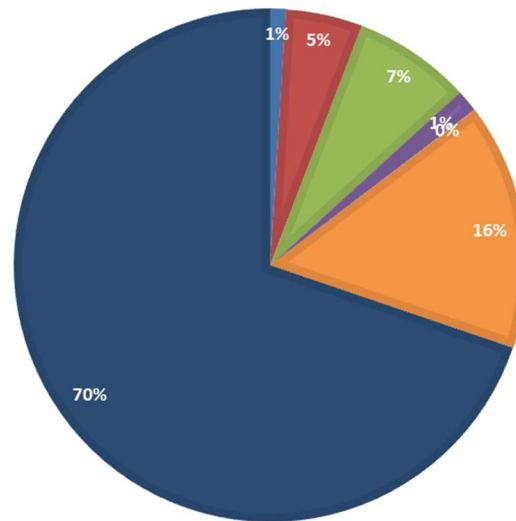


Figure 3.1. Organic wheat production among different provinces of SAPR (Source: Ministry of Agriculture, Organic Production Statistics)

According to the interview results, the irrigated agriculture for wheat is a crucial factor to improve the yield of wheat. On the other hand, the unfinished part of South Eastern Anatolia Project which consist of a large-scale irrigation and energy project, has been considered as the reason for importing wheat. This situation has also been reported as a cause for excessive use of water wells, leading to the reduction of groundwater. It is reported that there is barrenness in the Harran Plain due to unconscious irrigation.

Seed is the core element of wheat value which has a significant role on the quality and yield performance of produced wheat. The incentives for certified seeds of wheat agriculture are stated as a positive feature observed in the agricultural node of the wheat value chain in SAPR. According to the information obtained from the industrial enterprises, although the use of certified seeds has become widespread in wheat cultivation in the region, it is understood that there is still a significant level of farmers who use non-certified seeds in the region and this situation causes a quality problem in the wheat raw material obtained from the region. Although there are many enterprises in the region for certified seed production, it is reported that there is an external dependence on certified seed due to insufficient new seed development studies.

On the other hand, SAPR have a big potential of local seed quality because of its locational competences. SAPR, which is the genetical material source geography for wheat species, have a big potential in terms of geographical marked products. A study which is related the protection of local genetic sources of wheat of SAPR shows that there is need to improve the regional efforts to protect local genetic sources with “in-situ” methods. In addition, this study emphasizes on the need of a regional local seed-based wheat-based food production model. (Aktaş et al., 2018)

Wheat can be said to be sold through three channels. Even a bit delayed, the Turkish Grain Board is still giving the highest price on the market. The other two channels are stock exchanges and free market (direct trader) sales. In a survey conducted in Sanliurfa and Mardin in 2014, it was found that despite the high price of TMO, 80%

of the wheat producing enterprises sold their products to the merchant, which gave lower prices than TMO. This is because the cash prepayment required by the farmers is made by the merchant and not by the TMO (İpekçioğlu et al, 2014).

3.2.3.2. Industrial Production Process:

Two different types of wheat grown in the SAP region differ in terms of durum wheat and bread wheat end products and, hence processing stages. Durum wheat is used in pasta, semolina and bulgur production, while bread wheat is used in flour and starch production.

According to the statement on the website of a company operating in the region, the following operations are carried out during the production of bread wheat flour (URL7, retrieved in 2017)

- Wheat discharging and production control laboratory
- Cleaning of wheat
- Annealing, crushing and grinding of wheat
- Removal of flour formed by sieves and sassers
- Bagging and packaging
- Storage
- Marketing and logistics

According to the TOBB Industry Information System records close to 20% of the flour business in Turkey it is situated in the SAPR. 60% of the 105 enterprises operating in the SAP region are in Mardin and Gaziantep (TOBB Industry Database, 2017).

The most important issues about wheat flour is

According to the information on the website of a company engaged in pasta production in Gaziantep, pasta production stages are as follows (URL8, retrieved in 2017)

- Cleaning and annealing
- Grinding and screening
- Kneading and shaping
- Drying and cooling
- Resting and packaging

When the TOBB Industry Database records examined, 26% of the Pasta and derivate products production company in Turkey is in the SAPR region. There are 14 companies in Gaziantep and 2 in Mardin (TOBB Industry Database, 2017).

Another product produced from durum wheat is semolina. The following processes are carried out during the production of wheat semolina (Mirzaoğlu et al., 2008)

- Wheat purchase
- 1. Annealing
- 2nd annealing
- Grinding
- Storage
- Packaging

15 of wheat semolina producing 34 unit of Turkey is located in and 1 of them is located in Mardin. According to these data, Gaziantep is specialized in wheat semolina production in Turkey (TOBB Industry Database, 2017).

The production process of Bulgur, which is another wheat product and produced from durum wheat, is described as follows (Kemahlioğlu et al, 2010)

- Cleaning
- Wetting
- Cooking
- Drying
- Humidity adjustment

- Peeling
- Break
- Elimination
- Packing and storage

62 from a total of 98 enterprises producing bulgur in Turkey are in the GAP region. The enterprises in the SAP region are concentrated in Gaziantep, Sanliurfa and Mardin (TOBB Industry Database, 2017).

The most important support provided to the wheat processing food industry is the import of duty-free wheat. The most important factor affecting the quality of wheat based industrial products is the difficulty in supplying enough, quality, cheap and homogeneous raw materials. Other important problems of the sector are inadequate technology and idle capacity, economic problems, lack of trained personnel, import and export problems (Ulusal Hububat Konseyi, 2011)

3.2.3.3. Marketing Process:

Turkey is importing durum wheat and other wheat varieties without tariff, in order to make export of wheat-based products as a policy called “inward processing regime”. The imported wheat is used for producing pasta and flour which is exported. With this policy, Turkey became one the most important countries of world. Turkey sold pasta valued at nearly 400 million \$ to several countries in 2016 (ITC TRADEMAP, 2017).

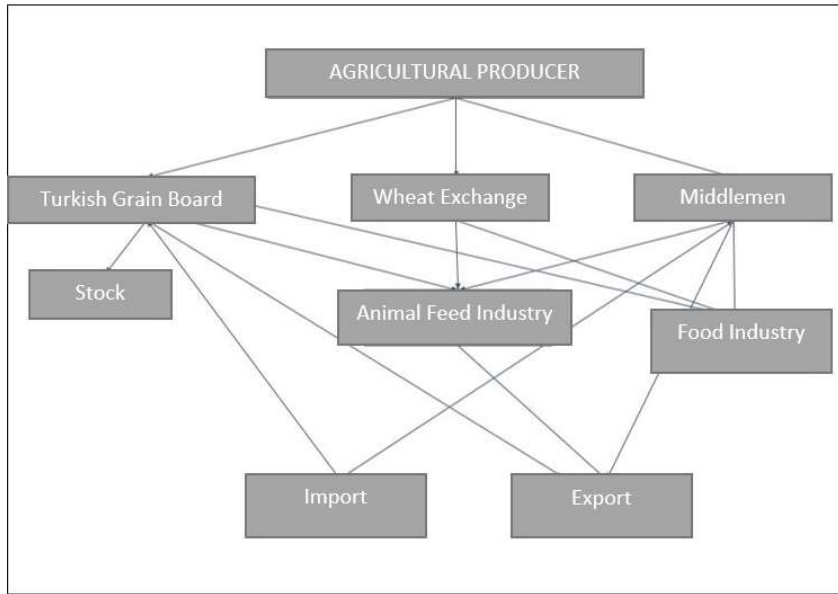


Figure 3.2. Wheat Marketing Linkages (Southeastern Anatolian Region Agricultural Master Plan 2007)

As a result of the primary and secondary data, the wheat value chain of SAPR can be demonstrated as below (Figure 3.4).

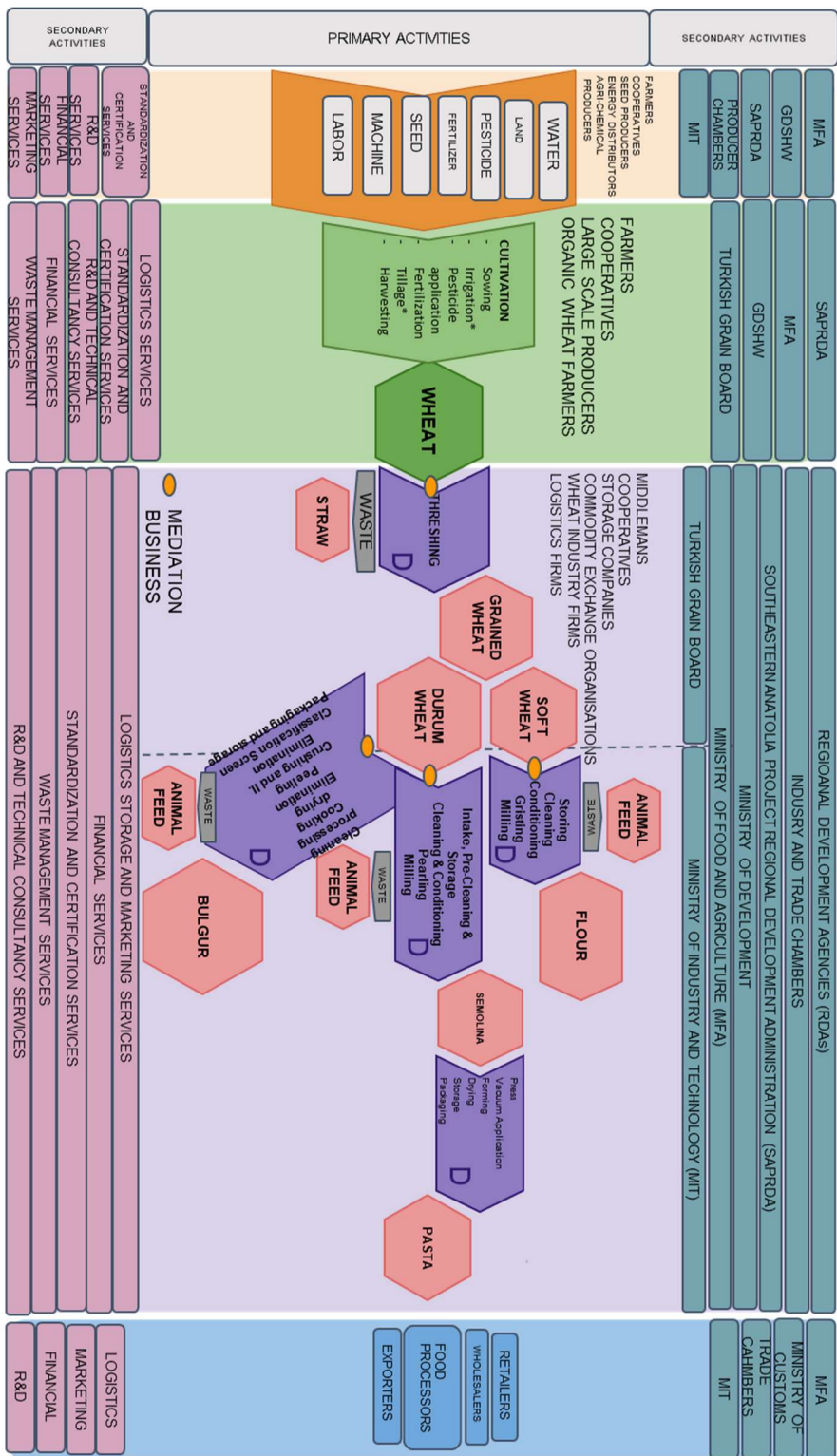


Figure 3.3. Enter the Figure Caption here

3.2.4. Field Research Results

Within the scope of the studies, 10 companies in the value chain of wheat, 4 of which are in Mardin, 3 of which are in Gaziantep, 2 of which are in Sanliurfa and one of which are in Adiyaman, were visited for in-depth interviews. All these companies are industrial enterprises and 3 of them produce flour, one of them produces flour and bulgur, 4 of them produce bulgur and 2 of them produce pasta.

3.2.4.1. Potentials of SAPR Wheat Value Chain

In the interviews conducted in the region, the high quality of wheat grown in the region in terms of protein values was evaluated as a positive feature. The presence of warehousing activities serving wheat products in the region is considered as one of the positive characteristics of the wheat value chain in the region. In addition, the incentives for certified seeds used in the wheat agriculture in the region are another positive feature observed in the agricultural production of the wheat value chain.

According to the data obtained from industrial enterprises, the positive features observed in the processing node of the wheat value chain are considered as catching the advanced level in production technologies and following the developments related to recycling in the sector and taking this issue into consideration.

In line with the opinions stated for the marketing node of the wheat value chain, the fact that all wheat products produced in the region can be sold and the importance of bulgur and pasta in nutrition in recent years are considered as positive ideas for this node. Due to the high nutritional value and the concerns about rice being present in some health problems, the development of the market base of wheat as an alternative to rice has been considered as an important marketing potential by some bulgur producers.

3.2.4.2. Problems of SAPR Wheat Value Chain

According to the information obtained from industrial enterprises, although the use of certified seeds has become widespread in wheat cultivation in the region, it is understood that there is still a significant level of farmers who use non-certified seeds in the region and this situation causes a quality problem in the wheat raw material obtained from the region. Although there are many enterprises for certified seed production in the region, it is concluded that there is an external dependence on certified seed due to insufficient new seed development studies. Another problem in the production chain of the wheat value chain is considered as land fragmentation. As a result of land fragmentation, it is stated that different product patterns which are formed close to each other cause confusion in agricultural applications such as spraying, and this is a factor that decreases the quality. In addition, the fact that this is one of the most important problems decreasing the quality since more than one producer's products must be mixed and transported during a transport operation.

According to the evaluations in the interviews, there is a problem of standardization in production and this situation causes significant losses. In some of the interviewed enterprises, it was reported that imported wheat became more preferable due to the loss of 10% in domestic wheat compared to 5-6% of wastes in imported wheat.

Although there are warehousing activities carried out for wheat in the region, it is stated that these services are not performed sufficiently in some firms yet. One of the reported problems is that the storage system implemented in the warehouses causes a decrease in wheat quality and competition problems. However, as a result of licensed warehousing activities in the region, TMO will be disabled and deprived for the price guarantee, which is considered as a problem during interviews.

According to the data obtained from the interviews, the leading problems in the processing node of the wheat value chain is the inability of the enterprises to operate

at full capacity and the increase in unit costs. In addition, the lack of infrastructure services such as electricity and water supply experienced by industrial enterprises has been declared as one of the sources of inefficiency encountered in this ring. Especially the drying tower system, which is in companies operating on bulgur product, has been identified as an important problem source in terms of energy efficiency and environmental effects. The most problematic aspect of these systems is the difficulty in adapting them to clean energy sources. Bulgur producing companies prefer coal, which is one of the most polluted energy sources, because of their cheap and high energy capacity (sometimes because they cannot access natural gas service) and have difficulty in eliminating the large amount of ash wastes released from this system.

One of the issues that come to the forefront as a problem in the marketing node of the wheat value chain is the import of wheat due to lack of raw materials in the region and the country. Another situation that the importing industries declare as a problem is that enterprises producing poor quality products put cheap goods on the market and hinder the competition of quality goods. As the biggest obstacle to the more efficient marketing of wheat products by opening new markets in foreign markets, the lack of the labour force in the region to provide this service has been shown. As a result of this situation, the enterprises in the processing chain of the wheat value chain in the region depend on markets such as Iraq, which is a source of insecurity and uncertainty in terms of marketing and this situation is considered as an important problem for industrial enterprises.

3.2.4.3. Potential Innovation Issues for SAPR Wheat Value Chain

- **Dissemination of the Use of Chicken Manure in Wheat Agriculture:** It was stated in the interviews that positive results were obtained in the use of chicken manure in wheat cultivation and this method was worth researching and developing. According to the reporters, chicken manure can be a very effective alternative to increase protein values and quality in wheat.

- **Development of the Drying Tower System of Bulgur Enterprises:** The drying tower system, which stands out as a special source of inefficiency for the bulgur producing enterprises in the region, is a problem area where some enterprises in this sector have previously worked on but could not achieve success due to inadequacies in the studies. In order to find a solution to this issue, a platform which will be re-established more powerfully between the system works in the existing industrial organizations and the research and development units in the universities will help the efforts to increase the efficiency of this system.
- **Office for the Development of Foreign Market Activities:** In order to protect the industrial enterprises producing wheat products in the region from the precarious trade conditions created mainly by Iraqi export activities, the establishment of an office that will carry out studies developing the foreign trade and market specific to the industrial enterprises operating in the region, or the marketing support services / units, It can be considered as an important step to eliminate inefficiencies in the marketing ring.
- **Expanding the variety of High Value Added Products:** Transition to the Production of Cooked and Semi-Cooked Wheat Products: Another study that may increase the efficiency of the wheat value chain may be to diversify the products in order to increase the added value of wheat products and improve the production of cooked and semi-cooked wheat products.
- **Making the licensed warehouses more attractive for the operators by physical modification:** Developing a storage system to prevent the mixing of wheat of different grades in the licensed warehousing enterprises in the region will be the solution to the quality problems in this note.

3.2.5. Evaluation of The Food Security Findings in The Value Chain Perspective Through The Field Study Results

This section includes the examination of food security from field study results. The field study results will be investigated in the four main component of food security

which are “accessibility,” “availability,” “utilisation” and “stability.” Each component will be evaluated according to their relevance with the different value chain nodes and findings will be clustered according to the relationship with the different value chain nodes.

3.2.5.1. Key Findings for Accessibility

Agricultural Node:

Expensive seed input decreases the accessibility of wheat and wheat-based food products of wheat value chain of SAPR: The high prices in seed input forces agricultural enterprises to use inefficient seed sources which decreases the yield and quality of wheat products. It means that, the agricultural enterprises sacrifice the availability utilization and stability to increase accessibility for the wheat and wheat-based food products in SAPR.

The small-scale production of wheat decreases the accessibility of wheat and wheat-based products: The accessibility of wheat and wheat-based products are reflected by the production scale of wheat producing agricultural enterprises. The scale of production has a determinative role on price formation of wheat through commodity markets because big scale production has an advantage in logistics in terms of efficiency and logistic cost reductions of industrial enterprises. With this situation, production scale can be considered as a neutral or relative effect on accessibility of wheat and wheat-based food products.

Industrial Node:

Lack of peer to peer connectivity between agricultural producers and industrial producers decrease the accessibility availability and stability of wheat and wheat-based products through wheat value chain of SAPR: The procurement system of the Turkish Grain Board creates commodity price inflation-related accessibility problems forcing the agricultural producers to sell their products to the middlemen. The two-step mediation process between agricultural production and industrial production is responsible for the price increases in wheat procurement. As a solution,

the contracted farming doesn't be preferred by the agricultural producers because they want to sell their products in the highest price as possible in free market dynamics. This situation shows that agricultural producers has a determinative role on price formation through the wheat value chain. In the current situation, even there are some attempts to generate contracted farming through the wheat value chain of SAPR, the both agricultural producers and industrial producers are suspicious about the contracted farming system.

Expensive and fluctuated energy input in industrial node of wheat value chain of SAPR decreases the accessibility of wheat and wheat-based foods: The wheat value chain has problem about the high and fluctuated energy input prices especially at industry node and it reflects as negative to the accessibility component of food security. Industrial producers prefer to use coal as energy input instead of natural gas and oil in order to avoid the price fluctuations in energy input prices related to natural gas and oil. This situation creates sustainability problem as it has a positive effect on accessibility of wheat and wheat-based food products.,

Marketing Node:

The low price-based competition strategy decreases the accessibility of quality wheat-based products: The low-price based competition strategy in wheat flour and bulgur increases the accessibility of these products as it decreases the availability and the utilization of these products in wheat value chain of SAPR. There is a need for a minimum price regulation in export of wheat products in order to enable quality-based competition strategy and increase the utilization as creating a control mechanism for accessibility of wheat-based foods in SAPR wheat value chain.

3.2.5.2. Key Findings for Availability

Agricultural Node:

Availability and stability of quality wheat and wheat-based products is under the pressure of profitability and salability of alternative products like barley:

Although wheat keeps its profitability advantage against cotton, the decreasing prices for wheat forces the agricultural enterprises to leave wheat production and creates tendency to produce more profitable alternative agricultural commodities like barley. This situation constitutes the most remarkable threat against the food security reducing the availability of wheat through the wheat value chain of SAPR.

The logistic and storage services for harvest process influences strongly the availability of wheat: The wrong operation of harvester causes losses up to 5% in wheat production. The logistic of wheat during the harvesting process causes losses up to 2% in wheat production. The insufficient storage quality causes loss up to 10% in wheat products. This shows that the quality of harvester logistics and storage services for wheat value chain of SAPR has a big influence on availability of wheat and wheat-based products.

The low-quality wheat production in some part of region causes the decrease in availability and utilization of wheat and wheat products: As Mardin, Ceylanpinar and Şanlıurfa produce the more proper wheat in terms of quality, the rest of regional production doesn't meet enough quality to use as raw material in wheat industry. This situation reduces the availability of wheat decreasing the amount of wheat at sufficient quality. This situation creates the need for wheat import. The real problem behind the insufficiency of produced wheat are evaluated as non-irrigated agricultural applications, the high need of wheat for poultry industry, and the low quality of produced wheat because of the insufficient crop rotation and soil protection applications.

There are significant but particular efforts to establish contracted farming in order to improve the availability of wheat through wheat value chain of SAPR: There are some industrial enterprises who have contracted farming efforts in SAPR in order to improve availability of wheat. There is need to support and disseminate such kind of efforts through wheat value chain of SAPR. The current situation of the contracted farming efforts mostly organized by the industrial enterprises in terms of quality standards and technical procedures. Participation of agricultural enterprises to

the contracted farming efforts is necessary to improve a profit balance through the wheat value chain as the availability of wheat is increases.

Lack of education among agricultural enterprises problem and insufficient control for agricultural chemical applications causes decrease in availability of wheat and wheat products through the wheat value chain of SAPR: Wrong agricultural applications reduce the availability of wheat causing the quality problems for wheat: Inappropriate agricultural chemicals applications, insufficient crop rotation and unqualified seed usage causes quality problems. Lack of education among agricultural enterprises is evaluated as the real problem behind the wrong agricultural applications. Also, the insufficient control for agricultural chemical applications is considered as another problem.

Agricultural production scale related problems reduce availability of wheat: Land degradation results in small scale agricultural production. The small-scale production doesn't meet the large amount of homogenous raw material need of industrial production in wheat value chain because there are different types of produced wheat through the high number of different agricultural producer enterprises. On the other hand, big scale farms have quality and efficiency problems because of the irrigation insufficiency.

The quality and efficiency of Logistic services for Harvest process are influencing the availability of wheat: The problems in harvester technology and operations results in high proportion of loses in wheat production. This situation results in a decrease in availability of wheat and wheat products. There is a need for technologically innovative improvement in harvester equipment and harvesting operation education in order to reduce the loses which are originated from the harvester operations.

The insufficiency of agricultural enterprises in production technics causes quality problems and results in decrease of availability and utilization of wheat: Unaware agricultural chemical applications, problems in soil analysis processes and

lack of on-site technical consultancy for agricultural technics results in quality problems. In addition to this, the unaware choice of seed type causes deficiency in yield and quality of produced wheat. The conservative attitude of agricultural enterprises for the agricultural technical innovation in production technics and seed development is an important obstacle in front of the improvement in availability of wheat. There is also deficiency in university industry cooperation in order to improve the availability of wheat through wheat value chain of SAPR.

Marketing Node:

Export oriented industrial production of wheat-based food products reduces the availability and utilization of wheat-based foods in domestic markets: The financial and profit advantages in wheat-based food production export creates an export-oriented production tendency among the industrial enterprises of SAPR wheat value chain. The industrial enterprises evaluate the export market as more advantageous in terms of profit and financial stability. As the industrial enterprises consider the standards and product differentiation needs, they tend to conduct their domestic market-oriented production in a less differentiated product portfolio. As a result, the availability of more qualified and differentiated wheat food products is reduced because of the export-oriented marketing strategy of industrial producers of wheat value chain in SAPR.

3.2.5.3. Key Findings for Stability

Agricultural Node:

Inappropriate incentive applications for agricultural commodities are harmful for stability of wheat and wheat-based foods produced through wheat value chain of SAPR: Inconsistent incentive policies for agricultural commodities creates profit reduction for agricultural enterprises of wheat value chain in SAPR. The high incentive policies for cotton and corn forces agricultural enterprises to leave the wheat production. As a result, stability of wheat produced through wheat value chain of

SAPR is under the risk because of the rise of alternative advantageous agricultural commodity production.

Industrial Node:

Water and energy supply for agricultural and industrial node of wheat value chain is environmentally unsustainable: Excessive use of ground waters in agricultural and industrial production process is supposed to create environmental degradation like aridness. In addition, the coal-based production techniques in wheat industry create environmentally hazardous wastes. Lack of proper infrastructure for more clean types of energy supply and the high and volatile prices for more clean types for energy supply forces the industrial enterprises to use coal-based production systems. As a result, the current water and energy supply services for wheat value chain reduce the stability of wheat causing environmental sustainability problems.

Current business model of wheat procurement dominated by middlemen reduces the stability of wheat and wheat based products: The inefficient procurement policy of Turkish Grain Board forces the agricultural enterprises to sell their products to the middlemen with reduced prices and there are more than one stage of middlemen procurement process between agricultural enterprises and industrial enterprises. This situation causes disruptions in wheat procurement. On the other hand, the current business model of middlemen causes decreases in wheat prices for agricultural enterprises and it results in the leave of wheat production by agricultural enterprises tending to produce alternative more profitable and sellable commodities like barley. As a result, the stability of wheat produced through wheat value chain of SAPR is reducing.

3.2.5.4. Key Findings for Utilization

Agricultural Node:

The insufficient seed development services reduce the utilization of wheat and wheat-based foods produced through the wheat value chain of SAPR: The old seed types which are used in region caused an important decrease in utilization

resulting in protein deficiency in produced wheat. There are too many seed types which results in a decrease in quality of the produced wheat in region. In addition to this, the extreme climate events which are getting often with the climate change cause protein deficiency in produced wheat. Moreover, the seed is an expensive input for agricultural enterprises. On the other hand, some of the currently used seed types in region don't meet the need of industrial wheat-based food production of SAPR wheat value chain. The wheat value chain of SAPR needs regionally specified and climate change resilient affordable commercialized seed development efforts in the light of the need of both agricultural and industrial enterprises in order to produce more qualified wheat through the wheat value chain of SAPR. It means that, deficiency of regional seed development efforts creates utilization problems for wheat and wheat-based food products produced through the value chain of SAPR.

Insufficient technical consultant labor and uneducated farmer profile reduces the utilization of wheat causing the quality problems in wheat production: There is an insufficiency in agricultural technical consultancy which is conducted on site. The technical capacity of agricultural consultants is not enough, and their education is not sufficiently to guide the agricultural producer in an efficient way of agricultural production. This situation creates important quality problems which is resulting in the reduction of utilization in wheat and wheat-based food production. In addition to the technical consultants, also the education level of farmers is evaluated as another quality reducing reason which directly decrease the utilization of wheat production.

Lack of sufficient emphasis on local qualified wheat seeds and other local quality competences: The agricultural producers of SAPR wheat value chain don't take into account the local quality seed usage in order to compete. Instead of competing using the local seeds and generation of local quality competences, they chose to leave the wheat production. This situation reduces both the utilization and availability of wheat products produced through the wheat value chain of SAPR.

Industrial Node:

Current incentives for storage services creates a big potential for improvement of the utilization of stability for wheat produced through the wheat value chain of SAPR: The licensed storage services are developing with the current incentive policies and this situation creates potential to improve the storage services in terms of technology in case these incentives are used in an efficient way. As a result of these technological improvements, the utilization of wheat produced through the wheat value chain of SAPR can be improved.

Current incentives for industrial equipment improvement isn't enough in order to increase the utilization of the wheat based products produced through the wheat value chain of SAPR: Incentives for machine and equipment are evaluated as insufficient and the tax payment in machine procurement is considered as an obstacle to improve the technical level of industrial infrastructure through the wheat based product industry. As a result, the utilization improvement couldn't be achieved with the current situation of incentives for the industrial node of wheat value chain.

3.2.6. Evaluation of Overall Regional Development and The Food Security Findings in The Value Chain Perspective

In accordance with the general aim of the study, after the evaluation of current situation of SAPR wheat value chain in terms of the food security components, this evaluation should be analyzed in terms of regional development outputs in order to establish the basement of a food security sensitive regional development strategy for the SAPR. In this section, the main food security related findings for SAPR wheat value chain will be examined in terms of their relationship with regional development of SAPR.

To achieve the results of this examination, first the findings will be grouped in terms of different nodes of wheat value chain. After that, each value chain node will be evaluated by its own scope and each node will be evaluated in terms of their reflections on the other nodes of wheat value chain. Then the contradiction and cooperation points between food security and regional development will be defined. Also, the definition

of interactions between different finding issues has a crucial role to coordinate the proposed strategy development process.

3.2.6.1. Agricultural Node

As the general results of food security findings are considered, it is seen that agricultural node of value chain has a key role in food security issues of wheat and wheat-based food production in SAPR. The two main core issue for agricultural node related food security is the utilization problem and the stability of wheat production. It is seen that, the other issues related to availability and accessibility are the results of the current situation of stability and utilization of wheat production in the agricultural node of SAPR wheat value chain. The findings are concentrated on the seed input, agricultural technics and technical capacity of farming, agricultural production scale, harvesting related logistic and equipment services, local wheat production specialization and incentive polices.

The most striking finding about the agricultural node of wheat value chain is that the agricultural enterprises have a tendency to leave the wheat production and go on to production of other commodities because of the current incentive and wheat procurement policies. If this situation evaluated in the light of regional development concerns, it can be seen that this tendency doesn't be considered as a problem and even can be considered as a positive reflection in terms of competitive advantage. But it is in conflict with the main food security issue about wheat and wheat-based food products. This contradiction point should be taken into account in the strategy development process. The stability of agricultural production of wheat influences directly the availability and accessibility of wheat and with this position it is an essential point for food security.

As another essential core issue for food security through wheat and wheat products, the utilization related findings of wheat and wheat products are evaluated as strongly related with the availability and accessibility component related findings. But unsimilar with the stability related issue, the utilization related issues are parallel with

the regional development concerns. Solution of the utilization related wheat value chain problems have a potential to results in positive regional development outputs through region as it improves the food security.

The seed input of wheat agriculture in SAPR is required to be considered in terms of utilization, availability and accessibility. The expensive and insufficient seed input creates food security problems. The necessity of regionally specified and climate change resilient affordable commercialized seed development efforts in the light of the need of both agricultural and industrial enterprises is reached from the evaluation of all findings, in order to improve the food security in wheat through the wheat value chain of SAPR. As it evaluated in the regional development perspective, it is seen that, an improvement in seed input supply system can also improve the regional development process creating the agricultural economic development through wheat produced parts of region. It shows that in the seed development issue the food security and regional development is in the cooperation.

As another critical finding for SAPR, the lack of local seed policy through SAPR creates a big potential loss in terms of utilization and availability. The wheat agricultural production through SAPR wheat value chain loses its acceleration because the agricultural producers don't consider the competitive advantage of local wheat production competences and instead, they choose to not produce wheat. On the other hand, the industry node of SAPR value chain established its production capacity based on imported wheat-based production. In the short run, the orientation of both agricultural and industrial producers can be considered as a positive improvement in terms of regional development enabling the regional production capacity to integrate to the global value chain. But in the long run, SAPR loses its competitive advantage in the wheat-based food production. This situation creates a need of a regional strategy development considering the both food security and

Agricultural technics and technical capacity of farming is another utilization related finding which also causes the decrease of availability problem in the wheat production.

According to field research, the insufficient crop rotation, soil analysis and inappropriate seed and agricultural chemical uses in production are evaluated as the most important sources of the quality problem which reduces utilization and availability of wheat produced through the value chain. As this situation evaluated in the regional development perspective, the inefficient use of sources is harmful for the economic development of agriculture based rural population. This situation shows that at the technical deficiency in agricultural production, the regional development and the food security issues are considered together in a cooperation.

Agricultural production scale, which includes the land ownership patterns related production scale issues are considered as a utilization and availability problem. The production of small-scale farmers in the region causes inhomogeneous wheat output and inefficiency in logistics operations. As the inefficiency in logistic operations results in accessibility problems increasing the logistic costs, the inhomogeneous raw material creates quality problems in wheat industry and reduces the utilization of wheat-based products. In the overall, the small-scale production creates both regional development and food security problems through the region. This situation should take into account in a general agriculture sector related regional development perspective.

Harvesting related logistic and equipment services are critical for the utilization and availability influencing the proportion of losses in wheat production produced through the wheat value chain of SAPR. When this issue is taken into account in the regional development perspective it can be consider as a regional development related issue which have a role in the economic development of the agricultural enterprises. But as it is investigated further, it can be seen that this issue is a wheat value chain specific issue. Because the harvester equipment is a wheat specific investment area. This situation creates the risk to overlook the harvester equipment related strategy development needs as the general sector related regional development strategies are generated. As a result, harvester and logistic services for wheat harvest process should be a prioritized issue in the light of food security sensitive regional development strategy generation process.

Insufficient agricultural technical consultancy labor and uneducated farmer profile have been defined as a quality reducing problem through the wheat value chain of SAPR. This situation reflects as utilization and availability problem for food security as it creates an obstacle for regional development through the agricultural activities. With this structure, the technical and education capacity of agricultural labor can be considered as a cooperation point for both regional development and food security issues.

As a summary, in the agricultural production node, the most important situation which is the driver of the wheat import is the lack of proper quality in wheat agriculture. The raw wheat which is harvested in SAPR is under the limits of food standards in terms of protein and humidity. This situation arises from the agricultural techniques which is used during cultivation. Experts reported that tillage techniques and cultivation without proper crop rotation is the most important cases for the insufficient content of the harvested wheat. Looking the background of this problem, it can be seen that the land fragmentation, insufficient farmer education, underqualified and expensive inputs, insufficient of crop rotation applications, improper purchasing process of TMO are the basic origins of the underqualified wheat production.

With this situation, the agriculture node of wheat value chain has positive and negative effects on food security issues and regional development of SAPR. At this node, most of small-scale farms which have the weight among regional farms, have the difficulty to integrate the final markets through value chain because of the standard quality incompatibility and small amount of wheat produced through value chain of region. Because, transportation costs have the tendency to decrease depending on the increase in the amount of transported commodity and the needs of homogeneous big scale wheat raw material need of industrial producers. This situation couldn't exceed sharing the transportation facilities among small scale farmers. In the wheat industry the quality difference between different party of commodities has an important role on the end-product of wheat industry. As a result, industrial firms don't prefer to purchase raw material from the small-scale farmers. On the other hand, large scale

wheat farms in SAPR have low production quality because of the problems in the irrigation of big scale farmlands during the production processes. They can supply the wheat with enough quality to the industry, but this production doesn't meet the quality standards of wheat-based industry. In sum, the regional wheat production can't meet the raw material need of industry because of the majority of the small-scale wheat farmers in regions. As a result, the availability of wheat-based food products is effects negatively. In addition, the import dependency in raw material creates the sustainability problems and effects negatively the stability in food security. On the other hand, the small-scale farmers stuck in a vicious circle of low income through their agricultural activities and they must leave their lands out of production. This situation harms the sustainable regional development possibilities of region as it is also harmful for food security. The lack of emphasis on the local competences in wheat agriculture in SAPR is a considerable finding through the value chain of SAPR. As the expert studies emphasize on the importance and quality of local seeds they shows the lack of a regional wheat and wheat based food production policy based on local wheat competences originated from local genetic sources.

3.2.6.2. Industrial Node

As the industrial node related field research results from SAPR are evaluated in the light of the food security components, it is investigated that the industrial node and agricultural node is reflecting each other in the wheat value chain of SAPR. But industrial node can be more in the reflected position in terms of both food security and regional development outputs among the interaction between the different nodes of SAPR wheat value chain. The industrial node related food security problems concentrated on the accessibility and availability as this node performs a mediator role on utilization and a reflected position in the availability problems of SAPR wheat value chain. It is interesting that none of the interviewed participants define the industrial unused vast capacity as an origin of availability problems through the wheat value chain of SAPR. They only define it as a result of agricultural node related availability and utilization problems. As the key findings are evaluated, it can be seen

that the industrial node related food security problems are related to the wheat procurement processes, unsustainable energy and water inputs and insufficient incentive policies for industrial equipment transformation.

The procurement channels of wheat through wheat value chain of SAPR causes a harmful price formation process for both agricultural and industrial producers. With the current middlemen dominated procurement model, the agricultural producers are forced to sell their wheat at less prices as the industrial node producers supply the necessary raw wheat at higher prices. This situation, creating availability and accessibility problems, creates a conflict among the different regional actors in terms of economic interests. The interests of agricultural producers and industrial producers are sacrificed against the economic interest of middlemen actor group. The outputs of this situation aren't clear in terms of regional development as it is harmful for food security indisputably. Because, the as the industrial producers have the wheat raw material import opportunity, the agricultural producers are under the pressure of low prices and loss of economic interests. This unclear situation of regional development should be considered as a conflict point between food security and regional development during the strategy generation process.

The energy and water input which is used by the industrial node of SAPR wheat value chain are defined as an important origin of accessibility and sustainability problems for wheat-based food products produced through the SAPR wheat value chain. On the other hand, these problems create cost increasing effects on the products which causes a relative economic interest reduction effect for industrial producers of SAPR wheat value chain. In addition, the current energy and water supply systems are environmentally unsustainable, which can be considered as a threatening for both regional development and food security. At this point, the strategy generation process appears as cooperation of both regional development and food security concerns.

The industrial node defines the insufficient incentive policies for industrial equipment as an obstacle for the quality of wheat-based food production. It means that the

incentive policies create stability and utilization problems for SAPR wheat value chain. But on the other hand, the current industrial capacity is continuing to create economic interest for the industrial actors of SAPR wheat value chain. As a result, they don't have a need to transform their equipment in the light of utilization and stability needs of food security issues of SAPR wheat value chain. They conduct a low-quality low-price strategy instead of qualified wheat-based food production. This situation creates economic interest in the short run as it is harmful for the marketing power of produced wheat through the wheat value chain of SAPR. At this point, the role of regional development concerns isn't clear as the food security issues arises. With this structure, the industrial equipment transformation related incentive strategies can be considered as a conflict issue between food security and regional development.

As the summary, the industrial production node of SAPR wheat value chain contains the highest added value proportion through value chain. As a result of the inward processing regime, industrial firms control the value chain activity flow using their raw material import amenities. They also dominate the value chain using the standardization requirements. The main reason behind this situation is the inert industrial production capacity through wheat value chain of SAPR. The inert capacity of wheat industry creates a resiliency problem for food security because this situation results in a high dependency on the imported wheat which makes the regional industry more vulnerable for global financial and political crisis. The national Food accessibility availability and stability harms as a result of this import depended production capacity, as the utilization of food has the opportunity to improve in order to meet the high-quality production desired global markets. When inward processing regime oriented industrial capacity of SAPR evaluated in terms of regional development, it is seen that current situation creates the opportunity of technological capacity accumulation which has a positive role on regional development as it results in inefficient financial and capital source use and creates urban unemployment through inert capacities of wheat industry.

3.2.6.3. Marketing Node:

The marketing node of SAPR value chain effects the food security of wheat and wheat-based products both interacting with the agricultural node and industrial node of wheat value chain of SAPR. In fact, it is a natural situation that the marketing node shapes the industrial node of value chain but in the case of SAPR wheat value chain, agricultural node directly shapes the marketing node forcing the export-based marketing activities through the wheat value chain of SAPR. These interactions make the marketing node of SAPR wheat value chain more effective position than industrial node. As a result of it, the marketing node of SAPR value chain should be evaluated as the second important node in the food security sensitive regional development strategy generation process. The two issues, which are low price-based marketing competition strategies and export-oriented marketing strategies, shapes the food security situation of wheat and wheat-based foods produced through the wheat value chain of SAPR. When these issues are evaluated in the light of the food security components, it is seen that the accessibility, availability and utilization of wheat and wheat-based foods are influenced by the marketing node of SAPR wheat value chain.

Low price-based marketing strategy in SAPR results in low quality in the wheat-based products of industrial node of the SAPR value chain. It caused a utilization problem for wheat products and reduces the food security of SAPR wheat value chain. If it is evaluated in the regional development perspective, even in the short run it creates economic interest for wheat based industrial producers, in the long run, it reduces the reliability of regional products and causes the loss of economic interests. This situation can be considered as a harmful effect both for food security and regional development and it requires the cooperation of food security and regional development concerns at this point.

Export oriented industrial production of wheat-based food products produced through SAPR value chain reduces the availability and utilization of wheat-based foods in domestic markets: The availability of domestic wheat raw material and it forces the

producers an inward producing regime-oriented marketing strategy. As a result of inward processing regime, the produced wheat-based food products feed only the foreign markets and the domestic markets couldn't use these products. As this situation reduces the availability components of national food security, the SAPR wheat-based food producers creates more economic interests because the price and payment advantages of foreign markets. It causes a conflict between food security and regional development.

As a general review, in the logistics node of SAPR wheat value chain, the most important situations are the domination of export-oriented trade strategies. Because of the overcapacity problem in the wheat industry, the firms have aim to trade their over produced commodities to the global market. As a result of legal obligations which are oriented from the inward processing regime, firms cannot trade their imported raw material-oriented products to the national markets. Inward processing regime is more profitable than national market trade because it brings firms profit in foreign currency. On the other hand, inward processing regime is desirable by government because of the need to the foreign currencies. This situation makes wheat-based food products less accessible and harm the stability of food security at national level. On the other hand, the food utilization capacity is getting better due to the firms which are considering high food standards in order to sell their products to the more sophisticated global markets. In the logistic and marketing node, food security and regional development efforts are competing, and they have conflict. Because, the foreign trade capacity of the regional industry capacity is also desirable for regional development. Even it results in income distribution problems, inward processing regime provides important economic profit for region in sum. Also, this situation rises a time scope problem for regional development. In short term, the regional development of SAPR can be affected as positively due to the inward processing regime but in long term, because it creates an income distribution problem, inward processing regime harms to the sustainability of regional development.

3.3. Evaluation of the Results: Definition of Problematic Issues for Wheat Value Chain of SAPR in Terms of Food Security and Regional Development

The general review of the wheat value chain of SAPR in terms of both regional development and food security components shows that value chain approach is an important tool to understand the complex interactions among the different actors of wheat and wheat-based food production processes in SAPR. The determination of conflict and cooperation points of food security and regional development in SAPR wheat value chain comprise an important source for the generation of sector based regional development strategies. But in the special focus of food security sensitive regional development strategies, the conflict areas between regional development and food security concerns will be more determinative. These conflict areas will shape the boundaries of the general structure of food security sensitive regional development for the wheat value chain of SAPR.

As the whole SAPR wheat value chain evaluation results are considered, the relationship between different findings about conflict and cooperation points of regional development and food security, the relationship can be defined as below.

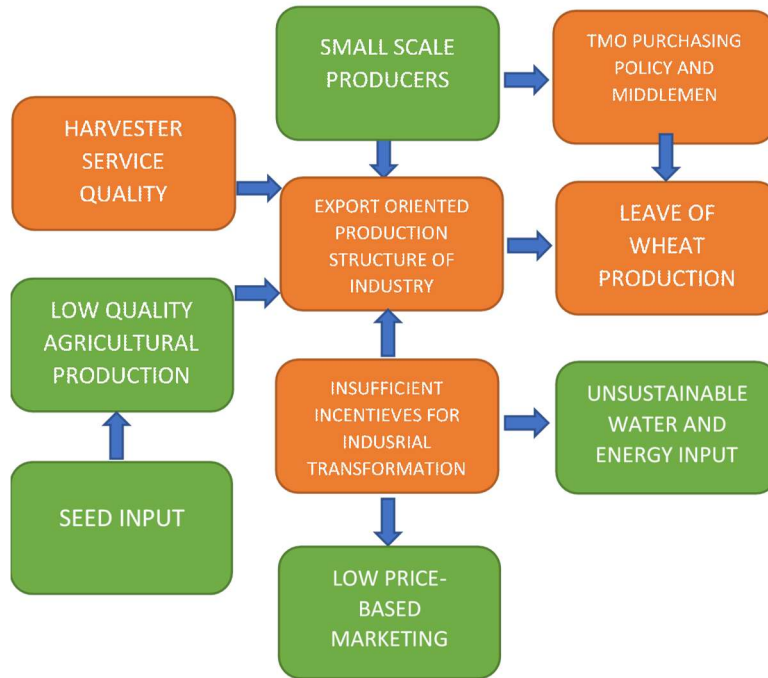


Figure 3.4. The hierarchy of food security and regional development related problematic issues in the wheat value chain of SAPR

Undoubtedly, the leave of wheat production in SAPR is the most important problematic issue in terms of food security. This point is at the first stage in the prioritization for strategy development process. As the other conflict issues are evaluated the Turkish Grain Board Procurement Problems and Middlemen Dominated Market Structure can be consider the 1. Degree related issue to the leave of wheat production in the region. In addition to this, the export-oriented wheat industry infrastructure of SAPR is the 2. Degree related issue for the leave of wheat production in SAPR. The Export oriented infrastructure causes the middlemen dominated wheat purchasing processes and it reduces the food security through the SAPR wheat value chain. In addition, this type of production model overlooks the local wheat seed related production and its competitive advantage because of the short run interests coming from the global value chain integration. As this issue evaluated, the harvester logistic services are the 3. Degree related issue for the leave of wheat production through the SAPR wheat value chain. In addition to this, the insufficient industrial transformation

incentives cause the continuation of the export oriented big scale wheat raw material based industrial infrastructure through the SAPR value chain and indirectly it caused the leave of wheat production in SAPR. The green areas which are constituting the cooperation areas of regional development and food security can be considered as sectoral strategy recommendations which also creates a general sectoral development in the related sector. But the conflict areas should be a special focus area of a food security sensitive regional development strategies. This approach will improve the food security as it reveals regional development outputs. As a result of this approach, the strategies should consider the following steps

1A) Improvement of Wheat related harvester logistic services in SAPR

1B) Generation of regional wheat industry-oriented transformation incentive programs in the light of local wheat seed production

2A) Support of local geographic brand-based marketing strategies in addition to the export activities

2B) Generation of peer to peer purchasing process through wheat value chain of SAPR with Contracted Farming

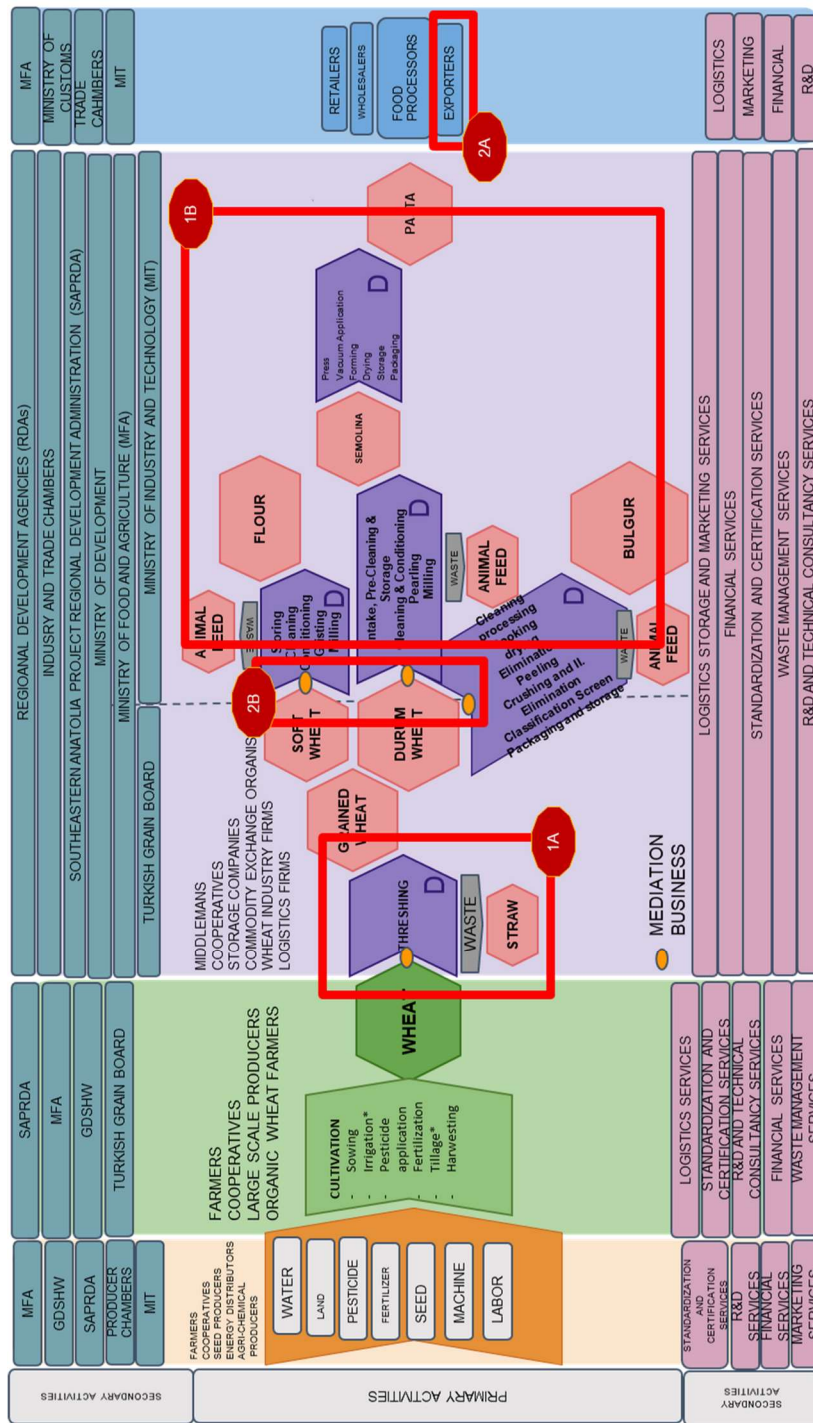


Figure 3.5. food security and regional development related problematic points of the The SAPR wheat value chain

CHAPTER 4

GENERATION OF FOOD SECURITY SENSITIVE REGIONAL DEVELOPMENT STRATEGIES

4.1. Proposal for Food Security Sensitive Regional Development Strategic Framework for SAPR

The strategic framework consists of four main parts. The first part defines the fundamental approach in the scope of strategic framework. The second part includes the proposed strategies in line with the research results and key findings about the wheat value chain of SAPR. The next part of strategic framework shapes the decision making and prioritization process of defined strategies. And finally, the last part of the strategic framework will delineate a scenario output in line with the established strategic framework.

The vision of the strategy and the main principles comprise the content of the first part of the strategic framework. This part defines the final achievement point of strategies and it explains also the main principles and values through the strategy development process.

In the second part of strategic framework, which includes the definition of proposed strategies, after the explanation of the scope of each strategy, the proposed regional development and food security effects of each strategy has been explicated. In addition to this, each strategy has been defined in terms of their relationship between research results and key findings. In this part, there are no hierarchic order among strategies.

The third part of strategic framework corresponds to the hierarchy and decision support system for the strategic framework. This part aims to classify and prioritize the strategies in line with the specific findings and proposed food security and regional development goals.

As the last part of the strategic framework, the scenario output will define the detailed output of supposed strategies for SAPR wheat value chain in order to improve the food security in a coordinated way with the regional development. This scenario requires a more concrete and detailed description of strategy development and implementation for SAPR value chain.

With this structure, the strategic framework has a claim to improve the food security in compatibility with the regional economic development.

4.1.1. The Vision of Strategic Framework

The strategy is based on the extrication of the unused potential of region to trigger a food security sensitive regional development process through the wheat value chain. In the strategy there will be a comprehensive strategy tool which is based on an alternative wheat value chain model for SAPR. The strategy will constitute an alternative market structure through the all nodes of value chain which will focus on the food security and regional development.

4.1.2. Main Principles of Strategic Framework

- D) PARTICIPATORY ALTERNATIVE MARKET STRUCTURE:** The strategy is generated as an alternative system to the currently working conventional wheat value chain in SAPR. This alternative system targets the problematic and unused potentials of different nodes of wheat value chain. So, the strategy will enable all the actors to integrate to the production with their full capacity. The strategy will define the institutional organization to meet the unmatched potentials between the different nodes of value chain.
 - a) Input and Service Suppliers:** Unused vast agricultural lands will be considered as pillar of strategy. The strategic framework will bring the unused lands to the agricultural production through an alternative market organization. Strategy will define institutional organizations

which will consider the agricultural production and land supply together.

- b) Agricultural producers:** Agricultural producers who cannot easily link to the conventional market because of production scale are the agricultural node pillar of the strategy. With this strategy, agricultural producers who do not have enough land for economically feasible production will find the opportunity to attend to the production and as a result, the degradation of rural agricultural population will be reduced.
- c) Industrial Producers:** The vast capacity through the industrial producers are considered as the industrial node pillar of the strategy. At this node, the vast capacity will be adapted to the alternative market structure. As a result, the full participation of the industrial actors will improve the industrial productivity of value chain.
- d) Consumers:** The strategy will handle the vast capacity of industrial infrastructure of wheat value chain to transfer it through the alternative market organization which is created by strategy. There will be relevant institutional organizations which will combine the market need and vast capacity of industrial infrastructure.

II) FULL TRANSPARENCY AMONG MARKET: The strategy will be based on the free flow of information among the all actors of value chain. This transparent structure will reduce the in-trust related efficiency problems through the value chain. Through the strategy, there will be defined relevant institutional organizations which are responsible to collect, process and share the market information through value chain. The information which is gathered from the value chain are the price, sustainable production, production quality related market information for all the nodes of value chain.

III) OPTIMISATION INSTEAD OF STANDARDISATION: The conventional wheat value chain requires the standardization through the

value chain to provide the quality for production. This standardization requirements result as a non-inclusive and non-sustainable value chain structure. The strategy calls into being of an optimized value chain model using the information transparency through the different actors of value chain. To achieve this structure, strategy will define relevant institutional organizations and mechanism through the value chain. Precise agriculture, digitalization of production systems and certification of production processes will be the key elements of this strategy.

- a) **INCLUSIVE RISK MITIGATION:** The institutional outputs of strategy will enable the risk mitigation process for all actors through value chain. With the strategy, market linkages will be established depended on a mutual information-based trust which is enabled using the digitalization and certification of production activities. In addition, institutional organization outputs will have a mission to define the risks for each actor and orient them to mitigate the defined risks through value chain organization. This institutional organization outputs will supply this mission using cooperatives strategies, quality monitoring and information transparency-based value chain linkages.
- b) **SUSTAINABLE NATURAL RESOURCE MANAGEMENT:** The natural source and ecosystem services for wheat value chain will be considered as a basic requirement through the institutional organization and linkages outputs of strategy. The information transparency will enable the value chain mechanism to be more efficient in terms of natural source management. On the other hand, institutional organization through the alternative value chain will require the natural resource protective activities using its incentives mechanism. This incentive mechanism constitutes on the strong market linkages of each actors which refers to the value share of actors through the value chain. Crop rotation, waste management, biodiversity protection and the competition of different crops through production will be considered

as minimum requirements through the linkages of value chain. These requirements will be the must for the actors to link the market through value chain.

4.1.3. Strategic Framework for Food Security Sensitive Wheat Value Chain Upgrade For SAPR

As the main part of strategic framework, the strategies have been developed in two different scope. The defined strategies fall into two groups: the first group of defined strategies will comprise the substantial part of food security sensitive regional development strategies for SAPR wheat value chain, as the second group of strategies will includes general sectoral strategic implementation suggestions for region which are not wheat value chain specific strategies but have important contributions through the food security specific strategy development of SAPR wheat value chain. The main difference between the two group of strategies is the relationship of their wheat and region-specific relationships.

The core strategies have been developed in line with the four main axis which are originated from the regional research finding for wheat value chain. These four axes of strategies are grouped into two main part which are pointing out the prioritization and specific value chain node relationships of strategies. The first group of strategic axes comprise the first step of strategy implementation process, which are including the agricultural and industrial node-specific strategies. The second group of strategy axes defines the second step for the strategy implementation process which are including the marketing node specific food security sensitive regional development strategies for SAPR value chain.

This structure of strategy development process will lead the third part of the strategic framework which has a content to prioritization and time schedule of proposed food security sensitive regional development strategies through SAPR wheat value chain.

4.1.3.1. The Core Strategies for Food Security Sensitive Regional Development in SAPR

Strategy Axis 1A) Improvement of Wheat related harvester logistic services in SAPR

This axis presents the agricultural node related utilization improvement efforts in the light of the local problems of SAPR wheat production. The first strategy directly refers to the wheat production quality of SAPR.

- **Strategy 1: Modification of existing mechanical infrastructure in accordance with the precise agriculture technologies:** With the precise agriculture technologies the quality of agricultural production will be increased. In order to achieve this, this strategy is proposing an incentive based regional institution which will support precise agricultural transition of agricultural enterprises. This institution has a mission to support agricultural producers both in technical and financial way. In addition, this institution will be creating a regional agricultural mechanization infrastructure which is depended on a share system. This infrastructure also will support the agricultural producers in terms of reduced tillage mechanization infrastructure. This strategy will develop a sustainable natural source use capacity for wheat agriculture of SAPR.

Accessibility: The cost of wheat which is produced by region will be decreased with the increasing efficiency and decreasing input use. This will increase the accessibility of wheat and wheat products.

Availability: The yield and quality of wheat which is produced by region will be increased and the quality related loses will be decreased with the precise agricultural production. In addition, with the dissemination of reduced tillage technics, the soil quality and yield will be increased as a result, availability will be increased.

Utilization: With the precise agriculture the quality and nutritious value of wheat which is produced by region will be increased. In addition, with the dissemination of reduced tillage technics, the soil and agricultural production quality will be increased. This will increase the utilization for food security.

Stability: With the strategy, the sustainability of agricultural processes will be increased with the input use reduction related to the precise agricultural technologies. This situation will increase the stability of wheat and wheat products.

Strategy Axis 1B) Generation of regional wheat industry-oriented transformation incentive programs in the light of local wheat seed production

This axis, as parallel with the 1A strategy axis, comprise the other significant improvement efforts of first step of the strategy implementation process. Seed development and seed type based technical production capacity transformation is the main issue of this axis.

- **Strategy 2: Sustainable and Resilient Seed Development:** This strategy refers to a wheat seed research and development process in which the needs of consumers and industrial producers, the climatic conditions and protection of local seeds, the economic feasibility of agricultural production will be considered. With this strategy, the changing and differing consumer demands and industrial input needs will be met as the local seed species and their ecologic sources will be protected, With the development of local seeds, the input use and ecologic negative effects of wheat agriculture will be decreased. This strategy will also emphasize the geographical advantage of SAPR which is the origin of wheat. This will increase the profitability of agricultural production. The seed development process will also include the in-situ and ex-situ protection of genetic material of wheat which is originated from the SAPR. The selected and developed seeds will be researched in terms of industrial

process to gain a commercial property and the research findings will shape the transition process of industrial node of the SAPR wheat value chain.

Accessibility: The cost of wheat which is produced by region will be decreased with the decreasing input uses. This will increase the accessibility of wheat and wheat products.

Availability: The needed type and amount of wheat which is produced by region will be increased with the compatible agricultural production with the industry consumer and consumer demands. As a result, availability will be increased.

Utilization: The different consumer needs will be considered with the new seeds for regional agricultural production. This will increase the utilization for food security.

Stability: With the strategy, the sustainability of agricultural processes will be increased considering the local seeds and their protection activities. This situation will increase the stability of wheat and wheat products.

- **Strategy 3: Transition of vast unused capacity of wheat industry in accordance with the local wheat seed types:** As a strategy, the local wheat species which are bringing the low agricultural input and high quality advantages for wheat products will be a main direction to restructure the vast capacity of SAPR wheat. the regional industrial infrastructure will be transformed in the light the local seed related wheat-based food production. To achieve this, a regional incentive program for wheat industry will be organized. This incentive program will include technical and financial incentives for the Industrial enterprises who want to transform its capacity suitable for local seed-based wheat production. This transformation process will be supported in the second group of strategic axes, which are including the regional wheat value chain marketing brand development strategy.

Availability: The availability of different and local wheat products will be increased with the strategy.

Utilization: With this strategy, the inclusiveness of the wheat value chain of SAPR for different consumer demands will be increased. As a result, the utilization of wheat value chain of SAPR will be increased.

Stability: The local wheat production will improve the stability of wheat-based products decreasing the import related wheat procurement bottlenecks and fluctuations.

Strategy Axis 2A) Support of local geographic brand-based marketing strategies in addition to the export activities

- **Strategy 4: Creation of regional quality brand for wheat-based alternative products:** This strategy will work in coordination with the **Strategy 2 and 3** which is proposed a local ecosystem-based wheat production. In the quality brand marketing strategy, the ecosystem-oriented specialties of SAPR wheat will be emphasized and guaranteed in terms of nutrition quality standards for local seeds. To achieve this strategy, a regional marketing and brand management institution will be developed in order to develop marketing research and consumer relations. With this strategy, the visibility and salability of regional wheat products will be increased. On the other hand, the changing demand structure of consumer will be monitored interactively with this institutional organization. This system also supported with the cooperative strategy forcing the small-scale farmers to sell their products via producer cooperatives.

Availability: With the marketing activities, the availability for quality wheat products which is sensitive to the changing consumer demands will be increased.

Utilization: With this strategy the different consumer demands will be monitored and met with the compatible structure of wheat value chain of SAPR. This will increase the utilization of wheat value chain of SAPR.

Stability: With the strategy, the sustainability of production processes will be increased as a result of the decreased market linkages of wheat value chain of SAPR. This will increase the stability of wheat value chain of SAPR

Strategy Axis 2B) Generation of peer to peer purchasing process through wheat value chain of SAPR with Contracted Farming

- **Strategy 5: Organization of Regional Contract Farming System for Local Seed Oriented Wheat Procurement:** This strategy will include a full digitalized peer to peer Wheat Purchasing System which will enable a trust environment among the agricultural producers and industrial producers of SAPR wheat value chain. In this strategy the blockchain technology will be a technological supportive tool which will also supported with the developing precision agricultural farming implementations. The industrial actors and agricultural enterprises will conduct a transparent production process in terms of production technics and qualities. This system will be supported with the regional local seed-based wheat products marketing brand strategy. Each node of the wheat value chain will be connected through the digital purchasing and production quality monitoring system. The system will be a competitive marketing strategy for regional wheat sharing the quality information for consumers.

Availability: The system will support the wheat procurement processes of industry enabling the supply-demand balance through the digital system. As a result, the availability of wheat and wheat-based products will be improved.

Utilization: With this strategy the local seed-based wheat products will serve more qualified and nutrient wheat-based product for consumer. Also, the system will force the agricultural producers to follow the quality requirements using the precise agriculture supported digital information sharing system. This will increase the utilization of wheat value chain of SAPR.

Stability: With the strategy, the sustainability of production processes will be increased as a result of the decreased input usage through agricultural node of value chain. In addition, the wheat import related industrial production fluctuations will be decreased. As a result, the stability of SAPR wheat value chain will be improved.

4.1.3.2. Additional Strategic Development Suggestions for Sector Based Regional Development Efforts

Agricultural Sector Related Strategy Suggestions

Strategy 6: Facilitation of Land Source protection using market dynamics: To protect the land sources in a sustainable way requires to participation of landowners and land renters. In current situation, there are not any mechanism which is encouraging the land source protection activities among the agricultural producers or landowners. This strategy suggests an organization which is encouraging the land protection activities establishing a market mechanism which in which the land prices will be formed by the soil protection and sustainability qualification of land sources. With this strategy, the agricultural cost which is related to land rent costs will be formed in a more transparent and fairer situation and the awareness of the actors about the protection of land sources will be increased. This situation will increase the food security in terms of;

Accessibility: The cost of wheat which is produced by region will be decreased with the decreasing land rents.

Availability: The wheat amount which is produced by region will be increased with the increasing yields.

Utilization: The quality of wheat which reflects the nutrient quality of wheat products will be increased with the increasing soil quality.

Stability: As the land sources will be protected, with the increasing sustainability of agricultural production, the stability will be increased.

Strategy 7: Dissemination of agricultural output quality monitoring through agricultural process: This strategy aims to create a market structure in which the agricultural wheat producers and industrial wheat product producers will perform their exchange activity which is based on the agricultural process quality information. This strategy will encourage the agricultural producers to share their production process information with market in which the agricultural enterprises will have an opportunity to sell their products more easily.

Availability: The wheat amount which is produced by region will be increased with the increasing yields and quality of production. This will increase the availability of wheat and wheat products.

Utilization: The quality of wheat which reflects the nutrient quality of wheat products will be increased with the increasing production quality.

Strategy 8: Engagement of the agricultural labor with the quality agricultural production processes. With this strategy, the regional labor for wheat value chain will be educated about the sustainable and efficient production of local seed species in accordance with the research development activities for local seeds. The labor will be strengthened by improvement their knowledge. With this strategy, the engagement of agricultural labor with the production process will be facilitated as their qualification will be increased.

Utilization: With the participation of qualified labor to the wheat production process, the quality of wheat products will be increased. This situation will increase the utilization of wheat value chain.

Stability: With the strategy, the sustainability of wheat value chain will be increased considering the increase of the production sustainability and the protection of qualified agricultural labor in region.

Accessibility: The cost of wheat which is produced by region will be decreased with the increasing efficiency and decreasing input use. This will increase the accessibility of wheat and wheat products.

Availability: The yield and quality of wheat which is produced by region will be increased and the quality related losses will be decreased with the precise agricultural production. In addition, with the dissemination of reduced tillage technics, the soil quality and yield will be increased as a result, availability will be increased.

Utilization: With the precise agriculture the quality and nutritious value of wheat which is produced by region will be increased. In addition, with the dissemination of reduced tillage technics, the soil and agricultural production quality will be increased. This will increase the utilization for food security.

Stability: With the strategy, the sustainability of agricultural processes will be increased with the input use reduction related to the precise agricultural technologies. This situation will increase the stability of wheat and wheat products.

Service Sector Related Strategy Suggestions

Strategy 9: Transition of Logistics and storage in accordance with the transparent market structure: As one of the core elements for quality of wheat production of SAPR, logistics and storage facilities will be transformed in the accordance with the digitalization and information share based structure of wheat value chain of SAPR. With the participation of logistics and storage actors of SAPR, the strategy will promote the digitalized and quality monitoring infrastructure based logistics and storage activities through wheat value chain of SAPR: to achieve this, an alternative digital information share infrastructure for wheat value chain of SAPR will

be established and with this infrastructure all the quality processes of logistics and storage will be tracked. This strategy will promote a competition and a quality increase in logistics and storage services for wheat value chain of SAPR.

Availability: The storage and logistics related losses will be decreased. As a result, availability of wheat will be increased.

Utilization: The storage and logistics related quality and nutrition losses will be decreased. As a result, utilization of wheat value chain will be increased.

Stability: With the strategy, the sustainability of production processes will be increased as a result of the decreased storage and logistics related losses. This situation will increase the stability of wheat and wheat products.

Strategy 10: Market Integrated waste management: This strategy will promote a value chain integrated waste collection and recycle system which will also develop new use areas for wheat oriented agricultural and industrial waste outputs. To achieve this strategy, a regional wheat waste institution will be generated and supported with the R&D actors of wheat value chain of SAPR. The financial outputs of this integrated waste management system the regional financial incentives for wheat value chain will be supported.

Stability: With the strategy, the sustainability of production processes will be increased as a result of the decreased waste output losses of wheat value chain. This situation will increase the stability of wheat and wheat products.

Strategy 11: Promotion of the cooperatives using the market dynamics: In this strategy, a market structure which promotes the agricultural cooperatives will be established. The industrial wheat product producers will be the drivers of the market structure in order to create a sale promotion for agricultural cooperatives. The industrial enterprises will be promoted by product quality guarantee in return as they prioritize the agricultural cooperatives in input purchasing processes.

Accessibility: The cost of wheat which is produced by region will be decreased with the decreasing operational costs of agricultural enterprises. This will increase the accessibility of wheat and wheat products.

Stability: With the strategy, the sustainability of agricultural processes will be increased considering the protection of agricultural producer population group for wheat agriculture. This strategy will be increased the stability of wheat and wheat products.

4.1.4. Implementation, Hierarchy and Timing of The Strategies

The strategy comprises a comprehensive approach in order to transform the value chain in the light of regional development outputs and food security improvement goals. This structure of strategy should be supported with a research-based prioritization hierarchy in order to create an efficient strategic development process in terms of expected outputs.

As it stated, the finding shows that the agricultural node of wheat value chain of SAPR is the most critical node in terms of triggering the wheat value chain activities in SAPR. The finding about the insufficient agricultural production of wheat has a trigger effect on the other problematic issues through value chain and this shows that, the agricultural node related strategies has a critical role to shape the value chain in terms of regional development and food security. This node should be improved parallel by the industrial node of value chain, which shapes the general problematic situation of SAPR wheat value chain. At the second step of strategy implementation process, the Marketing node of wheat value chain should be considered in terms of strategies.

The 3. Chapter of the study has revealed a systematic causality hierarchy for food security and regional development related problematic issues in SAPR wheat value chain. According to this hierarchy, the harvester service-related quality problems and insufficient incentive policies for transformation of wheat processing industrial capacity of SAPR are at the first stage of the causalities hierarchy. These two

problematic points results in export oriented industrial capacity of SAPR wheat value chain which is based on inward processing regime related marketing strategy. This problematic point comprises the second step in the causalities hierarch with the current middlemen dominated wheat procurement system in SAPR wheat value chain. These two problematic issue results in the final and core problematic point of SAPR wheat value chain in terms of food security and regional development. As a result of this hierarchy, these strategies require a prioritization through the implementation process of the strategies.

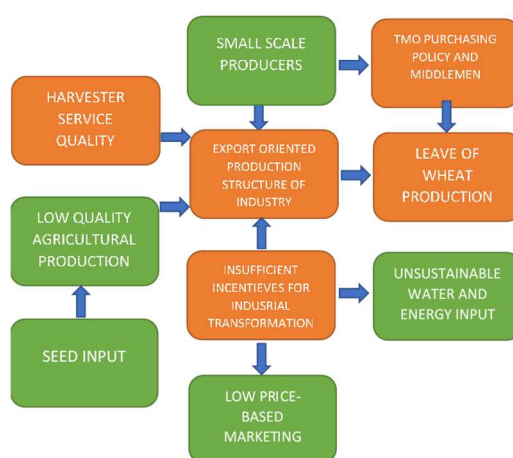


Figure 4.1. The Hierarchy of causalities through the food security and regional development related problematic issues of SAPR wheat value chain.

The two group of strategic axis refers to the hierarchic steps through the causality systematic. These two groups named as 1A/B and 2A/B as below:

- 1A) Improvement of Wheat related harvester logistic services in SAPR
- 1B) Generation of regional wheat industry-oriented transformation incentive programs in the light of local wheat seed production
- 2A) Support of local geographic brand-based marketing strategies in addition to the export activities
- 2B) Generation of peer to peer purchasing process through wheat value chain of SAPR with Contracted Farming

According to these axes the two step of strategic implementation process can be carried out as below

Implementation step	Strategies
1	Strategy 1: Modification of existing mechanical infrastructure in accordance with the precise agriculture technologies:
	Strategy 2: Sustainable and Resilient Seed Development:
	Strategy 3: Transition of vast unused capacity of wheat industry in accordance with the local wheat seed types:
2	Strategy 4: Creation of regional quality brand for wheat-based alternative products:
	Strategy 5: Organization of Regional Contract Farming System for Local Seed Oriented Wheat Procurement:

In line with this hierarch scheme of strategies, a time span of strategy implementation process should be defined. This strategy comprises a 10 year of time period in order to create an outstanding effect. In this five year, the implementation schedule should be as below.

Implementation step	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Strategy 1	■	■	■	■	■					
Strategy 2	■	■	■	■	■	■	■			
Strategy 3							■	■	■	■
Strategy 4									■	■
Strategy 5										■

According to this time schedule for strategy implementation, the first two strategy should be considered in the first 5 years. The first strategy should be implemented and monitored in order to provide the necessary triggering effect for the next steps of the strategy. The second strategy has a unique and critical time schedule because the nature of seed improvement procedures. A seed development process for a wheat seed specie requires minimum 7 years to result in a commercialized seed source. In addition to this, this strategy has a guiding role on the next steps of strategy implementation. The developed local seed species will be subjected to a industrial processing

improvement R&D process in order to guide to the transformation of the industrial capacity of SAPR wheat value chain. In the 7. Year, the 2. And 3 strategies should be implemented in coordination. The fourth strategy will be a supportive process for the third strategy, and it will be conducted in accordance with the new product types through the transformed production capacity of SAPR value chain. At the last year, after the all infrastructure which is necessary for the implementation of regional local seed based wheat contracted farming system will developed, the local seed based wheat production and procurement system will be established in order to enforce the transformed wheat processing infrastructure through the industrial node of SAPR wheat value chain.

4.1.5. Challenges and Opportunities of Strategic Framework

b. CHALLENGES

- i.** Informal Economy
- ii.** Elimination of “middleman” actor group in alternative exchange system
- iii.** Fail to cooperate with currently working conventional value chain
- iv.** Restricted Input use

c. OPPORTUNITIES

- v.** Cost decreasing effect of natural resource efficient mechanism
- vi.** Poverty mitigation with the participation of rural poor to the agricultural production
- vii.** Food security improvement with the cost effective and resource efficient value chain structure
- viii.** Revitalization of unused capacity of industrial infrastructure

4.1.6. Scenario Output of Strategic Framework: Alternative Wheat Exchange System

The alternative wheat exchange system depends on the voluntary participation of all actors through the system. This system is designed as working in a coordination with the currently working conventional wheat value chain. With its alternative and more sustainable structure, the alternative wheat exchange is supposed to be attract the actors who currently be a part of the conventional wheat value chain in order to adopt the sustainable and efficient system approach of the alternative wheat exchange system. This system also can be considered as a regional scale contracted farming system which guarantees sustainability, sales and profitability for all actors through the system using its contract and data flow power.

4.1.6.1. System Components and Mechanism

1. KEY ACTOR GROUPS

- a. Landowners:** This group of actors includes the land renter non-agriculture enterprises. They have a critical potential to improve and increase the wheat production through vast agricultural lands.
- b. Input Suppliers:** The efficiency of the alternative exchange systems is highly depended on the participation of input suppliers who have the critical role on the agricultural production quality. Fertilizer, agricultural chemicals, seeds, energy, and water inputs must be supplied in accordance with the need of regional agricultural production of wheat. This actor group will enable a quality guarantee for the agricultural inputs as they attend and work in the coordination of the other components of alternative exchange system.
- c. Agricultural Labor:** This group refers to the actors who supplies the needed agricultural labor for agricultural production. The actor group consist of two groups: waged workers and agricultural experts. This actor group will be a part of alternative system as they will attend the

educational activities which will be conducted by the R&D components of alternative wheat exchange system. The participation of this actor group will improve the quality and efficiency of the agricultural production.

- d. **Agricultural Producers and Cooperatives:** The agricultural producers and cooperatives group is one of the key actor groups of the alternative wheat exchange system. The agricultural producers can differ according to patterns of land ownership and production techniques. The alternative exchange system's focus group is especially the small and medium scale agricultural producers who have difficulties in integration to the conventional wheat value chain through linkages. This actor group is also including the agricultural producers who are attending agricultural production as agricultural land tenants. The system has an aim to activate the unused potential of small and medium sized agricultural producers.
- e. **Industrial Producers:** The alternative wheat exchange system requires the participation of actor group for industrial production enterprises of wheat value chain. The alternative exchange system aims to activate the unused vast capacity of wheat industry through wheat value chain of SAPR. So, the participation of industrial enterprises for transition of their vast capacity in accordance with the needs of alternative exchange system has a critical role for the strategy.
- f. **Logistics and Storage Actors:** The alternative exchange system requires the participation of regional logistics and storage actors who serve the harvesting, transportation, and storage services for wheat value chain. This actor group will participate to the system in accordance with the service quality and monitoring requirements of the alternative exchange system.
- g. **Consumers:** The consumer actor group is considered as an information source to restructure of the alternative wheat exchange system. This

actor group will shape the whole alternative exchange system as it directs the industrial production through its demand patterns. On the other hand, this actor group will be a target group of the marketing components of the alternative exchange system.

2. EXCHANGE COMPONENTS

- a. LAND EXCHANGE COMPONENT:** This component is an interface between the landowners and agricultural producers. The main function of this component is to bring together the agricultural land need and land suppliers in an efficient way. As this function is performed, the sustainability of the land sources will be enabled using the mechanism of the land exchange component. To achieve this, the land exchange system requires the information of agricultural lands in terms of soil quality and land area in order to create a transparent price formation process for land rents. This information will be supplied by the landowners. This requirement forces the both side of exchange to regard the soil analysis and be aware about the sustainable use of land sources. On the other hand, this exchange component creates an optimization opportunity to define the agricultural enterprise scale and according to this information, the linkage pattern and the type of linkage of the agricultural enterprises to the value chain. The alternative exchange system has a prerequisite for an agricultural enterprise to have enough amount of land in order to conduct its production activities in an economically feasible way. Land exchange system depends on not only the information of rented land but also the whole land information of all agricultural enterprises who participate to the alternative exchange system. This is necessary to create an effective price formation for land rent prices. The land exchange also transfers the soil and land area information to the seed and agricultural production R&D component of the system for each parcel which is used for agricultural production through the alternative exchange

system. This information transfer is used as an optimization tool by the seed and production R&D component of alternative exchange system. The land exchange system is based on a digital environment which is managed by the exchange system enabler actors.

- b. ALTERNATIVE WHEAT OUTPUT EXCHANGE:** This exchange mechanism is an important component of whole exchange system. In this component, the agricultural commodity supply of the wheat which is needed by industrial production is bring together with the industrial producers who participate to the alternative exchange system. There are two important group of this component: agricultural producers and industrial producers. This exchange will create a full transparent market condition which is supported by the information which is generated by the regulative and monitoring related institutional components of the alternative exchange system. In the agricultural commodity exchange component, the all the commodity suppliers must report their production and product quality information with the exchange system to create a fair and transparent process for price formation of wheat. This regulation will force the agricultural producers to produce more quality and sustainable products with the profit maximization opportunity. In this exchange system also, agricultural producers must comply the crop rotation requirements in order to link to the market. The digital environment-based information for each participant agricultural producers allow the system to accept only the product which is produced in sustainable production process. To achieve this, exchange system will compile all the production with its technical and quality information for each parcel of participant agricultural producers. On the other hand, to force the efficient and sustainable use of land sources, the direct participation of the agricultural producers which do not have enough land area to produce wheat economically feasible will be rejected. For those type of

producers, the only way to participate to the alternative commodity exchange will be the cooperative based linkage with the exchange system. This strategy will encourage the cooperative system as it promises the sales guarantee and cost diminishing opportunities for small and medium agricultural producers.

3. REGULATIVE AND SUPPORTIVE INSTITUTIONS AND RELATED ACTOR GROUPS

a. WHEAT SEED AND AGRICULTURAL PRODUCTION QUALITY R&D AND MONITORING COMPONENT: This component is the core component of the alternative wheat exchange system. It will organize and optimize all the exchange system using the information flows and transfers among the participant actors and components of alternative exchange system. The main purpose of this component is to optimization of market linkages considering:

- The input type, amount and quality needs of industrial production and consumers
- Land source of region
- Agricultural enterprise structure and economic condition
- Ecosystem services, natural resource protection and biodiversity of region
- Local seeds of region
- Climate change scenarios for region

Using this data flows, the seed R&D and quality monitoring centre will create an optimization model based on the parcel information which is participated by the agricultural and landowner actor groups to the alternative exchange system. The component is based on a digital environment in which all the production and soil data for each agricultural producer can be stored and processed in order to create an optimized production pattern through the agricultural lands of region.

The component will firstly take the industrial input need information in order to create a production pattern. On the other hand, this component will use the information of consumer needs in order to conduct its seed research and development activities. As the research and development unit develops and appoint them by parcel which is

- Suitable for climatic condition of parcel
- Suitable for irrigation and soil type of parcel
- Relevant for industrial input needs
- Compatible with the biodiversity and natural resource sustainability among the land.
- Suitable for economically feasible production

it will also inform and educate the agricultural enterprise about the seed and relevant agricultural technics. In this system, it will be compulsory to use the appointed seed, inputs and production technics and relevant amounts for each parcel. The agricultural enterprises will be responsible for the production of relevant seed with the determined technic which is identified by seed R&D and quality monitoring component. In addition, agricultural enterprises must work in the coordination with the agricultural experts who are monitoring the quality of production processes of the wheat. The production quality monitoring processes will be supported by the precise agriculture technologies.

This system component will be operated as a center which is directed by a regional committee. This committee will consist of regional research and development institutions including university institutions, agricultural research institutions, agricultural research societies, agricultural legislative institutions and regional development agencies under the direction and management of SAPR development Administration. With this structure, the center has its own human

source and operation infrastructure which is located in the center of region. This component will be financed and operated as a sub-unit of SAPRDA.

In addition to its research and development efforts, this component will operate in accordance with the regional certification and quality management service providers for agricultural production. The participant accredited certification and quality management service providers will create the necessary quality data for produced wheat through system and they have prerequisite to share it with the alternative commodity exchange system. The quality standards which is considered by quality monitoring services will be created by this component of alternative exchange system.

- c) AGRICULTURAL MECHANIZATION R&D AND SUPPORT COMPONENT:** This component of alternative exchange system has a mission to support the agricultural production processes in terms of mechanic infrastructure needs. This component will provide the unaffordable mechanical infrastructure for small and medium size agricultural producers. With this component, reduced tillage technics and precise agriculture which require unaffordable agricultural machine usage, will be disseminated through the alternative wheat exchange system. In addition, this component also will work on research and development of existing machine infrastructure of region.
- d) MARKETING R&D AND BRAND MANAGEMENT COMPONENT:** This component has a mission to work as a bridge between consumer demands and direct the alternative exchange system in accordance with the determined demand structure of consumers. This component is supposed to consider the alternative and niche demand groups through the consumers. The main purpose of

alternative wheat exchange originated from this alternative consumer-based marketing and branding strategy.

The marketing R&D component will inform and combine the unused vast industrial capacity through wheat industry with the changing alternative consumer demands. On the other hand, this component will inform the seed and agricultural prediction R&D unit of alternative exchange system in order to shape the supply in accordance with the consumer demands. To achieve this, marketing component will determine the proposed demand types and amounts for agricultural and industrial production.

In addition to this, the marketing R&D component will create a brand for alternative wheat exchange system, and it inform the consumer about the production processes and quality management of production processes. The Marketing R&D and Brand Management Component will be under the direction and management of SAPR development Administration.

- e) **WASTE R&D AND CONTROL COMPONENT:** This component of alternative wheat exchange system will operate the coordination of waste disposal activities of agricultural and industrial producers. The main aim of this component is recycling and reuse of the waste in an efficient way through the wheat value chain. This component also has an aim to create financial support for alternative wheat exchange using and generating the new technics of waste recycling and reuse. To achieve this, the component will create a waste inventory through all the agricultural and industrial producers. The component has its own logistic infrastructure to collect all waste which is created through alternative wheat exchange actors. Then, this waste will be recycled or sell to other industries and purchasers in order to create financial source for alternative wheat exchange system.

f) FINANCIAL SUPPORT AND CONSULTANCY COMPONENT:

The financial support component has an aim to define the financial support needed points of alternative exchange system. This component will feed by the regional development agencies and SAPRDA. In addition, the waste management component will feed this component financially. This component has two main support purpose which are financial support of the renewable energy transition of agricultural enterprises and the financial support of vast capacity of the wheat industry in accordance with the changing consumer demands.

4.1.6.2. Linkages Through Components

a. INFORMATION TRANSFERS

1. The land source information which is used through the agricultural production of alternative wheat exchange system.
2. The input suppliers' inventory for region
3. Agricultural labor information for wheat production in SAPR
4. Agricultural production information: input use, timing, soil analysis results, climate, and meteorological information
5. The input quality, quantity and type needed by the industrial production.
6. The vast capacity of industrial actors who participate to the alternative wheat exchange
7. Consumer demand information
8. Ecosystem services, natural source sustainability, climate, and biodiversity
9. Logistics and storage service quality information

b. INFORMATION TRANSFERS BY COMPONENTS

1. Soil analysis and soil protection applications knowledge
2. Input need of the agricultural production of alternative wheat exchange system

3. Education of agricultural labor in accordance with the needs of wheat production for alternative exchange
4. Soil quality and sustainability information for land exchange system
5. Agricultural production quality and sustainability information for alternative wheat exchange component
6. Industrial processing research and development knowledge for local seeds and wheat production.
7. Market research and development knowledge for transformation of industrial vast capacity in accordance with the alternative consumer demands
8. Production process quality and sustainability information for consumers.

c. FINANCIAL INCENTIVE FLOWS

1. Financial support transfer for transition to renewable energy and sustainable production technologies in agricultural production
2. Financial support transfer for transition of vast capacity of SAPR wheat industry
3. Transfer of Waste management profits to the financial support pool of agricultural exchange system

d. SERVICE FLOWS

1. Precise agriculture and agricultural machine support for agricultural producers
2. Agricultural logistics, harvesting and storage services
3. Industrial logistics and storage services.
4. Marketing and consumer logistics and storage services

e. OUTPUT FLOWS

1. Agricultural Input supply for agricultural production
2. Land source supply for agricultural production
3. Labor supply for Agricultural Production
4. Wheat supply for industrial production

5. Wheat products supply for consumer

f. MARKETING FLOWS

1. Marketing of alternative wheat products for consumer

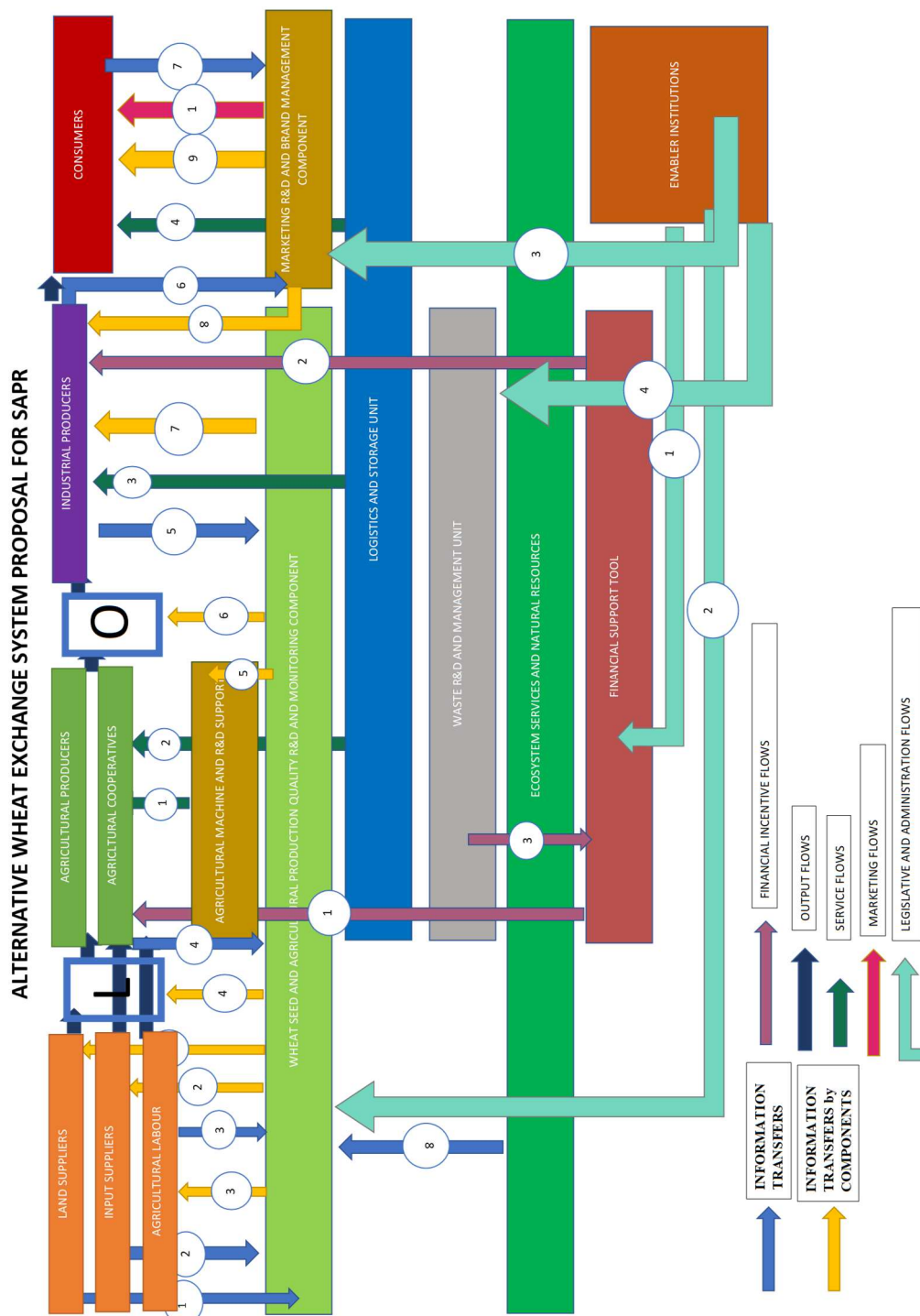
g. LEGISLATIVE AND ADMINISTRATION FLOWS

1. Management of Financial support pool of alternative exchange system

2. Management and financial support of What Seed and Production R&D and Quality Monitoring

3. Management and financial support of Marketing and Regional Brand Management R&D

4.1.6.3. The Scheme for Alternative Exchange System



CHAPTER 5

CONCLUSION

This study shows that, integration of food security and regional development strategies improves the quality of strategy development process for regions. This approach improves the resiliency and sustainability of the region and make the region more competitive in emerging topics like food security and food production. On the other hand, study shows that the regional scale has a critical role on food security issues in terms of food value chains. But this approach should be supported at city and national scale as well. At national scale, incentives should be revised in the light of regional strategies in terms of food security. In addition, at urban scale, value chains should be considered as consumer driven and food trade policies should be considered at urban scale. This approach serves also resiliency for urban areas in terms of food security. In the further efforts after of this study the spatial outputs of this development strategy should be considered in order to integrate the different scales to the strategy. In addition to this, the interactions between different commodity value chains should be defined and these interactions should be considered for the implementation of strategies.

In this study, the main research issue was how to handle the food security issue in the regional development context using the value chain approach. Starting with this idea, the study has tried to find a way to bridge the three different concepts "food security", "regional development" and "value chain approach" in the specific case of SAPR.

As a natural result of the main research question, it was important to understand the structure of different concepts which are food security, regional development and value chain approach. The literature serves enough material to extricate the relationships between these three main concepts, but it is hard to find enough specific

examples which are deeply examining the relationship between these three issues. At this point, it was important to understand the literature to build an understanding which relates to food security, regional development and value chain approach. Considering this theoretical background, this study subjects a case study through a field research-based value chain analysis process. The study handles the SAPR region of Turkey as a case, which is characterized by its agriculture-oriented government investments and agricultural production-based development efforts.

First, the study started with the determination of the most strategic edible agricultural products in terms of both food security and regional development. Because the value chain approach can't be efficient without a product scope to understand food security and regional development effects. With this step, the study points out the necessity of crop-based specialization for each region in light of its competitive advantage situation. At this point, the efficient role of the value chain approach moves in. To determine the most strategic crops of a region in terms of food security and regional development, the study considers the trade volume, consumption, production, production value, and employment generation as parameters and compares them at regional, national and global levels. When this approach implements the case of SAPR, the most strategic agricultural commodity in terms of food security and regional development is determined as wheat. It wasn't a surprise result when the role to be the genetic source of SAPR for wheat species is considered. This result has been supported by the location quotient results of SAPR for the wheat-based industrial infrastructure and its comparison with the Western Anatolia, which is the most important competitor region in the wheat-based industrial production.

Moving forward from this point, the study has continued with the field research for wheat and wheat-based food value chain of SAPR. To achieve the necessary research material, the study determined the actors of the SAPR value chain and the relevant data collection methodology for each group of actors. The field research is based on two actor groups which are agricultural enterprises and industrial enterprises of the SAPR value chain. As the industrial enterprises were subjected to open-ended in-depth

interviews, the agricultural enterprises have been offered to participate in an online agricultural enterprise survey. The sampling for the field study participants determined thanks to the communication network of SAPRDA which is oriented from its administrative activities in the region. The volunteer participants which are reached by the call of SAPRDA has served the relevant information for the field study efforts. In addition to the SAPR value chain actors, the need for the expert view is received by the secondary research materials which consist of academic studies, NGOs' technical reports, policy documents, and statistical databases.

After the data collection process has ended, first, the findings were classified in the systematic organization of the value chain concept. Each node of the SAPR wheat value chain has been described in terms of actors and activities considering the research findings. With this process, the general structure of the wheat value chain has been understood. After this process, the field research findings from in-depth interviews have been analyzed in terms of the SAPR wheat value chain organization. This analysis suggests the general overview of the SAPR value chain focusing on the local characteristics of wheat value chain actors and activities. This analysis was important to understand the focus of regional development concerns through the SAPR wheat value chain, displaying the activity, value and commodity flows among different actors of SAPR wheat value chain. After this analysis, the open-ended in-depth interview results are analyzed in the light of food security components in a value chain based systematic organization. This step was the core of the study to reveal the most important food security-related local contingencies which are the main determinants for the trajectory of food security-sensitive regional development strategies. In fact, when the local findings are compared with the national wheat-related problematic issues, it was seen that most of the local findings are similar to the general overview of national wheat and wheat-related food production processes or general sector related (non-wheat-specific) situations. But it was important to understand the local reflexes to the national general trajectory of wheat and wheat-related food production processes using the local findings from the SAPR wheat value

chain. As the genetic material source position of SAPR for wheat species is considered, it was worthy to understand why a region with such a competitive advantage doesn't use its potential and fails to compete in the agricultural node of the wheat value chain. According to the result of these analyses, the core problematic issues were identified as quality of harvester service, insufficient incentive for transformation of wheat-processing industrial infrastructure, export-oriented wheat-based industrial infrastructure, the wheat purchasing policy of Turkish Grain Board and middlemen dominated wheat market, and as a final and cumulative problem, the leaving of wheat production by farmers. These issues have been identified as constituting the conflict points of food security and regional development. In addition to these findings, the study pointed out the general sectoral and national policy causalities which are common for food security and regional development problems among the SAPR wheat value chain. These are the small-scale farming, uneducated farmer profile, unsustainable energy and water input usage, inefficient seed input services and expensive agricultural input services. The common or conflicted problematic points distinction of the research was very important because of its guiding effect on the strategic framework development process. As a result of this distinction step four main axes have been identified for proposed food security-sensitive regional development through the wheat value chain of SAPR. These are;

- 1A) Improvement of Wheat related harvester logistic services in SAPR
- 1B) Generation of regional wheat industry-oriented transformation incentive programs in the light of local wheat seed production
- 2A) Support of local geographic brand-based marketing strategies in addition to the export activities
- 2B) Generation of peer to peer purchasing process through the wheat value chain of SAPR with Contracted Farming

These four main axes for strategies evaluated in two groups can be seen from their 1A/B 2A/B codes. This coding was a hint for the prioritization of the proposed strategy development process. There are five specific strategies that are grouped in the light of

these four main axes. According to the strategic framework, the SAPR wheat value chain should follow a local seed focused marketing and industrial process strategy using its competitive advantage of being a genetic source for wheat species. This main direction requires an implementation process sequentially according to the organization of nodes of the SAPR wheat value chain. As a final output of all studies, a scenario based on a strategic framework has been defined in order to concretize the proposed outputs of a food security-sensitive strategic framework.

As a final and brief evaluation, the most important distinction of this study was to explain why and how SAPR shouldn't leave the wheat production in order to consider the national food security concerns instead of moving forward to produce some alternative products like cotton corn and barley.

It seems that the future of development efforts will intersect with the food security issues because of the accelerating emphasis on climate change and expecting scarcity of natural resources due to the high growth rates in global population statistics. On the other hand, globalizing food production and trade trends lead to the rapid rise of the value chain approach for global food commodities. This trajectory forces experts to handle the food security issue from a sustainable development strategy perspective. But in the literature, there isn't any single and specific way to combine these two efforts to generate a food security improvement through the regional development process.

The discussion points of the study begin with the theoretical framework which includes the literature for food security, regional development and value chain approach. First, the literature research for the theoretical background of food security includes lots of different approaches and it was remarkable that the food security concept isn't an issue on which it is easy to build a consensus. The most known definition of food security has faced some criticism about its context and approach to the issue. There is an important block among the academic society that considers the existing food security concept as inefficient to solve the hunger and malnutrition

problems in the world. But these academic circles criticize more international organizations' approaches to solving food security problems than their food security approach. It is already known that food security isn't a one-sided production issue but also a social income distribution issue that requires a consumer sided approach to food-related problems. But it seems that it is more beneficial to combine and bridge both different approaches to build an inclusive food security improvement process. And the two different approaches have different scopes that extricate the unique point of problem-solving in the way of improving the food security issues. For example, a consumer sided food security approach can easily handle at the urban scale considering the case of reach to the food by the urban population. But, if we consider the current trajectory of food production processes, it can be seen that it is more relevant to handle the production-related food security issues at a regional scale because of the globalized huge scale conventional food production. This situation is also criticized by many of the experts and academic peoples because of the harmful effects of the conduction of conventional food production, but globalized conventional farming is defined as inevitable by most academic experts because of the current trend of urbanized population growth. This situation also makes it compulsory to handle the food security divided as production and consumer sided approaches. Apart from these discussions, the overemphasis on the agriculture sector in food security issues is evaluated as a problematic approach because of the blindness of the industrial sector dimension of food production. The industrial production policies have an influence on the transition of the agricultural sector and this situation shows that food security efforts require an intersectoral point of view which can be enabled by the value chain approach which describes the whole production process of food beginning from the agricultural inputs to the consumer plate. In fact, as a competitive advantage strategy tool, the value chain concept is mostly adopted by the development studies. But with its analytic structure, the value chain analysis can be also a strong instrument in food security improvement studies. It can easily point out the critical policy improvement needs through the whole food production process extricating the hidden relations between the actors of production.

As a commentary addition to discussion, the pitfalls of this study include the difficulties to combat with the national policy related food security and regional development causalities through wheat value chain of SAPR. The regional development process supposed to be in a conformity with the national policies, but the local reflections of national policies might show no conformity with the expected results of the national policies. This situation has been specifically emerged in the land ownership patterns and farming scale issues during the wheat value chain analysis of SAPR. The national scale agricultural land ownership management policy of Turkish Government doesn't provide any efficient solutions for the farmers without farming land. In the study, this challenge has been supposed to be compensated with a local land market driven regional development strategy.

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A. FIELD RESEARCH NOTES FOR SAPR WHEAT VALUE CHAIN

1) Pasta Producer [Mardin]

Semolina – Mısır irmiği, unu
- Yem Fabrikası

Kapasite

Günde 300 ton buğday işleniyor

240 ton günlük toplam makarna üretimi

Bazen hammadde sıkıntısı oluyor. Günlük bu kadar üretimi karşılayacak buğday bulunamayabiliyor.

[1 makine ürünün tahliye olma süresi 6 saat.

4,5 ton (toplam 2 hat)

5 ton kesme makarnalar

6 * 4,5 ton spagetti

- Boş dönen fabrika yok. Un sektöründe Mardin Gaziantep'i geçmiş durumda.

Hammadde

Buğday alımı yetmiyor.

Tüccar → çiftçi ile sanayici arasına tüccar giriyor, karaborsada hammadde satıyor bu yüzden buğdaya istedikleri zaman ulaşmakta sıkıntılar yaşıyorlar.

Lisanslı Depoculuk

TMO'ya ürün gitmiyor. Bu da istedikleri zaman hammaddeye ulaşamamalarında bir diğer sebep.

Ürün aracı yerine TMO'ya gitse ürün fiyatları da artmayacak enflasyon da. Araya en az 2 aracı giriyor.

Sözleşmeli Tarım

Sözleşmeli tarım da yapılamıyor çünkü çiftçi kim daha fazla öderse ürününü ona satıyor.

İhracat

240 ton günlük makarna üretiminin neredeyse tamamı ihraç ediliyor. 17 ülkeye!

Libya, Irak, Angola ihracatta yoğunlaşılan 3 ülke. En büyük gönderim Angola'ya.

Gine (%50, ilk defa geçen ay yapılmış)

Su

- OSB'nin suyunu kullanıyorlar. Kendi kuyularını kazdırmışlar. Su temini konusunda sorun yok.
- Ancak eğer 3-4 yıla GAP bitmezse, 6-7 yıl sonra bu bölgede yeraltı su kaynağından bahsedemezsiniz! (Mesela Suriye bu konuda Esad zamanında yeraltı sularının kullanımını yasaklamış)
- Tarımsal sulama kanallarının bitmemiş olması aslında devlete daha fazla yük oluşturuyor. Çiftçi sulamadan kaynaklanan elektrik faturasını ödeyemez zaten!

Enerji

Elektrik kesintisi sorunu. Makineleri bozuyor, üretimi aksatıyor. Bazen kesinti hiç olmuyor ama bazen günde 2-3, bazı günler 4-5 kez elektrik kesintisi olabiliyor. Bu durumda üretim aşamasında olan ürün zarar görebiliyor. 24 saat elektrik alamadıkları da olmuş.

Yakıt

- Fuel oilden ithal kömüre geçilmiş bu yüzden tüm sistem değiştirilmiş (çünkü yakıt maliyeti doğal gaz kullananlara göre 3 kat artmış). Şimdi alana doğal gaz gelmiş ama ithal kömürle çalışan sisteme geçmek için 1 trilyon masraf yapmış oldukları için doğal gaza geçmeye pek sıcak bakmıyorlar.
- Ayrıca doğal gaz ve petrol fiyatlarındaki dalgalanmalardan dolayı kömür şu anda “safe” geliyor. Diğerlerinde her an bir fiyat artışı olmayacağına bir garantisi yok.
- Devlet politikaları genelde batıya göre yapıyor.

Depolama

- Yeterli. Kendi bünyelerinde yapıyorlar. Dışardan destek almıyorlar.
- Depoların yapımında genelde Tarım Bakanlığı'nın hibe desteğinden faydalanılmış.

Atık

- Kömür için Çevre ve Şehircilik Bakanlığı ölçümler yapıyor.
- Kömürden çıkan atık çimento fabrikasına gönderiliyor.
- Ambalaj atıklarını belediye topluyor.
- Diğer atıklar Mardin'in çöp depolama alanına gönderiliyor. Çöp depolama alanı yapılmadan önce büyük sorundu.

Personel

- Kümelenme olan yerlerde personel sirkülasyonu çok fazla oluyor. Bir firmada yetişmiş eleman başka bir firma tarafından transfer edilebiliyor -yetişmiş işgücü kaybı gibi görülüyor bu durum!
- Bölgede alternatif işler çok, bu yüzden herkes birilerinin yanında çalışmaktansa kendi işini kurmak istiyor.

Kadın

- Çalışan olarak bay bayan ayrımı yok. Ağır işlerde çalışmıyorlar ama üretimin her kısmında bayan çalışan mevcut. Bu biraz da Mardin'in bölgedeki diğer illere oranla daha modern olmasından kaynaklanan bir durum.

Sigorta

Fabrika, ihracat vs. her şey sigortalı. Sorun yok.

Sektörel Network & Bilgi Paylaşımı

Un Sanayicileri Konfederasyonu, Yem Sanayicileri, Türkiye Makarna Sanayicileri

Teşvik

Teşviklerin kayda değer bir katkısı yok (Unda, yemde, irmikte, buğdayda). Makineleri KDV'li alıyorlar.

[Diğer Yatırımlar

Fosfat tesisi – gübre fabrikası açılmış. Türkiye'nin gübresinin %20 – 25'i burada üretilecek.]

Sorunlar

- Bölgenin kendine özgü yapısal sorunları (terör, kalifiye eleman, limandan uzak olmak çok büyük dezavantaj, altyapı problemleri, Suriyeliler)
- Bu bölgede bulunmak zaten en büyük dezavantaj.
- Müşteri genelde önce Mersin'e Gaziantep'e gider, ürün bulamazsa ya da yetmezse buraya gelir.

- Kendi paralarıyla kendi trafolarını yaptırmak istiyorlar ancak 1 senedir bürokrasiyi aşamamışlar.
- 6 trilyonluk altyapı yatırımı yapmışlar.
- Irak'ın siyasi durumu ve sınır kapısının kapatılması sorunu şu anda en büyük tehlike çünkü bölge ihracatının çok büyük çoğunluğu Irak ile veya Irak üzerinden gerçekleştiriliyor. Sınır kapısı kapatılırsa bölgede sanayi diye bir şey kalmaz.

Ne yapılmalı?

- Verimliliği arttırmak için üretimde otomasyona geçilmesi lazım.

MISIR

- 2. ürün mısır
- Mısır ithalatının azalması için 2. ürün mısır üretiminin desteklenmesi lazım. 1. ürün olduğu zaman pamuğun, buğdayın alanını daraltıyor.
- **Mısırdaki sorun:** Su ve elektrik. Su ve elektrik fiyatları uygun olursa herkes eker!

2) Bulgur Producer [Mardin]

- Bölgede yoğunlukla ekilen ürünler; buğday ve ikinci ürün olarak mısır.
 - Pamuk artık neredeyse bitti çünkü çiftçiler tamamen fiyat odaklı. Ekseriyetle buğday ekiliyor.
 - Mardin'de üretilen bulgur çok kaliteli (Türkiye'nin en kaliteli buğdayı) bu yüzden **coğrafi işarete** başvurmuşlar; süreç devam ediyor.
 - Ancak son zamanlarda protein değerlerinde düşüş var.
 - İtalyan makarna markası sözleşmeli tarımla buradan makarnalık buğday alıyor.
 - Ancak seneye yine de ekilen alanlar azalacak! Fiyatlar yüzünden!?
- Çiftçi burada stratejik hareket etmez! Dünyanın en kaliteli makarnalık buğdayını üretiyor olması onun için önemli değil. Buğday da arpa da 1 lira ise seneye arpa ekecek çünkü onu hayvan yemi olarak da kullanıyor!

Kaliteli buğdayın özellikleri:

1. Protein
2. Glüten
3. Sertlik
4. Züccaciye:
 - Parlaklık (burada 90'ın altına düşmez)
 - Dönek yapmayan (suyla rengi değişmeyen)
 - 1m³'de kaç tane geldiği (burada 82 ve üstü)

Fiziki Kapasite

Yıllık 128,000 ton – son ürün olarak 180,000 ton bulgur demek
Ancak işlenebilen buğday 50,000 ton – düşük kapasitede çalışıyor.

Üretim Aşamaları

Buğday girişi ve temizlenmesi → Yıkama → Kaynatma → Kurutma (Hedik denen bir ürün çıkıyor bu aşamada. Nem 50'den 12'ye düşürülüyor çünkü 50 de saklamak mümkün değil)
→ Tav → Kırılma ve özelliğine göre ayrılma (köftelik, ince bulgur vs)

Hammadde Tedariği

1. Direk çiftçiden: Hammadde aldıkları belli başlı çiftçiler var.

Büyük çiftçiler – 2,000 dönüm arazi (1,000 ton buğday)
- 5,000 dönüm arazi (2,500 ton buğday) aile işletmeleri, en büyük çiftçi kapasiteleri.

2. Zaireci (komisyoncu, aracı)

Hammadde Fiyatı

Fiyatları piyasa belirliyor. Toplu mal olunca 100 kişiyle ayrı ayrı uğraşmamak için toplu mala biraz daha fazla fiyat vermeyi tercih ediyorlar.

İhracat

İhracatın %90'ı Irak'a

Sigorta

Irak'a yapılan ihracatta sigorta yok, tamamen açık hesap çalışıyorlar.

Enerji & Kaynak Kullanımı

Genelde elektrik enerjisi kullanıyorlar. Kaynatma ve kurutmadaki buhar kazanında toz kömürü (Şırnak'tan geliyor, 2 yıldır yerli toz kömürü kullanılıyor). Bu yeni kömürlü sistem 4 milyon TL'ye kurulmuş.

Enerji kaynağını değiştirme gibi bir planları yok çünkü daha ucuza mal edebilecek bir alternatif yok.

Depolama

Bölgedeki ilk lisanslı depoculuğu yapan firma da kendileri

Atık

- Buğday kepeği ve buğday kırığı → hayvan yemine gidiyor
- Kömür atığı → normalde çimento sanayisinde kullanılabilir ancak şu anda değerlendirilemiyor; gömülüyor.

Sektörel Network & Bilgi Paylaşımı

HUBUDER (Hububatçılar Derneği)

Mardin'de 14 bulgur fabrikası var. Türkiye Bulgur Üreticileri Derneği var ama çok faal değil, yine de iletişim içerisinde.

Mardin bulgurunun markalaşması projesi yapılmış ama çok aktif değil (Urge)

Kredi

Exim – ihracat kredisi

Kalkınma Bakanlığı'nın kredileri

Kredi konusunda sorun:

Expertizler 10 liralık mala 1 liralık fiyat biçiyorlar. Makineleri teminat olarak kabul etmiyorlar (Daha önce teminat olarak gösterilen araçların ortadan kaybedildiği yok edildiği durumlar olmuş bu sebeple artık kabul etmiyorlar).

Lab Hizmeti

Dışardan lab hizmeti alacakları bir yer yok. Kendi laboratuvarlarını kurmuşlar.

Sertifikasyon

Sertifikasyon almışlar, problem yok.

Pazarlama

1. Bayiler aracılığıyla
2. Ulusal market zincirlerine

3. Fason üretim yaptırnanlar da olabiliyor

***** Bulgur olarak fuarlara katılıyorlar

Yılda 1 kez Mardin Bulgur Festivali – Mardin bulgurunun tanıtılması ve markalaşması için

Pazar araştırması:

Ülkelerin tüketim miktarları, tüketim alışkanlıklarına yönelik araştırmalar yapıyorlar. Pirincin çokça tüketildiği her yerde bulgur bir alternatif olarak önem kazanıyor. Özellikle son yıllarda beslenme, diyetetik, diyabetik vb. konuların öneminin artması ve pirincin bu konudaki riskleri dolayısıyla imajının zedelenmesi bulgur için bir potansiyel doğuruyor. Bu konuya yönelik bulgur tanıtım çalışmaları yapılmalı. Örnek olarak Japonya'ya makarnanın tanıtıldığı gibi bulgur da tanıtılabilir.

Urge Projesinde ülke sayısı azaltıldı, stand açma olayını kaldırdılar, sadece ofis açılabilir artık. Ayrıca artık giderlerin sadece bir kısmını karşılıyorlar.

Lojistik

Sorunlar var!

Örneğin A perakende şirketi 10 koli de sipariş isteyebiliyor 1 koli de (bu tür market zincirlerinin bir stok min. sınırı var, o sınırın altına düştükçe yeni sipariş veriyorlar -çalışma sistemleri bu şekilde). Böyle durumlarda 20 kg. buğdayı biz oraya taşıyacağımıza bedava versek daha ucuza gelir bizim açımızdan.

Lojistikten kaynaklı iade (hasarlı ambalaj, satış niteliğini yitirmiş ürün vb.) oranları düşük %0.05'den daha az denebilir.

Kayıplar

Buğday işletmeye gelene kadar 3 noktada kayıp yaşanabiliyor:

1. Biçerin yanlış biçmesi sonucu tarlada kayıp (%5'e çıkabilir)
2. Biçer biçtikten sonra, işletmeye taşınması sırasında kasadan dökülebiliyor. (%2)
3. Depolama esnasında iyi muhafaza edilmezse, böceklenirse vb. (%10'a çıkabilir)

Personel

- Dış ticaret, pazarlama, üretim alanlarında özellikle nitelikli eleman tercih ediyorlar.
- Yetiştirilen personele aidiyet duygusu aşılama özen gösteriyorlar, içerde tutmaya çalışıyorlar.
- Urfa'daki çalışmak istemeyen işçi sorunu burada yok!

Kadın

Her mertebede kadın çalışan mevcut, ayırım yok (yönetici kadrosunda da var).

Sorunlar

- Enerji maliyetlerinin yüksek olması
- Altyapı sorunları, bölgeye has enerji dalgalanması sorunu
- Sektör olarak eğitim seviyesi düşük.

Ne yapılmalı?

- İyi tohum! İyi üretim için gerekli en temel nokta budur.
- Bölgedeki makarnalık buğdayların tohumu eskidi, protein eksikliği başladı (bazı çeşitlerde 14-15'lerden 10'lara düştü).
- Çeşit sorunu. Makarnalık buğdayda 10 civarında çeşit var.

- Acilen bölgeye uygun yeni tohumların ıslah edilmesi lazım.
- Hedef: Nitelikli, katma değeri yüksek ürün üretmek istiyorlar. Mesela yarı pişmiş pratik ve hızlı hazırlanabilecek ürünler veya besin eklenmiş (örneğin ıspanaklı makarna gibi, karışımı)
- Nitelikli eleman istihdamının desteklenmesi
- Yeni pazarlara girişlerde ihracat desteği
- Habur sınır kapısı kapatılırsa biz de fabrikayı kapatıp gideriz. Buradaki OSB'deki her yerin durumu da öyle olur. Burada riski dağıtmak adına pazar çeşitlendirmesi yapılabilir.
- Tavuk gübresi kullanılırsa buğdaydaki protein miktarı çok fazla artıyor. Bu konuda bir şeyler yapılabilir.

3) Flour Producer - [Mardin]

Kapasite

- 2011'de 8 un fabrikası varken, 2017'de 40-45'e çıktı. Mardin'deki kurulu un üretim kapasitesi şu anda tek başına Türkiye'yi ve Irak'ı besleyecek durumda.
- Bu işletme günlük 13,000 – 14,000 (ton?) buğday kırma kapasitesine sahip.
- Fabrika son sistem, en yeni teknolojiye sahip. Verim konusunda teknik anlamda sıkıntı yok.

Hammadde

- Yerli hammadde temin edilen yerler: Mardin, Ceylanpınar, Şanlıurfa. Diğer yerlerin buğdayı yeterince iyi olmadığı için tercih etmiyorlar.
- Rusya'dan her yıl 4,5 milyon ton buğday ithal ediliyor.

İthalatın nedenler:

1. GAP suyunun hala ulaşmamış olması
2. Buğdayın tavuk yemi olarak da kullanılması (yetersiz kalıyor)
3. Özellikle yerli buğdayda istenilen kalite tutturulamadığı zaman Rusya'dan buğday ithal ediliyor.

Kaliteyi etkileyen faktörler:

- Süne zararlısı (haşere, Tarım İl Md. Mücadele etmiyor)
- Zamansız yağmur (protein değerini düşürüyor)
- Çiftçinin buğday tohumunun temin edildiği yer Ceylanpınar'daki TİGEM.

Hammadde Temini

Çiftçiden (Kızıltepe üreticisi, genelde küçük üretici) veya buğday borsasından (Büyük buğday üreticileri daha çok Diyarbakır'da bulunuyor)

Üretim Aşamaları

Buğday tarladan gelir → temizleme → yabancı tanelerin ayrılması → öğütme → %75 un (Irak'a gider) %25 kepek (hayvanlara)

Üretim Planlaması

Arz-talebe göre

Pazar

Bölgedeki firmalar genelde ihracata yönelik çalışıyorlar. Irak'da distribütörleri var. Afrika'ya ürün ihraç edebilmek için limanlara yakın olmak gerekir. Ürünü İskenderun veya Mersin Liman'larına göndermek nakliye konusunda maliyetli oluyor, bu sebeple ihracatta Irak tercih ediliyor.

Para transferleri bireysel ilişkilere dayalı, güven esaslı olarak gerçekleştiriliyor! Avrupa'ya yapılan ihracatlardan çok farklı işliyor.

Lojistik

Dışarıdan nakliye hizmeti alıyorlar, yerel firmalardan. Sorun yok.

Depolama

- Kırsal kalkınma destekleri sayesinde yapılan çelik siloları kullanıyorlar. Bu silolarda buğday 3 yıl kalsa dahi zarar görmeden depolanabiliyor. Bu depoların alt kısmındaki fanlar sayesinde her istenildiği zaman ürün havalandırılabilir. Haşere de olmuyor.
- Lisanslı depoculuk giderek yaygınlaşıyor. Olumlu görülüyor. Memnunlar.

Enerji & Kaynak Kullanımı

- Elektrik kesintilerinin fazla olması sorun yaratıyor. Elektriğin pahalı olması da büyük sorun.
- Su OSB'den temin ediliyor (satın alınmıyor).

Atık

- Yem sanayiine gittiği için atık kalmıyor

Personel

- Nitelikli kalifiye eleman eksikliği sorunu

Kadın

Kadın personel genelde ofis işlerinde veya teknik eleman olarak istihdam ediliyor. Üretimde kadın çalışan mevcut değil.

Sigorta

Sigorta hizmetlerinden yararlanıyorlar. Sorun yok.

Kredi/Finans Hizmetleri

Kredi konusunda en büyük sorun bu bölgede "az değer biçme" sorunu ("Mardin Gaziantep gibi değil maalesef"). Bu konuda Kredi Garanti Fonu'nun büyük yardımı oldu.

İklim Değişikliği

Mardin'de eskiden dağlık alanlarda bulunan geçilmez ormanların zamanla yok olmuş olması

Mesleki Dernek/Sivil Toplum Kuruluşları

- Çalışmaları yeterli değil.

Sorunlar

- Elektrik kesintilerinin çok fazla olmasından dolayı üretimin aksaması ve verimsiz hale gelmesi
- TEDAŞ'ın tarifeli saat uygulaması yapmaması (tarla genelde gece sulanıyor ve gece elektrik normalde 3'te 1 oranında daha ucuz).
- Kuyuların aşırı kullanımı. Sadece Kızıltepe'de 5000 adet kuyu bulunuyor. GAP suyu ulaşmış olsa bu kuyular da kapatılmış olacak yer altı suyunun aşırı tüketimi önlenmiş olacaktı.

- Devletin destekleme politikalarındaki tutarsızlık: Örneğin devlet 5 yıl boyunca mısıra destek veriyor. Yatırımcılar tesis yaptırıyor, üreticiler desteklere güvenerek borçlanıyor. Sonra devlet birden desteği kesiyor “Mardin mısır ekmeyecek diyor.”
- Tohumluk buğdayın pahalı olması sebebiyle bir önceki senenin ürününün tohum olarak kullanılması en önemli sorunlardan biri (yani çiftçinin tohumluk buğday kullanmamakta ısrarcı olması). Bu durum hem verimi hem de kaliteyi düşürüyor!

4) Bulgur Producer [Mardin]

10 yıllık bir fabrika.

Son 2-3 yıldır bulgur konusu sıkıntılı.

Bu bölgedeki buğdayın protein değeri 13-14, kırsal kesimde üretilen buğdayın proteini 11.

Üretim Aşamaları

Buğday geliyor → eleme → kaynatma → kurutma → yıkama → tav (kabuğunun alınması) → tekrar kurutma → Ayrım: köftelik, pilavlık vs.

Ham madde Temini

Buğday komisyoncudan alınıyor, direk çiftçiden alınamıyor.

Fiyat Mekanizması

Komisyoncu çiftçinin buğdayını alıp gezdiriyor borsada fiyat alıyor + %10 kendi komisyonu

Personel

- Disiplinsizlik, kafasına göre işe gelme vb. sorunlar burada da mevcut.
- Suriyeli çalışan yok.

Kadın

- Bayan mühendis personel mevcut.
- Kadın çalışanlar servis hizmetinden yararlanıyorlar.
- Genel olarak bulgur bayanlar için ağır bir sektör.

Lojistik

- Nakliye için km başına fiyat bellidir.
- Kilo başına hamala yükleme ücreti ödenir.
- Nakliyede normal şartlarda büyük bir sıkıntı yok ancak hasat zamanı ücretler iki katına çıkabiliyor.

Enerji & Kaynak Kullanımı

İthal kömür kullanılıyor (7000 kalori). Toz kömürden memnun kalmamışlar bu yüzden artık fındık kömür kullanıyorlar, bu kömürün atığı çok az çıkıyor!

Sistemi değiştirmek 6-7 yıl önce yaklaşık 150,000 TL' ye mal olmuş.

Atık

- Kepek → bazı hayvancılık ve yem fabrikaları tarafından alınıp kullanılıyor
- Patlayan paketlerden dökülen ürün vs. de yeme gidiyor
- Ambalaj atığı pek olmuyor

Pazar

- İç piyasada bayilikleri mevcut.
- Irak'da ise temsilcilikleri var

Kredi

- Bankalardan yana kredi konusunda sıkıntı yok

Mesleki Dernek/Sivil Toplum Kuruluşları

URGE kapsamında 'Mezopotamya' isimli bir birlik kurulacak, herkesin ürünün orada birleştirmek mümkün olacak mı...?

Sorunlar

- Çiftçi olarak GAP suyu gelmediği takdirde elektrik parası yüzünden mısır ekmeyecek! 250,000 TL elektrik faturası borcu olanlar var, bunlar çiftçinin altından kalkabileceği miktarlar değil!
- Kaliteye gereken önemin verilmemesi konusunda şikayet var. Herkes ucuz mal istiyor, kaliteye değil ucuz fiyata önem veriliyor.
- Süne zararlısı buğdaya zarar verebiliyor
- Yeni mezun eğitilmiş personelin (mühendis) işe hakim olmaması, işi öğrenme süreçleri..
- Pazarlama konusunda sıkıntılar var. Özellikle dış pazarlara açılma ve orada iş yapma konusunda işi bilen personel eksikliği

5) Bulgur Producer [Adıyaman]

Çiftçilerle kontratlı üretim (yıllık kontrat)

Kontrol firmaları ve ziraat mühendisleri çiftçileri denetliyor.

Organik tarımla bulgur, mercimek, nohut, fasulye üretimi

Türkiye (Adıyaman) dışında Kazakistan, Etiyopya, Ukrayna'da da çiftlikleri var. Yurt dışından gelen ürünler Mersin'de işlenip paketlenip yurt dışına satılıyor.

Hammadde (Buğday)

Şanlıurfa (%90 Viranşehir), Mardin, Muş

Bulgur üretimi Mardin'de fason yapılıyor.

Bulgur yapılırken buğday %30 fire veriyor (yem sanayiye gidiyor).

Toplamda ek maliyet %50

Lojistik

Taşıma esnasında kayıp yok denecek kadar az.

Atık

Bulgurdaki (buğdaydaki) %30 fire – yem sanayiye gidiyor

Enerji

Su – şebeke hattını kullanıyorlar

Enerji – kendi güneş enerjisi sistemleri var (1 mw), kendilerine yetiyor.

İşgücü & Kadın

Asgari ücrete yakın yoksulluk yardımı giren evde insanlar çalışma gereksinimi duymuyor.

Geçimlerini çalışmadan sağlayabiliyorlar. İşgücü açısından bu büyük bir sorun.

93 çalışan var. 32 kadın (%27).

Kadınlar genelde ofis işlerinde veya temizlikte çalışıyorlar (çünkü diğer işler ağır). Yüksek mertebelerde de olabiliyorlar, örneğin Mersin fabrika müdürü bayan. Ancak evlenince eşleri çalışmalarına müsaade etmeyebiliyor (önceden pazarlık yapıyorum evlenince işi bırakacak mısın bırakmayacak mısın diye).

Suriyeli işçi yok ama olursa çalıştırırız.

ARGE

ARGE departmanı var, ayrıca dışarıdan da hizmet alıyorlar (İzmir'den).

Sertifikasyon

BRC – İngiltere bazlı kalite yönetimi sistemi sertifikası (ihracat yapan firmalar için bu sertifika şart)

Kosher üretim var!

Rekabet

- Adıyaman çiftçisinin rekabet edememe sebepler elektrik faturasını ödüyor olması!

Pazarlama

Ayda bir Avrupa-Amerika'ya ziyaretlerde bulunup müşteri taleplerini dinliyoruz

Fuarlara tanıtımlara katılıyorlar

Pazar araştırmasını kendileri yapıyorlar.

DEİK – Devletin alıcı ile satıcıyı buluşturmak için oluşturduğu bir ticaret heyeti var ancak çok faydalı olmadığını düşünüyorlar. Bu tarz gezilere genelde insanlar iş değil de tatil gözüyle bakıyor!

Mesleki Birlik / Koop. / Dernek

Samimi bulmadığımız için hiçbirine katılmıyoruz.

Türkiye İhracatçılar Birliği, TİB, DEİK gibi ulusal organizasyonlar var – korumacılık yok, üzerine düşen görevi yapan yok.

Projeler

GAP Organik Oluşum Projesi – sonuca gelineemedi, sadece sergi amaçlı, bir pazarlama stratejisi yok (“5 yıldır Almanya’ya gidip stantta kasede bal, zeytin sergiliyorlar)

Ne Yapılmalı

- Destekleme sistemindeki aksaklıklar giderilmeli. Destek arazisi olana değil üretene verilmeli.
- Özel sektörde zaten verimliliğin çok fazla düşmesi mümkün değil. Ancak arazi ve çiftçi konusunda ciddi çalışmalar yapılması lazım. Mevcut destek sistemi geri tepmekte, çiftçi verimi giderek düşmekte!

6) Flour Producer (Gaziantep)

1992’de 240 ton ekmeklik un üretimi kapasitesiyle başlandı.Toptancı ve fırıncı laboratuvarı oluşturuldu.Fabrika 1995’te 550 ton kapasiteye ulaştı.Firma 1997’de ihracata başladı.Şuanda günlük 1960 ton un üretiliyor.Bu, yaklaşık olarak 89 kamyonu tekabül ediyor.

Üretim aşamaları

3 çeşit un üretiliyor: 1- %100 tam buğday unu

2-ekmeklik buğday unu(kür değeri 0.71-0.80)

3-özel amaçlı un (ar-ge çalışmasıyla üretim yapılıyor)

Tonaja göre temsili numune analizleri yapılıyor. Kriterlere uygunsa satın alınıyor. Farklı değerdekiler farklı silolara yerleştiriliyor. Depo koşulları uygunsa 5 yıl saklanabiliyor. Depoda bekleyen buğdaydan 3 undan hangi çeşit un üretimi yapılacaksa o unun paçal oranında farklı değerlere sahip buğday çıkarılıyor. Sertlik derecesine göre temizliği yapılıyor. Sertlik derecesine göre nemlendirme işlemi yapılıyor. Nemlendirme işlemi, kabuk ve buğday içerisindeki unsu kısmı birbirinden ayırmak için uygulanıyor. Daha sonra temizleme yapılıyor. Temizleme 2 şekilde olabiliyor; yıkama ve tavlama. Yıkama işleminde fazla miktarda suyla temizleme işlemi yapılıyor. Tavlama işleminde ise bir ünitenin içerisinde geçen buğdaya az miktarda su püskürtülerek temizliği sağlanıyor. Tavlama işleminde su tüketimi çok daha düşük olmuş oluyor.

Hammadde tedariki

Tedarik ettikleri hammaddenin üreticisinin yenilikçi olmaması geleneksel yollarla ailesinden kalan aynı buğdayı ekiyor olması ve riski sevmediklerinden yeni bir tohum denemeye isteksiz olmaları buğday kalitesinin düşük olarak üreticiye ulaşmasına sebep oluyor.

Çoğu toprak sahiplerinin küçük arazilerde üretim yapması endüstriyel üreticiyi zora sokuyor.

Tonajın yüksekliğine bakan çiftçi ve 1 tondan elde ettiği unun miktarını gözetemeyen endüstriyel üretici arasında her zaman uyum sağlanmıyor.

Kullanılan işgücü ve niteliğine yönelik bilgiler

**** Un, çalışanların eğitimsiz ve un üretiminde yetersiz olması sorunu sebebiyle kendi personelinin kendisi yetiştiriyor. Eleman yetiştirirken öncelik üründe kaliteyi yakalamak amacı aşılanıyor. Usta mühendis yetiştirme hedefi güdülüyor. Her çalışana adaptasyon eğitimleri veriliyor. Un üretiminde erkek çalışan talep ediliyor çünkü kadın işgücünün karşılayamayacağı iş yükü var. Bölgede işgücü sorununu çözebilmek için unlu mamülleri yüksek okulu kuruldu fakat işlevsiz kalıyor. Eğitimci unlu mamüller hakkında yeterince bilgi sahibi değilken eğitim vermemesi gerekiyor. Üretim sahasında çalışmadan verilen eğitim sahada çalışanı yetersiz bırakıyor. Akademisyenin sanayiye hizmeti böylelikle çok kısıtlı kalmış oluyor.

Tarım-der öncülüğünde Maraş'ın Narlı ilçesinde buğday denendi fakat laboratuvar ve birim yetersizliği sebebiyle bir sonuç alınamadı.

Gaziantep tarım bölge müdürü buğdayda cinsin talebine göre ekim yaptırıyor.

Sözleşmeli tarım yapılmıyor fakat kendi mühendisleri denetiminde verimli olarak tespit edilmiş tür çiftçiye arazisinin küçük bir bölümüne ekmesi isteniyor. Elde edilen hasatın miktarı ve kalitesi hakkında incelemeler yapılmak üzere tekrar laboratuvara getiriliyor.

Kendi ar-ge sahaları aktif ve üst düzey olduğundan tarımsal araştırma enstitüleriyle paslaşılarak yürütülen çalışmaları var.

Toptancılar, fırıncılar ve pastanelere satış yapıyor. Kızılhaç, yardım kuruluşları ve birleşmiş milletlere un tedariki sağlıyor. ***** Un Gıda Sanayi A.Ş. Irak'a büyük miktarda ihracat yapıyor.

Ürün lojistiği firmaya ait 80 tır filosu ile sağlanıyor. Yetersizlikte anlaşmalı oldukları lojistik firmasıyla sağlanıyor.

7) Flour Producer (Gaziantep)

1993 yılında üretime başlandı.

Hammaddede su oranı ve ilaçlamalara göre satın alma işlemi gerçekleşiyor. Su oranına göre elindeki buğdayı değerlendiriyor. Üretimini yaptığı ürünler; irmik ve un.

Buğdayda ilaçlamadan kaynaklanan bir kalitesizlik varsa o ürün tercih etmiyor. İlaçlama aşamasında takipsizlik, sorumsuzluk ve bilinçsiz ilaçlama var, çiftçi eğitilmiyor. Rekoltenin yüksek olduğu yerden hammadde alıyor. Hammaddede kaliteyi 2. Ürün ekimi ve dinlendirmeden topraktan ürün alımı düşürüyor. Yeni tohum almadan önceki hasattan ayırdığı ürünü geri ekiyor bu da kalitesiz ürünün endüstriyel üretim yapacak kişinin girdi tedarik

kararlarını etkiliyor. Rus pazarı dünya piyasasında önde fakat geçen yıl(2016) da Rus buğdayı hastalıklıydı. Mantar hastalığına sebebiyet vermişti.

Günlük 125 ton buğday üretiliyor fakat atıl kapasite sorunu var. Fabrika %50 verimle çalışıyor geri kalan %50 si boşa gidiyor.

Yıkama yöntemi olarak suyla yıkama kullanılıyor, tavlama yöntemini hijyenik bulmuyor.

Finansman bulurken sorun yaşamıyor. EXIM Bank kredilerini değerlendiriyor.

İç piyasada kalıcı pazar payı edinmektense yurtdışı ihracatı tercih ediyor.Yurtdışına yaptığı satışlardan parayı peşin tahsil ediyor. Yurtiçinde piyasayı tutarsız buluyor.İhracatta da akreditifle bu riski minimize ediyor. Yurtdışı satışlarında free-on-board (FOB) ve cost insurance and freight (CIF) incotermleriyle çalışıyor.

Buharla pişen un ar-ge önerisi var ama kendilerine ait laboratuvarları yok .hazır gıda markasına tedarik sağlıyor. Kek unu üretiyor. Kepekli un üretmeyi düşünmüyor çünkü Türkiye’de kepekli una talep olmayacağı inancı taşıyor. Zaten şirket politikalarının da talebe göre üretim yaptıklarını söylemişlerdi. Talep doğrultusunda gofretlik, pastalık vb.

Endüstriye verilen teşviklerden önce çiftçiye verilen desteklerin su ve kalitesiz ürün problemlerine çözüm olacağına inanıyor.

Reklam ve tanıtımı için uluslararası ve yurtiçi fuarlara katılıyor.Aliexpress ve compass sitesinde satıcı hesabı var.Orada yurtdışından da müşterilerinin kendisine ulaştığını söylüyor.

8) Pasta Producer (Gaziantep)

200 kişi personel sayısı ile aylık 9000 ton üretiliyor.

Sanayi envanteri problemi

Tesisin yıllık 3 milyon ton üretim kapasitesi var fakat üretim 1.5 milyon ton.%50 atıl kapasitesi bulunmakta. Tesiste ithal makinalar ve modern tekniklerle üretim yapıyor. Antep’te 1993 te 80 tane buğday fabrikası vardı ve hiçbirinin laboratuvarı yoktu.

Buğday ekili tarım alanları kıt bu sebeple kaynak sıkıntısı çekiyorlar. Buğday bulunduğu anda ise buğdayın kalitesinde sorun çıkıyor. Buğday tarımında hektar başına 750 ton verim alındığında sektörün verim probleminin çözüldüğüne inananlar var. ABD’de bu rakam hektar başına 1400 ton.

Girdi tedarigi:

Her girdi tedariginde yerli buğdayda %5, ithal buğdayda %9 fire veriyor.En kaliteli buğday Batman,Siirt Kurtalan, Gaziantep Araban’ dan geliyor.Yurtdışından tedarik edilen hammadde Kanada ve Meksika’dan satın alınıyor.Aynı cins buğdayları farklı farklı tedarik kanallarından temin ediyor firma çünkü tek bir satıcı büyük miktarlarda hasat elde edemiyor.Çünkü Arazi parçalanması problemi var.Parsel başına çiftçi sayısı arttıkça buğdayda çeşit artıyor, kalite ise düşüyor.Büyük tarlalarda ise sulama problemi oluyor.220 ton büyük çiftçiden aldığı ürünün sadece %10 u kaliteli çıkmış,%90 ı istedikleri kalitede değil.Biçerlerin kırmasıyla buğdayın %5 i boşa gidiyor.Biçerlerin kırmadan hasat toplaması için ar-ge isteniyor.Buğday üretimine bir standardizasyon gelmesi gerekiyor diyor.Buğdayda çeşitlilik çok fazla.Bölgede topraktan

en yüksek verimin alındığı ve en kaliteli buğday türlerinin dışında ekim yapılmamalı diyor. Toprak analizleri yapılıyor fakat süreç çok yavaş ilerliyor. Tohumun en verimli olanını test etmek içinse çiftçi yeniliklere açık değil. Gözlem sıkıntısı yaşanıyor. Arazi parçalanmasından ve çiftçiyle anlaşılabilir buğday kalitesinde güvensizlik olduğundan ötürü sözleşmeli tarım yapılmıyor. Ziraat mühendislerinin sahada faaliyet göstermemesi yüzünden farklı ürünlere kullanılan zirai ilaçlar buğdaydan çıkıyor. Yanyana farklı ürünler yetiştirildiği için numunelerde farklı ilaçlar çıkabiliyor. Ziraat mühendislerinin uygulama alanlarına çıksalar bile bilgisizliği sözkonusu. Üniversite sanayi işbirliği isteniyor ama önce üniversitede ziraat mühendisliği mevzuatında değişikliğe gidilmesi bazı büyük sorunlara çözüm olacağı belirtiliyor.

Makarnanın standardizasyonu noktasında katma değeri yüksek makarna ürettikleri iddiası var. Türk standartlarının çok üstünde makarna üretimi gerçekleşiyor. 10.5 protein içerikli makarna üretiliyor. TS nin şartlarını sağlamak için 9.5 proteinli ürün olması yeterli.

Personelin tesisteki süreksizliğinden şikayet ediyor. 3 ayda %15 işçi sirkülasyonu var. Bölgede değirmencilik okulu diploması geliştirildi. Kurumsal kapasite ve kalifiye eleman bilinci artırılmadığından yetersiz bir girişim olarak kaldı. Çalışmayanın işsizlik maaşı yeşilkart gibi sosyal haklarının ihtiyacı olana ulaşsa bile ihtiyacı olmayan ve işgücüne katılması gereken kesime de dağıtılması personel sıkıntısı yaşıyor. İşkur ile ortak proje yönettiler fakat bu proje işsizlik probleminde cevap olmadı. Kadın çalışan müracaatı fazla.

Atık olarak ırmık parçaları çıkıyor onlardan tekrar makarna yapılıyor. Tavlama yöntemiyle buğday yıkandığı için su atığı yok ya da az.

Yurtiçi pazarına ürününün %10 unu pazarlıyor. %90 ı yurtdışı.

Ar-ge çalışmalarıyla glutensiz makarna geliştirildi ve ihracatta başarısı suruyor. Ar-ge çalışmalarlarıyla geliştirdikleri makarna cipsi üretimleri yarıda kaldı.

Firma tanıtımı ve reklamı için kullandığı kanallar Afrika'da tv ağırlıklı reklam, uluslararası fuarlara katılım sağlanıyor.

ABD'de sağlaması zor ihracat şartları sebebiyle pazara açılım sorunu yaşıyorlar. Devlet teşviğinin dışına açılan firmalar için yetersiz olduğu vurgulanıyor.

Depo ihtiyacını TMO ve benzeri ofisler üreticilerin farklı çeşitteki buğdayını karıştırıyor. Lisanslı depolarda da durum aynı, farklı kalitelilerdeki buğday farklı yerlerde saklanması gerekirken hepsi aynı yere boşaltılıyor. Bir de TMO'dan verilen siparişlerde 1. Sınıf buğday siparişi veriliyor fatura 1. sınıf buğdayın fiyatı üzerinden kesiliyor ama fabrikaya gönderilen kamyon içerisindeki buğday 2. veya 3. kalite çıkıyor. Gaziantep borsası depolama alanı inşa etti. büyük bir tesis kurdu. 11 çeşit buğday alımı olmazsa depoculukta iyi olacağı düşünülüyor. 4 çeşit buğdayın hem yörede verimliliği hem de alt tabaka buğday alıp üretenler için yeterli olduğunu söylüyor. Bazı tohumlar çiftçiye de endüstriyel tarım faaliyeti gösterenlere de faydasız ama hala ekiliyor. Devlet denetiminde olan ofisler özel sektöre devredilirse sorunun çözüleceğini düşünüyor. Depoların devlet tarafından denetim yetersizliği var. Ayrıca TMO ve LİDAŞ'tan alınan buğdayda sipariş verilen ürünün içeriği dışında bir şey tespit edildiğinde itiraz hakkı yok. Edilen itirazlar yanıtız kalıyor.

Aynı tarladan gelen malda da çeşitlilik gözleniyor. Çünkü tohumu yenilemeyen çiftçinin elindeki tohum yıldan yıla verimsizleşiyor. Mısır ve pamuğa yüksek teşvikler sonucu buğday

eken çiftçide de azalma gözleniyor.Seneler geçip mısır tarlayı yorduğunda buğday ekimine geri dönülüyor.Artık Araban'da toplam buğday üretimi yılda 30.000 ton yerine 20.000 ton olduğunu tespit ediyorlar.Karpuz ve sarımsak ekimine geçişler olması nedeniyle.

Lojistik hizmetinde Borsa'dan satın aldığı ürünlerde sevkiyatı borsa tarafından sağlanıyor.İhracat için anlaşılan firmalarda İskenderun'dan öztrans firması yurtdışına gönderim sağlıyor.lojistik kamyonlarının sadece gıda lojistiği değil farklı ürün kalemlerini de taşıması zarara sebebiyet veriyor. Bebek maması markası sattığı üründe lojistikte gıdaya bulaşan pestisit tespit edildi.Bunun gibi zayıat 3 yılda 3 kere verildi.Kilogram fiyatı 2 TL yani kamyon başına 15 bin lira zarar meydana geldi.

9) Bulgur Producer (Şanlıurfa)

OSB de kendi işleri için yeterli büyüklükte un fabrikası vardı bulgur ek olarak kuruldu. Teknolojik makine ve teçhizat il bazında alımını yaptı.İl bazında ne düzeydeyse kendi fabrikasını da o düzeyde tanımlıyor.Yan sanayide ildeki bütün bulgurcular gibi başka illere bağımlılar.Bir arıza durumunda Adana veya Antep'ten usta getiriliyor.Konya, Çorum ve Antep'ten değirmen makineleri satın alıyorlar.Girdi tedarikinde buğday pazarında komisyoncudan veya çiftçiden direk alım yapılıyor.Urfa'da buğday buğdayda açık artırma yöntemiyle satışı da oluyor.Dışardan gelen buğday da Urfa'ya depolanmaya geldiği de oluyor.6 ay boyunca kurutma makinesi kullanılıyor.Hijyen açısından suyla yıkama yöntemi kullanılarak yıkıyor.Metal değirmenlerde öğütülüyor.Unda otomasyon endüstri mühendisleri diagrafin dışına çıkmamaya çalışıyor.Hammaddeye bölgeden ulaştığı için hiçbir sıkıntı yaşamıyor ve kalite artırımına gerek duymuyor çünkü en kaliteli buğdayın bölgede zaten üretildiğini düşünüyor.Müşteri portföyü çuval bazlı alım yaptığı için paketlemede sorun yaşamıyor.Suyla temas eden bütün parçalar krom.

Hammadde alırken eğitimsiz çiftçiden yakınıyor ziraat mühendislerinin sahaya inmediğini söylüyor.Bölgeye gelen mühendislerin eğitimlerinin yeterli düzeyde olmadığını söylüyor.TİGEM sürekli tohum üretiyor ve tohum çeşitliliğinin olmaması gerektiğini savunuyor.Arazi parçalanması probleminden ötürü çok fazla çeşitte boyutta ve kalitede buğday çıkıyor.Çoğu da ne üreticiye kaliteli nihai mal üretimi sunuyor ne de çiftçiye iyi bir gelir kapısı oluyor. Gap'ta toplulaşma projesi amacına uygun bir şekilde toplulaştırma yapılmadı. Sulamada elektrikle kuyudan su çekilerek sulama yapıldığından ötürü elektrik bölgede sürekli kesinti olduğundan sulanamayan çok arazi oluyor. Lojistikte sıkıntı yaşamıyor ve lojistikten kaynaklanan bir zayıyat yok.

İlaçlamada devlet desteğinin artık olmayışından ötürü çiftçi yeteri kadar ilaçlayamıyor.Süne'yi engellemek için Keklik besleniyor biyolojik olarak böyle bir çözümle uğraşan çiftçiler var.

Bilinçsiz çok fazla sulamadan ötürü Harran ovasında toprak çoraklaşması gözlenildi.

Müşterilere ulaşırken un ve bulgur için çok fazla rekabet ediliyor.fiyatta düşük fiyat veren satışı yapabiliyor. günlük 20.000 ton kapasite ile üretim yapabilecek olan tesiste %75 atıl kapasite sorunu gözlemleniyor. Büyükşehirlerde müşterilerine satıyor ama aile şirketi olmasından dolayı kurumsallaşamadıkları için daha fazla müşteriye ulaşmak çok zorlayıcı oluyor.

Ticaret odaları dış ticaret borsası un sanayicileri derneği üyelikleri var.

Depolamada bireysel depoları yetersiz. Küften kaçınmak için betonarmeden kaçınıldı silolara geçildi.

10) Bulgur Producer (Şanhurfa)

Gıda organize sanayi Urfa'da henüz kurulmamış olmasının eksikliğiyle birlikte organize sanayi bölgesinde yer almaktadır. 2002 yılında Güneydoğu Anadolu'da kurulmuş bir aile şirkettir. Günlük 96 ton kapasite ile üretim yapan tesisine, 2014 yılında faaliyete geçen günlük 240 ton kapasiteli yeni bir fabrika eklemiştir.

Girdi satın alındıktan sonra buğday numunesi laboratuarda kontrole gönderilir ardından ürün uygunsuz ambara girer. Buğday tedariki komisyonculardan yapılıyor. Komisyoncusunun urfa ve çevresinden buğday tedarik ettiği biliniyor. Çiftçiyle arada 1 komisyoncu oluyor genelde. Önce temizlenen buğday kaynatılarak sahada güneşin altında kurutmaya alınır. Kış aylarında kurutma için kurutma kulesi kullanılır.

Personelleri hem teknik alanda hem de gıdada yetişmiştir. Ticarete olan nakliye maliyeti rekabetçi bir ortamda yüksek maliyetler şirketin Pazar payını büyük ölçüde etkilemektedir. İşçi eğitimi ve işçi güvenliği için ne kadar önlemler alınsa bile bilinçsiz işçiler çalışırken ölümle sonuçlanan kazalar doğurabiliyor. Tamamı tesis içerisinde çalışıyor bilinç aşılandı. Kadın çalışmasına uygun bir iş olmaması sebebiyle kadının işgücüne katılımı sadece gıda mühendisleri ve çevre mühendisleri olabilir.

Kırma işleminde taş ile kırma olursa 7 saatte 20 ton kırılıyor üretimin kalitesi daha iyi oluyor. Normal makine ile kırma işleminde 1 saatte 20 ton buğday kırılıyor ama kalite düşük oluyor. Makarnalık buğdaydan elde ediliyor. Son aşamada eleklerden köftelik bulgur orta bulgur ve iri bulgur olarak ayrılıyor. Standardizasyon kullanan firma kendilerinden başka yok. Kaynatmada kömür kullanılıyor. Kömürün maliyeti ve doğaya verdiği zarar aşırı fazla oluyor. %10 Suriyeli personel çalıştırılıyor. Suriyeliler paketlemede ve portör olarak kullanılıyor. toplamda 35 çalışan sayısı var. Dışardan alınan hizmetler arasında laboratuvar hizmeti iş güvenliği ve sağlığı uzmanlığı alınıyor.

Atık olarak çıkan kepek satılıyor. Genelde hayvancılar alıyor. Un kepek ve kavuz çıkıyor. Isı atığı çok fazla sıcak su atığı ise 2-3 ton oluyor. 10 barlık bir kazanı gıda organize sanayi kurup ortada herkes o kazanı kullansa iş birliğinden ötürü maliyetler düşecek ve verim de artacaktır diyor. Buhar satın alarak üretim yapanların Antep'te olduğu tespit edilmiş. Yeni akışkan yataklı kazan daha yüksek üretim teknolojisiyle üretilmiş fakat maliyetlerden kaçınıldığı için devlet teşviği bu konuda olmadığı için alınmıyor.

Üretimde planlama kalite departmanı ile ilintili çalışıyor. Organik tarım yapmak planlanıyor ve organik tarım için tohumu çiftçiye ***** firması kendi ulaştırarak sözleşmeli tarım yapmayı planlıyor. Firik buğdayı üretilirken zaten sözleşmeli tarım ile satın alınıyor.

Çuval ambalaj ve zarf malzemelerinin hiçbiri urfadan değil, tamamı antep'ten satın alınıyor. Depolama hizmeti almıyor kendi siloları yeterli. Lojistikte MSC firması ihracatta lojistik sağlıyor. İskenderun ve mersin limanlarından ihraç ediliyor. Ambalajda daha hızlı ve hijyenik ambalajlama yapan makineler piyasada var gene yüksek maliyetlerden dolayı bulgur üretici firmalar bu makine ve teçhizatı almakta kaçınıyor.

Ürünü yurtiçi ve yurtdışı pazarlarda direk irtibata geçeceği firmayı tespit edip yerinde ziyaret ederek buluyor ve randevu talep ediyor. Fiyatta ve koşullarda anlaşıldıktan sonra ürün

sevkiyatı gerekleŖiyor. İhracatta taban fiyat getirilirse kimse o fiyatın altında satamayacak ve boyece daha adil bir rekabet ortamı saėlanmıŖ olacaktır. İhracatta fiyat deėil kalite ile rekabet edilmiŖ olacaktır deniyor.

Devlet teŖviklerinde adil daėılımın olduėunu dŖŖnmyor.

Gneydoėu Anadolu İhracatı Birlikleri ve bulgur ihracatıları derneklerine yelikleri var. Bu derneklerin ortak olarak bulgur festivalini gerekleŖtirdiler. Blgede ne kadar da birlikler ve dernekler kurulsa da Urfa Ŗhrinde bulgur reticileri bir araya gelmekten kaınıyorlar.

B. STRATEGIC AGRICULTURAL COMMODITY INDEX FOR SAPR

	P	C	V	E	D	T	Ind
Wheat	0.50815	0.13554	0.00070	0.30	8.00	3688619	429.26537
cotton	0.11504	0.00645	0.00013	0.24	7.00	1452550	0.22789
Grapes	0.06825	0.02143	0.00004	1.62	4.00	555954	0.20347
tomatoes	0.00328	0.08685	0.00007	3.50	4.00	434983	0.11681
Chilles and peppers	0.00943	0.01867	0.00001	3.50	2.00	101353	0.00068
Sheeps	0.04811	0.01536	0.00007	0.01	7.00	66723	0.00024
olives	0.03858	0.00304	0.00000	0.75	4.00	179358	0.00009
Pistachios	0.19941	0.00134	0.00000	0.75	1.00	67253	0.00004
Barley	0.20626	0.00060	0.00000	0.29	3.00	80861	0.00004
Lentils dry	0.14305	0.00418	0.00000	0.30	1.00	553893	0.00003
Watermelons	0.00774	0.03226	0.00000	3.50	1.00	15054	0.00002
Chickpea dry	0.00371	0.00403	0.00000	0.30	1.00	71137	0.00000
cucumbers and gherkins	0.00077	0.01404	0.00000	3.50	1.00	28701	0.00000
Goats	0.01875	0.02313	0.00001	1.00	1.00	293	0.00000
Walnuts	0.00142	0.00224	0.00000	0.75	2.00	194196	0.00000
Melons, other	0.00353	0.01516	0.00000	3.50	1.00	5099	0.00000
cherry	0.00130	0.00411	0.00000	3.00	1.00	182541	0.00000
figs	0.00039	0.00037	0.00000	3.00	1.00	251806	0.00000
Vetchs	0.00501	0.14276	0.00000	0.30	1.00	74	0.00000
Almonds	0.00000	0.00090	0.00000	0.75	1.00	128050	0.00000
Anise badian fennel	-0.00193	0.00000	0.00000		1.00	46445	0.00000
ducks	-0.05804	0.00000	0.00000		1.00	92	0.00000
fruits fresh nes	-0.00303	0.00246	0.00000		1.00	105045	0.00000
Geese	-0.04793	0.00000	0.00000		1.00	3	0.00000
Leeks	-0.00018	0.00179	0.00000		1.00	2242	0.00000
Oat	-0.01316	0.00090	0.00000		2.00	6861	0.00000
okra	-0.00329	0.00022	0.00000		1.00	0	0.00000
onions shallots green	0.00024	0.00112	0.00000		1.00	0	0.00000
peanuts	-0.03920	0.00000	0.00000		1.00	17613	0.00000
peas dry	-0.01050	0.00000	0.00000		1.00	44772	0.00000
peppermint	0.00036	0.00000	0.00000		1.00	0	0.00000
Persimmons	-0.00129	0.00000	0.00000		1.00	89	0.00000
potatoes	-0.02663	0.03577	0.00000		3.00	71577	0.00000
Raspberries	0.00064	0.00052	0.00000		3.00	9742	0.00000
Rye	-0.00628	0.00090	0.00000		1.00	1	0.00000
safflower seed	-0.00135	0.00022	0.00000		1.00	0	0.00000
Sesame seed	-0.01353	0.00000	0.00000		2.00	249628	0.00000

Soya bean	-0.17015	0.00000	0.00000		4.00	1295062	0.00000
sugar cane	-0.03557	0.00000	0.00000		1.00	28548	0.00000
tobacco	0.00261	0.00000	0.00000		4.00	1596580	0.00000
Triticale	-0.00593	0.14276	0.00000		1.00	135	0.00000
Turkeys	-0.04046	0.00000	0.00000		1.00	10452	0.00000
Board bean ddry	-0.00343	0.00030	0.00000		1.00	3719	0.00000
cherry sour	-0.00021	0.00157	0.00000		1.00	67	0.00000
quinces	-0.00006	0.00090	0.00000		1.00	10814	0.00000
Peas green	-0.00354	0.00090	0.00000		1.00	15	0.00000
Spinac	-0.00124	0.00172	0.00000		1.00	199	0.00000
cabbage	-0.00348	0.00635	0.00000		1.00	3064	0.00000
Lettuce	-0.00145	0.00388	0.00000		1.00	1601	0.00000
Millet	-0.04372	0.14276	0.00000		1.00	1187	0.00000
Carrots and turnips	-0.00152	0.00403	0.00000		1.00	10854	0.00000
Bean green	-0.00182	0.00523	0.00000		1.00	1061	0.00000
Strawberries	-0.00048	0.00321	0.00000		1.00	7702	0.00000
Pears	-0.00157	0.00366	0.00000		1.00	8835	0.00000
Pumpkins squash and gourds	-0.00262	0.00269	0.00000		1.00	33989	0.00000
plums and sloes	-0.00257	0.00179	0.00000		2.00	19324	0.00000
Garlic	-0.00037	0.00067	0.00000		1.00	8421	0.00000
Apricots	-0.00031	0.00202	0.00000		2.00	318040	0.00000
eggplants	-0.00006	0.00687	0.00000		1.00	12448	0.00000
Peaches and nectarines	-0.00204	0.00523	0.00000		1.00	25755	0.00000
Vegetables, fresh nes	-0.02849	0.00172	0.00000		1.00	3757	0.00000
Beans dry	-0.04779	0.00254	0.00000		1.00	42895	0.00000
Onions dry	-0.00513	0.01583	0.00000		1.00	12556	0.00000
Apples	-0.00499	0.01755	0.00000		2.00	40800	0.00000
rice	-0.23078	0.00702	0.00000		1.00	156652	-0.00025
Sunflower	-0.03238	0.02367	0.00000		3.00	2205989	-0.00052
Chickens	-0.91576	0.13340	0.00000		4.00	671387	-0.39597
Maize	-0.16033	0.01471	0.00007		8.00	501777	-0.63184
Cattle	-0.31446	0.82811	0.00704		13.00	320747	-7645.30326