Evaluation of Agricultural Policy Reforms in Turkey

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Foreword

Agricultural policies in Turkey have evolved significantly over time and the new Agricultural Law agreed in 2006 aims to align Turkey's agricultural policies with those of the European Union. The main purpose of this study is to evaluate recent policy developments in the context of a broader review of policy developments since the implementation of the Agricultural Reform Implementation Project (ARIP) in 2001.

The author of the report is Dimitris Diakosavvas, of the Directorate for Trade and Agriculture. The study draws on background papers prepared by two consultants: Professor Erol Çakmak, (Middle East Technical University, Ankara, Turkey), who prepared a background paper dealing with Turkey's agricultural policy reform programme, and Professor Ali Koç (Akdeniz University, Antalya Turkey), who prepared a background paper dealing with price transmission to farmers in Turkey. Editorial assistance was provided by Theresa Poincet. Françoise Bénicourt and Theresa Poincet provided secretarial support and prepared the report for publication.

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Executive Summary

Turkey, a middle-income country, with a growing population of approximately 73.7 million, is one of the world's 20 largest economies. Since 2001 the country has been undergoing a significant socio-economic transformation and is being re-shaped by an economy-wide agenda of policy reform. As a result of the economic reforms, the Turkish economy experienced an average annual growth rate of more than 7% over 2002-07 – a record among OECD countries – and demonstrated remarkable resilience in weathering the 2008-09 global economic crisis.

Historically, the agricultural sector has been Turkey's largest employer and a major contributor to the country's Gross Domestic Product (GDP), exports and rural development. Turkey is an important producer and exporter of agricultural commodities on world markets and is estimated to be the world's 7th-largest agricultural producer. Although, in relation to the industrial and service sectors, agriculture has been declining in importance, it nonetheless continues to play a fundamental role in Turkish society, employing about a quarter of the workforce and generating most of the income and employment in rural areas. Primary agriculture's share in employment decreased from 50% in 1980, to 25% in 2009, but its contribution to GDP also declined – going down from 23% to 8.3% over the same period. Agriculture's share in total exports remains stable at around 11% of total exports.

The climatic and geographical conditions across the country permit a wide range of farming activities. Turkey is largely self-sufficient in foodstuffs. Roughly 55% of Turkey's agricultural area is devoted to arable crops (of which about 11% is fallow land, and 24% is irrigated); 38% to permanent meadows and pastures; and 8% to permanent crops.

Agricultural production, particularly crop production, has grown rapidly over the past two decades. Arable farming dominates the agricultural sector, accounting for about 75% of output value, with the value share of fruit and vegetables at over 44%. The main crops are cereals (wheat, barley and maize); other crops (sugar beet, cotton, potatoes and tobacco); vegetables (tomatoes, cucumbers, dried onions and watermelons); and fruits and other perennial crops (apples, citrus fruit, grapes, figs, hazelnuts, olives and tea). The livestock sub-sector (which consists mainly of cattle, dairy, buffalo, poultry, sheep and goats) includes traditional and commercial activities. Climatic and topographic conditions are favourable to fruit and vegetable production in the two coastal regions, while the predominantly rural and mountainous areas specialise in livestock and animal products.

Despite the recent emergence of more commercial farms, the majority of farming enterprises still consist of small-sized holdings or family farms, with a high degree of fragmentation. The agricultural labour force (over half of which is made up of women, working mainly as unpaid family labour) displays high levels of poverty and low levels of education. Despite significant progress achieved over the last two decades, illiteracy levels

of workers in the agricultural sector remain as high as 18%, compared with 7% for those employed outside agriculture.

Nearly two-thirds of farms are smaller than 5 ha. A relatively large number of the larger and more specialised farms are located in the Aegean and Mediterranean regions of Turkey. The structure and specialisation of farms are determined by the social and economic conditions in rural areas, as well as by climatic conditions.

Subsistence and semi-subsistence farming are important features of Turkish agriculture. Characterised by very low productivity, a high rate of hidden unemployment and a poor level of competitiveness, such farms are, nonetheless, of crucial importance in providing income security, and represent a source of livelihood for the majority of Turkey's rural population.

Farms at all points in the size spectrum tend to be fragmented, with nearly one-quarter consisting of six or more disjointed parcels of land. The size of the average land parcel has continued to diminish over recent decades, largely as a consequence of Turkey's inheritance laws. A major policy objective is to increase the average size of the country's agricultural holdings.

These small farms are, nevertheless, sufficiently productive to have made Turkey a significant agricultural exporter and a world leader in certain agricultural products. Turkey is the world's largest producer of hazelnuts, apricots and cherries; the 2nd-largest producer of figs, chestnuts, pistachios, cucumbers and watermelons; the 3rd-largest producer of apples, chick peas, onions, olives and sheep's milk; and the 4th-largest producer of fresh vegetables and grapes, tobacco and tea. Production of wheat and cotton is also important. Turkey's main trading partners are the European Union (EU), the United States, the Middle East and the Russian Federation.

The principal objectives of Turkish agricultural policy, which have changed little over time, can be summarised as follows: meeting the food security needs of a growing population; increasing productivity and reducing vulnerability to adverse weather conditions; improving self-sufficiency levels; raising farm incomes and giving them more stability; enhancing competitiveness; developing rural areas; ensuring food safety; and harmonising the country's agricultural and rural development policies and institutions, bringing them into alignment with those of the EU.

Until the early 2000s, these objectives were primarily addressed through a complex set of price supports for commodities, with domestic prices supported by intervention purchases. These initiatives were complemented by trade-related measures (particularly tariffs); subsidies for farm inputs; and investments in infrastructure.

The measures were carried out by the numerous government agencies which oversee agricultural policy, such as the State Economic Enterprises (SEEs); the Agricultural Sales Co-operative Unions (ASCUs); and the state-owned banks. These institutions were responsible for the determination of price support levels; distribution of budgetary support; instigation of marketing regulations; and provision of inputs to farmers.

Besides affecting price formation, weak budget constraints on agricultural SEEs and ASCUs have led to poor financial discipline. Financial losses due to intervention purchasing by ASCUs, the Turkish Grain Board, the State-owned Tobacco Enterprise and the State-owned Sugar Enterprise, coupled with borrowing by the SEE from commercial banks at relatively high interest rates, were key factors in the country's economic turbulences in the 1980s and 1990s.

Policy reforms in the agricultural sector gained momentum in 2001, as part of an economy-wide effort to restore fiscal balances and increase the efficiency of the economy. In 2001, under the auspices of The World Bank, the Agricultural Reform Implementation Project (ARIP) was launched and put into implementation (over 2001-08). Its main objective was to bring about a move towards a more market-oriented agricultural policy, through: the abolition of the administered output price and the elimination of input subsidies, including credit; the restructuring of state-owned enterprises and ASCUs; and the introduction of direct income support (DIS), decoupled from commodity production.

In addition to these measures, several additional steps have been taken to harmonise Turkey's agricultural policies and institutional framework with those of the EU. For example, agro-environmental issues have attained more prominence with the process of the EU accession negotiations, as the adoption of the EU's *aquis* emphasises the integration of environmental concerns and good practices in land management and rural development, in general. In the area of rural development, the EU's Instrument for Pre-Accession Assistance on Rural Development (IPARD) will also facilitate Turkey's gradual alignment with the *acquis* concerning the EU's Common Agricultural Policy (CAP).

The Agriculture Law adopted in 2006 creates the legal basis for certain management systems necessary for the implementation of the *acquis*. However, the Law defines support linked to production as a key instrument of agricultural policy, thus undermining ARIP's market-oriented objectives and moving Turkey further away from the principles of the reformed CAP. Consequently, as from 2006, producer support based on commodity output increased, while DIS payments decreased and were eventually abolished, in 2009. However, area-based payments, such as the so-called "fertiliser" and "diesel" payments, are increasing in importance. Moreover, import protection remains unchanged, with major staples and related products being heavily protected, while protection on net-imported products and on intermediate inputs to export-oriented manufacturing is relatively lower.

Overall, since 1986, success in achieving the policy reform necessary for bringing about improved market orientation has been variable, and frequent *ad hoc* changes to policy settings have been made. In 2009, support as a share of gross farm receipts (% PSE) increased, and now exceeds the OECD average. Moreover, as much as 88% of support to producers is now provided in the form of market price support, as measured by the OECD, which is one of the most distorting types of policies.

The need for further reform of agricultural policies is coming from several directions. Turkey should start to examine the adjustment issues related to potential EU membership (or the expansion of the Customs Union decision on agricultural products) and the further liberalisation of trade through the WTO Doha Round negotiations. Although both EU membership and WTO negotiations have stalled during the recent past, the adjustment of the agri-food sector to a new policy environment is slow. In addition to the transition measures being undertaken, a Doha Round agreement and EU membership may necessitate further, considerable adjustment efforts.

Chapter 1

Overview of the Macro-economy and the Agricultural Sector in Turkey

This chapter provides a brief overview of the agricultural situation in Turkey since the mid-1980s, with particular emphasis on the nature of the structural impediments faced by the agricultural sector. It discusses trends in: the socio-economic role of agriculture in the overall economy; changes in farm structures (e.g. farm holdings, sizes, types and human capital); the value of production, input and output prices, productivity and agricultural incomes; agricultural trade (e.g. trends in agricultural exports, imports and the agricultural trade balance); and the relative economic importance and structure of the agri-food sector. As trends in agricultural policy in Turkey are closely linked to the evolution of the economy as a whole, and cannot be assessed in isolation from the macro-economic context, a brief discussion of key macro-economic aspects, such as fiscal deficits, inflation and exchange-rate changes, is also presented.

1.1. Main features of the Turkish economy

Turkey is a middle-income country and, with its population of over 73.7 million, is one of the world's 20 largest economies. Key trends in the Turkish economy since the 1980s show high Gross Domestic Product (GDP) growth rates, increasing exports, and growing industrialisation, urbanisation and population (Annex Table A.1). GDP reached USD 742 billion, and GDP *per capita* reached around USD 10 440 in 2008, following a spectacular recovery from a deep economic crisis in 2001. Total export values have been increasing steadily, while imports have followed a more irregular path over time, but have also been on an upward trend.

With an annual average population growth of 1.8%, the population has more than doubled since 1970, leading to high rates of migration from the rural provinces to the urban centres, particularly from east to west. Despite this rapid urbanisation, 24% of the total population still lives in rural areas (2009). As a result of long-term population growth, Turkey has a comparatively large young population: the age group of 15 years or less represents 31% of the total population (the OECD average is 20%). The population of working age is relatively more concentrated in the urban areas. Only after 50 years of age does the distribution of the rural population show – in relative terms – higher shares in rural areas.

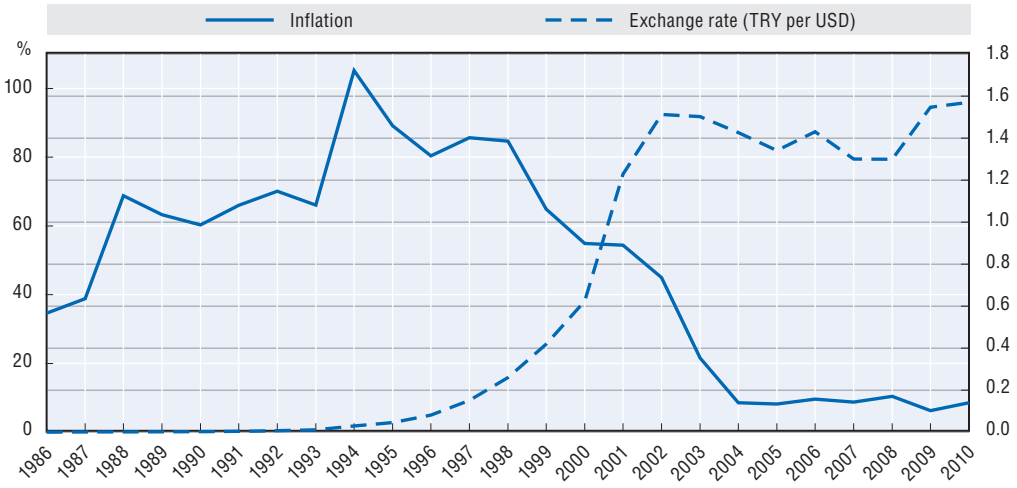
Turkey is characterised by large regional disparities, which broadly follow a west-east pattern. These disparities are associated with substantial differences in geographical features and climatic conditions, as well as migration flows. In particular, the main centres of economic activity are located in the western part of Turkey, while the poorest are on the eastern border. The more affluent regions have important shares of production and employment in manufacturing and services, whereas in most of the other regions agriculture is the most important source of income and employment.

Two-thirds of the total Turkish population live in Istanbul, Ankara, Izmir and other major cities. Over 80% of total value-added is generated in these three cities. Istanbul and other large cities have experienced high immigration from rural areas.

1.2. Key macro-economic developments

Macro-economic stability is an essential requirement not only for sustained economic growth, but also for coherent agricultural policies, as prices convey reliable market signals to producers and investors and enable them to develop longer-term strategies for investment. This prerequisite has not been met consistently in recent decades, as Turkey has been beset by several macro-economic and financial crises. In particular, the period from the late-1980s until 2001 was marked by unstable macro-economic cycles, with two major currency collapses and deep recessions (in 1994, at the end of 1999 and in early 2001) (Figure 1.1). This situation led to high volatility in aggregate economic activity and hampered the overall pace of growth.

Figure 1.1. **Inflation and the exchange rate, 1986-2010**



Note: Inflation is measured as the percentage change in the Consumer Price Index (CPI) over the same period of the previous year.

Source: OECD.

A policy of industrialisation based on import substitution was pursued in the period prior to 1980, but, after a severe economic crisis in the late-1970s, there was a switch to export-led growth policies and progressive trade liberalisation (OECD, 1994). The 1980s began with a period of post-crisis rehabilitation and the 1980 stabilisation package included a large devaluation, together with stringent measures to curb inflation (which was at that time running at over 100%) and to reduce a public sector borrowing requirement of 10% of GDP.

Policies throughout the economy were targeted on export promotion, and the share of manufactures in exports rose sharply. During the late-1980s, the strict import controls, which had operated under the previous import substitution programme, were gradually relaxed – including those for agricultural commodities. Currency convertibility and deregulation of the capital market in 1989 allowed the government to resort increasingly to international capital markets to finance chronic budget deficits. Interest payments on escalating foreign debt pushed up total spending requirements.

The 1990s were years of economic turbulence for the Turkish economy. During this period, Turkey experienced highly volatile economic growth, with repeated booms and busts and persistently high inflation. Budget deficits and debt levels reached such high levels that the country's macro-economic stability was severely undermined. Growing deficits and exchange rate pressures led to the economic meltdown of early 1994, which resulted in a huge currency devaluation and a new stabilisation package.

Turkey began the new millennium with serious financial and currency crises in late 2000 and early 2001, with the real GDP growth rate shrinking from 6.8% to -5.7% between 2000 and 2001. This crisis paved the way for the adoption of new macro-economic policies and structural reforms, which created the conditions for a significant and stable improvement in the economy.

In order to address this instability, the government embarked on a macro-economic stabilisation and structural adjustment programme, backed by the International Monetary Fund (IMF), requiring a reduction of government expenditure in all sectors, in which

agricultural policy reform had a prominent role (Chapter 2). In addition to fiscal austerity, the programme relied on contractionary monetary policy. The programme was also combined with a crawling-peg exchange rate, which was subsequently abandoned. In February 2001 the currency was floated, and fell by almost two-thirds against both the US dollar and the euro.

A new programme was launched in 2002 in the form of an economic stabilisation programme consisting of a banking reform, major fiscal retrenchment and measures to improve foreign direct investments. Budget deficits were significantly reduced and public debt, as a percentage of GDP, declined. The central bank was made independent of the government and an explicit inflation-targeting framework was introduced.

The reforms adopted since 2001, combined with greater political stability, led to a spectacular recovery after the 2001 crisis, and Turkey enjoyed strong and un-interrupted expansion until 2007, with annual economic growth exceeding 7%, on average, between 2002-07. Net public debt fell from over 90% of GDP in 2001, to 39% in 2007. The inflation rate, which was running at over 100% in 1994, fell to one-digit numbers in 2007 for the first time in 30 years.

These reforms were also instrumental in enabling Turkey to overcome the 2008-09 global economic crisis remarkably well: it achieved the strongest recovery of any country in the OECD area, demonstrating the much-improved resilience of its economy (OECD, 2010). According to OECD projections, Turkey's economic growth is likely to be among the strongest of all OECD countries in 2010, supported by financial stability, international investor confidence and a dynamic business sector.

Furthermore, the prospect of Turkey's accession to the European Union (EU) remains a key anchor of political and economic reform. Notwithstanding temporary setbacks, Turkey has strengthened its relations with the EU. A six-year programme of economic, social and institutional harmonisation with the EU *acquis* has been prepared. In its 2007 Action Plan, the government reiterated its commitment to implement EU-related reforms, highlighting their importance to Turkey's development.

1.3. Agriculture in the economy

Historically, the agricultural sector has been Turkey's largest employer and a major contributor to the country's GDP, exports and economic growth. According to World Bank estimates, Turkey was the world's 7th-largest agricultural producer in 2009, with agricultural GDP estimated by TurkStat at USD 51 billion in 2010 (World Bank, 2010; TurkStat). However, as the country develops, and with increasing urbanisation, the economy has experienced a marked change in structure, with more urban-based manufacturing and service sectors now displacing agriculture as the main drivers of economic growth.

Agriculture's share in the economy is dwindling, accounting for about 8.3% of GDP in 2009 – well below half its share in the 1980s (Figure 1.2). Likewise, agricultural employment exhibits a marked descending trend over time. Agriculture was the single largest source of employment in 1988, accounting for over 8 million jobs and employing almost 50% of the country's entire workforce (Annex Table A.2). By 2009, agricultural employment had declined in absolute terms, and was down to 5.3 million (or a quarter) (25%) of the total workforce, shedding 2.9 million jobs.

Figure 1.2. **Contribution of agriculture to the economy, 1980-2009**

Source: OECD Secretariat calculations based on TurkStat, 2010.

Notwithstanding the steady decline of agricultural employment, the agricultural sector continues to be the principal source of employment in rural areas, accounting for around 63% of rural employment (Annex Table A.3). Moreover, the sector provides employment for almost all of the women living in rural areas, although its share in rural employment declined from 95% in 2005 to 84% in 2009.

Agriculture also plays a role in helping overcome the chronic nature of unemployment in Turkey: in urban zones, the unemployment level is almost twice as high as in rural areas (in 2009, unemployment was 16.6% in urban areas, compared with 8.9% in rural areas). However, workers who left the agricultural sector to migrate to the cities experienced difficulties in finding employment, due to their low level of education and lack of suitable skills, which led to high rates of unemployment (MARA, 2007).

The importance of agriculture in Turkey is further enhanced when the whole agri-food chain is considered. In particular, the food industry is one of the major manufacturing sectors that plays an important role in the economic growth of the Turkish economy, including rural development.

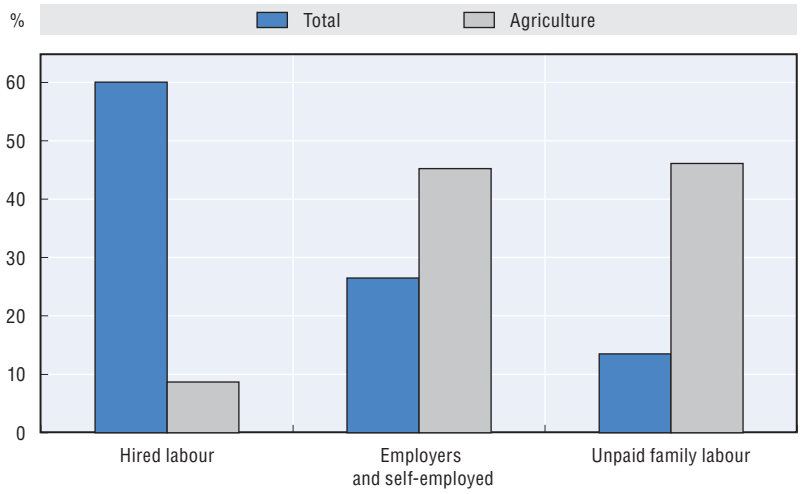
Turkey is an important agricultural exporter, with agricultural exports estimated at USD 12.7 billion in 2010. Turkey continues to be a net exporter of agricultural products, the surplus helping to counter the persistent deficit in its non-agricultural merchandise trade. Agriculture supplied 11% of total exports and accounted for 7% of total imports in 2008. The EU is the main trading partner for Turkish agricultural products (see Section 1.7, on the **Agri-food trade profile**).

1.4. Farm structure

Farm labour

In contrast to the structure of the general economy, where hired labour is the most important type of employment in the agricultural sector, self-employed and unpaid family labour constitute the two main types of employment, each making up to approximately 45% in 2009 (Figure 1.3; Annex Table A.4). Hired labour in agriculture made up about only

Figure 1.3. **Employment status, overall economy and agriculture, 2009**



Source: OECD Secretariat calculations based on TurkStat, 2010.

9% of total agricultural employment. Unpaid family labour in agriculture is more dominant among female workers, with as much as 76% (1.9 million) working as unpaid labour in 2009.

Illiteracy rates in the agricultural workforce are significantly higher than in the rest of the economy (Table 1.1). Despite a significant improvement over the last two decades, illiteracy rates among agricultural workers remain as high as 15%, compared to less than 2% for those employed outside agriculture. The major contributor to this high rate of illiteracy is the female sector of the agricultural workforce (with an illiteracy rate of 25%), which represents 60% of the total agricultural workforce. In rural areas, where the agricultural population dominates, only 2% of the village (rural) population has received university-level, or higher education.

Table 1.1. **Educational attainment by economic sector, 2009**

%

	Illiterate	Primary	High school	Technical high school	University
Agriculture	15.2	77.5	3.5	2.7	1.0
Male	6.3	82.8	5.1	4.1	1.7
Female	25.4	71.5	1.8	1.1	0.3
Industry	1.6	66.3	9.6	13.2	9.3
Services	1.1	46.3	14.7	12.0	26.0
All sectors	4.7	59.0	10.6	10.0	15.6

Source: TurkStat.

Farm incomes

Although comparable data on agricultural incomes over time are not readily available, Table 1.2 indicates rather large and increasing disparities between agricultural and non-agricultural entrepreneurial income. Moreover, agricultural households account for as much as 60% of the poorest 20% of households and only 12% of the most affluent 20% (Figure 1.4).

Table 1.2. **Equivalised household disposable income, 2002-08**

%

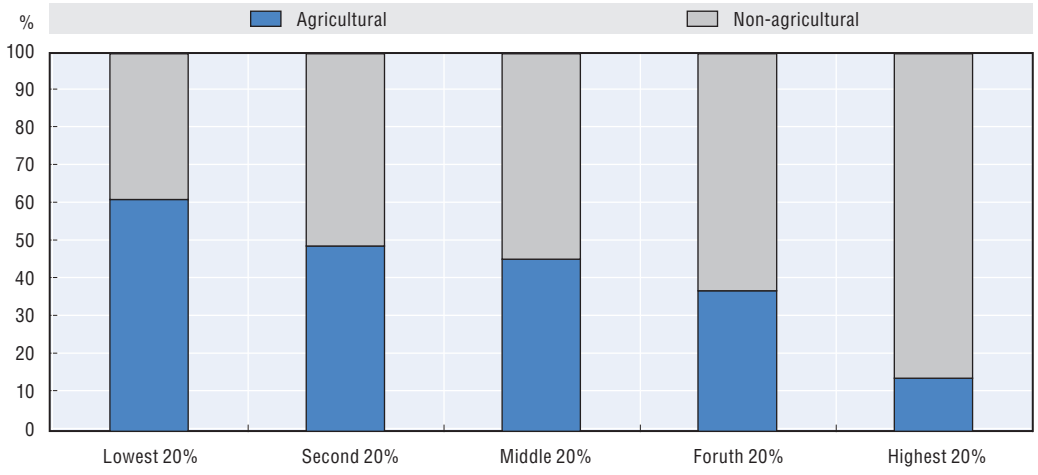
	2002	2003	2004	2006	2007	2008
Agriculture	38.3	30.6	29.6	29.4	27.5	27.8
Non-agriculture	61.7	69.4	70.4	70.6	72.5	72.2
Total	100	100	100	100	100	100

Note: Equivalised household disposable income is the disposable income of households, adjusted for household size. More specifically, the equivalised disposable income is the total income of a household, after tax and other deductions, that is available for spending or saving, divided by the number of household members converted into equalised adults (household members are equalised, or made equivalent, by weighting each member, according to age).

Source: OECD Secretariat calculations based on Income and Living Conditions Survey (2002, 2003 and 2004) and Households Budget Survey (2006, 2007 and 2008).

Figure 1.4. **Distribution of equivalised household disposable agricultural and non-agricultural income, by income quintiles, 2008**

%



Source: OECD Secretariat calculations based on *Income and Living Conditions Survey,* TurkStat, 2010.

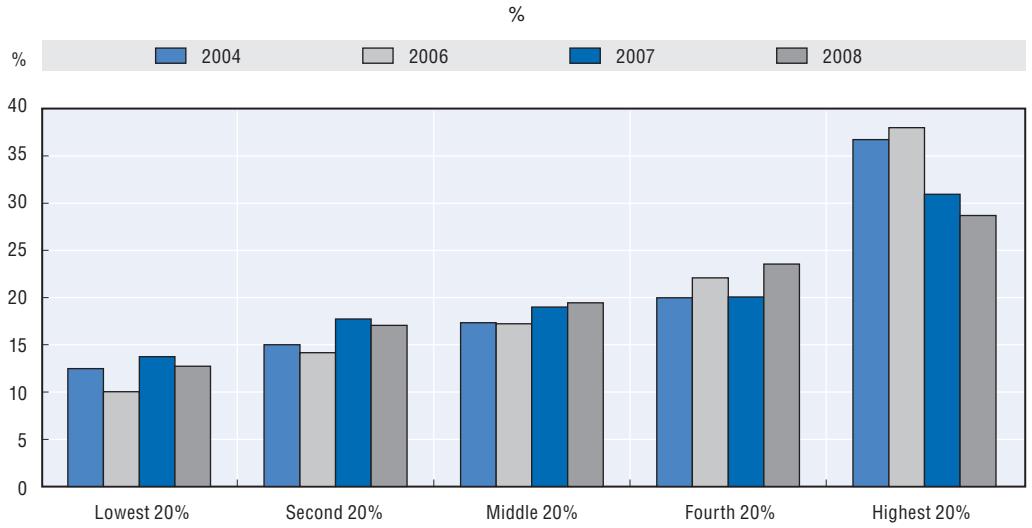
The conventional quintile distribution of agricultural household income for 2008 displayed in Figure 1.5 shows that the top (most affluent) quintile had 28.3%, while the bottom quintile had only 12.6%. The highest income-earners (the top 20%) of agricultural households earned 2.3 times more than those in the lowest 20%.

Concerning distribution of agricultural income over time, it appears that, with the exception of 2006, there has been a slight improvement over the 2004-08 period. The income share of the top 20% of households declined from 36.2% of total income in 2004 to 28.3% in 2008. In contrast, the income share of the poorest quintile has remained more or less stable.

Agricultural holdings

Farms in Turkey are typically family-owned, small and fragmented, except in the prosperous Aegean and Marmara coastal regions. More than 90% of farm households have no more than 20 hectares (ha) of land, and 66% of all holdings are less than 5 ha in size (these are mainly oriented towards self-sufficiency and have lower than average income). There are 3.1 million agricultural holdings on a total of 23 million ha of land. The number of farms decreased sharply in the 1990s, due to rural migration to urban areas (Table 1.3).

Figure 1.5. **Distribution of agricultural equivalised household disposable income, by income quintiles**



Source: OECD Secretariat calculations based on Income and Living Conditions Survey, TurkStat, 2010.

Table 1.3. **Holdings and land by size class: 1991, 2001 and 2006**

%

	1991		2001		2006	
Size of holdings (ha)	Holdings	Land	Holdings	Land	Holdings	Land
No land	2.5	0.0	1.8	0.0	0.4	0.0
<0.5	6.2	0.3	5.8	0.3	2.8	0.1
0.5 - 0.9	9.4	1.1	9.4	1.1	6.3	0.5
1 - 1.9	18.5	4.3	17.6	4.0	15.3	2.6
2 - 4.9	31.3	16.5	30.9	16.0	32.7	12.9
5 - 9.9	17.5	19.9	18.2	20.7	21.4	18.1
10 - 19.9	9.4	21.0	10.6	23.8	12.7	21.0
20 - 49.9	4.3	19.8	5.0	22.8	6.6	23.6
50 - 99.9	0.6	6.4	0.6	6.1	1.3	9.9
100 - 249.9	0.3	5.9	0.1	3.0	0.4	7.4
250 - 499.9	0.1	2.8	0.0	0.4	0.1	1.8
500 +	0.0	2.0	0.0	1.9	0.0	2.0
Total	**100**	**100**	**100**	**100**	**100**	**100**
Total number of holdings and land (000)	4 068	23 451	3 076	18 434	3 022	18 434
Average farm size (ha)	5.8		6.0		6.1	

Note: Data for total land are in 000 ha.

Source: TurkStat, 2009.

The average cultivated area per holding was about 6 ha and remained almost unchanged between 1991 and 2006 (6.1 ha in 2006, as compared with 6.0 ha in 2001 and 5.8 ha in 1991). The structure and specialisation of farms correspond to the social and economic conditions in rural areas as well as the climatic conditions. The distribution of agricultural land has remained skewed, with a slight tendency towards medium-sized farms and away from smaller-sized holdings over the last fifteen years.

The 2006 *Agricultural Holding Structure Survey* results show most agricultural holdings to be concentrated in the 2-5 ha holding size-group (33%), while most of the land operated by agricultural holdings is in the 20-50 ha holding size-group (24%) (TurkStat, 2008). About 79% of agricultural holdings occupying 34% of the land are less than 10 ha in size. Around 21% of agricultural holdings are 10 ha or more in size: these agricultural holdings operate 66% of the total land. A relatively high number of larger and more specialised farms are located in the Aegean and Mediterranean regions.

Distribution of holdings according to economic size (shown in Annex Table A.5) reveals that most farms are concentrated in the small economic size group. In 2006, around 91.6% of farms were in an income bracket of less than TRY 13 000 (EUR 7 222): of the remaining farms, 6.2% had between TRY 13 000-26 000 (EUR 7 222-14 444), and only 2.3% of farms were in the TRY 26 000 (EUR 14 444) or higher, income group. There were as many as 34.5% of farms with income below TRY 2 000 (EUR 1 111), while there were very few (0.02%) with income above TRY 200 000.

According to the 2006 *Agricultural Holding Structure Survey* results, of the total land operated by agricultural holdings, 66% is operated by holdings engaged in both crop production and animal husbandry; 34% by holdings engaged only in crop production; and less than 0.5% by holdings engaged only in animal husbandry (TurkStat, 2008). As shown in Table 1.4, most of the agricultural holdings are in the typology class "specialist field crops", followed by mixed crops and livestock, and specialist permanent crops.

Table 1.4. **Distribution of holdings according to typology classification, 2006**

%

Class type	(%)
Specialist field crops	25.7
Specialist horticulture (vegetables and flowers)	1.0
Specialist permanent crops	19.8
Specialist grazing livestock (bovine animals, sheep and goats)	16.7
Specialist granivors (poultry and rabbits)[1]	0.1
Mixed cropping	9.1
Mixed livestock holdings	6.1
Mixed crops and livestock	21.7
Total	**100.0**

1. This includes holdings rearing poultry or rabbits (breeding females), in addition to crop production, or bovine animal, or sheep and goat husbandry.

Source: TurkStat.

Farms rearing bovine animals (cattle and buffalos) are concentrated in the holding size-group with 1-4 heads (60%), whereas the number of bovine animals is concentrated in the holding size-group with 10-19 heads (25%) (TurkStat, 2008). Around 25% of the agricultural holdings rearing sheep and goats are in the holding size-group of 20-49 heads, with the number of sheep and goats concentrated in the holding size-group of 50-149 heads (36%).

Land use

In terms of agricultural land area, Turkey ranks among the largest countries in the world. In 2009, the Utilized Agricultural Area (UAA) was 38 935 000 ha. According to Turkish Statistical Institute data, agricultural land decreased by around 3 million ha between 1998 and 2009, an average of 0.3% a year (Annex Table A.6). It is interesting to note that the largest decrease was estimated in 1991 (-4.8%) and the largest increase in 2001 (5.7%).

The most important land use among crop production is wheat, with an area of approximately 10 million ha and annual production of 20 million tonnes. The second-most important crop in terms of area use is barley, followed by industrial crops and oilseeds. The total production area of cereals is about 11 million ha, out of a total of 16 million ha of agricultural area (Annex Table A.7).

Although arable crops occupy more than half the area cultivated, their share has declined from 62% in 1988-90 to 55% in 2009, while land under permanent meadows and pastures increased by six percentage points, reaching 38% in 2009 (Table 1.5). The decline in the area under arable crops, which became more marked following 2005, was due to the fall in the area sown and land left fallow for field crops.

Table 1.5. **Agricultural land by main use, 1988-2009**

%

	1988-90	1995-97	2000-02	2005-07	2008	2009
Total arable crops	62	62	62	57	55	55
Area sown	45	47	47	43	42	42
Fallow	13	13	13	11	11	11
Vegetable	2	2	2	2	2	2
Permanent crops	6	6	6	7	8	8
Area of fruits, beverage and spice crops	3	3	3	4	4	4
Area of vineyards	1	1	1	1	1	1
Area of olive trees	2	2	2	2	2	2
Meadows and pasture	32	31	31	36	37	38
Total utilised agricultural land (000 ha)	39 273	39 317	39 317	40 311	39 122	38 935
Cropping intensity	81	81	81	82	83	82

1. Data used census for the calculation of share of permanent meadow and pasture are the results of 1980, 1991 and 2001 General Agricultural Censuses, which are compiled every ten years.
2. Since 1995, only the closed area of fruit and olive trees is included.
3. Data for 2009 are provisional.
4. Cropping intensity = % share of area sown in total cultivated land.

Source: OECD Secretariat calculations based on TurkStat (2009).

The concomitant decline in the harvested area and area left fallow resulted in almost unchanged cropping intensity. In contrast, the share of vegetable production has remained stable at 2%. Overall, the pattern of crop production portrayed no drastic changes, although the area of land used by some important crops, such as cereals (particularly wheat and barley), tobacco, pulses and cotton, has decreased since 2005 (Annex Table A.7).

Land use and irrigation

The proportion of irrigated land increased from 14% in 1991, to 20% in 2001 and to 24% in 2006. The share of irrigated land is much higher in the west than elsewhere in Turkey. One-third of holdings smaller than 1 hectare are irrigated and specialise in the production of fruit and vegetables.

According to the 2006 *Agricultural Holding Structure Survey*, when rates of irrigated land according to land use are examined, it is found that the 28% of this area is sown (Table 1.6). Out of this area, 72% is given to vegetables and flowers (including land under seedlings and land under protective cover): 26% is under fruit, other permanent crops and beverage and spice crops (including land under nurseries and land under protective cover). In addition, approximately 35% is permanent meadow; and 58% of poplar-willow groves are irrigated.

Table 1.6. **Irrigated and non-irrigated land by land use, 2006**
%

Land use	Total	Irrigated land	Non-irrigated land
Total land	100	24.1	75.9
Area sown	100	27.8	72.2
Land under vegetables and flowers[1]	100	72.7	27.3
Land under fruit, other permanent crops and beverage and spice crops[2]	100	25.8	74.2
Poplar-willow groves	100	58.4	41.6
Unused and undeveloped potentially productive land	100	7.3	92.7
Permanent meadow	100	35.0	65.0
Other[3]	100	-	100

1. Including land under seedlings and land under protective cover.
2. Including land under nurseries and land under protective cover.
3. Including fallow land, pasture, woodland and forest, non-agricultural land.

Source: TurkStat.

In the absence of irrigation, a large extent of land can only support low-yielding, dry-land crops. About 5.4 million ha of land are under irrigation in Turkey. Agricultural products for both domestic consumption and export include wheat and other cereals, pulses, oilseeds, cotton, tobacco, tea and a range of fruits and nuts, as well as Mediterranean fruits and vegetables.

Taking irrigation as the main indicator of crop production intensity in Turkey, MARA has estimated that: intensive crop production is practiced on 4.1 million ha of fully irrigated land (15% of cultivated land); semi-intensive crop production is practised on 0.8 million ha of insufficiently irrigated land (2.9% of cultivated land); and extensive crop production is practised on the remaining 21.7 million ha of non-irrigated, rain-fed land (dryland farming) (81.5% of cultivated land) (MARA, 2007).

Irrigation development works have been accelerated by the revitalisation of Regional Development Plans and Action Plans such as the South-East Anatolia Project (GAP); the Eastern Anatolia Project (DAP); and the Konya Plain Project (KOP). The GAP Action Plan (2008-12) has been underway with its funding mechanisms in place since May 2008. Similar action plans are under preparation regarding the rationalisation of irrigation projects in the DAP and KOP areas. The GAP Action Plan of 2008 aims to put 1.06 million ha of land in the GAP provinces under irrigation by the end of 2012. In addition, other irrigation schemes in the DAP and KOP area provinces have been funded and their implementation accelerated through the GAP Action Plan's funding mechanisms (SPO, 2010).

Land tenure types and number of parcels

A major structural problem in Turkish agriculture is that a typical farm is divided up into several distinct parcels of land. The degree of fragmentation in farm holdings can be seen from Table 1.7. Over 80.5% of farms are divided into more than three parcels. This level of fragmentation limits the opportunities for mechanisation and the adoption of intensive grazing systems, and involves increased losses and higher production costs.

In 1980, less than 10% of the total number of farms was situated on single plots, and approximately 64% were highly fragmented, consisting of four or more plots. The 1991 census showed a rise in the share of single-plot holdings (up to 15%), and a fall in the

Table 1.7. **Number of plots per farm holding: 1980, 1990, 2001, 2006**

Number of plots	Number of holdings (000)				Share in total (%)			
	1980	1990	2001	2006	1980	1990	2001	2006
1	337	578	589	308	9.5	7.9	19.1	10.2
2-3	933	1 139	1 119	801	26.2	15.5	36.4	26.5
4-5	797	904	615	653	22.4	12.3	20.0	21.6
6-9	791	760	485	644	22.2	10.3	15.8	21.3
10+	701	3 967	214	604	19.7	54.0	7.0	20.0
10-15			*171*	*402*			*5.6*	*13.3*
16+			*43*	*212*			*1.4*	*7.0*
	3 559	7 348	3 076	3 022	100	100	100	100

Source: TurkStat.

share of holdings with four or more plots (down to 57%), but the degree of fragmentation was still high, compared to the OECD average (OECD, 2004).

The large number of multi-parcel agricultural land holdings is in large part due to the inheritance provisions of the 1926 Civil Code, which specifies that, upon death of a landowner, 25% of the land should pass to the owner's spouse, with the rest being equally distributed among any surviving children. Over time, these inheritance laws have resulted in the ever-greater fragmentation of land ownership, which is the main problem facing Turkish agriculture today, as it leads to high production costs and impedes farmers' marketing ability. To prevent continued fragmentation in this manner, the Soil Conservation and Land Use Law (No. 5403) was amended in 2007. The amended Law determines the minimum permissible size of a land-parcel to be 20 ha. Following the amendment, the by-law on the Conservation and Use of Agricultural Lands and Land Consolidation, which lays down the principles of implementation of the Law, was passed in July 2009.

There has been a noticeable acceleration in the progress of land consolidation and the on-farm development works of the General Directorate of Agricultural Reform, initiated under the GAP Action Plan. In this framework, an area of 2.06 million ha in the GAP provinces has been selected for land consolidation and on-farm development works. Similarly, efforts to expand these services nationwide have been intensified and, as of 2010, an additional 1.3 million ha of land consolidation is planned to take place across 32 provinces (SPO, 2010).

According to the 2006 *Agricultural Holding Structure Survey*, when the type of land tenure on agricultural land is examined, the number of agricultural holdings operating only their own land, out of total agricultural holdings, was 85%, and the amount of land operated by them, out of total agricultural land, was 71% (TurkStat, 2008). Of total agricultural holdings, 13% operated both their own and another's land; 2% operated rented or shared land only; and 0.2% operated land on the basis of more than one type of tenure.

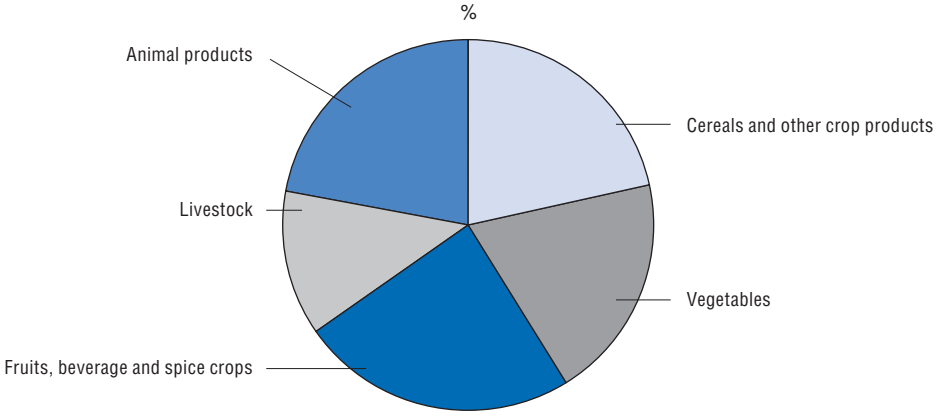
When the number of parcels of land belonging to agricultural holdings is examined, it can be seen that agricultural holdings are most frequently composed of 4-5 parcels of agricultural land. The land operated by the agricultural holdings in this group constitutes 16% of total agricultural land.

1.5. Agricultural production

Value of agricultural production

Agricultural production in Turkey is dominated by crop production, which represented 66% of total value of agricultural output in 2006-08 (Figure 1.6). Livestock production and animal products constitute 12% and 22% of total value, respectively.

Figure 1.6. **Value of agricultural production by commodity groups, 2006-08**



Source: TurkStat.

Turkey is of major importance on the world market in several commodities: it is the world's biggest producer of hazelnuts, apricots and cherries; the second-largest producer of cucumbers, pistachios, watermelons, figs, lentils and chestnuts; and the third-most important producer of chick peas, onions, apples, walnuts, olives and sheep's milk (Table 1.8). According to data from the Food and Agriculture Organization of the United Nations (FAO), the largest commodity produced in terms of value by Turkey in 2009 was cows' milk, followed by wheat, tomatoes, grapes and indigenous chicken meat. Other important commodities are cotton lint, apples, sugar beet, hens' eggs and indigenous cattle meat.

Crop production

Wheat constitutes the largest share in cereal value, at just under 63%, followed by barley (18%) and maize (12%). Sugar beet (49%), cotton (35%) and tobacco (17%) constitute almost all of the production value of industrial crops. Chick peas, dry beans and lentils are the important pulses, while sunflowers and potatoes are the two important oil and tuber crops, respectively.

Fruit and vegetable production, which is a leading sector of Turkish agriculture, together accounted for 55% of the total value of production in 2009. Vegetable farms are small (about 0.8 ha on average), but, as the sector is highly labour-intensive, it also represents a major source of rural employment in Turkey. Production consists mainly of apples, tomatoes, grapes, watermelons, citrus, apricots, cherries, hazelnuts, chestnuts, figs, pistachios and cucumbers.

Table 1.8. **Turkey's ranking in world production top-10, by selected crop, 2009**

Field crops		Perennials		Livestock products	
Barley	8	Almonds	4	Chicken meat	8
Chick peas	3	Apples	3	Sheep meat	6
Cotton	7	Apricots	1	Sheep's milk	3
Cucumbers	2	Cherries	1		
Aubergines	4	Chestnuts	2		
Lentils	5	Figs	2		
Onions	3	Grapes	6		
Sugar beet	5	Grapefruit	5		
Tobacco	4	Hazelnuts	1		
Tomatoes	4	Lemons	4		
Watermelons	2	Olives	3		
		Pistachios	2		
		Tea	4		

Note: The figure for lentils refers to 2008. International prices are used to calculate the value of output quantities.
Source: FAOSTAT, September 2010.

In general, yields have increased over time, but still remain low, in comparison with OECD averages (Annex Table A.7). In 2009, yields increased for all crops, compared with 2008 (with the exception of tobacco, hazelnuts and grapes). Cereal yields reached their highest level in 2009, at 2.8 tonnes per ha. However, these record yields only represented about 40% of the EU15 average.

Livestock production

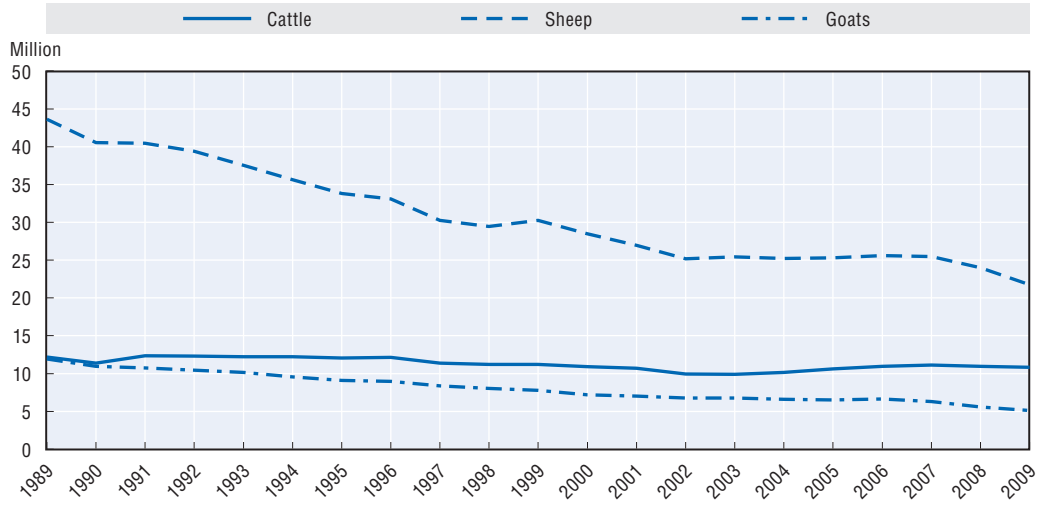
Animal husbandry is an important part of Turkey's agricultural sector, as natural conditions in the country are generally favourable to the raising of livestock, and to grazing animals in particular. The total number of cattle is approximately 11 million, and for sheep and goats, it is around 24 and 6 million, respectively.[1]

However, a combination of factors, including small herd size combined with domestic agricultural policies, has contributed to a steep downward trend in livestock numbers over time (Çakmak, 2004). The livestock sector is also beset with animal health problems, particularly Foot-and-Mouth Disease.[2] In addition, socio-economic factors, such as the rapid migration of young farmers to cities and the increasing age of livestock farmers, contribute to the decline in livestock numbers.

As shown in Figure 1.7, total livestock numbers in Turkey were in steady decline until 2002, since when there appears to have been a reversal of this trend and the numbers have stabilised or even increased. In particular, the numbers for poultry livestock have more than doubled since the early 1990s, and the sector has benefited from food-safety concerns relating to beef, although it was severely affected by an outbreak of avian influenza in 2005.[3]

In terms of quantity, the most important meat product in Turkey is poultry, while in terms of value the most important meat product is beef (followed by poultry). In response

Figure 1.7. **Livestock numbers, 1989-2009**



Source: TurkStat.

to a surge in domestic demand for poultry meat at the beginning of the 1990s, poultry production expanded rapidly. Turkey is now the world's 11th-largest poultry meat producer, with output in excess of 1 million tonnes in 2008, showing a four-fold increase between 1995 and 2008.

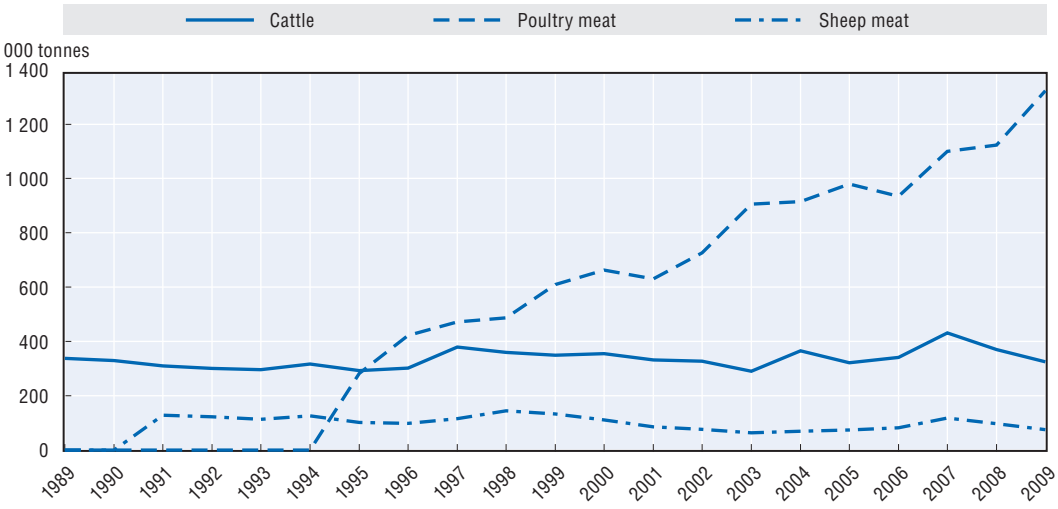
Over the same period, annual chick production reached 317 million, including 60 million for egg production. This expansion was related both to the shortfall in red meat supplies and to a rising population with increasing incomes, coupled with the affordability of poultry meat. The great bulk of this output (more than 95%) is comprised of chicken meat, the rest being mostly turkey meat.

Beef production was relatively stable over the 1989-2008 period, at a level ranging between 338 000 tonnes (in 1989) and 325 000 tonnes (in 2009): it is estimated to have reached 726 000 tonnes in 2010.[4] As shown in Figure 1.8, sheep and goat meat were less important. However, sheep and goat production is important on subsistence and semi-subsistence farms, as well as in certain regions.

Turkey is one of the largest milk-producing countries in the world, with an annual output of about 12.2 million tonnes in 2008 and a share of around 1.7% of total production. Of this output, 92% comes from cows, 6% from sheep, and 2% from goats. Production conditions vary considerably between the western and the eastern parts of the country, with the former benefiting from more favourable climatic conditions.

Milk production fluctuated widely over the 1989-2008 period: it reached a peak in 1996, at more than 10.8 million tonnes. In line with the trend in livestock numbers, it then decreased until 2002, when it fell to 8.4 million tonnes: since then it has shown an upward trend, reaching 12.5 million tonnes in 2010.

Figure 1.8. **Volume of meat production, 1989-2009**



Source: TurkStat.

Structure

Turkish livestock production is a predominantly small-scale, family farm activity, carried out, in the vast majority of cases, by arable farmers as a sideline activity, and is characterised by low productivity (Selli *et al.*, 2010; SPO, 2010; FAO, 2007). According to TurkStat's 2009 data, the average cattle carcass weight is 215 kg, and the milk yield is 2 700-2 800 kg per lactation, whilst the average figures for OECD countries are 270-280 kg per carcass, and 5 000-6 000 kg per lactation, respectively.

Small-sized holdings (under 20 ha) constitute two-thirds of total Turkish farms, and keep 49.8% and 48.7% of the small ruminant and cattle population, respectively. In 2001, of the 2.2 million cattle holdings, 50% consisted of 1-4 animals, and approximately 87% had less than 10 cows. On the other hand, there is a significant degree of concentration of beef fattening in a small number of farms with more than 300 animals: 1.2% of the 72 000 specialised holdings keep 43% of all fattening animals. The modern, high-capital, intensified fattening units are mostly concentrated in the western part of the country. According to the Farm Accountancy Data Network (FADN), the average holding-size in the livestock sector shows an increasing trend, from 2006.

Almost 50% of milk production is not subject to formal quality control, and is unpasteurised and unpacked, although the proportion of milk being processed by the "formal" sector is now increasing rapidly (Budak, 2009).[5] Milk production yields are also comparatively low, although on an upward trend. Most of the milk-producing agricultural holdings have between 1 and 10 cows. These holdings are usually run by relatively old, part-time farmers, who also produce small quantities of other agricultural products, such as fruit and vegetables. Part of their output is consumed on the farm and the rest is sold, most often directly, to local buyers. The quality of milk produced in these holdings is generally poor (FAO, 2007).

More commercialised farms – those with a herd size between 10 and 50 – are owned and managed mainly by young farmers, selling generally higher-quality milk to modern dairies. Large farm holdings with herds of more than 100 can be either privately- or state-owned,

and some are owned by processing companies. Commercially oriented dairy farming is usually located in the western parts of the country. Overall, the number of commercialised farms with a herd size of more than 50 heads increased five-fold during the 2002-10 period (from 4 300 in 2002, to 20 000 in 2010).

In parallel with the "informal" production systems for milk and red meat, there is a substantial "backyard" poultry enterprise. These flocks tend to be managed by women. The informal system of poultry meat and egg production is a major source of protein in rural villages, providing up to 40% of human protein requirements.

Apart from the "backyard" component, Turkey's poultry industry is much more concentrated than other sectors of the food industry because of its degree of vertical integration. Five enterprises control 48% of the volume, but there are about 50 major companies involved. This concentration is even more prevalent in the breeding and parent stock business, where a few major players dominate the market.

Regional diversity

The overall picture presented above of the structure of farming and agricultural production does not, however, reveal the regional dualistic structure of the Turkish agricultural sector. Due to the wide variations of climatic and topographic conditions, agricultural production in Turkey is subject to a large degree of regional differences. Western regions are more commercialised compared with the central and eastern regions.

Most of Turkey's agricultural production takes place in the coastal regions, with a relatively high number of the more specialised farms being located in the Aegean and Mediterranean regions (Annex Table A.8). These two coastal regions focus largely on fruit and vegetable production, while the predominantly rural and mountainous areas in the central and eastern parts of the country specialise in livestock and animal products.

Three combined regions – Marmara, the Aegean and the Mediterranean – account for almost 90% of Turkey's fruit and vegetable production. Due to the mild climatic conditions in the Mediterranean region, cultivation of around 90% of citrus products takes place there, while grapes are mainly produced in the Aegean area, followed by south-eastern Anatolia.

Also due to climatic conditions, almost 80% of olive production is concentrated in the area of the western Mediterranean coast, while hazelnut and walnut production is located mostly along the Black Sea coast. The Aegean region produces 51% of Turkey's tobacco crop. Cotton production is concentrated in south-eastern Anatolia (which produces 45% of the country's output), followed by the Mediterranean area (22%), with the Aegean region providing the remainder. More than half of Turkey's wheat production takes place in the south-western regions, while approximately 70% of sugar beet output comes from mid-western Anatolia and the western Black Sea areas.

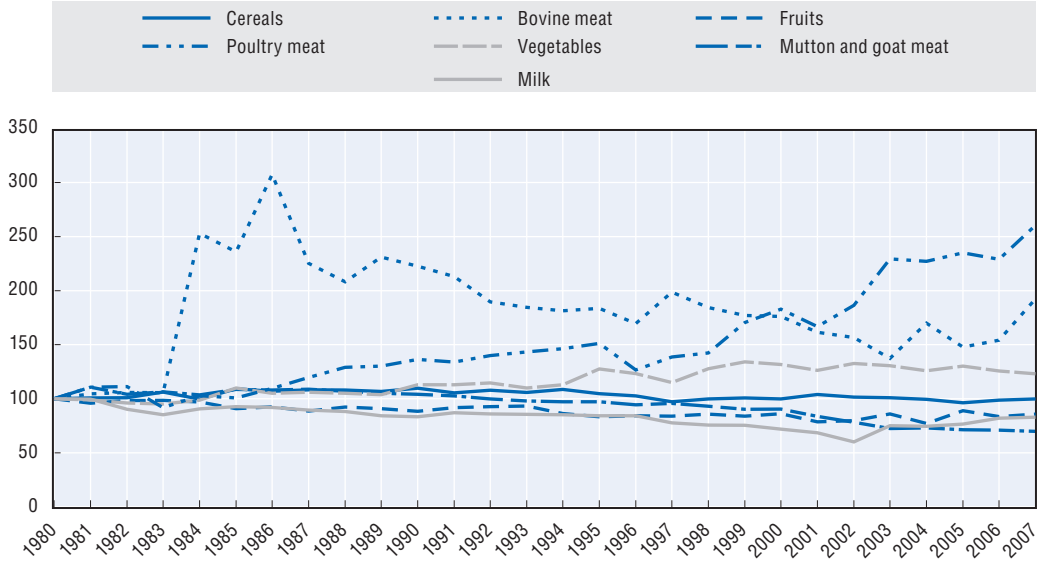
The northern and eastern parts of the country are dominated by livestock production. The relatively low agricultural production potential in the east is governed by natural conditions, such as lower rainfall, lower temperature and higher altitude. It also corresponds to the socio-economic conditions in rural areas, as reflected by small-scale farming and subsistence production. About 46% of sheep production is concentrated in the extreme eastern zones of Anatolia. In contrast to the location of livestock, poultry production is concentrated in proximity to urban centres (for example, about 70% of poultry production is located around Istanbul and close to the most densely populated areas).

1.6. Food consumption and self-sufficiency

Consumption rates for fresh vegetables and fruit are relatively high in Turkey, compared with other OECD countries. *Per capita* consumption of red meat and milk, however, is comparatively low. For example, *per capita* consumption of red meat in Turkey is about one-fifth of the EU average, and consumption of cows' milk and eggs is, respectively, half and three-quarters of the EU level. Cheese and yoghurt are the preferred dairy products. *Per capita* consumption of sheep meat is higher than in the EU.

As shown in Figure 1.9, *per capita* consumption of poultry meat has increased sharply over time, while that of bovine meat has decreased, particularly since 1985. *Per capita* consumption of milk and of sheep and goat meat has gradually declined over time, while that of cereals and fruits has remained relatively stable. For vegetables, *per capita* consumption has slightly increased.

Figure 1.9. **Evolution of *per capita* food supply, 1980-2007**



Note: 1980 = 100.

Source: FAOSTAT, September 2010.

Raising levels of self-sufficiency, usually for food security grounds, has been one of the objectives of the agricultural policies set out in the government's Development Plans (OECD, 2004). Turkey's self-sufficiency status for the main agricultural commodities produced over the 1985-2007 period is shown in Table 1.9. Turkey has been more or less self-sufficient in food production since at least the early 1980s, and is clearly self-sufficient in vegetables and fruits.

The self-sufficiency situation for field crops is mixed: there is a clear deficit for oil crops, while for sweeteners and pulses it alternates over time. Wheat and starchy roots (including potatoes) are close to self-sufficiency levels, while rice, oil crops and vegetable oils are in deficit. Concerning livestock, most products are close to self-sufficiency levels.

Table 1.9. **Self-sufficiency ratios, 1985-2007**

%

	1985	1990	1995	2000	2005	2006	2007
Wheat	87	109	98	112	114	103	88
Barley	103	97	109	102	103	104	102
Maize	95	81	75	70	98	105	77
Rice (paddy equivalent)	66	42	29	40	59	66	67
Oilcrops	97	99	83	78	65	72	60
Pulses	146	144	124	99	109	123	114
Starchy roots	100	86	102	93	100	99	104
Sugar and sweeteners	113	99	87	144	119	95	110
Vegetables	104	104	104	105	106	106	106
Vegetable oils	73	66	67	74	66	67	61
Fruits	113	117	120	122	130	131	128
Bovine meat	90	98	87	100	100	101	101
Mutton and goat meat	110	102	101	100	100	100	100
Poultry meat	102	100	101	100	105	104	105
Eggs	116	101	101	100	101	102	106
Milk (excluding butter)	99	99	100	99	100	99	99

Source: FAOSTAT, September 2010.

1.7. Agri-food trade profile

International trade has been growing in importance for the Turkish economy for several decades, particularly since the government's adoption in the mid-1980s of a new foreign trade policy aimed at achieving a rapid increase in exports and a relaxation of restrictions on imports (OECD, 1994; Burrell, 2005). The EU is, by far, Turkey's largest trading partner, both in terms of exports and imports. Turkey's trade balance has fluctuated significantly over time, but it has an overall trade deficit.

In contrast to the case of merchandise trade, Turkey typically enjoys a trade surplus in agricultural products (Figure 1.10). Despite the fact that the agricultural sector was not part of the export-oriented development strategy adopted by the government in the mid-1980s – and notwithstanding the economic downturn in the late 1990s – Turkish agriculture continues to enjoy a consistent trade surplus.

As shown in Table 1.10, the share of agricultural exports and imports in total exports and imports fell steadily, from 18% and 8%, respectively, in 1996-2000, to 10% and 5% in 2006-10. This decline, however, can be attributed to the very strong export performance of the manufacturing sector and to higher domestic food demand (typical of a developing economy), rather than a decline in the performance of agriculture (Burrell, 2005). The share of agricultural exports in total exports seems to have stabilised at around 10%, but the proportion of the processed products is increasing. The ratio of exports to imports in the agricultural sector also remained stable over time, at around 1:2.

Figure 1.10. **Agricultural exports, imports and trade balance, 1996-2010**

million USD

Note: Data refer to SITC, REV3; 2010 data are provisional.

Source: TurkStat.

Table 1.10. **Trade in agri-food products, 1996-2010**

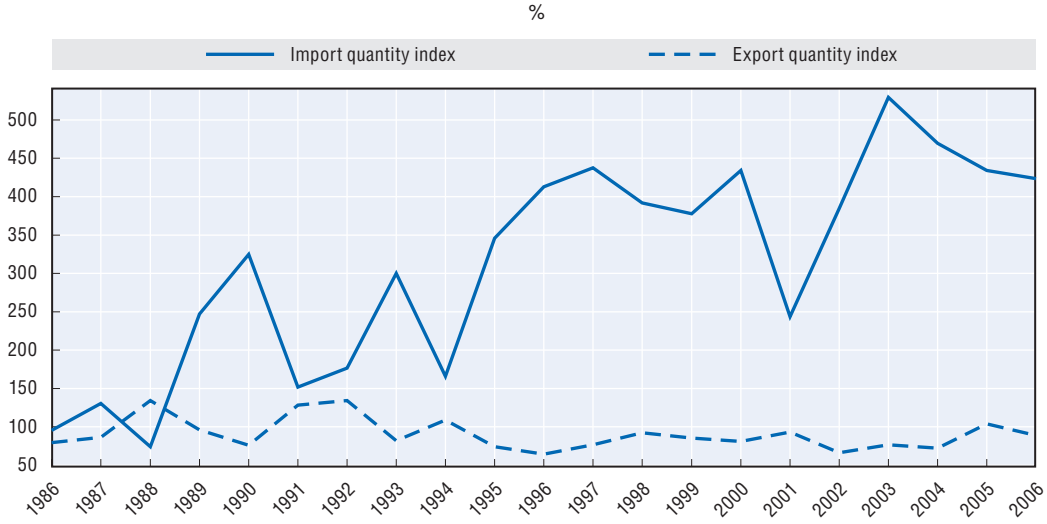
	1996-2000	2001-05	2006-10
Agro-food exports (million USD) (1)	4 616	5 496	9 012
Food (%)	74	77	80
Agricultural raw material (%)	26	23	20
Agro-food imports (USD million) (2)	3 772	4 254	7 644
Food (%)	34	31	39
Agricultural raw material (%)	66	69	61
Ratio (1)/(2)	1.2	1.3	1.2
Agro-food exports in total merchandise exports (%)	18	11	10
Agro-food imports in total merchandise imports (%)	8	6	5

Note: Data refer to SITC, REV3.

Source: OECD Secretariat calculations, based on TurkStat.

Figure 1.11 and Annex Table A.9 show the movement in Turkish agricultural trade totals, valued at constant prices over the base period. In the early years, trade volumes were volatile. After the mid-1990s, import quantities increased up until the 2001 crisis, whilst export quantities remained slightly below the level of the base period. The significant devaluation of the Turkish lira strongly affected imports in 2001 and led to a decline of 24% compared with 2000 (valued in USD). Turkey's terms of trade for agricultural products improved in the mid-1990s (Figure 1.12) but, by the early 2000s, most of this improvement had gradually disappeared.

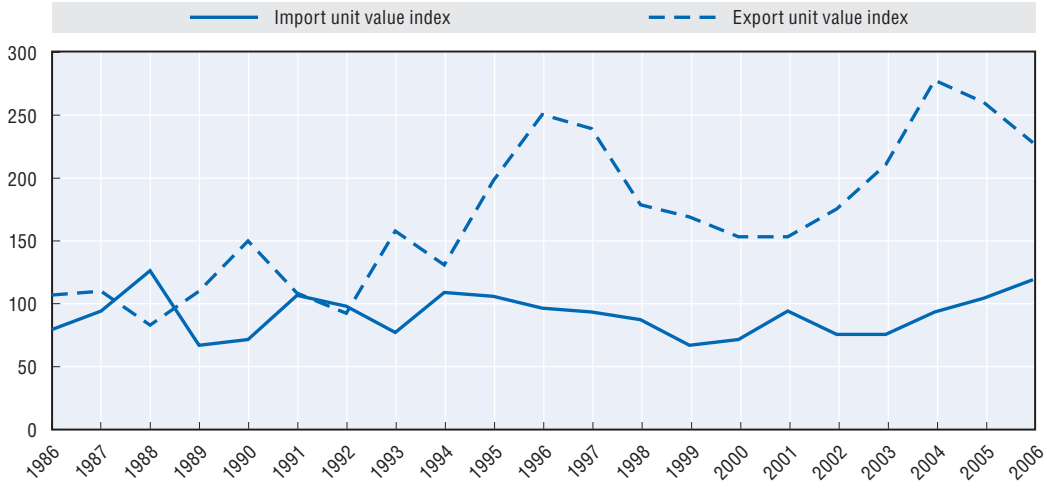
Figure 1.11. **Agricultural trade quantity indices, 1986-2006**



Note: 1986-88 = 100.

Source: FAOSTAT, 2010.

Figure 1.12. **Agricultural trade unit value indices, 1986-2006**



Note: 1986-88 = 100.

Source: FAOSTAT, 2010.

Composition of agri-food trade

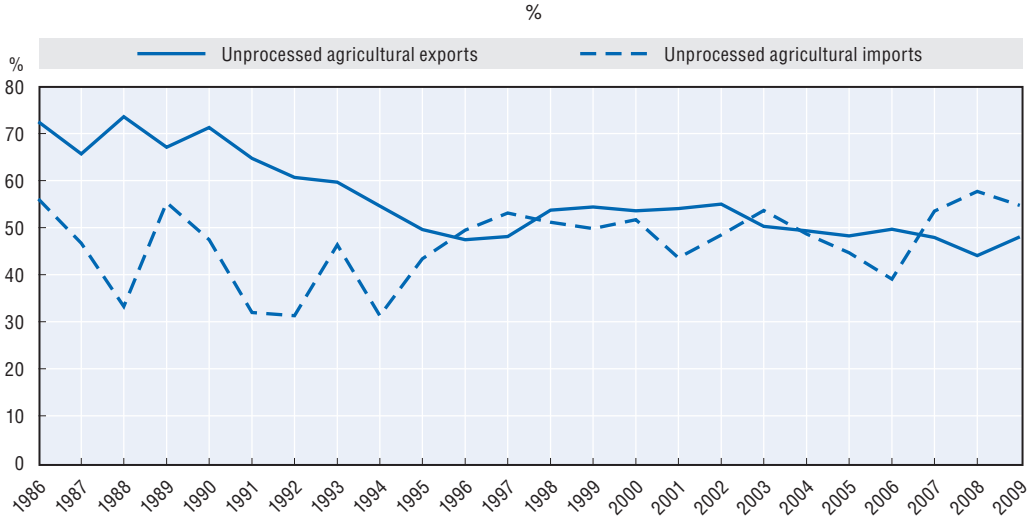
Turkey's main agricultural exports are tobacco, hazelnuts, raisins and tomatoes. Throughout the 1986-2007 period, fruits and vegetables comprised over half of Turkey's agricultural exports, with citrus, tomatoes, dried fruit and nuts being the most important individual categories. Turkey is the world's third-largest exporter of fruit and vegetables, after the US and the EU.

Turkey's agricultural exports are not highly diversified. Fruits, nuts, vegetables and related processed products comprise 60% of total agricultural exports. A further 20% originate from tobacco, cereals and sugar (Annex Table A.10).

Agricultural imports are more diversified. Non-food agricultural commodities, particularly agricultural raw materials (such as raw hides and skins, leather and textile fibre scrap) represent more than half of total agricultural imports (Annex Table A.10), with cereals and cereal products; animal feed; tobacco and tobacco products; animal and vegetable oils, fats and waxes; oilseeds and oleaginous fruits making up the remainder. Sugar imports peaked in 1996 and had fallen to low levels by the end of the decade. There is relatively little trade (export or import) in meat, dairy and eggs, mainly due to high tariffs and non-tariff barriers.

Unprocessed agricultural products accounted for 48% of Turkey's total agricultural exports, and 55% of imports, in 2009. While their shares in both exports and imports have decreased over the 1986-96 period, they have remained fairly steady since 1996 (Figure 1.13). Overall, imports of unprocessed agricultural products seem to be more variable than those of exports.

Figure 1.13. **Shares of unprocessed agricultural products in agricultural exports and imports, 1986-2009**



Sources: Undersecretariat for Foreign Trade; TurkStat.

Exports of unprocessed products are, in general, more resilient than those of processed products. On the other hand, unprocessed imports seem to be more vulnerable to economic conditions, as they were more adversely affected by the devaluations of the Turkish lira and the downturns of the economy than processed imports.

Destination and origin of agri-food trade

As with general trade, Turkey's major trading partner in agricultural products is the EU, both in terms of exports and imports (Table 1.11). Turkey also has important trade relations and a trade surplus with countries in the Mediterranean basin and the Gulf region. The most important trading partner on the import side is the United States, particularly for tobacco and tobacco products, cereals and oilseeds (Annex Tables A.11 and A.12).

Table 1.11. **Turkey's agri-food trade by destination and origin, 2007-09**

Imports				Exports			
	2007	2008	2009		2007	2008	2009
				Total (million USD)			
	8 041	10 952	8 251		9 417	10 970	10 785
				Share (%)			
European Union	50.0	41.8	41.8	European Union	56.0	51.1	45.1
United Kingdom	4.0	3.9	3.9	Germany	11.6	10.2	9.7
Germany	5.5	4.0	4.0	Italy	7.2	5.4	5.3
Italy	3.1	2.5	2.5	France	4.1	3.6	3.2
Netherlands	2.4	2.2	2.2	United Kingdom	5.2	4.9	5.7
Romania	2.3	1.9	1.9	Netherlands	3.7	3.5	3.3
Greece	2.2	2.1	2.1	Romania	2.4	2.0	1.7
France	2.0	1.6	1.6	Belgium	2.4	2.6	1.9
United States	19.8	17.0	17.0	Russian Federation	8.0	8.0	7.6
Russian Federation	5.0	7.4	7.4	United States	4.9	3.4	4.2
Ukraine	5.1	6.7	6.7	Iraq	7.4	11.0	12.8
Argentina	4.2	6.4	6.4	Saudi Arabia	2.5	2.3	3.0
Brazil	2.5	2.6	2.6	Free trade zones	2.5	2.2	1.7
Kazakhstan	2.3	4.1	4.1	Ukraine	1.8	2.2	2.1
India	2.3	1.4	1.4	Switzerland	1.2	1.2	1.1

Note: Data refer to SITC, REV3.

Source: OECD Secretariat calculations based on OECD, *ITCS Database*, September 2010.

In contrast to merchandise trade, Turkey has a trade surplus with the EU in the field of agriculture (Table 1.12 and Annex Table A.13). The EU accounts for almost half of Turkey's agricultural exports. The EU's market share of Turkey's agricultural imports is also important, accounting for just over 17% of total Turkish agricultural imports.

Table 1.12. **Bilateral trade: EU – Turkey**

million EUR

	1995-99	2000-04	2005	2006	2007	2008	2009
EU27 exports to Turkey							
Total agro-food	1 597	1 911	2 617	2 669	2 952	3 131	2 885
All products	19 579	30 275	44 625	50 038	52 684	54 136	43 780
Share (%)	8	6	6	5	6	6	7
EU27 imports from Turkey							
Total agro-food	2 287	2 894	3 823	3 885	3 761	3 750	3 429
All products	12 176	25 081	36 082	41 720	46 967	45 990	36 086
Share (%)	19	12	11	9	8	8	10
Trade balance for Turkey							
Total agro-food	690	983	1 206	1 216	809	619	544
All products	-7 403	-5 194	-8 543	-8 318	-5 717	-8 146	-7 694

Note: By SITC Chapter.

Source: OECD Secretariat calculations based on EUROSTAT/COMEXT, 2010.

Agricultural products remained outside the customs unions with the EU, which came into force in 1996, although both the EU and Turkey awarded significant trade preferences to each other's agricultural products in a bilateral agreement that came into force in 1998, and which was updated in 2006, following the accession of 10 new member states to the EU. This agreement is asymmetric in nature, involving a larger degree of liberalisation from the EU than from Turkey. Roughly 70% of Turkish agricultural exports to the EU enter duty-free and 11% enter at reduced tariff rates (EC, 2003).

About three-quarters of Turkey's agricultural exports to the EU consist of fresh, dried or processed fruits, vegetables and nuts. By contrast, Turkey's main agricultural products imported from the EU are spread over a much wider range of sectors, with hides and skins, essential oils and cotton (despite the high domestic production of the latter) being the most important in value terms.

More than one-third of Turkish agri-food exports are exported to Germany, mainly in the form of tobacco products, fruits and nuts. Italy, the United Kingdom, the Netherlands and France are also important export destinations. Concerning Turkish imports from the EU, the major sources are Germany and Greece, followed by Spain, the United Kingdom, France and the Netherlands.

The new EU member states are an important destination for Turkish exports of oilseeds, cigarettes and tobacco, while Romania and Bulgaria are more important in terms of fruits and nuts and preparations of vegetables and fruits. Imports from the 10 new EU member states have been limited to cereals and certain dairy products.

Notes

1. It should be noted that the statistical system is currently under revision.
2. MARA has several projects in co-operation with the EU to combat animal diseases, particularly in the Thrace region, which adjoins Bulgaria and Greece. The objective to make Thrace a certified animal disease-free region has been achieved.
3. It should, however, be noted that the official meat production statistics are based on the registered number of animals slaughtered in the large commercial processing facilities, whereas as much as 40% of red meat (22% of beef and 69% of sheep and goat meat) is slaughtered and marketed informally, and is not subject to any form of registration.
4. Data exclude sacrificial meat and informal production.
5. According to TurkStat, in 2009 58% of cows' milk and 53% of total milk production was processed by the integrated milk processors.

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Chapter 2

Evolution of Agricultural Policies in Turkey

This chapter is devoted to the evolution of agricultural policies. Its main objectives are four-fold: first, it presents the main objectives of agricultural policies in Turkey, as set out in the government's Ninth Development Plan; Agricultural Strategy 2006-10; Agricultural Law (No. 5488); and the programme for harmonisation with EU aquis (Chapter 11). Second, it discusses the institutional framework within which agricultural policy is designed and implemented. The main purpose of this section is to discuss the main actors involved in the agricultural policy-making process, such as ministries, financial institutions, State Economic Enterprises, and the Agricultural Sales Co-operatives and their Unions. Third, the evolution of various types of domestic policies is discussed. The analysis is structured in terms of the policy developments that occurred before, during and after the Agricultural Reform Implementation Project, and includes a discussion of the Agricultural Law, which was implemented in 2006. Agricultural trade policies, including regional agreements, are presented in the final part of the chapter.

2.1. Agricultural policies: Objectives

The aims of Turkey's agricultural policies have traditionally been set out in successive Development Plans, which also set targets and provide the guidelines to be followed in order to achieve them. In addition to the Ninth Development Plan 2007-13, the current over-arching objectives of agricultural policies are set out in the Agricultural Law (No. 5488) and in the programme for harmonisation with the EU *aquis* (Chapter 11).

Turkey's key policy objectives for agriculture are, *inter alia:* improving productivity; ensuring food security, food safety and stability of food supply; raising self-sufficiency and exploiting export potential; providing stable and sustainable income levels in agriculture; enhancing competitiveness; fostering rural development; and building the institutional capacity necessary for moving into alignment with the EU's agricultural and rural development policies. Some of Turkey's main targets for improving efficiency in agriculture under the Ninth Development Plan 2007-13 are shown in Table 2.1.

Table 2.1. **Agricultural structure, 2006 and 2013**

	2006	2010	2013
		%	
Share of animal production in total agricultural production	28	32	37
Percentage of certified cereal (wheat-barley) seed usage	30	50	50
Proportion of pedigree and cross-breed to total cattle stock	67	77	77
Proportion of organic agricultural land to total agricultural land	1	1.24	3
		Hectares (million)	
Irrigation area (net cumulative)	2.55	2.80	3.00
Land consolidation activities (cumulative)	0.60	1.28	1.27
Industrial and soil protection plantation (cumulative)	2.60	2.88	3.30

Note: The 2010 values are realisation estimates in the 2010 *Annual Programme*.

Source: State Planning Organisation (SPO) (2006), *Ninth Development Plan 2007-13*, Ankara.

The Agriculture Strategy 2006-10, which serves as the basis for legislative arrangements in the agriculture sector, set an overall target for the agricultural support budget of 1% of total GDP, as well as allocating the budgetary funds to the various types of agricultural support measures for the target year 2010.

The Agricultural Law (No. 5488) which was adopted in 2006, in addition to setting out its goals, defines: the new direction of agricultural policies; the principles of policy implementation; a framework for rural development and environmental support; the financing and administrative structure; and creates the legal basis for certain management systems (such as the Integrated Administrative Control System, Farm Accountancy Data Network) necessary for implementation of the EU *acquis*.

2.2. Institutions

Turkey's agricultural sector is governed by a very large number of institutions. Formal authority for the formulation of annual programmes involving specific agricultural policy measures resides with the Council of Ministers, in consultation with the ministries concerned, the State Planning Organisation (SPO) and the Treasury.

The prime responsibility for the implementation of agricultural and rural development policies belongs to the Ministry of Agriculture and Rural Affairs (MARA), with certain responsibilities allocated to the Ministry for Industry and Trade (MIT). MARA has responsibility for the overall running of the agricultural sector, and its activities include: formulating policies to develop rural areas and agriculture, animal husbandry and aquaculture; providing infrastructure for the development of the agricultural sector and rural areas; co-ordinating and carrying-out training, research and extension services for farmers; and assisting agricultural co-operatives.[1] MARA serves the rural regions through its central and local bodies.

MIT regulates, *inter alia*, some of the activities of the Agricultural Sales Co-operatives (ASCs); the Ministry of Environment and Forestry (MOEF) has responsibilities regarding afforestation and erosion control; MOEF also oversees the State Hydraulic Works agency, which is responsible for major irrigation investments, including the supply of agricultural irrigation water.

In addition, the Undersecretary of the Treasury (UT), the Undersecretary for Foreign Trade (UFT) and the SPO (all are attached to the Prime Minister's Office) play an important role in agricultural policy making. The UFT is the competent authority as regards the formulation, administration and co-ordination of Turkey's agricultural trade policy. In carrying out its tasks, the UFT consults with all the relevant ministries, as well as other institutions, including those in the private sector and non-governmental organisations. These include MARA, MIT, SPO, the Sugar Authority, the Tobacco, Tobacco Products and Alcoholic Beverages Market Regulatory Authority, the Public Procurement Agency, the Export Credit Bank of Turkey, the Union of Chambers and Commodity Exchanges of Turkey, the Turkish Exporters' Assembly, individual and local chambers of commerce, and exporters' associations. The UFT also conducts periodic reviews and assessments of agricultural trade policies. In this context, the export and import regimes and legislation on standardisation are reviewed annually and updated as necessary.

The UT underwrites the income loss of the Ziraat Bank and provides subsidised credit for agricultural sales co-operatives and unions. The SPO is responsible for preparing and co-ordinating the implementation of the Development Plans: it prepares and implements the Public Investment Programme, which forms part of the Budget; prepares and co-ordinates the government's Annual Programme, which involves budgetary and regulatory targets and policy priorities among sectors for the related year; co-ordinates the policy-making process concerning problems in the rural sector within the framework of national development plans; and participates in all Commissions that advise the government on agricultural policy.

Financial institutions

Agricultural loans are mainly financed by state-owned banks, although from the beginning of the century, some private financial institutions (private banks, leasing companies, etc.) – which had been discouraged from offering credit to the agricultural

sector, due to the past interest rate subsidies and frequent debt write-offs and debt restructurings – have also started to emerge.

The Agricultural Bank of Turkey, Ziraat Bankasi, the country's largest commercial bank, is the main provider of agricultural credit and it also carries out all types of public support payments. The credit is distributed to farmers through the Agricultural Credit Co-operatives (ACCs). The Agricultural Bank deals mainly with large farmers, State Economic Enterprises (SEEs) and Agricultural Sales Co-operatives Unions (ASCUs), while the ACCs focus on smaller farmers.

The Ziraat Bank, the ACCs and the ASCUs played a key role in the implementation of agricultural policy during most of the second half of the twentieth century, and up to 2001, by channelling subsidised inputs to farmers. Following the elimination of the farm credit subsidy in 2001, credit is now only made available to farmers with sufficient collateral.

ASCUs, which date from the 1930s, usually cover just one product, including important crops, such as cotton, hazelnuts, sunflowers, olive oil, raisins and sultanas. They provide warehousing, primary and/or secondary processing, packaging and marketing services to their members. Until 1994, they were authorised to set prices for members' commodities and to implement support purchase from producers on behalf of the state. They were also authorised to set up facilities, such as warehouses and processing and packing plants, and to market commodities in accordance with wholesale and retail market practices.

After 1994, ASCUs continued to set the prices for their members, but ceased to do any purchasing on behalf of the government. The government maintained its practice of appointing the ASCUs' directors and key staff. Budget transfers to ASCUs for the years 1995-2000 averaged over USD 600 million *per annum*.

In 2000 the ASCU Law was enacted, with the aim of reducing the role of government in co-operative management and, particularly, of removing the burden of financing the purchases of ASCUs. The Law was the first formal attempt to make the ASCUs independent from government and to give them financial autonomy. Under the Law, provision is made for technical assistance to enable ASCUs to build the institutional capacity to restructure, and for government payments to cover the severance pay costs associated with labour retrenchment.

Within the 2001 ARIP framework (see Section 2.3 on **Domestic agricultural policies**, below), financial aid was granted to assist the restructuring and transformation of ASCUs into genuine co-operative organisations (that is, independent, financially autonomous and self-managed co-operatives selling and processing their members' produce). For hazelnuts, sunflower seeds and tea, the ASCUs' shares in 2008/09 were 46%, 31.5% and 55.4%, respectively.

Producer organisations

Agricultural producer organisations in Turkey can be classified under three broad categories, namely: agricultural producer unions; chambers of agriculture; and co-operatives (ABGS, 2005). Agricultural producer unions – which are mostly established for certain specialised products or product groups, or on the basis of geographical area – represent farmers in their dealings with government and other stakeholders (MARA, 2007). As the legal framework for these organisations is fairly recent (the Agricultural Producer Unions Law came into effect in 2004 with the objective of improving farmers' organisations), the number of unions and the size of their membership are rather low, but growing. According

to data obtained at the end of September 2010 from the MARA (TEDGEM) webpage, the total number of unions has now reached 310, with approximately 96 000 members. In general, the participation of farmers' organisations in the agricultural policy-making process is quite limited.

Chambers of agriculture, through which the government's consultations and contacts with different professions are conducted, have a broad mandate, which includes providing farmers with vocational services and representation, and assisting the government in the formulation and implementation of agricultural policies. They are also involved in issuing farmer registration certificates and sales of agricultural inputs (*e.g.* pesticides, seeds, etc.). There are over 700 chambers of agriculture in Turkey, with a total membership of approximately 5 million.

Agricultural co-operatives provide a wide range of commercial services to farmers, such as input supply (mostly on credit), purchasing, processing and selling farmers' crops. Over the years, government has given priority to making the co-operatives more independent from government, and has rationalised operations and improved the services provided to farmers. Agricultural co-operatives are composed of Agricultural Development Co-operatives, Irrigation Co-operatives, Fisheries Co-operatives and Sugar Beet Co-operatives. The Agricultural Development Co-operatives undertake activities mainly related to production and marketing and including crops, livestock and husbandry. These are commonly multi-purpose organisations that do not usually specialise in any particular product or product group. The main aims of the irrigation co-operatives are to manage or establish irrigation facilities.

State Economic Enterprises

A key group of institutional players in the agricultural policy arena are the State Economic Enterprises (SEEs). SEEs carry out manufacturing and commercial activities on behalf of the state, in line with strategic plans and annual directives from relevant government bodies. They influence the determination of prices in the market by providing price support through commodity purchasing and stockpiling, disbursing subsidies, procuring and supplying input to farmers, or importing and exporting agricultural commodities. Commodities traded by SEEs regularly receive implicit support, as the Treasury covers the difference between the export price and the intervention price ("duty losses").

In agriculture, the earliest SEEs date from the 1930s (TMO for grains, TSFAS for sugar) and the 1940s (TEKEL for tobacco, alcoholic drinks and salt; TZDK for fertiliser and other inputs). The EBK (for meat and fish and, later, also poultry) and the Feed Industry Corporation (YEMSAN) were created in the 1950s, to be followed by SEK (milk) in 1963 and ÇAYKUR (tea) in 1971.[2]

The trading losses and capital needs of these organisations were regularly met from public funds. For the years 1991-95, the annual average duty losses of TMO, TEKEL and TSFAS, taken together, were USD 622 million, rising to an annual average of over USD 1.7 billion during 1996-2001. In addition, the government began writing-off the debt of agricultural SEEs in the mid-1990s. The average annual debt write-off for TMO, TEKEL, TSFAS and ÇAYKUR during 1996-2001 was USD 550 million, whilst equity injections from the Treasury to agricultural SEEs averaged USD 150 million during the same period.

Beginning in the early 1980s, some SEEs lost their monopoly or monopsony powers, and there was a move to allow SEEs more autonomy in fixing prices. However, as the

government retained its right to set prices, SEEs were not, until recently, managed fully in line with commercial principles. Following the 2001 policy reforms, it has been aimed to reduce their role in agricultural marketing, with the privatisation of SEEs and the processing plants.

The Ninth Development Plan of Turkey (2007-13) also foresees the total withdrawal of state activity from the areas of processing sugar, tobacco and tea products by 2013, while the TMO will be maintained. As part of the government's 2001 reforms, the level of intervention in grain marketing by TMO has gradually been reduced. However, following the 2006/07 marketing year, TMO was involved in the intervention purchase of hazelnuts, which was suspended in 2009. While TEKEL's production unit was privatised in 2008, the Sugar Law enacted in 2001 imposes strict quotas at the processing plant level. The quota classification follows, by and large, the EU structure.

2.3. Domestic agricultural policies

Overview of main policy developments: Mid-1980s-2000

Historically, government intervention in agriculture has been considerable, with price support, input subsidies and high border protection being the main policy instruments (OECD, 1994; Burrell and Kurzweil, 2008; Olgun, 1991). Over the mid-1980s-2000, domestic agricultural support measures in Turkey were almost entirely based on commodity price support for crop commodities and variable input subsidies. Although both rates of support given to products and levels of input use fluctuated considerably prior to 2000, no fundamental changes were made to the policies and delivery mechanisms in place.

Market price support was primarily carried out through intervention buying operated by the SEEs (grains and pulses, sugar, tobacco, tea) and the ASCUs (horticultural crops, cotton, oilseeds, nuts and olive oil). Intervention buying of crop commodities at support prices began in the early 1930s with wheat: by 1992, the total number of crops accorded price support was up to 25 (OECD, 1994).

Restrictions on area planted were introduced for three commodities (hazelnuts, tobacco and tea) in the mid-1980s, under the authority of the relevant ASCU or SEE. However, enforcement was ineffective and stricter controls and compensation incentives were adopted in 1994. From 1994 onwards, tea growers were also required to cut back part of their plantation each year, in order to improve the quality of the crop. A "pruning premium" was introduced to compensate them for lost volume. Over the period 1996-2000, payments for tea pruning averaged USD 17 million annually. In addition, informal area controls operated for sugar beet.

By contrast, in the livestock sector domestic policies played a relatively less important role. Since 1986, producers delivering milk to dairies certified as meeting certain technical standards have received an extra payment per litre – the "milk incentive premium". The only other form of support provided for dairy products has been border measures. Tariffs on most dairy products are bound at 180% (lower for some cheeses). Applied most-favoured-nation (m.f.n.) tariffs were significantly below these bindings in the late 1990s, but moved closer to bound levels in the early 2000s.

Apart from temporary intervention purchases of live animals during the drought of 1989, the only source of support for bovine meat has been border measures. For example, in 1995 m.f.n. tariffs on red meat stood at just 15%, but shortly afterwards were raised to 165%.

Since 1996 there have been restrictions on red meat and live cattle imports due to concerns over animal diseases, such as Bovine Spongiform Encephalopathy (BSE), Foot-and-Mouth disease (FMD) and Blue Tongue in a number of countries of origin. The restrictions have been progressively and partially lifted for some countries from the second half of 2010, following changes in their animal health status. A meat incentive premium was paid in 1990-01, and again in 1994-05, per kilogramme of beef and sheep meat, on animals delivered to abattoirs satisfying modern hygiene standards. During 1987-89, the compound feed was also subsidised at a rate of 20-25%.

Support to input use has been extensive. Until 1999, credit to farmers was heavily subsidised, and the government also provided subsidised credit to the agricultural input industries. Interest rate levels for farmers tended to be 40-60% below commercial rates, and from the late 1970s until 1998, the real interest rates on loans to farmers were negative. In 1994, for example, the average real interest rate on agricultural loans reached -45% (OECD, 1994; World Bank, 2004). The use of credit subsidies to agriculture peaked in the period 1994-99, averaging over USD 1.3 billion per year. The World Bank (2004) noted that, starting in the mid-1990s, cheap and abundant credit encouraged credit delinquency and, due to the high administrative costs and the delivery agencies' inefficiencies, only 80% of the implicit subsidies ever reached the farmers.

From 1986 onwards, the government made subsidies available to fertilisers used by farmers *via* the Agricultural Bank. For a brief period (1994-97), these subsidies were paid directly to farmers, upon presentation of a sales invoice, but this procedure was eventually reversed due to the heavy administrative burden of the scheme and its susceptibility to fraud (World Bank, 2004). During 1990-97, annual expenditure on fertiliser subsidies averaged USD 363 million. The fertiliser subsidy was 39% of the market price in 1993, and 50% in 1997. In 1997, the government began phasing-out the fertiliser subsidy, and it ceased completely at the end of 2001.

Agriculture's use of pesticides has been supported in two ways. First, the government assumes the cost of protective measures taken when epidemic crop diseases or pest infestations occur. Second, from 1987 onwards the Agricultural Bank has been authorised to pay a rebate of 20% on the value of pesticides bought by farmers themselves. Over the period 1996-2001, annual disbursements by government on this item averaged USD 26 million.

Starting in 1985, a subsidy was paid to certified producers of hybrid maize, hybrid sunflowers, soybeans and nitrogen-fixing bacteria (OECD, 1994). Total payments under this scheme fell during the 1990s from their peak of USD 31 million in 1987, to low levels in the early 2000s. Subsidies have also been paid to farmers, at various times, for seeds and animal feed.

Incentives for capital investment were paid to farmers during the 1980-85 period, largely in the form of reductions in customs duty on imported machinery and other tax deductions. From 1985 onwards, grants were paid for various investment projects, such as the establishment of feedlots. This form of aid ceased in 1994. MARA also funded on-farm development work (such as field-levelling, soil improvements, etc.), with costs averaging USD 23 million for 1986-90; USD 52 million for 1991-95; and USD 63 million for 1996-2000. A similar rate of expenditure has continued into the 2000s.

Overview of main policy developments since 2000

The Agricultural Reform Implementation Project

As pointed out in Chapter 1, agriculture was one of the sectors targeted for structural reform in order to stabilise the Turkish economy. Aside from promoting allocative efficiency in the agricultural sector, reforms were necessary for fiscal stabilisation. An ambitious, multi-faceted programme of agricultural policy reform, The Agricultural Reform Implementation Project (ARIP), was launched in 2001 and implemented over 2001-08.

The project was underpinned by The World Bank, and was a pre-condition for obtaining support from the International Monetary Fund (IMF) for the macro-economic stabilisation programme, which aimed to reduce the high inflation rate and stabilise the general price level. Under ARIP, Turkish agricultural policy has been oriented towards closer alignment with the EU's CAP.

More specifically, under the reform programme, measures relating to agriculture have been taken in four main areas: i) reducing output intervention purchases financed from the budget; ii) phasing-out price support, credit and fertiliser subsidies, and replacing them with a less-distorting system of direct income support (DIS) for farmers, based on a uniform per-hectare payment; iii) withdrawing the state from direct involvement in the production, processing and marketing of crops; and iv) making available one-time transition grants to farmers. Under ARIP, The National Farmers' Registry System (NFRS) was set up, and technical and financial assistance are provided for restructuring the ASCUs, to facilitate the reform programme described above.

Within the reform framework, indirect support policies (price and input subsidies) were phased-out at the end of 2002 and replaced with the DIS programme. DIS payments (of approximately USD 90 per ha) were not related to crop type or quantity of agricultural production and were made to those farmers (individual persons or legal entities) dealing with land-based agricultural activity, regardless of the status of land tenure. In order to qualify for payments, farmers had to be registered in the NFRS, which was set up in 2002. According to the NFRS, DIS payments began to be made in 2002 for land between 0.1 and and 50 ha. Agricultural land was required to be tilled, or otherwise maintained for agricultural use, and farmers had to commit themselves to undertake an agricultural activity on that land for a minimum of one production season (8-10 months). State-owned land; deserted or inaccessible agricultural land with no current use; forested areas and communal property, such as pastures, were excluded from DIS payments.

Additional DIS payments were granted to farmers undertaking soil analysis, practising organic farming, or utilising certified seeds on their land, with the payments for soil analysis limited to a maximum area of 6 ha. DIS payments were applied to over 16.4 million ha of land (around 63% of total agricultural land), benefitting 2.8 million farmers (89% of total farmers).

A key element of ARIP was the privatisation of SEEs and the restructuring of ASCUs. The state-owned Turkish Sugar Company (TURKSEKER) and the state-owned Tobacco Company (TEKEL) were to be privatised, whereas the TMO and quasi-governmental ASCUs, which had previously administered support prices for certain commodities, were to be restructured.

ARIP supported the implementation of the 2000 ASCU Law. Prior to this date, most of the ASCUs had been acting as government purchasing agencies, and were highly over-staffed and lacking in working capital. It was decided to lay off, with severance payments,

more than half of the workers in the ASCU system (World Bank, 2001). In addition, TRY 250 trillion was made available from the budget, in the form of a credit to the ASCUs, in order to increase their working capital.

The third element of ARIP comprised one-time payments to farmers to cover the cost of switching away from crops in excess supply, such as hazelnuts and tobacco, to alternative activities (net imported products). Initially, the programme intended to cover the costs of shifting from producing hazelnuts, tobacco and sugar beet to the production of oilseeds, feed crops and maize. Participation in the scheme has been limited, and is mostly made up of tobacco farmers, and, as with the privatisation of TEKEL, prices are determined by a bidding mechanism.

ARIP was amended in 2005 and extended to the end of 2008. The amendment included new sub-components such as cadastral works, rural development activities and agri-environmental policies. ARIP is supported by a World Bank Loan Agreement. Projects started up in this context are: Land Consolidation, the Village Based Participatory Investments Programme, Licensed Warehousing investments and the Conservation of Agricultural Lands for Environmental Purposes (ÇATAK) (see Chapter 4).

However, the Agricultural Strategy Paper and the 2006 Agriculture Law appeared to re-couple part of the DIS payment, and support linked to production was defined as a key instrument of agricultural policy. As a result, starting from 2005, the weight of DIS payments in total budgetary support to agriculture has decreased (from 19% of the PSE in 2002, to 3% in 2008).

The share of crop-specific deficiency payments and support to livestock production has been increasing. Some concessional credit once again became available in 2004 (about USD 30.5 million), albeit under the strict condition that it should target producers aiming for higher-quality output, such as those using higher-quality livestock breeds. The new items in the policy agenda, such as the environmental protection schemes, crop insurance support and rural development projects, have not received an equal share of funding.

Moreover, the so-called "diesel" and "fertiliser" payments were introduced in 2003 and 2005, respectively, for farmers who qualify for DIS. These payments are based on land area, with rates varying by product groups. The diesel payment varies between TRY 18 (USD 14) per ha for fruit and vegetable production and can reach TRY 54 (USD 41) per ha for industrial crops. Fertiliser payments range between TRY 15.5 (USD 9) per ha for fruit and vegetable production and TRY 30 (USD 23) per ha for industrial crops.

The DIS scheme was eventually ended in 2009, while the "diesel" and "fertiliser" payments continue. In 2008, 2.6 million registered producers, on a total of 16.2 million ha, received DIS payments (SPO, 2010). In 2009, each farmer registered under the NFRS received, on average, a "diesel payment" of TRY 29.2 (USD 18.9) per ha and a "fertiliser payment" of TRY 38.2 (USD 24.7) per ha in 2009. The share of these two programmes in payments based on area increased from 30% in 2005, to 87% in 2009 (SPO, 2010). The NFRS continues to be maintained.

Other policies

Purchasing prices

Minimum purchase prices exist for cereals, sugar, tobacco and tea (Annex Table A.14). These prices, which are set by the relevant SEE, take into account world prices, the cost of

production and domestic market conditions. However, as these prices are generally not announced until well after the planting date – and sometimes after the delivery date – market uncertainty is accentuated and farmers' production plans can be frustrated.

Deficiency payments

Deficiency payments (so-called "premium payments") are provided for the products that are in short domestic supply. The payments are made in the form of a lump sum for every production period. Production costs, domestic and world prices, as well as budgetary considerations, are taken into account in determining the amount of support. Producers of oilseeds, olive oil, cotton, cereals and tea (since 2005) and pulses (in 2009) benefit from such payments. As from 2005, there has been a growing interest in producing energy crops in Turkey.

In 2010, a "basin-based support programme" was introduced, under which crop deficiency payments are differentiated according to 30 agricultural basins throughout the country. The law requires the Cabinet to determine "the agricultural basins where agricultural production is to be concentrated, supported, organised and specialised according to the regions' ecological conditions". The boundaries of these 30 agricultural basins were established in 2009, based on a sophisticated model developed by MARA,[3] which estimates that, under the new support system, total crop production can be expected to increase by 7.1 million tonnes more than under the current system, which provides support to 16 crops, irrespective of where they are produced. In particular, the new support system is expected to increase production of wheat and oilseeds, despite the fact that the area planted for wheat is estimated to decrease.[4]

Area payments for hazelnuts

The previous policy was ineffective in controlling excess hazelnut production in areas that were not best-suited to this activity, in terms of environment and quality of production. As a result, an area-based payment to reduce production was announced for 2009-12, replacing previous public intervention measures. The new support system shifts all support to per-hectare payments. Licensed producers will receive about USD 1 000 per hectare for three years (150 TRY/da/year), with compensation of the un-licensed producers being slightly more in the first year of participation.[5] The hazelnut-growing regions are defined at district level. The government's target is to achieve a fully licensed, high-quality hazelnut production area of 432 000 ha, and to uproot 237 000 ha of un-licensed plantings.

Compensatory payments

Tea growers are partially (70%) compensated for the costs incurred in implementing the strict pruning requirements to control, supply and increase quality. Compensatory payments are also granted to potato and livestock producers to compensate for income losses. A new, three-year transitional payment programme aimed at helping farmers switch from tobacco to other commodities was approved in 2009.

Agricultural insurance payments

Prior to 2006, the government compensated farmers for major income losses due to severe weather conditions (mainly hail) and other catastrophic natural events (Ucak and Berk, 2009). However, from 1957 until 2006 only 0.5% of farmland had insurance cover and

only 9 out of the 62 insurance companies operating in Turkey offered insurance policies for agriculture (Karaca *et al*., 2010).

In 2006, a new, government-supported agricultural insurance system, providing cover for natural disasters, was introduced: it is open to all producers, regardless of the commodity produced and the size of area planted. The scheme covers crops (including crops produced in greenhouses), bovine animals, poultry and aquaculture. Moreover, the system provides coverage for additional risks, such as floods, frosts, fires, storms, twisters, earthquakes, landslides and loss of livestock due to disease or accident. The system mainly comprises an agricultural insurance pool, established by law, and government support for insurance premiums, as well as support to insurance companies for re-insurance. The agricultural insurance pool is a public body, operated by a company and controlled by a board.[6] As from 1 June 2006, standard policies are issued by 23 insurance companies, which hold an agricultural license and are members of the Agricultural Insurance Pool (TARSIM).

The level of government support for premiums is determined by the Cabinet, taking into account recommendations from MARA, which is responsible for checking the records in the Farmer Registration System before transfers to the pool can be made. The Cabinet determines the proportion of the insurance premiums to be paid by the state. The scheme operates in 807 districts (out of a total of 850) and in 15 860 villages. Over 2006-10, the major share of government support for agricultural insurance was allocated to crop insurance (63%), followed by livestock (31%), greenhouses (4%), and aquaculture and poultry (1% each). According to MARA, 366 410 insurance policies were issued in 2010, which paid out a total of TRY 113.775 million (USD 71 million) in damage compensation. In 2010, 662 000 ha and 188 437 animals were covered by the insurance scheme.

Livestock support

Budgetary support is also given to the livestock sector ("animal improvement support"): fodder crops; apiculture; animal health; registration of animals; and protection of animal gene sources. There is also support for dairy premiums and milking units. These support programmes are production-based (per head, litre or kg) or project-based, for fodder crop support. Support for animal husbandry, initially implemented in 2002 for a five-year period, has been implemented annually as from 2008. The share of livestock support programmes in total budgetary payments increased from 7% in 2004, to 22% in 2009.

Interest concessions

Support to farmers in the form of interest concessions through the Ziraat Bank (TCZB) and the ACCs continue, with a subsidy rate varying between 25 and 100%. The difference between the current rates and the rates applied to farmers, namely income loss, is paid by the Treasury to the TCZB and the ACCs. Agricultural enterprises and farmers are entitled to benefit from interest concessions on loans in areas such as: good agricultural practices, organic farming, the production of organic inputs and certified seeds, agricultural research and development, breeding dairy cattle, livestock production, aquaculture production, stock farming, irrigation, agricultural mechanisation (except for tractors and harvesters), greenhouse horticulture, bulb production for export purposes, production of medicinal crops, livestock production in specialised industrial zones based on agriculture, milking units and milk-cooling tanks, and animal waste-disposal facilities.

Credits regarding the pressurised irrigation system (drip and sprinkler irrigation) have been offered by the TCZB since mid-2007 and by the ACCs since the beginning of 2009, with a 100% subsidy rate. For other irrigation credits, the subsidy rate is 60%. As of 1 January 2011, the subsidy rate for other irrigation credits was also increased, from 60% to 100%.

2.4. Agricultural trade policies

Measures affecting imports

Tariffs

In contrast to the significant liberalisation of trade in industrial products accomplished from the mid-1980s onwards, the liberalisation of the agri-food sector trade has been proceeding at a slow pace. The trade liberalisation of the sector follows, in general, the reduction commitments required under the terms of the Uruguay Round Agreement on Agriculture (URAA), with the exception of the primary commodities extensively used as intermediate inputs in export-oriented manufacturing industries.

Tariffs are the main policy instruments of Turkish agricultural trade policy. Within the framework of the URAA in 1995, all border levies were converted to tariff equivalents and bound. Under the URAA, Turkey's tariff bindings had to fall by an average of 24% over 10 years, with a minimum 10% reduction per tariff line. Turkey opted for the minimum 10% reduction on many products, including a number of animal products, tea, most grains, flours and cereal preparations, a few vegetables and nuts, sugar and unprocessed tobacco.

The tariff structure of agricultural products is mostly composed of *ad valorem* tariffs, while non-*ad valorem* tariffs in the form of specific, mixed or compound and formula duties are utilised to only a limited extent. Overall, Turkey's tariff structure exhibits mixed escalation: negative from first-stage processed products to semi-finished goods; and positive from semi-finished to fully-processed products. This is mainly due to high tariffs on raw agricultural products (WTO, 2008).

For agriculture, tariff escalation is observed for some products such as "edible vegetables and preparations", while negative escalation is observed for processed dairy, meat and grain products, which constitute a significant proportion of all processed agricultural products. For example, in 2009, the tariff rate for "meats and edible offal", classified in HS chapter 02, was 136.8%, while "processed meat products", in HS chapter 10, had a tariff rate of 100.8%. For some grain products in HS chapter 11, the tariff rate was 39.5%, while processed products in HS chapter 19 had a tariff rate of 9.6% for the same year.

In general, tariff protection for agricultural products is substantially higher than in non-agricultural products (WTO, 2008). The simple, average, applied m.f.n. tariff in agri-food products was 59% in 2007, 42% in 2008, 46% in 2009 and 50% in 2010. Tariff rates on some dairy and meat products were higher than 100% in 2010 (Table 2.2). Other products with relatively high tariffs include sugar, cereals, and preparations of vegetables, fruits and nuts. Imports of agricultural products, such as live animals for breeding purposes, are duty-free, as are cotton, raw hides and skins. In general, Turkey maintains a restrictive import policy for livestock products. In response to high prices for red meat in 2009, the government announced a partial lifting of the import ban for live cattle and beef meat.[7]

In addition to the URAA, as a result of the Customs Union between Turkey and the EU, in 1996 Turkey began to base its tariff on all industrial products and the industrial components of processed agricultural products (imported from third countries) on the EU Common Customs Tariffs, whose levels are far below the rates bound under the URAA. Tariff

rates for non-agricultural products are more than eight times lower than the protection afforded to the agricultural sector, which, according to WTO data, stood at 4.8 in 2008. This rate is zero for the EU since 1996 and for EFTA countries since 1999.

Table 2.2. **Applied m.f.n. tariffs on agri-food products by HS2, 2007-10**
% (simple averages)

Code	Product Description	2007	2009	2010
1	Live animals	46	44	54
2	Meat and edible meat offal	138	137	138
4	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included	98	109	119
5	Products of animal origin, not elsewhere specified or included	3	2	3
6	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	17	18	18
7	Edible vegetables and certain roots and tubers	21	21	21
8	Edible fruit and nuts; peel of citrus fruit or melons	45	42	44
9	Coffee, tea and spices	38	38	39
10	Cereals	48	52	52
11	Products of the milling industry; malt; starches; insulin; wheat gluten	40	40	40
12	Oil seeds and oleaginous fruits; misc. grains, seeds and fruit; industrial or medicinal plants; straw and fodder	17	18	17
13	Lac; gums, resins and other vegetable saps and extracts	4	4	4
14	Vegetable plaiting materials; vegetable products not elsewhere specified or included	0	0	0
15	Animal or vegetable fats and oils and their by products; prepared edible fats; animal or vegetable waxes	22	18	22
16	Preparation of meat, fish, crustaceans, molluscs or other aquatic invertebrates	101	101	118
17	Sugar and sugar-based confectionery	71	78	114
18	Cocoa and cocoa preparations	8	8	67
19	Preparations of cereals, flour, starch or milk; pastry cooks' products	9	10	49
20	Preparations of vegetables, fruit, nuts or other parts of plants	54	55	55
21	Miscellaneous edible preparations	12	12	12
22	Beverages, spirits and vinegar	40	41	41
23	Residues and waste from the food industries; prepared animal fodder	9	9	9
24	Tobacco and manufactured tobacco substitutes	36	24	36
41	Raw hides and skins (other than fur) and leather	2	2	0
5002	Raw silk, wool and flax	0	0	0
51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric	4	4	0
5201	Cotton, not carded or combed	0	0	0
5301, 5302	Raw flax and hemp	0	0	0
	Other WTO-agricultural products	na	6	6
	All WTO agricultural products	59	46	50

Source: Undersecretariat of Foreign Trade, 2010.

Sanitary and phytosanitary measures

Sanitary and phytosanitary (SPS) controls are imposed on live animals, and animal and plant products, whether domestically produced or imported. Existing SPS measures are in accordance with the WTO Agreement on Sanitary and Phytosanitary Measures. The Production, Consumption and Inspection of Food Law, which has been in force since 2004, is Turkey's principle law governing food. Its aim is to ensure food safety and the hygienic production of all food products and food packaging materials; to protect public health; to establish the minimum technical and hygienic criteria for food producers; and to set out the principles for monitoring production and distribution. The harmonisation

of Turkish legislation on veterinary, phytosanitary and food safety with EU standards is a key objective.

MARA is responsible for the safety of imported and domestic products through its inspection and quarantine services. Under the Law on Agricultural Quarantine, live animals (cattle, sheep, goats, cats and dogs) entering Turkey must put into be quarantine for 21 days at the place of destination, or at a quarantine centre. The countries from which imports are allowed are determined on the basis of the World Organisation on Animal Health (OIE) disease notifications, and information provided by Turkish representations in third countries. In this regard, food and non-food agricultural imports require control certificates, issued by MARA.

The list of documents required to prove that imports of agricultural products and foodstuffs comply with food safety conditions, and qualify for control certificates, includes: a *pro forma* invoice; the original official veterinary health certificate; the certificate of origin; the certificate of pedigree; a copy of a *pro forma* health certificate; and the results of any tests or analysis.

All documents must be obtained from and/or approved by the relevant authorities in the producer country. Documents must be in the language of the country of origin and a translation into Turkish is required. Control certificates must be presented to customs authorities upon import. The period of validity of control certificates ranges from four to twelve months, depending on the product. The importer will normally receive written approval, along with a control certificate from MARA, within one to two weeks.

Turkey has signed co-operation agreements to prevent animal diseases from entering the country through trade in, and transit of, live animals and animal products, veterinary medications, fodder and other products that could pose a potential risk to animal health. Moreover, bilateral agreements on a product-by-product basis have been signed with Belgium, France, Germany, Italy, the Netherlands, New Zealand, the United Kingdom and the United States, in relation to the use of sanitary and phytosanitary certificates.

Turkey faced its first outbreak of avian influenza in October 2005 and further outbreaks have since occurred. In order to prevent the expansion of epidemic diseases, including Bovine Spongiform Encephalopathy (BSE), the Turkish authorities have maintained, since 1996, a temporary import ban on live animals (dairy and beef cattle, sheep, goats and poultry) and on meat (beef, sheep, goat and poultry meat) (WTO, 2008). Turkey's BSE regulations had allowed imports of dairy and beef breeding cattle from only three countries, Australia, New Zealand and Uruguay. However, Turkish legislation does not permit the importation of live bovine animals, beef meat and derivative products from countries where BSE has been detected.

Since the establishment of the WTO, three main concerns have been raised against Turkey in the WTO SPS Committee concerning Turkey (WTO, 2008). The first was raised by the United States and, subsequently, Hungary, in connection with Turkey's import ban on livestock, and was related to Foot-and-Mouth Disease.[8] The second was raised by Hungary, regarding Turkey's ban on imports of pet food from all European countries, and was related to transmissible Spongiform Encephalopathy resulting from the BSE epidemic.[9] The third was raised by Ecuador, and concerned Turkey's control certificates for banana imports.[10] This last case was settled bilaterally.

Export support measures

Turkey's URAA commitments on export subsidies include 44 agricultural product groups. Due to budgetary constraints, Turkey generally grants export refunds to only 16 products/product groups (Table 2.3). Export subsidies are set at 5-20% of the export values, changing between 14% and 100% of the exports of eligible products.

Table 2.3. **Turkey: Export subsidy rates, 2010**

Product	Rate (USD per tonne)	Share of exported quantity eligible for the subsidy (%)
Cut flowers (fresh)	205	37
Vegetables, frozen (excluding potatoes)	79	27
Vegetables (dehydrated)	370	20
Fruits (frozen)	78	41
Preserves, pastes	75	51
Honey	65	32
Homogenised fruit preparations	63	35
Fruit juices (concentrated)	150	15
Olive oil	80	100
Prepared or preserved fish	200	100
Poultry meat (excluding edible offal)	186	14
Eggs	USD 15 per 1 000 pieces	65
Preserved poultry meat products	250	40
Chocolate and other food preparations containing chocolate	119	48
Biscuits, waffles	119	18
Macaroni, vermicelli	66	32

Source: UFT, Ankara, 2010.

According to the authorities, the main policy objective regarding export subsidies is to develop Turkey's export potential in processed agricultural products. These subsidies are provided to exporters in the form of deductions in their payments to public co-operations, such as taxes, or the cost of social insurance premiums, telecommunications or energy. In addition, exporters of either un-processed or processed agricultural products also benefit from export credits of up to 50% of the free-on-board (f.o.b.) value of the consignment at interest rates that are frequently well below the rate of inflation. These export credits are available to all sectors.

Regional agreements

The agricultural sector was not covered by the Customs Union formed in 1996, but Turkey and the EU have agreed to extend the preferential regime in basic agricultural products with a view to assisting Turkey to adapt its agricultural policy to that of the EU. Since 1998, Turkey has given preferential market access to many EU agricultural products, but, for the most part, preferential concessions have been accompanied by a quota limit.

Overall, the concessions agreed in 1998, and updated in 2006, are favourable to Turkey. Apart from a full *ad valorem* exemption on almost all agricultural products, Turkey has acquired concessions on a number of products, including: tomato paste, poultry meat, sheep and goat meat, olive oil, cheese, certain fruits and vegetables, hazelnuts and marmalade and jams, in the form of duty exemptions/reductions, within tariff quotas or without any quantity restrictions. Roughly 70% of Turkish exports to the EU enter duty-free.

Similarly, Turkey has granted concessions to the EU in the form of tariff quotas on live bovine animals, frozen meat, butter, cheese, seeds for vegetables and flowers, flower bulbs, apples, peaches, potatoes, cereals, refined or raw vegetable oil, sugar, tomato paste and some animal food.

As noted earlier, Turkey has adopted the EU's tariff system regarding processed (non-Annex I) products and has aligned its import regime accordingly: separate duties have been introduced for the agricultural and industrial components of non-Annex I products. Regarding the industrial component, Turkey applies the EU's Common Customs Tariff *vis-à-vis* third countries.

Aside from the EU, Turkey has also signed a number of multilateral and bilateral agreements on free trade, defining preferential trade conditions with the countries belonging to the European Free Trade Association (EFTA), Egypt, Israel, Morocco, Tunisia, Syria, the Palestinian Authority, Bosnia and Herzegovina, Albania, Croatia, the Former Yugoslav Republic of Macedonia, Georgia, Jordan, Chile, Serbia and Montenegro (Annex Table A.15).[11] In general, tariff preferences on agricultural products granted under Turkey's trade agreements are subject to quotas. Turkey is also part of the Euro-Mediterranean Partnership (the Barcelona Process), which aims at establishing a free-trade area in the region.

Notes

1. Affiliated to MARA are the Turkish Grain Board (TMO), the Directorate General of Agricultural Enterprises, the Meat and Fish Company (EBK), the Tea Company, the Agricultural Credit Co-operatives and the Agricultural Development Co-operatives. Affiliates of the MIT are the Sugar Authority, the Commodity Exchanges and the Fresh Fruit and Vegetables Wholesale Markets.
2. YEMSAN was privatised in 1995.
3. Although the details of the working model are still not widely known, it seems that the determination of the agricultural basins depends on a complicated model that uses extensive data on climate, soil quality and type, topography and production patterns, as well as the priorities of agricultural policy.
4. According to MARA's estimates, wheat production is estimated to increase from 17.2 million tonnes to 18.3 million tonnes, and area planted to decrease by 1.3 million ha, going down to 7.3 million ha. For sunflowers, it estimated that both area planted and production will increase by 635 000 ha and 1.4 million tonnes, respectively.
5. Hazelnut producers operating in unlicensed areas shall be paid 3 000 TRY/ha for the first year and 1 500 TRY/ha for each of the following years, provided that they start cultivating alternative products. If they apply during the 2010 marketing year they will receive 3 000 TRY/ha for the first year and 1 500 TRY/ha for the second year. Finally, if they apply in the 2011 marketing year, farmers will receive 3 000 TRY/ha for that year only.
6. The board is composed of seven members (two from MARA, two from the Undersecretariat of the Treasury, and one from the Union of Turkish Insurers and Re-insurers, the Union of Turkish Agricultural Chambers and a member of the operating firm).
7. The import quota entails 7 500 metric tonnes of bovine meat (fresh, chilled or frozen) at a 25% tariff rate and 16 000 metric tonnes of live slaughter cattle at a 10% tariff rate.
8. This complaint was supported by Australia, the EU, New Zealand and Uruguay. The United States has reported that its concerns were resolved, but those of Hungary are still outstanding.
9. Hungary requested consultations under the Dispute Settlement Understanding on 5 May 2002. In June 2004, Turkey reported that the ban on imports of pet food from Hungary had been lifted and that the issue had been resolved.
10. Formal consultations were requested by Ecuador on 10 September 2001.
11. As of February 2011, the agreements with Chile and Jordan had not yet been enforced.

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Chapter 3

Agriculture and Rural Development in Turkey

This chapter discusses the role of agriculture in the rural economy, particularly in terms of agriculture's contribution to Gross Domestic Product and employment. It analyses the evolution of rural development policies related to agriculture, with particular focus on the National Rural Development Strategy, which was adopted in 2006.

3.1. Background

In comparison with other OECD countries, Turkey's rural areas have a stronger agricultural bias and a relatively larger population. According to TurkStat statistics, in 2009 about 31% of the total population was living in rural areas (defined as settlements with less than 20 000 inhabitants) and about 63% of the rural labour force was employed in agriculture.

The main problems facing rural areas can be summarised as follows: the workforce is poorly educated and low-skilled; the institutional structure is ineffective and there is a lack efficient farmer organisations (co-operatives, producer unions, etc.); in some regions, the pattern of settlement is scattered; the development and maintenance of physical, social and cultural infrastructure is insufficient; an important level of dependence on subsistence agriculture exists; agricultural and non-agricultural income-generating activities are inadequately diversified; there is a high rate of hidden unemployment and low income levels; migration is on the increase (from rural to urban and inter-regional areas); and the rural population is ageing.

MARA is the main body responsible for rural development policies in Turkey and it operates in affiliation with other public institutions (ABGS, 2005). The Ministry works in co-operation with the other governmental organisations, especially the Ministry of Environment and Forestry, the General Directorate of State Hydraulics Works, the South-East Anatolia Project Regional Development Administration and the State Planning Office (SPO), which is charged with preparing the national development plans of the country and co-ordinating their implementation (it also co-ordinates and implements the regional development programmes). For integrated rural development projects, which are mostly financed by the International Fund for Agricultural Development (IFAD) or international Development agencies, MARA is the only implementing body.

Rural development policies in Turkey have essentially been aimed at upgrading the economic and social infrastructure in rural areas in order to raise the rural population's standard of living and reduce the rate of migration to cities. Broadly, policy has focused on: upgrading transport and telecommunication links in rural areas so as to facilitate the flow of goods and services; improving government services in the areas of education, health care and sanitation; and facilitating agrarian reform and encouraging land consolidation.

Traditionally, rural development policy has come under the umbrella of overall development policy, consisting of large infrastructure projects under the authority of the SPO. It also included sectoral projects, mainly aimed at improving rural and agricultural infrastructure, in order to increase agricultural production and to improve health and education services.

After the introduction of the planning process in 1960s, with the first National Development Plan, the implementation of "rural development projects" was launched in various provinces and regions of the country. These projects/programmes mostly targeted the improved utilisation of natural resources (through irrigation projects, for example) and

the elimination of regional socio-economic disparities. Action was taken to overhaul the infrastructure, improve crop and animal production, raise the income of the population, protect the environment and rural heritage, and organise various local activities designed to contribute towards rural development. It is only recently that diversification of economic activities in rural areas has also been introduced, through EU-funded projects and a new support programme under MARA.

Turkey has only lately (end of January 2006) adopted a National Rural Development Strategy (NRDS), providing the first rural development strategy plan for the country, as part of the EU accession requirements. The NRDS forms the basis of the EU Instrument for Pre-Accession Assistance Rural Development (IPARD). The NRDS and the Law of Agriculture, which describes the basic domestic agricultural policy instruments, form the basis for future agricultural and rural development policies.

Currently, the main objectives of rural development policy relate to the framework of integration with the EU, Turkey being a candidate country, and National Development Plans have been designed to: ensure social cohesion and competitiveness by increasing the income level of rural communities; develop human resources in rural areas through the expansion of training schemes and the participatory organisational approach; and protect the environmental and cultural heritage of rural areas.

In addition to the NRDS, specific rural development and regional development projects have been implemented at provincial or regional level since the 1970s. These projects were supported by foreign finance, especially from the World Bank and IFAD.[1] The first rural development project was the "Çorum-Çankırı Rural Development Project", supported by the World Bank and IFAD and instigated in 1972. After this project, various rural development projects supported by IFAD were implemented, followed by other donors (for more details see Aksoy, 2005; MARA, 2007).

These rural development projects cover activities in areas such as the development of agriculture and livestock production, irrigation, wetlands rehabilitation, construction of village and forest roads, drinking-water ponds, drinking-water supply, increasing agricultural and livestock production and forestation (Aksoy, 2005; MARA, 2007).

3.2. National Rural Development Strategy

The NRDS was prepared within the context of the economic and social harmonisation of Turkey with EU standards in the framework of the accession (ABGS, 2005). It has been prepared in conformity with the National Development Plans, with a view to harmonisation with the EU's rural development policy, and provides Turkey's first rural development strategy plan.

The main goal of the NRDS is to develop and ensure that the sustainability of the living and working conditions of the rural community, on their territory, is compatible with that of urban areas, on the basis of utilising local resources and potential, and protecting the rural environment and the natural and cultural heritage (SPO, 2006).

The four strategic objectives identified in order to reach this target can be summarised as follows:

- *Economic development and increased job opportunities*, through the diversification of the rural economy and the creation of a competitive agriculture and food sector, brought about by: strengthening the producer organisations, making efficient use of water and land

resources, increasing the competitiveness of the Turkish agri-food industry, reinforcing consumer rights and improving food safety.

- *Development of human resources*, by improving local capacity, developing education and health services, combating poverty and increasing the employability of disadvantaged groups.
- *Improvement of rural infrastructure services and quality of life,* by investing in rural infrastructure and developing and protecting rural settlements.
- *Protection and improvement of the rural environment,* by improving environmentally friendly agricultural practices, protecting forest ecosystems, promoting the sustainable utilisation of forest resources and the management and improvement of protected areas.

These strategic objectives and priorities are in compliance with the EU's rural development objectives. For example, in addressing the needs of agriculture and the wider needs of rural society in a sustainable way, the NRDS adopts a cross-sectoral, holistic approach for the development of rural areas. Its approach also aims at coherence with the EU's strategy for rural areas. Like the EU, the NRDS sets priorities for the next programming period to improve the competitiveness of the agriculture, forestry and food sector. It also aims at improving the environmental conditions and quality of life in rural areas, and at diversifying the rural economy and strengthening local capacity-building.

The NRDS is also consistent with the Ninth Development Plan for the period 2007-13 in terms of its objectives (Axis 1: "increasing competitiveness and improving the efficiency of agricultural structures"; "increasing employment" and "ensuring regional development"), which also combine the sectoral and territorial aspects of rural development. It is important to note that the NRDS places emphasis on the need to pay attention to the present regional development disparities and imbalances in rural areas.

In August 2010, a new Plan, the "Rural Development Plan (2010-13)" was adopted as a High Planning Council Decision. The Plan aims at familiarising stakeholders with the topic of rural development through monitoring the activities of the government agencies involved in the implementation of rural policies.

3.3. Agriculture-related rural development programmes

The European Union's IPA Rural Development Programme for Turkey

As a candidate country, Turkey is eligible to benefit from the EU's Instrument for Pre-Accession Assistance (IPA) framework for assistance to candidate countries and potential candidate countries, including the component on Rural Development (IPA Rural Development [IPARD]). The programme is of seven years' duration – 2007-13. The aim of IPARD is to prepare candidate countries for implementation of the EU's Common Agricultural Policy upon accession, by assisting them to align their agricultural sectors to EU standards and to develop a policy for the agricultural sector and rural areas.

The IPARD Programme for Turkey has been designed to take into account both the priorities and needs of the country in the pre-accession period, within the context of rural development – in accordance with the priorities of the Ninth Development Plan (2007-13); the Agricultural Strategy (2006-10); the NRDS and the strategic priorities of the EU's Multi-annual Indicative Planning Document (MIPD).

The IPARD Programme for Turkey was prepared by MARA, in close co-operation with other public institutions, and incorporates the opinions of all relevant stakeholders, local

authorities, social, economic and environmental partners, centres of knowledge, NGOs and universities.[2] The IPARD Agency was established for the implementation of the Programme, but it has not yet received conferral of management from the European Commission to begin implementing the IPARD Programme on the ground – this is due to be received in 2011.

The programme defines several priority agricultural sectors, such as dairy, meat, fruit and vegetables and fisheries, and will be implemented in 42 provinces. More specifically, the overall policy aims of the IPARD Programme are to contribute to:

- The modernisation of the agricultural sector and processing sectors through increasing efficiency and competitiveness, while at the same time encouraging the improvement of EU *acquis*-related food safety, veterinary, phytosanitary, environmental or other standards, as specified in the EU Enlargement Package;
- Capacity-building and preparatory actions for the implementation of agri-environmental measures and the LEADER method;
- Development and diversification of the rural economy, with improvements to the quality of life and attractiveness of rural areas, to counteract rural out-migration.

The IPARD funds (EUR 874 million, or 18% of the total EU IPA financial aid) are to be implemented through a single, multi-annual "Rural Development Programme" covering the period 2007-13. Including Turkey's contribution of EUR 291 million, the total grant is EUR 1.165 million. It is envisaged that 25% of the project budget will be financed by beneficiaries; 25% by the Turkish government; and 50% by the EU. Concerning the beneficiaries, emphasis is given to young farmers living in mountainous areas. Financial aid of EUR 212 million, of which 75% (EUR 159 million) is EU-financed, has been allocated to the Rural Development Programme for the financial period 2007-09 (Table 3.1). The Agriculture and Rural Development Support Institution, a public organisation, has been established for the management and implementation of the IPARD Programme.

Table 3.1. **Expenditures of the IPARD Programme for Turkey, 2007-09**

	Public expenditure			
	Total (million euros)	EU contribution (%)	EU contribution (million euros)	Share (%)
Axis 1 – Improving market efficiency and implementation of European Community standards	154.955	75	116.216	73
Axis 2 - Preparatory actions for implementation of the agri-environmental measures and local development strategies(1)	-	-	-	-
Axis 3 – Development of rural economy	53.066	75	39.800	25
Technical assistance	3.980	80	3.184	2
Total	212.001		159.200	100

1. Axis 2 measures will be developed in detail subsequent to a capacity-building process and will be presented to the Rural Development Committee for adoption at a later stage.

Source: EC (2007), *IPA Rural Development (IPARD) Programme for Turkey*, 20 December, memo/07/609.

Axis 1. Improving market efficiency and implementing EU standards

Most of the IPARD funds (73%) will be absorbed by Axis 1 to be used for the implementation of the following three measures:

- Investment in agricultural holdings to restructure and to upgrade to EU standards (40% of the public aid under Axis 1).

- Investment in processing and marketing of agricultural and fishery products to restructure and upgrade to EU standards (28% of the public aid under Axis 1).
- Support for setting-up producer groups (5% of the public aid under Axis 1).

Support granted for the attainment of these objectives will mainly be concentrated on sectors where the related EU *acquis* and the EU standards to implement are particularly comprehensive and demanding – as in the case of the dairy, meat and fishery sectors, as well as in the fruit and vegetables sector. All investments must comply with EU standards, with a special emphasis on milk hygiene and quality for the dairy sector, as well as manure/waste storage for the dairy, meat and fishery sectors.

Axis 2. Preparatory actions for the implementation of agri-environmental measures and LEADER

The programme contains an outline of preparatory actions planned for the implementation of agri-environmental measures (erosion control, water resource conservation, biodiversity), as well as for the LEADER method (acquisition of skills, implementation of local development strategies, running costs for approved Local Action Groups, including co-operation projects between those groups). The measures will be developed in detail and submitted to the Rural Development Committee for adoption after a capacity-building process, including institution-building and training, during the period 2010-13.

Axis 3. Development of the rural economy

The main priorities of Axis 3 are to contribute to the development of the rural economy; diversify on-farm and off-farm activities; and support the formation of micro enterprises in order to create new jobs, as well as maintain the existing jobs, in rural areas. In particular, support will be provided to fund: diversification and development of on-farm activities, such as bee-keeping and honey production, cultivation of medicinal plants and production of aromatic and ornamental plants; sale of local products and the micro-enterprise development of traditional crafts, rural tourism and aquaculture. One-quarter of IPARD funds are allocated to this Axis.

It should be noted that some of the priority objectives are common to both the IPARD Programme and the NRDS, which share an identical overall approach and orientation for rural development. However, there are objectives which are specific to IPARD assistance (MARA, 2007). For example, IPARD concentrates on the four most *acquis*-relevant sectors (milk; red meat and poultry; fish; and fruit and vegetables) and relevant food chains. Also, in relation to the environment, IPARD aims at the introduction of preparatory, pilot schemes for agri-environmental measures because of the complexity of the undertaking. With regard to diversification of the rural economy, it focuses on the uptake or expansion of on- or off-farm activities in the rural areas in specific sectors.

In addition, IPARD does not explicitly address some of the strategic objectives indicated in the NRDS, such as: strengthening human resources through education and the provision of health services; combating poverty and improving the employability of disadvantaged groups through vocational and entrepreneurship training; the establishment of consulting services; provision of social security coverage (or social assistance and services) to rural employees; and the development of rural infrastructure services, with improved accessibility to the rural population (MARA, 2007).

Rural Development Investments Support Programme[3]

The Rural Development Investments Support Programme (RDISP) was implemented in 2006 in 65 provinces (other than the 16 provinces covered by the ARIP Village Based Participatory Investment Programme (VBPIP) – which it complements [MARA, 2007]). The programme has two components: investment support to economic activities and investment support to agricultural infrastructure.

The economic activities component includes investments in: new or unfinished constructions for the storage, processing and packing of agricultural products; capacity increase or technology renewal of facilities currently used in connection with the storage, processing and packing of agricultural products; building of greenhouses that incorporate alternative energy sources; and modern pressurised irrigation facilities.

The beneficiaries are individuals and legal entities (*e.g.* agricultural co-operatives and unions) who are registered in the National Farmer Registry System and other related registration systems. The maximum amount payable under the project is TRY 100 000 for individuals and TRY 500 000 for legal entities. The amount of public support for the total project is 50%. The agricultural infrastructure investment support component focuses on the improvement and development of the irrigation systems currently in place, with support being given to pressurised irrigation. The beneficiaries of the support are the irrigation co-operatives, sub-governorships and the Unions for Village Services. The maximum amount payable under the project is TRY 500 000 and public support contributes 75% of the total project. In addition, the programme provides support for the purchase of new agricultural machines and baling and silage equipment, pressured irrigation systems and new cold-storage transportation vehicles.

Agriculture and rural development projects funded by international donors

Village Based Participatory Investment Programme

The VBPIP was one of the three components of the so-called "Participatory Rural Development Programme" included in ARIP in 2004, which remained in force for three years. Its objective was to support community-based, demand-driven activities in small-scale agricultural processing, marketing and other off-farm businesses, as well as to rehabilitate the infrastructure used to provide public services in remote rural areas. It also aimed at strengthening capacity for implementing IPARD at provincial and community level.

The VBPIP-supported investments affected local agricultural production and economic activity by investing in the following areas: i) processing of raw materials by agri-processing enterprises, which increased capacity and/or improved technology; ii) support for enterprises coming into the sector; iii) construction of greenhouses; iv) provision of cold-storage facilities; v) the rehabilitation of existing irrigation schemes; and vi) small-scale, pressurised irrigation systems.

The VBPIP was a pilot programme implemented in 16 provinces, selected according to a set of criteria prepared jointly by the Turkish government and The World Bank, and was specifically designed as a precursor for EU pre-accession programmes. It originally encompassed two parallel community-based, demand-driven investment programmes – one for public-sector activities, and one for the private sector.

Under the part of the programme focused on the private sector, individual farmers and other private individuals engaged in small rural businesses were eligible to participate,

as well as groups of farmers, co-operatives, and other farmers' organisations. The public-sector part of the programme focused on the rehabilitation of existing public infrastructure related to the provision of public services.

Investments in the public sector enjoyed a higher grant element (up to 75%) and higher funding limits (for costs up to USD 300 000), than private agri-processing investments (up to a 50% grant and USD 250 000 in costs). In its three years of operation, the VBPIP disbursed over TRY 50.5 million (USD 38 million). Survey results indicate that the impact of the VBPIP on the participating villages was substantial, but that it could have had an even greater effect with design and agency improvements, which would have been likely to require a longer, more conventional, project period in order to develop (World Bank, 2009).

In 2008, the "Participatory Rural Development Programme" component of ARIP was terminated and incorporated into the "Support of Rural Development Investments", which had been introduced in 2006. The new programme aims to support nation-wide activities in small-scale agricultural processing, marketing and other off-farm businesses, as well as the rehabilitation of public irrigation infrastructure. It is financed by the national budget. The machine-equipment component, which supports the modernisation needs of farm holdings, was also included in the programme in 2007.

Projects on the following investment areas in 81 provinces are to be implemented: maize-drying and storage; collection, cooling and processing of milk; storage, processing and packing of fruits and vegetables; construction of greenhouses using alternative sources of energy (geo-thermal, solar, wind, etc.); meat processing, food legume processing and packing, and the processing and packing of bee products.

Concerning the programme which focuses on the private sector, individual farmers and other private individuals engaged in small rural businesses are eligible to participate, as well as groups of farmers, co-operatives, and other farmers' organisations. Grant elements of 50% for private-sector investment proposals, and 75% for public-sector investments, have been set.

Other projects

Among the rural development projects that are fully financed by the Turkish government, the South-East Anatolia Project (GAP) is the most comprehensive project in Turkey (GAP, 2008; Aksoy, 2005). This project (which, in fact, encompasses several projects) is a multi-sectoral and integrated regional development plan based on the concept of sustainable development in south-eastern Anatolia – one of the least-developed parts of Turkey.

At its inception, the GAP was launched as a programme for developing the land and water resources existing in the region, and envisaged the construction of 22 dams and 19 hydro-power plants for irrigation and energy, accompanied by other investments for irrigation (GAP, 2008). Subsequently, with the 1989 Master Plan (revised in 2002), the GAP was transformed into an integrated regional development project on the basis of multi-sector sustainable human development, encompassing investments in agriculture, industry, transportation, education, health and rural and urban infrastructure.

The original initiative consisted of irrigation and hydro-electric energy production projects on the Euphrates and the Tigris rivers. Today, GAP covers sectors such as irrigation, hydraulic energy production, agriculture, industry, urban and rural infrastructure, forestry, education, rural tourism and health. Its basic aim is to eliminate regional development

disparities, by raising income levels and standards of living, and to contribute to national development targets, such as social stability and economic growth, by increasing rural productivity and employment opportunities in the rural sector.

Following a review of the GAP, the GAP Action Plan (2008-12), with its budgetary funding mechanisms, was prepared, and came into effect as from May 2008. It includes policies, strategies and actions to complete the Project in the medium-term, responding, firstly, to basic infrastructure needs, including irrigation, and speeding-up the economic and social development of the region. It aims to create jobs and to bring employment levels in the region up to the national average.[4] The GAP Action Plan envisages the irrigation of 1.06 million ha in the region by 2012, and USD 6 billion of additional funds have been allocated to selected top-priority projects. Focus has been on the construction of dams and major canals during the first half of the Action Plan (2008-10), with the installation of irrigation schemes to be accelerated by 2011.

The Sivas-Erzincan and Diyarbakır-Batman-Siirt development projects are other on-going development projects supported by international donors. Total investment in the Sivas-Erzincan development project amounts to USD 30 million; part of the financing is provided by IFAD and OPEC. The main objectives of the project include: increasing agricultural productivity and raising the income levels of the rural poor in the less-developed areas covered by the project; expanding rural employment opportunities and encouraging individual and group initiatives of smallholders; improving the social and physical infrastructure; building and strengthening self-supporting institutions directly related to the needs of the rural poor; and raising living conditions in the disadvantaged rural community. The project's primary target groups include poorer rural men, women and youth living in the provinces of Sivas and Erzincan.

The total investment amount of the Diyarbakır-Batman-Siirt development project, which is also partly financed by IFAD, is USD 37 million: its goal is to improve the economic and social status of the rural population in provinces covered by the project. It is targeted at improving economic efficiencies and the quality of life, on the basis of current production and employment patterns in the villages of the project provinces; at promoting diversification into both on- and off-farm income-generating activities, in order to increase employment; and at supporting the individual and institutional capacity-building of members of the target group, in order to optimise their employability.

Notes

1. Other international donors include the EU, the Organisation of Petroleum Exporting Countries (OPEC), the United Nations Food and Agriculture Organization (FAO), the United Nations Development Programme (UNDP), the Islamic Development Bank (IDB) and the Japan International Cooperation Agency (JICA).
2. The programme was approved by the EU Commission's Rural Development Committee on 19 December 2007. "Decisions of the Rural Development Committee" was approved by the EU Commission on 25 February 2008 and by the High Planning Council on 30 December 2009.
3. In addition there are several non-agricultural rural infrastructure support programmes (*e.g.* the Village Infrastructure Support Project [KOYDES] and the Municipality Infrastructure Support Project), which are implemented by the Ministry of Interior Affairs, or by provincial authorities (MARA, 2007).
4. GAP Regional Development Administration, *www.gap.gov.tr/gap-action-plan/southeastern-anatolia-project-action-plan/objectives-and-targets,* accessed 15 March 2011.

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Chapter 4

Agriculture and the Management of Natural Resources in Turkey

This chapter addresses the role of agriculture in the management of natural resources. A discussion of the environmental performance of agriculture, focusing on pressures on land and water, is followed by an analysis of Turkey's agri-environmental policies, particularly those implemented under the Environmentally-Based Agricultural Land Protection Programme (ÇATAK). The importance of organic farming is also discussed.

4.1. Environmental performance of agriculture

Environmental issues, including those relating to agriculture, only began to be consistently addressed by the Turkish government during the 1990s (OECD, 1999). Nevertheless, with the adoption of various international commitments, plus the prospect of becoming a member of the EU, the environment is becoming an increasingly important item on the policy agenda (Redman and Hemmami, 2008). In particular, agri-environmental issues attained more prominence during the pre-accession negotiations, as the adoption of the EU *aquis* emphasises the integration of environmental concerns and good practices in land management and rural development, in general.

Overall, pressures from agriculture on the environment have risen steadily with the growing intensity of agricultural production (OECD, 2008a). However, this intensity is still considerably lower than in many other OECD countries. In some areas over-grazing remains a problem, although the occurrence of a reduction in cattle, sheep and goat numbers at the same time as an increase was made to the area under permanent pasture, has eased pressure on land susceptible to erosion.

The key environmental concerns relate to: soil degradation (especially from erosion); over-exploitation of water resources; water pollution (including salinisation from poor irrigation management practices); and the adverse impacts of farming on biodiversity (OECD, 2008a).

Soil

The most widespread form of soil degradation is erosion, with approximately 86% of the land suffering from some degree of erosion, mainly caused by water. Turkey loses as much as 1 billion tonnes of topsoil annually (MARA, 2007). The main causes of these elevated rates of erosion include: natural conditions, especially climate and steep topography and the mismanagement of cultivated land (*e.g.* inappropriate tillage; stubble burning; abandonment of rural infrastructure; and, in particular, terracing and inappropriate or excessive irrigation); deforestation (forest degradation due to forest fires; over-harvesting; illegal cutting; misuse of fuel wood or clearing of land for farm and urban uses) and over-grazing, in some regions (OECD, 2008a; MARA, 2007).

Even though livestock density is less than half the level of European OECD member countries, over-grazing and other inappropriate pasture-management practices have left about 60% of rangelands prone to erosion, especially in the Aegean and Marmara regions. The eastern part of the country is less prone to erosion, as pasture is dominant.

Other forms of soil degradation are more limited, with an estimated 6% of arable land suffering yield limitation due to salinisation, and a further 12% being affected by waterlogging. Inappropriate irrigation and fertiliser-management practices, as well as excessive water extraction, have been important causes of soil salinity in some areas, with the problem rapidly escalating in parts of the area under the South-East Anatolia Project (GAP) (OECD, 2008a).

Water use

There are two aspects to the impact of agriculture upon water resources – agricultural water use and agricultural pollution. Water use is one of the most critical environmental issues facing Turkey. The pressure on water resources is increasing over time, as a result of several factors: global climate change; alterations in water consumption habits due to increasing socio-economic development and growing urbanisation; and the increasing demands of agriculture and the tourism industry but – most importantly – from rapid population growth (MARA, 2007).

Irrigated agriculture currently consumes 75% of total water consumption, which corresponds to about 30% of renewable water availability (Çakmak, 2010). Over the last 40 years, the development of Turkey's irrigation systems has been remarkable. The irrigated area has increased by about 2.5 times since the 1970s. The share of the area developed by public agencies is 80%. The rest is developed by the farmers themselves. The objective of the General Directorate of State Hydraulic Works (DSI) is to increase the irrigated area from 5.1 to 8.5 million ha of irrigated land by 2030 (DSI, 2009a; 2009b).

Although most of the water used for irrigation is derived from dams and reservoirs, approximately 35% is also pumped from groundwater. Over-pumping of groundwater for irrigation purposes is a major problem and many aquifers are being exploited beyond their natural recharge rate, especially in the Mediterranean region, which is a matter of concern, as two-thirds of the drinking water in the region is supplied from groundwater (OECD, 2008b).

The over-extraction of groundwater in such coastal regions is a growing problem both because of the intrusion of sea water into aquifers, and because of the increasing competition for water resources coming from the tourism industry, whose peak demand period in the summer coincides with that of agriculture (OECD, 1999). Some major irrigation projects, such as the GAP, have also been undertaken with little consideration of environmental management or impacts, with the loss of valuable ecosystems (*e.g.* steppe, wetlands), and problems of salinity and agri-chemical run-off are becoming widespread. However, the GAP project is increasing the supply of domestically produced hydro-electricity and has brought socio-economic welfare gains to villagers.

Irrigation is a threat to groundwater balance, since almost three-quarters of the total freshwater extracted is used for agricultural purposes. The pressure of agriculture on groundwater is expected to continue to increase in the future, to meet the growing needs of an expanding population. With the rise in demand for water from the agricultural sector, competition with other users of water resources will rise and environmental concerns will increase.

Most irrigation methods depend on gravity systems, which are characterised by low water efficiency and with the loss of as much as 60% of irrigation water. The number of pressurised irrigation systems is, however, increasing. Farms tend to be irrigated from dams and reservoirs mainly subsidised by the government, with 1% of farmers using 15% of the irrigated land, while smaller farmers are more likely to irrigate from wells constructed at their own expense.

Although agriculture is not yet the highest sole source of pressure on water resources, the utilisation of pressurised irrigation techniques (drip irrigation); the optimisation of water drained onto fields and the careful management of irrigation are critical issues, and practices to optimise these procedures should be adopted by farmers, as a contribution towards addressing one of Turkey's major environmental problems. The significant role

of irrigation in improving the performance of the agricultural sector is recognised in the Ninth National Development Plan for 2007-13 (SPO, 2010). The Plan establishes the priority for a more efficient use of water resources in agriculture and for completing the irrigation projects currently under construction.

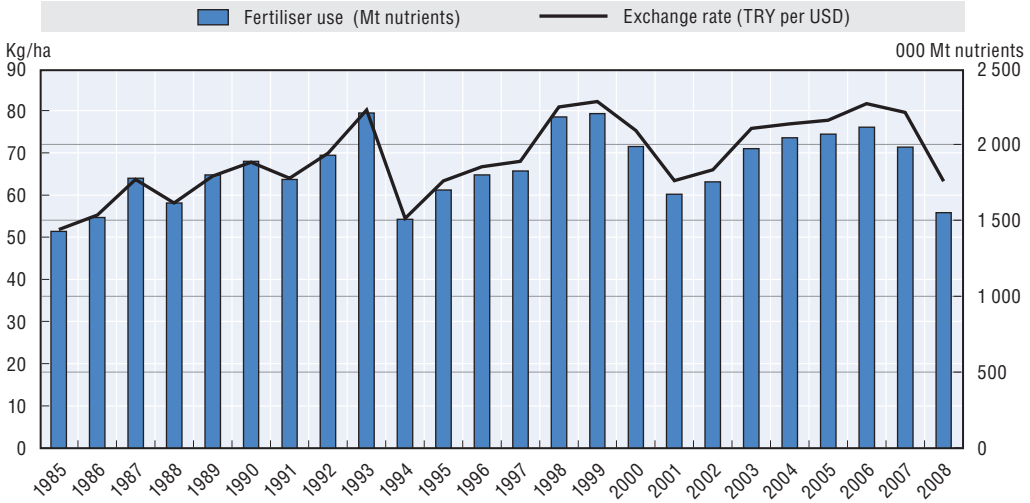
Water quality

In terms of water quality, the levels of water pollution caused by agriculture are generally considered to be low, compared to many other OECD countries (OECD, 2008a). Nevertheless, in some regions the pressure on water quality from farming is high, especially in the Aegean and Mediterranean regions, which are the most intensively farmed.

Agricultural pollution of water bodies from nutrients is a concern in specific parts of Turkey, such as the Aegean and Mediterranean regions. In agricultural areas, 2.5% of monitoring sites exceed recommended drinking water standards for nitrates in groundwater (OECD, 2008a). Evidence suggests that the uptake rates of nutrient management practices are low, as many farmers have little access to the necessary capital for investing in manure storage and other manure-treatment technologies, and their knowledge of nutrient management practices is limited.

The use of inorganic fertilisers has fluctuated considerably over time. During the period of agricultural policy reform (2000-02) support for fertilisers was lowered and use fell substantially, by around 20% (in volume) (Figure 4.1). It subsequently recovered, but remained below the peak of the late 1990s. Inorganic fertiliser application appears to be below requirements, with national estimates for nitrogen fertiliser use at 65% below soil requirements and phosphorus fertiliser use at 45% below requirements (OECD, 2008b). Wheat accounts for around 40% of fertiliser consumption in Turkey, while fruit and vegetables receive approximately 18% (Annex Table A.16). While there has been a substantial reduction in agricultural nutrient surpluses, there is a wide difference in the use of fertilisers between large commercial farms (*e.g.* in the Marmara and Mediterranean regions) and smaller, poorer holdings (OECD, 2008a; 2008b).

Figure 4.1. **Fertiliser use, 1985-2008**



Note: Fertiliser use is measured in nutrients (nitrogen, phosphate and potassium).

Source: International Fertilizer Industry Association (IFA), October 2010.

The growth of pesticide use in Turkey is among the most rapid in the OECD area (in volume of active ingredients) and is closely linked to the increase in crop production (OECD, 2008b). Horticultural production in irrigated areas of the Marmara, Aegean and Mediterranean regions accounts for over 70% of Turkey's total pesticide use. Overall, the intensity of pesticide use is low, compared with that in other OECD countries.

Biodiversity

Turkey has a very rich biodiversity, but it is coming under increasing pressure from agriculture, and the impacts are diverse, complex and poorly monitored (OECD, 1999; 2008b). The growing pressure on biodiversity is mainly due to: intensive farming in fertile areas, with an increased use of agri-chemicals; the construction of large rural development projects that alter the ecology of entire regions (*e.g.* GAP); and the diversion of water for irrigation to the detriment of wetlands (Redman and Hemmami, 2008). At the same time, there is some loss of farmed habitats from conversion to urban use and, in some marginal farming areas, from afforestation and abandonment of semi-natural farmed habitats, although the overall area of agricultural land has increased since 1990 (OECD, 2008a; 2008b).[1]

Climate change

Farming accounts for around 6% of total national agricultural greenhouse gas (GHG) emissions (OECD, 2008a). In Turkey the main agricultural and livestock production activities causing GHGs can be described as follows: livestock production; use of fertilisers; stubble burning; and, to a lesser extent, rice production.

Agricultural GHG emission reductions are largely explained by the decrease in cattle, sheep and goat numbers (lowering methane emissions), partly offset by higher fertiliser use and crop production. With the projected expansion of agricultural production up to 2016 and rising direct on-farm energy consumption, it can be expected that agricultural GHG emissions may rise.

4.2. Agri-environmental policies

The development of agri-environmental policies has been limited since 1990, although recently more policy initiatives have been undertaken. In the context of the Turkey-EU accession negotiations, the environment is regarded as one of the most important areas. Under the 2006 Agricultural Policy Strategy (2006-10), the share of budgetary support for agri-environmental purposes is to reach 5% by 2010.

The Environmentally Based Agricultural Land Protection Programme (ÇATAK) came into effect in 2005, as part of the amended (2005) ARIP programme. It was financed by external sources and it was implemented in four pilot provinces in the years 2006, 2007 and 2008. The objectives of the Programme were to protect the quality of soil and water resources in agricultural lands, to ensure the sustainability of renewable natural resources, and to decrease the adverse effects of intensive agricultural activities. In 2009, Turkey assumed full financial responsibility for the project.

ÇATAK was initially implemented in four pilot provinces and subsequently extended to 19 provinces in 2010, and to 25 in 2011. The programme covered 1 726 ha in 2006; 4 041 ha in 2007; 3 994 ha in 2008 and 2 370 ha of land in 2009. ÇATAK was fully financed by The World Bank for the 2005-09 period. Following the completion of ARIP in 2008, the programme is now

financed by national funds. Total payments to farmers were TRY 1.4 million (USD 1 million) in 2006, rising to TRY 8.9 million (USD 5.8 million) in 2010. This increase represented a rise in ÇATAK's share of total agricultural budgetary support, from 0.03% in 2006 up to 0.15% in 2010.

There are also several initiatives underway to implement various EU Environmental Directives, such as the Habitats and Birds Directive, and the Water Directive. In the context of adopting and implementing the EU Water Directive, the Regulation on the protection of water from nitrate pollution caused by agricultural resources was put into force in 2004. For its implementation, five basic phases have been defined necessary: determination of the water resources which are subject, or will be subject, to nitrate pollution; description/ determination of the vulnerable zones; development of good agricultural codes and implementation; development of "Action Plans" for all vulnerable zones; and the setting-up of a national monitoring and reporting system.

Economy-wide environmental policies also affect agriculture. The National Environmental Action Plan, which came in force in 1998, provides for national and regional plans to generate information to combat land desertification and reduce discharges of nutrients, and stipulates a number of regulations designed to control water and soil pollution and protect biodiversity. A Nitrate Directive was adopted in February 2004, as part of the goal to harmonise with EU policies, but there is still a need to define the responsibilities of the organisations defined under the Directive. The Regulation on Water Pollution Control (1988) defines water quality criteria according to the purpose for which the water is destined, including treated waste-water used for irrigation.

A number of regional development projects, most of which are partly financed by international development agencies and donors, aim at reducing the impacts of agriculture on the environment. The GAP project, which is the largest regional development project in Turkey, involves, among other objectives, the expansion of agricultural production in the region, to be brought about by building 22 dams and providing irrigation infrastructure for 1.7 million ha of land. The Anatolian Watershed Rehabilitation Project, jointly supported by EU and World Bank funding of TRY 65 million (USD 45 million) over 2004-12, is aimed at the restoration of degraded soils in order to increase farm and forestry production, and supports the monitoring and reduction of agricultural water pollution in the lower parts of watersheds. An Action Plan to accelerate GAP aims at the completion of irrigation schemes over 1 million ha of land by 2012.

The 2004 Law on Organic Farming and the 2005 By-law on Principals and Application of Organic Farming regulate organic agriculture in a similar way to EU Regulation (EEC) 2092/91. MARA is responsible for overseeing the cultivation of organic crops. As of February 2011, 17 firms were authorised by MARA to issue organic certificates.

Up until 2006, no support payments were provided for organic farming. However, as discussed in Chapter 2, the Farmer Transition Programme provides financial incentives to encourage farmers to divert from over-produced commodities to alternative commodities, thus creating an opportunity for the introduction of environmentally benign management practices.

Despite the strong increase in organic farming since 1997, its share in total agricultural land area remains low, at 1.3%. The major organic products produced are wheat, hazelnuts, raisin, figs, cotton, apricots, chick peas, lentils and olives. Most organic produce is exported, primarily to European countries (van Leeuwen *et al.*, 2008). Domestic demand began to

increase in the late 1990s, but is still very small relative to total food demand. Organic produce is almost twice as expensive for the consumer as food of conventional origin. Organic livestock production is very limited (Annex Table A.17).

Note

1. The details of agri-biodiversity, threats and strategic actions for conservation are included in the National Biological Diversity Strategy and Action Plan of Turkey (*www.cbd.gov.tr/documents/NBSAP-2007.pdf)*.

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Chapter 5

Evolution and Decomposition of Support to Agriculture in Turkey

This chapter discusses the evolution of agricultural support in Turkey since 1986. It presents a discussion of the evolution of the level of support and the decomposition of changes in forms of support, based on the Producer Support Estimate, the Consumer Support Estimate, the General Services Support Estimate, the Total Support Estimate and related support indicators.

Since 1987, in the context of monitoring and evaluating agricultural policies and agricultural policy reform, the OECD Secretariat has calculated the level and composition of agricultural support in OECD member countries, and also in some non-members. The OECD methodology of measuring agricultural support disaggregates total transfers associated with agricultural policies into three main categories: transfers to producers; transfers to consumers; and transfers to general services to the agricultural sector.

The overall cost of agricultural support financed by consumers and taxpayers – net of import receipts – is measured by the Total Support Estimate (TSE). The transfers accruing directly to agricultural producers individually are estimated by the Producer Support Estimate (PSE). Transfers provided to the agricultural sector as a whole are calculated through the General Services Support Estimate (GSSE) indicator.

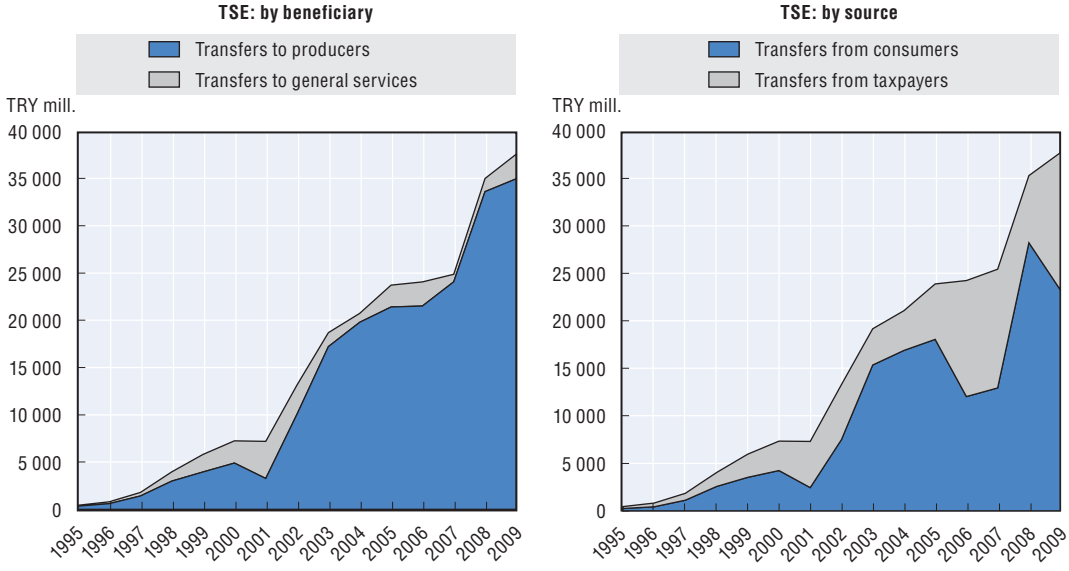
5.1. Total support to the agricultural sector

The TSE measures the annual monetary value of all gross transfers from taxpayers and consumers arising from policy measures that support agriculture, and can be defined either in terms of its intended beneficiaries or by the source of finance.

In terms of intended beneficiary, the TSE is the sum of: transfers to agricultural producers; transfers from taxpayers to general services to agriculture; and transfers from taxpayers to consumers of agricultural commodities. In terms of the source of financing the support, it can be defined as the sum of transfers from consumers, plus transfers from taxpayers, net of budget revenues.

As shown in Figure 5.1, the predominant component of overall agricultural support, particularly since 2001, is transfers which directly benefit agricultural producers. In the 2007-09 period, such transfers accounted for as much as 95% of overall agricultural support, with the remaining 5% being addressed to general services to the agricultural sector. Moreover, consumers are the main source of financing total support. This is in contrast to the composition of the average TSE in the OECD area as a whole, where taxpayers constitute the main source of financing and transfers to producers. In the OECD area, transfers to producers also constitute the main category of beneficiaries, but account for a much smaller share of total transfers to the agricultural sector than in Turkey (around 68% in 2007-09).

Figure 5.1. **Total Support Estimate in Turkey, by source and beneficiary, 2007-09**

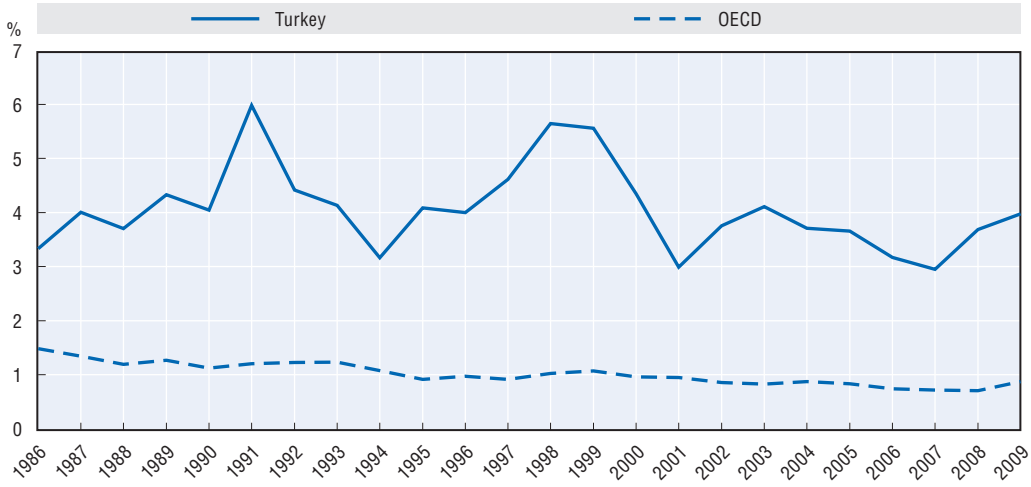


Note: TSE by source is net of budget revenue.
Source: OECD, PSE/CSE Database, 2010.

The evolution of TSE can be more clearly evaluated when expressed in real terms as a share of total GDP. As shown in Figure 5.2, in the OECD area this share has been falling consistently, reflecting not only the progress of policy reform, but also the shrinking importance of the agricultural sector in the overall economy. Between 1986-88 and 2007-09, the TSE fell in all OECD countries and, on average, reached 0.9% in 2007-09, down from 2.3% in 1986-88 (Figure 5.3). For Turkey, the share of TSE in GDP remained virtually unchanged between 1986-88 and 2007-09, at around 3.7%, which is the highest in the OECD area.

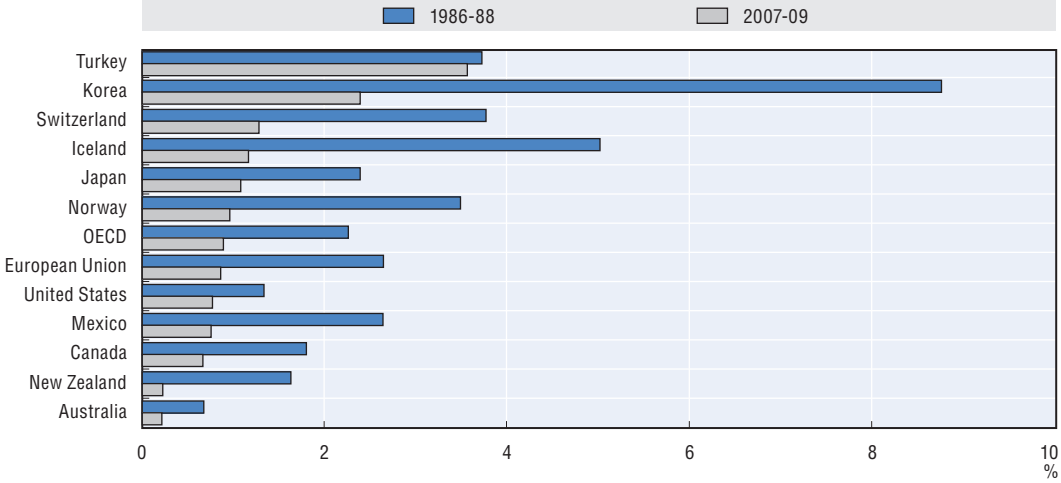
Figure 5.2. **Evolution of Total Support Estimate in Turkey and the OECD area, 1986-2009**

% of GDP



Source: OECD, PSE/CSE Database, 2010.

Figure 5.3. **Total Support Estimate by country, 1986-88 and 2007-09**



Note: Countries are ranked according to 2007-09 levels.

1 For Mexico, the years 1986-88 are replaced by 1991-93.

2. Austria, Finland and Sweden are included in the OECD total for all years, and in the EU from 1995. The Czech Republic, Hungary, Poland and the Slovak Republic are included in the OECD total for all years, and in the EU from 2004. The OECD total does not include EU member states which are not members of the OECD.

3. EU12 for 1986-94, including the ex-GDR from 1990; EU15 for 1995-2003; EU25 for 2004-06; EU27 from 2007.

Source: OECD, PSE/CSE Database, 2010.

5.2. Transfers to producers

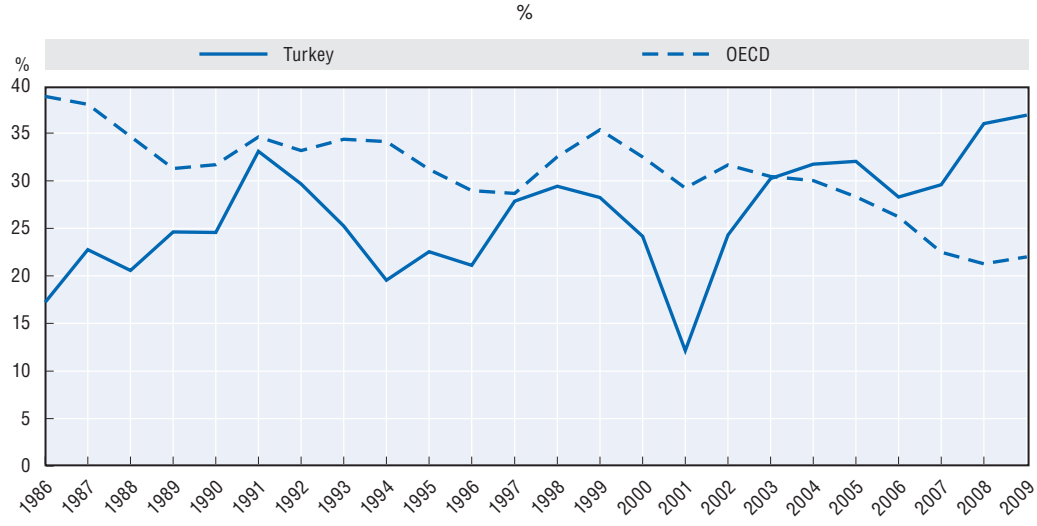
The PSE represents the transfers from consumers and taxpayers to agricultural producers arising from policy measures that support agriculture. It comprises market price support (MPS) plus budgetary payments from government to farmers.

The PSE indicators are expressed in both absolute monetary terms (in national currency, US dollars and in euros) and in relative terms – as a percentage of the value of gross farm receipts (including support payments) in each country for which the estimates are made. The percentage PSE (% PSE) provides the means to measure the degree to which farmers are supported in a way that is not influenced by the sectoral structure and inflation rate of the country concerned. This feature makes this indicator the most widely acceptable and useful indicator for the comparison of support to farmers across countries and over time.

Turkey's "standard" PSE products account for less than 50% of the country's value of agricultural output. In order to reflect the greater share of field crops and horticultural products in Turkey's output mix, apples, cotton, potatoes, tomatoes, tobacco and grapes are added into the calculation of aggregate MPS, which is then "grossed-up" to represent market price for the sector as a whole. This extended product selection covered about 60% of output in the 2007-09 period. The MPS of the remaining 40% of value of total agricultural production is calculated through extrapolation.

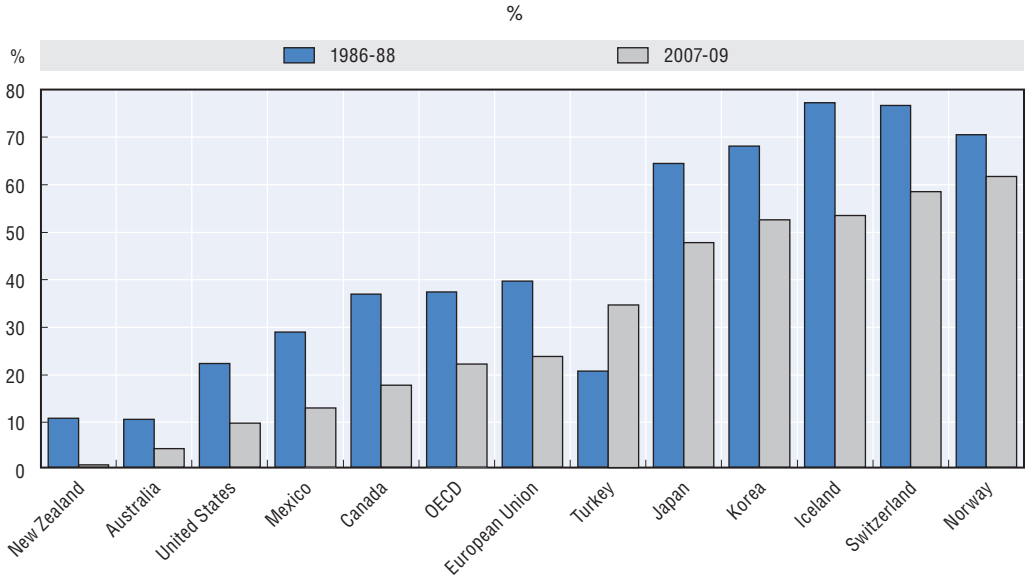
Figure 5.4 shows the evolution of the % PSE over 1986-2009. From 17% at the beginning of the period, it bottomed out at 12% in 2001 and gradually increased thereafter, reaching a peak at 37% in 2009. While the % PSE was lower than the average in the OECD area over the 1986-2002 period, from 2003 onwards it was higher, with the gap between the OECD area and Turkey increasing as from 2007. Between 1986-88 and 2007-09, Turkey was the only country for which producer support increased – from 20% in 1986-88, to 34% in 2007-09, which was higher than the OECD average (22%) (Figure 5.5). Overall, although support levels to producers have varied widely over time and across commodities, the evolution of the PSE and related indicators (discussed below) clearly indicates an upward trend since 2001.

Figure 5.4. **Evolution of producer support in Turkey and the OECD area, 1986-2009**



Source: OECD, PSE/CSE Database, 2010.

Figure 5.5. **The Producer Support Estimate by country, 1986-88 and 2007-09**



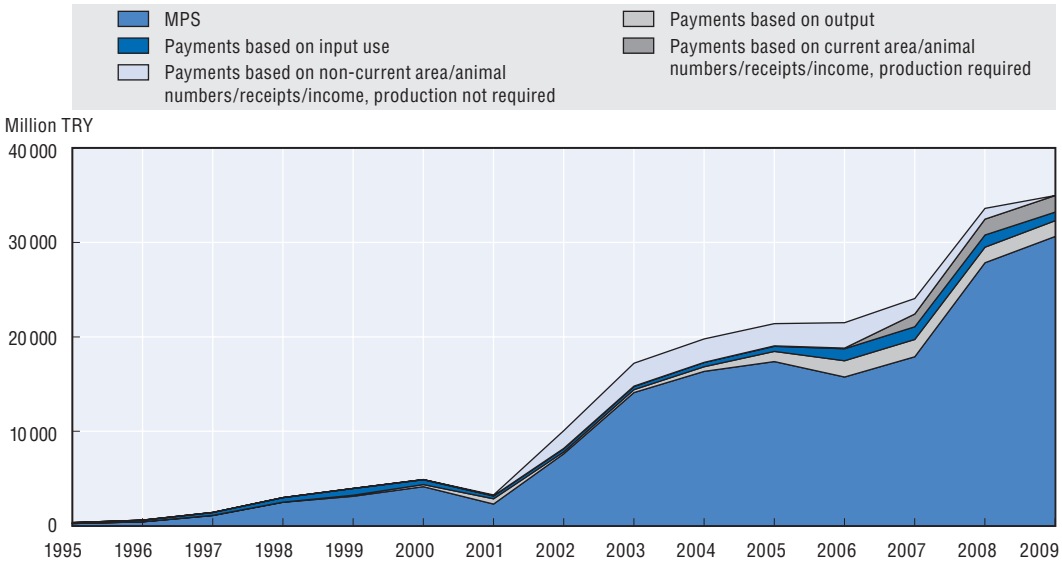
Note: Countries are ranked according to 2007-09 levels.

1. For Mexico, the years 1986-88 are replaced by 1991-93.
2. Austria, Finland and Sweden are included in the OECD total for all years, and in the EU from 1995. The Czech Republic, Hungary, Poland and the Slovak Republic are included in the OECD total for all years, and in the EU from 2004. The OECD total does not include EU member states which are not members of the OECD.
3. EU12 for 1986-94 (including the ex-GDR as from 1990); EU15 for 1995-2003; EU25 for 2004-06; and EU27 from 2007.

Source: OECD, PSE/CSE Database, 2010.

Support to producers is dominated by market price support, which accounted for 82% of the PSE in 2007-09 (Figure 5.6). The combined share of the most distorting policies (support based on commodity output and variable input-based payments without input constraints) in the PSE declined over time. While it accounted for almost all of the producer

Figure 5.6. **Composition of the Producer Support Estimate, 1995-2009**



Source: OECD, PSE/CSE Database, 2010.

support in 1986-88, in 2007-09 it accounted for approximately 89%. Reductions of the most distorting forms of support have been offset by increases in the Direct Income Support payment, which was introduced in 2001 (but later phased-out, in 2009). In 2009, payments based on output also increased, particularly for milk, maize and sunflowers.

Turkey has a significantly higher share of support based on MPS than the OECD average (Table 5.1). Moreover, while in the OECD area the share of MPS in the PSE has been declining over time, in Turkey it has been increasing, and reached 88% in 2009 (46% in the OECD area).

Table 5.1. **Composition of the Producer Support Estimate in Turkey and the OECD area**

%

	1986-88		2008		2009	
	Turkey	OECD	Turkey	OECD	Turkey	OECD
MPS	75	77	83	44	88	46
Payments based on output	2	6	5	2	4	2
Payments based on input use	23	8	4	13	3	13
Payments based on current A/An/R/I, production required	0	8	5	13	5	13
Payments based on non-current A/An/R/I, production required	0	0	0	1	0	1
Payments based on non-current A/An/R/I, production not required	0	1	3	24	0	23
Payments based on non-commodity criteria	0	0	0	3	0	2

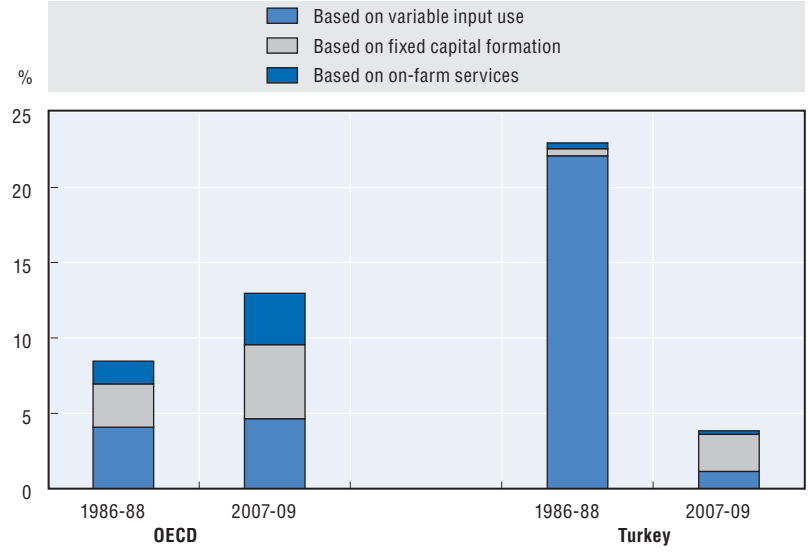
Note: A = area; AN = animal numbers; R = receipts; I = income.

Source: OECD, PSE/CSE Database, 2010.

By contrast, in Turkey the share of payments based on input use in the PSE has significantly declined, from 23% in 1986-88, to 4% in 2007-09, while in the OECD area, on average, it has increased (from 8% in 1986-88, to 13% in 2009) (Table 5.1 and Figure 5.7). This decline is primarily attributable to the sharp fall in payments for variable input use, following the abolition in 2001 of input subsidies, such as those for fertilisers and pesticides.

Figure 5.7. **Share of payments based on input use in producer support, 1986-88 and 2007-09**

%

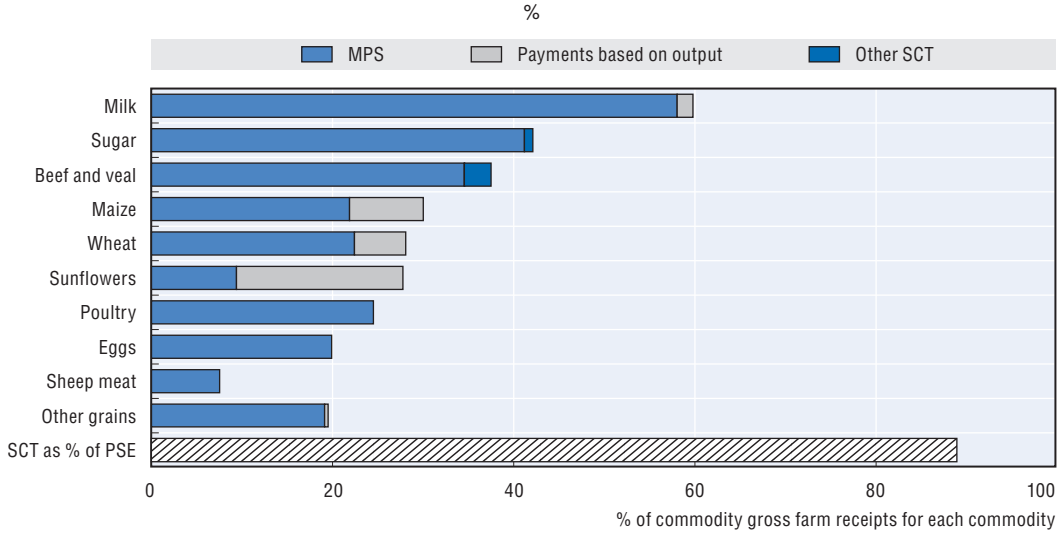


Source: OECD, PSE/CSE Database, 2010.

Producer Single Commodity Transfers (PSCT) are those transfers related to the production of a single specific commodity. The producer must produce the designated commodity in order to receive the payment. For example, the transfer that arises from a deficiency payment for wheat is specific to wheat, in that wheat producers are those who benefit directly from the transfer.

The percentage PSCT (% PSCT), which is similar in concept to the % PSE, measures support provided as PSCT expressed as a share of total receipts for that specific commodity. The share of PSCT increased from 78% of producer support in 1986-88, to 86% in 2007-09. The % PSCT was more than 30% for sugar, milk, and beef and veal over 2007-09, suggesting that more than 30% of the revenue for those commodities was made in the form of policy transfers (Figure 5.8). In 2009, the % PSCT was 72% for milk and 40% for barley and other grains. Reflecting the composition of total support to producers (PSE), MPS is overwhelmingly the principal form of transfers to single commodities. Payments based on output are also relatively important for sunflowers, wheat, maize and, to a lesser extent, milk.

Figure 5.8. **Producer Single Commodity Transfers by commodity, 2007-09**



Source: OECD, PSE/CSE Database, 2010.

The level of MPS increased over the 2007-09 period by an annual average rate of 26%. This increase was due to a rise in both output (increasing the base to which support is applied) and in the amount of MPS for each unit of output (termed unit MPS). For example, the MPS for milk, which accounts for around one-fifth of total MPS, increased, on average, by 102% annually (Table 5.2). Of this, 97% is attributable to the rise in unit MPS, and the remaining 5% is explained by a rise in production. In contrast, for apples, changes in MPS are mainly explained by changes in output.

The rise in the unit MPS can be further decomposed into the part due to a change in domestic prices for producers and the part due to the world (reference) price. As shown in Table 5.2, the increased gap between domestic and world prices is mainly the result of higher domestic producer prices. In fact, for wheat, potatoes, grapes, apples and poultry, the rise in domestic producer prices more than offset the effects of higher world prices. Only in the case of sugar did the higher world price contribute more than higher producer prices to the increased MPS per unit.

Table 5.2. **Drivers of change in market price support, 2007-09**

Annual % change

	Wheat	Sugar	Potatoes	Grapes	Apples	Milk	Poultry
Change in MPS	24	28	9	64	19	102	46
due to:							
Change in output	7	5	2	4	14	5	9
Change in unit MPS	17	23	7	60	5	97	37
due to:							
Change in domestic producer price	50	10	21	70	6	68	78
Change in world price	-33	16	-14	-10	-1	29	-41

Note: % change in national currency. Contribution to % change is calculated assuming all other variables are held constant.

Source: OECD, PSE/CSE Database, 2010.

The producer Nominal Assistance Coefficient (producer NAC) is the ratio between the value of gross farm receipts (including support) and gross farm receipts (at the farm-gate), valued at border prices (measured at the farm-gate). It measures the extent to which receipts come from the marketplace. In general, changes in producer NAC in Turkey have followed the evolution of the percentage PSE, increased over time and remained higher than the OECD average. In 2007-09, producers' gross farm receipts were 1.52 times higher than they would have been on the world market, while the OECD average was 1.28 times higher.

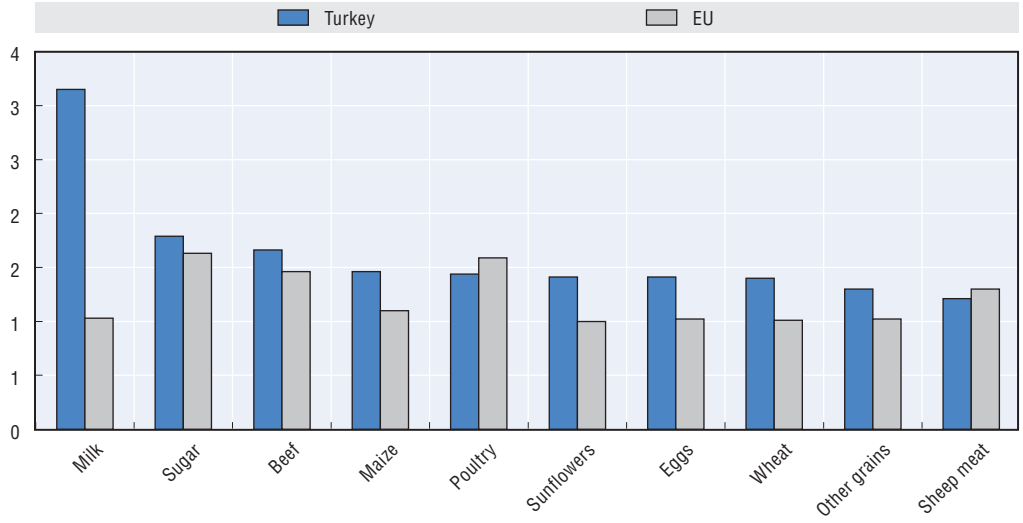
The Producer Nominal Protection Coefficient (PNPC) is the ratio between the average price received by producers (at the farm-gate), including payments per tonne of current output, and the border price (measured at the farm-gate). Since MPS is the dominant factor in the PSE for Turkey, the evolution of the producer NPC through time closely followed that of the producer NAC (Table 5.3). The PNPC also increased over time, and is much higher than the corresponding PNPC in the OECD area. While in 1986-88, prices received by Turkish farmers were 21% higher than world prices, in 2007-09 they were 38% higher. In contrast, the average figure for the OECD area decreased from 28% in 1986-88, to 13% in 2007-09. In terms of individual commodities, dairy has the highest PNPC, followed by sugar and beef (Figure 5.9). In general, and excluding poultry meat and sheep meat, the PNPC was higher than in the EU.

Table 5.3. **Producer NAC and Producer NPC, Turkey and OECD average**

	1986-88	1999-2001	2007-09
Producer NPC			
Turkey	1.21	1.26	1.38
OECD	1.28	1.34	1.13
Producer NAC			
Turkey	1.25	1.28	1.52
OECD	1.59	1.48	1.28

Source: OECD, PSE/CSE Database, 2010.

Figure 5.9. **Producer Nominal Protection Coefficients in Turkey and the EU, by commodity, 2007-09**



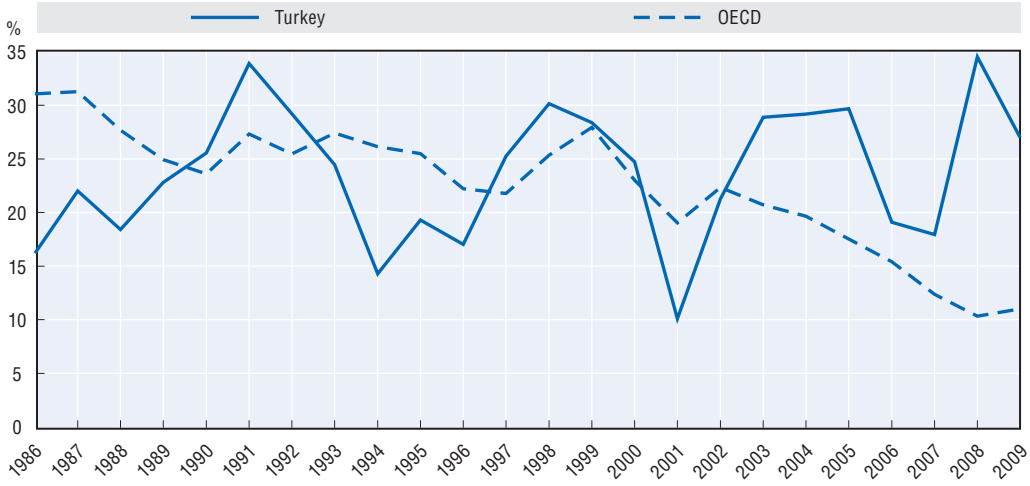
Source: OECD, PSE/CSE Database, 2010.

5.3. Transfers to consumers

The changes in support to agricultural producers are essentially the result of variations in the gap between world prices and domestic prices, as measured by market price support. These changes are also reflected in the evolution of transfers from consumers to producers, the main component of the Consumer Support Estimate (CSE).

The cost imposed on consumers, as measured by the % CSE, has been very variable over time, with some years higher than the average in the OECD area, and other years lower. It increased from 25% in 1986-88, to 38% in 2007-09. However, while since 2002 the average % CSE in the OECD area has declined steadily, for Turkey the trend has been upwards (Figure 5.10), with consumers paying prices that were 38% higher than world prices in 2007-09, compared with 25% in 1986-88.

Figure 5.10. **Evolution of consumer support indicators in Turkey and the OECD area, 1986-2009**



Source: OECD, PSE/CSE Database, 2010.

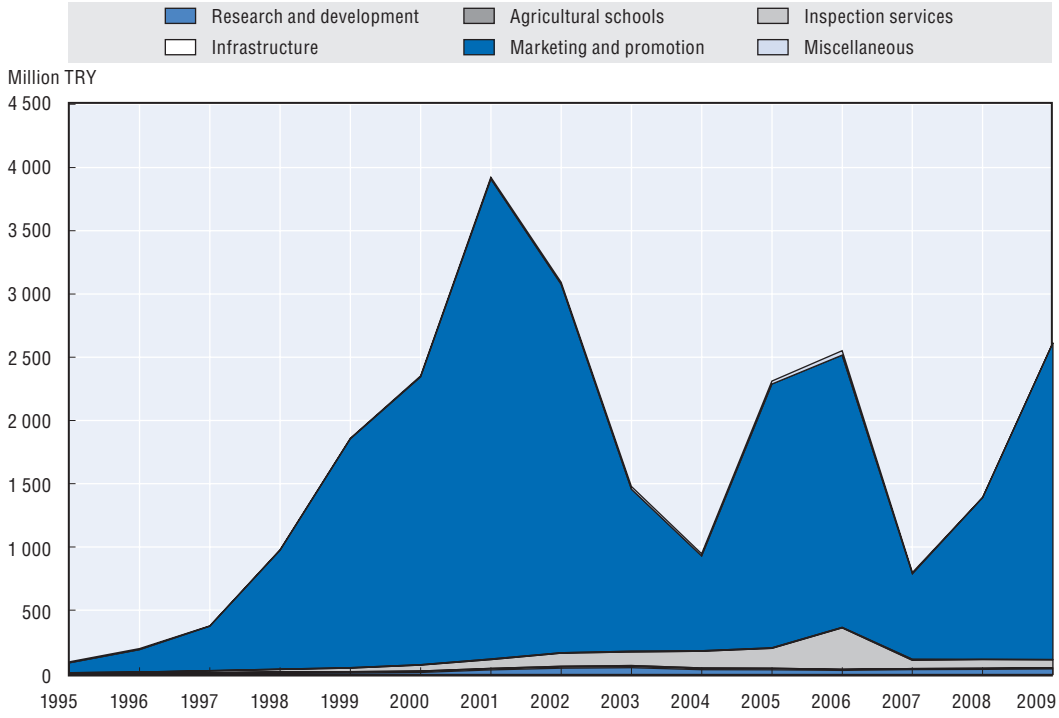
5.4. General support to the agricultural sector

The GSSE indicator entails transfers whose aim is to improve the functioning and competitiveness of the agricultural sector. The transfers are non-commodity specific and do not accrue directly to individual farmers: they include policy measures, such as investments in research and development; agricultural schools; infrastructure; marketing and promotion; and public stockholding.

As noted earlier, for the OECD area as a whole, these measures contribute just over 20% of total support. By contrast, in Turkey, GSSE support to the agricultural sector has been low and declining in importance over time. The share of support to general services in total support to agriculture decreased from 8% in 1986-88, to 5% in 2007-09, and remained well below the OECD average of 23%.

In general, transfers to general services are considered relatively benign, with a potential for distortion that is deemed lower than transfers to producers. By contrast, in Turkey, a key feature of the support to general services is that it has consisted largely of bail-out payments made to the SEEs and ASCUs.

Figure 5.11. **Evolution of the General Services Support Estimate by component, 1995-2009**



Source: OECD, PSE/CSE Database, 2010.

In particular, the GSSE is dominated by marketing and promotion, which in 2007-09 accounted for as much as 93% of the GSSE (Figure 5.11). The marketing and promotion category is, in turn, comprised of two elements: i) transfers to ASCUs and equity injection from the Treasury to SEEs (80% in 2009); ii) duty loss and debt write-offs. During 1995-2002, these payments never fell below 85% of the GSSE, and over the same period they averaged one-third of total support. Even after the reforms of 2001, the cost of financing these organisations continued to require considerable transfers. More specifically, spending for marketing and promotion rose sharply in 2001 due to duty loss and debt write-offs, and again in 2006 and 2009, due to equity injections from the Treasury to SEEs.

Chapter 6

Future Directions for Agricultural Policies in Turkey

In this chapter Turkey's agricultural policies are evaluated in relation to the principles and operational criteria of transparency, targeting, tailoring, flexibility and equity, which were agreed by OECD Agricultural Ministers in 1998 for the evaluation of reform efforts in OECD countries. These evaluation criteria were designed to promote an economically healthy sector that contributes to a wider economy, respects natural resources, and uses inputs effectively without recourse to production- and trade-distorting support. This chapter identifies some issues and emerging challenges for policy and concludes by providing some key policy recommendations.

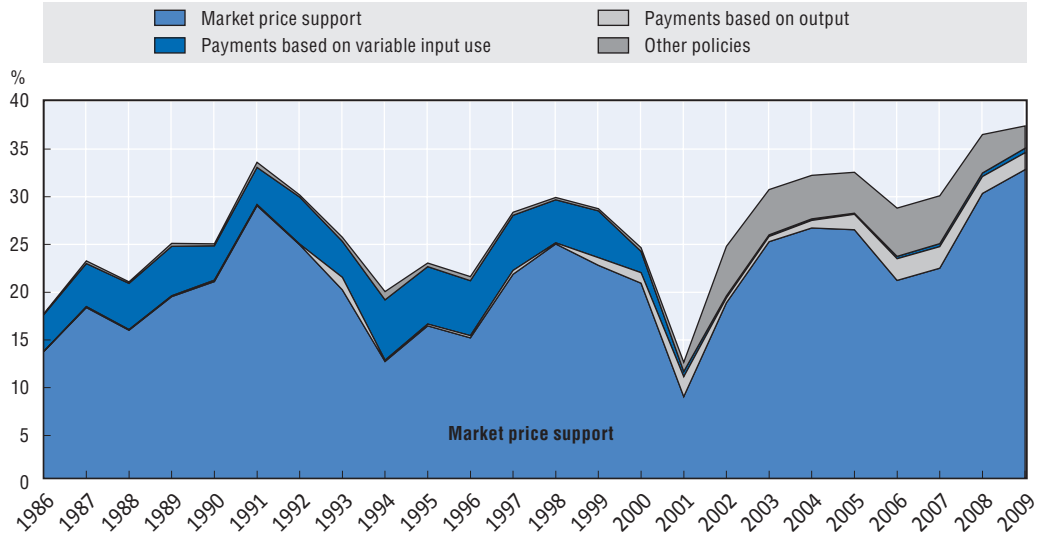
6.1. Overall assessment of policy reform progress since the mid-1980s

Progress in improving market orientation has been variable, with frequent ad hoc *changes being made to policy settings during periods of economic crisis and political instability …*

Progress since 1986-88 towards less production- and trade-distorting policies is assessed in terms of how much support is provided (level of support) and how it is delivered (composition of support). As shown in Figure 6.1, the level of producer support (as measured by the % PSE) has been very variable, with a clear upward trend since 2001.

Figure 6.1. **Evolution of producer support: Most-distorting and other policies**

% of gross farm receipts



Source: OECD, PSE/CSE Database, 2010.

Moreover, the share of the most production- and trade-distorting forms of producer support (*i.e.* payments based on output, and payments based on variable input use with no constraints attached) constitute the predominant form of producer support over the 1986-2009 period, with market price support being the main component, accounting for as much as 88% of producer support in 2009 (46% over the OECD area). In sectors such as milk, beef and veal, sugar, barley and other grains, over one-third of revenue originates from policy transfers.

Whereas, in the OECD area as a whole, transfers from taxpayers constitute the main source of finance for support to producers, in Turkey producer support is primarily financed by consumers through border protection. Reflecting the particularly large share of

agriculture in the economy, Turkey has the highest level of total support to the agricultural sector as a share of Gross Domestic Product (GDP) in the OECD area.

Support is also highly cyclical and more variable than in other OECD countries. The wide fluctuations are due not only to financial crises, such as those experienced in 1994 and 2001, and to exchange rate fluctuations, but also to weather conditions and severe droughts. According to the OECD's 2006 economic survey on Turkey, budgetary transfers to farmers increase above trend in election years and decline in others (OECD, 2006).

Policies pursued from the mid-1980s to 2000 were financially unsustainable …

Over this period, the government heavily intervened in supporting the agricultural sector, primarily through input and output price subsidies. Credit, fertilisers, chemicals and seeds were all provided at subsidised prices. Price support was accorded to all output markets, with the exception of vegetables and most fruits, through intervention purchases, tariff and non-tariff measures (OECD, 1994). Moreover, payments were coupled to commodity production.

Despite the high level of transfers to agriculture and the introduction of price support policies, the anticipated increase in agricultural incomes did not materialise. Overall agricultural performance was weak (growing by about 1% per year from 1980 to 2000); average *per capita* non-agricultural income was about three times larger than that of agriculture; and rural income was approximately half that of urban sectors (TurkStat, 2010a). A multiplicity of largely conflicting policy objectives and tools, distortionary price support and the way in which transfers from government to farmers were financed were the principal causes of the sector's lagging performance. The financing of the large number of state-owned and state-controlled enterprises was a burden to the overall budget of the country.

… and ambitious reforms were initiated in the late-1990s …

The financial unsustainability of the agricultural policies then in place became evident in the aftermath of the 1994 economic crisis. The government attempted to control the ensuing financial burden of these policies by restricting the number of crops qualifying for intervention payments and beginning to phase-out the fertiliser subsidy.

By 2000, the state of agricultural policies, in line with the country's overall economic policies, was in disarray and the Turkish government adopted an ambitious programme of agricultural policy reform, which aimed at dramatically reducing artificial incentives and government subsidies in order to attain fiscal stabilisation and enhance economic efficiency.

The agricultural policy reform programme entailed not only the re-instrumentation of policy and a change of policy delivery systems, but also included drastic measures related to agriculture-related State Economic Enterprises (SEEs) and the quasi-governmental Agricultural Sales Co-operative and Agricultural Sales Co-operative Unions (ASCUs), and several new pieces of legislation came into effect. SEEs were to be restructured and privatised, and ASCUs were to become financially autonomous, member-controlled co-operatives. The targeted companies were TURKSEKER (the Turkish Sugar Company), TEKEL (the Turkish Alcohol and Tobacco Company) and ÇAYKUR (the Turkish Tea Company).

The ASCU Law was enacted in June 2000. Its purpose was to reduce the role of government in the management of these co-operatives and, especially, to remove the

burden of financing the purchases made by ASCUs, which had, in the past, intervened to support certain commodity prices on behalf of the government. The Sugar Law, enacted in 2000, dismantled the sugar beet price support policy and also introduced a plant-based sugar quota system. A similar structure to limit the influence of TEKEL in the market was designed for tobacco. Farmers and manufacturers (both public and private) were given the responsibility for deciding the price of raw tobacco, mostly through contract farming. ÇAYKUR introduced a quota on the procurement of green tea from farmers, and TEKEL and TURKSEKER were transferred to the Privatisation Agency. Similarly, it was decided to eliminate the subsidised credit functions carried out by the Agricultural Credit Co-operatives and underpinned by the state-owned Agricultural Bank (Ziraat).

… which culminated in a comprehensive policy reform in 2001 …

This reform programme was underpinned by a World Bank loan agreement – the so-called Agricultural Reform Implementation Project (ARIP), which was a major element in Turkey's overall structural adjustment programme, in response to the macro-economic crisis of 1999-2001. The three over-arching objectives of ARIP were: i) to contribute to fiscal stabilisation by significantly reducing the financial burden of agricultural support policies; ii) to improve economic efficiency and productivity in the sector; and iii) to provide partial compensation to farmers from income losses resulting from the reform measures.

Within this new policy framework, measures have been taken in four main areas: i) elimination of price support and credit subsidies, and their replacement with a less production- and trade-distorting direct income support (DIS) scheme for farmers, based on a uniform per-hectare payment; ii) reduction of output intervention purchases financed from the budget; iii) withdrawal of the state from direct involvement in the production, processing and marketing of crops; and iv) provision of one-time transition payments to assist the switching-out of crops in excess supply (such as hazelnuts and tobacco) to alternative crops.

ARIP was radically restructured in 2005 in order to enable it to address, in particular, issues such as fragmented parcels of farms and licensed warehouses. Support to expand work on the land registry and on cadastral projects was increased, and new sub-components were added: land consolidation; village-based participatory investments; institutional reinforcement of farmers' organisations; and environmentally based agricultural land utilisation (ÇATAK).

… the initial impacts of reform were substantial …

ARIP played a significant role in the fiscal stabilisation programme and was successful in initiating budgetary discipline. Subsidies for fertiliser and pesticides were abolished in 2001 and 2002, respectively, while the phasing-out of credit subsidies was completed by 2002. Stringent budgetary constraints were imposed on the SEEs and ASCUs. It is estimated that fiscal savings over the years 2002, 2003 and 2004 exceeded USD 10 billion (World Bank, 2009).

Moreover, the agricultural support system has become more transparent as the burden of agricultural policies to consumers has significantly declined. While Turkish consumers financed as much as 61% of the overall support provided to the agricultural sector in 1999, in the form of higher food prices, this figure was reduced to 34% in 2001. For the same years,

the implicit consumer taxation, as measured by the % CSE, decreased by 18 percentage points (from 28% in 1999, to 10% in 2001).

The DIS scheme also achieved its objective of mitigating potential negative effects on farm incomes following the withdrawal of government support. Indeed, under the reform programme, agricultural income fell sharply in the aftermath of the removal of the very high levels of distorting support. It is estimated that agricultural income fell by 16% between 1999 and 2002 (four-fifths of which was due to the removal of support), although it subsequently began to recover, as from 2003 (World Bank, 2009).

The aim of the DIS scheme was not to provide producers with full compensation for price cuts, or to relieve rural poverty: it was intended, rather, as a transitional measure to cushion the immediate impact of reform on farm incomes. It has been estimated that, on average, DIS payments compensated farmers for approximately half of their short-term income loss (World Bank, 2004b). In particular, DIS compensation has been important for farmers in the disadvantaged areas in the east and south-east, where pre-reform incomes and subsidised input use were lower than in other regions (Bayaner and Bor, 2006).

Additional benefits of the DIS scheme were the establishment of the National Registry of Farmers (NRF) throughout the country, which was one of the programme's initial objectives, and the cadastral work. An accurate, reliable and transparent registry of farmers is critical for the efficient functioning of DIS and any other area payment programmes. The NRF has now become the basic rural database for Turkey. The World Bank evaluation report on ARIP notes that remarkable progress has been made in completing the coverage of nationwide cadastre and land registry (World Bank, 2009).

… and some gains in productivity and efficiency have been achieved …

Apart from its contribution to fiscal stabilisation, the reform programme had important impacts on the agricultural sector's productivity and technical efficiency. Studies show that the sector's efficiency increased in the early years of ARIP (Box 6.1).

Although yield is a very partial measure of agricultural productivity, changes in individual crop yields over time can provide some useful insights as to the effectiveness of the policy changes. As shown in Annex Table A.7, there has been a significant increase in yield for several crops, such as maize, cotton and rice. The reforms had a more profound impact on tobacco farms, whose yields decreased as producers adjusted to the new market conditions created by the privatisation of TEKEL. The decline in tobacco yields was, however, offset by an improvement in the quality of production (Çakmak and Dudu, 2010a).

The radical changes that have been made to government policies, such as the abolition of the fertiliser price subsidy, the introduction of fixed payments per hectare and changes in the organisational structure of the seed producers during the reform period, have also led to a significant increase in the use of certified seeds per hectare (particularly for maize and rice) and a decline in the use of inorganic fertilisers (Çakmak and Dudu, 2010a; Figure 4.1).[1] The increase in the use of certified seeds may, in part, explain the productivity gains.

Box 6.1. **Technical efficiency in the agricultural sector**

The number of studies on the efficiency issue in agriculture has gradually increased in recent years with the growing availability of data, although results are ambiguous. Mollavelioğlu *et al.* (2010) analyse the efficiency of the Turkish agricultural sector in comparison with the EU for the 1995-2005 period, using the Malmquist index technique. They find that total factor productivity in Turkey declined by 17.7% over the period, while in the EU it increased by 25.8%. Moreover, in Turkey both technological change and efficiency change declined (6.5% and 12.1%, respectively), while in the EU total factor productivity improvements, on average, originated from technological improvements.

In contrast, Çakmak *et al.* (2008), in a comprehensive analysis of the efficiency in Turkish agriculture, based on data provided by the Quantitative Household Surveys conducted in 2002 and 2004 in the context of ARIP, find that the average efficiency of farm households increased (from 32% in 2002, to 45% in 2004). However, this conclusion is controversial, since Çakmak and Dudu (2010b) report that – by using the same data, but a different set of explanatory variables – the change over time is not found to be significant. The reported efficiency levels are slightly higher than 50% for both years. In both studies, the technical efficiency is higher in the western parts of the country. Furthermore, producers of fruit and vegetables are found to be more efficient. On the other hand, Çakmak and Dudu (2010b) observe that technical efficiency is significantly lower than average, whether the share of subsidies received in farmers' total income is low or high.

Candemir and Deliktaş (2006) analyse the efficiency structure of the General Directorate of Agricultural Enterprises' farms between 1999 and 2003. They report that average technical efficiency is around 60%. They also find that there is a decline in the efficiency of the enterprises due to difficulties experienced in adapting to new technologies. The reported average technical efficiency is reasonable, since in most parts of the country the General Directorate of Agricultural Enterprises' farms are amongst the most efficient producers. Their results should be treated with care since they include state farms.

Furtan *et al.* (1999) use the Tornqvist total factor productivity method to analyse the input utilisation efficiency of Turkish agriculture between 1960 and the 1990s. They report that productivity in the agricultural sector increased between the 1960s and 1988 by approximately 2.5 times. However, they observe a decline in the increase of productivity after 1988. They relate productivity in agriculture to R&D activities, and report that the elasticity between productivity and R&D activities is close to one.

Demir and Mahmud (2002) analyse technical efficiency in agriculture by using province-level data for the years 1993-95. Their results support the findings of Furtan *et al.* They found that mean efficiency in the agricultural sector is about 42%, which is very low. However, they report that a great proportion of the inefficiency can be explained by prevailing agri-climatic conditions.

Abay *et al.* (2004) apply a data envelopment analysis method to a survey of data collected in 2000 for tobacco production to determine the technical efficiency of tobacco producers. They report an average efficiency of 45.6%, which is compatible with other studies on the Turkish agricultural sector. They relate the inefficiency to input-based subsidies, noting that these subsidies are likely to cause inefficiency in input utilisation, due to their distortionary effects.

Another study on the tobacco farmers, by Ören and Alemdar (2006), reports 45% technical constant returns to scale and 56% technical efficiency under variable returns to scale for 2001.

… but implementation of policy reforms encountered difficulties and farmers received mixed signals from government policies …

The reform programme was extremely comprehensive and multifaceted, covering almost all aspects of the policy arena, including the reduction of import tariffs. But its implementation encountered several difficulties, as embarking on a complete overhaul of the support system proved to be a challenging undertaking. Agricultural tariffs were reduced for only some commodities (*e.g.* grains) in the early years of the reform, and Turkey's tariff profile in agri-food products remains fundamentally unchanged.

In the early stages of the programme, problems were encountered in completing the national land registry in rural areas, for reasons such as inability to prove land ownership and disputes concerning rights of possession. The 50 ha ceiling for payments has led to some larger farms being divided amongst family members (Bayaner and Bor, 2006). Yet, despite the absence of a farmers' registry and the incomplete cadastral works at the inception of the DIS scheme, participation in these projects has increased rapidly.

However, DIS, which was a completely new policy tool in Turkey, faced harsh criticism from the various stakeholders, particularly farmers. Unfamiliarity with the scheme, lack of adequate communication on the rationale and meaning of decoupled support, and uncertainty concerning the exact timing of the payments were the main reasons for its unpopularity (Lundell *et al.*, 2004; Çakmak and Dudu, 2010a). In order to increase the stakeholders' acceptance of the DIS, new labels were given to direct payments, such as the "diesel payment" in 2003, which was also independent of crop choice, and the area-based "fertiliser payment" – based on land area, with rates varying by crop groups – in 2005.

According to The World Bank, the implementation of the farmer transition component of ARIP, which was aimed at decreasing the production of low-quality tobacco and hazelnuts, was not successful (World Bank, 2009). For hazelnuts, it was envisaged to provide payments for uprooting poor-quality trees, and transition payments to help during the shift from hazelnut production to alternative crops. However, only 0.05% of the target area (*i.e.* 500 ha of the hazelnut-growing area) was actually reduced (World Bank, 2004).

Ironically, as shown in Table 6.1, the area expanded – by about 20% – as government purchases continued without interruption throughout the implementation period of the hazelnut reduction programme. Eventually, due to the increasing cost of intervention purchases, the government introduced another hazelnut reduction programme for 2009-11, to enforce the already-existing law designed to maintain the stability of hazelnut production.

Table 6.1. **Hazelnut area and production, 2001-09**

	Area	Production
	(000 ha)	(000 tonnes)
2001	545	625
2002	550	600
2003	563	480
2004	572	350
2005	584	530
2006	620	661
2007	632	530
2008	640	801
2009	642	500

Note: Data for 2009 are provisional.

Source: TurkStat (2010).

The participation rate for tobacco farmers has also been low – although it is higher than that for hazelnuts – only slightly more than half of the initial targeted area has been converted to alternative crops. Producers were receiving mixed signals, with the government attempting to shift farmers away from tobacco production at the same time that TEKEL was offering them advance payments on the purchase of tobacco. The target level of area reduction has also been revised three times (from 36 000 ha initially, to 26 000 ha and, finally, to 9 000 ha [Akder, 2007]).[2] The programme was renewed in 2008 and the total area of participation reached 5 000 ha (World Bank, 2009).

… and some institutional reforms proceeded at a slow pace …

The new ASCU Law, which was enacted in 2000, was aimed at starting in motion the restructuring process of the whole ASCU system: 16 ASCUs were to become autonomous co-operatives owned and operated by member-farmers. The World Bank reports that none of the ASCUs has yet become a fully commercial enterprise (World Bank, 2009). Although the volume of products handled by ASCUs has, as a whole, declined, this was not true for all of them and in some cases the decline has not been rapid.

The ASCUs were highly overstaffed, with as many as 12 000 of the 16 500 permanent employees estimated to be surplus to requirements (World Bank, 2010). The Law specified the right of ASCUs to reduce the labour force, but with the severance payments mandated by Turkish law. The staff of the whole ASCU system was reduced by almost 50%, but detailed information on the situation of the revolving fund that was established to ease the financial difficulties of the ASCUs remains unclear (Çakmak and Dudu, 2010a).

Privatisation of some of the largest SEEs has been slow. For example: i) by the end of 2006, of the three original units of TEKEL (alcohol, tobacco and salt), only the alcohol enterprise had been privatised, while the cigarette enterprise had been put up for tender twice (unsuccessfully); ii) of the TSFAS's 25 sugar factories that were initially intended for privatisation, only two were actually privatised, while three privatisation attempts in 2008 and 2009 failed.

In the grains sector, TMO reserved its role as a major price-making actor in the grain sector, especially in the case of bumper harvests and/or low world prices. Although the intervention purchases of grains declined drastically at the early years of the reform programme, TMO has been actively involved in the market whenever it has been necessary (Table 6.2). For example, TMO increased its volume of intervention purchases to a record high in 2005, due to favourable weather conditions for cereals. Likewise, when domestic production falls short of demand, duty-free imports are used.[3]

TMO was also involved in support purchases of hazelnuts due to the financial difficulties experienced by the related ASCU (FISKOBIRLIK). The involvement of TMO in hazelnuts was terminated in 2009. TMO was left with a significant amount of hazelnut stock and it ceased sales of hazelnuts, following the good harvest in 2009 (TMO, 2009).

In the sugar sector, the two main objectives of the 2001 Sugar Law were to ease transition to compliance with the organisation of the EU's sugar common market, and to effectively curtail domestic production. Sugar quotas were successfully enforced, with levels remaining stable at around 2.2 million tonnes since 2002. In 2005, the privilege of writing-off "duty loss" (granted to TURKSEKER by government decree in 2003) was revoked, and the provision of sugar under an internal processing regime at world prices was lifted. Although these policy changes have increased domestic competition, tariff protection of 114% impedes the progress of structural adjustment.

Table 6.2. **Intervention purchases of TMO, 2000-10**

Thousand tonnes

	Wheat	Barley	Maize	Paddy	Hazelnuts
2000	2 959	509	29	41	
2001	1 459	952	0	19	
2002	333	380	79	59	
2003	545	27	381	130	
2004	2 023	3	474	15	
2005	4 171	796	661	12	
2006	1 457	725	0	87	163
2007	121	3	0	33	163
2008	63	0	832	1	368
2009	3 770	1 294	183	0	0
2010	980	916	83	0	0

Source: TMO, *www.tmo.gov.tr/Main.aspx?ID=162*.

Although the reform programme included the privatisation of ÇAYKUR, it still maintains its old status in the tea market: it is still attached to MARA; and its purchase price of green tea from farmers is still announced by the government. Although ÇAYKUR's financial performance between 2004 and 2007 was profitable, it registered losses in 2008 due to a high increase in the purchase price of green tea and a shift in workers' status from temporary to permanent, in the wake of the 2007 general election (UT, 2009). ÇAYKUR's share in the market is close to 50%; private sector and illegal imports constitute the remainder, with approximately 35% and 15%, respectively.

For tobacco, the privatisation of TEKEL is a major achievement. Following the privatisation of the major alcoholic beverages and tobacco assets of TEKEL in 2008, market prices in the tobacco sector are now determined by market forces, either through contract negotiations between farmers and buyers, or open auction sales for non-contractual production. While the number of tobacco farmers; the volume of transactions and, to a lesser extent, the area, declined steadily from 2003 until 2010, the quality increased in 2008 (Çakmak and Dudu, 2010a).[4] In addition, in the regional distribution of tobacco farmers, the privatisation of TEKEL had a more profound impact than the tobacco reduction programme.

In the meats market, the Meat and Fish Organisation (EBK) a state-owned enterprise, established in 1952, was included in the 1992 privatisation programme, and became the Meat and Fish Products Company the following year, but in 2005 it was removed from the privatisation programme and once again became a public entity. The EBK possessed 37 establishments in 1990, including 30 bovine animal-small ruminant slaughterhouses; one meat- and broiler-processing plant; one meat-processing plant; one fish-processing plant; and one cold-storage facility. During 1995-2004, 18 slaughterhouses were privatised, five plants were transferred to other public institutions (*i.e.* army, state university and municipalities) and three plants were closed down. In 2010, the EBK possessed seven slaughterhouses and one meat- and poultry meat- processing plant. The EBK also has 10 retail shops in six provincial centres.

The EBK's market share in meat is rather small. For cattle meat production, including buffalo, its share declined, on average, from 15% (48 000 tonnes of annual production) before privatisation (taking the annual average over 1988-92) to 2.5% (9 300 tonnes of annual production) in 2005-09. The role of the EBK in the meat market has gained further importance since May 2010, as, with the lifting of import restrictions on slaughter animals,

fattening animals and meat imports, the EBK has assumed responsibility for management of the tariff rate quota, bids for importation and inspection.

The overall performance of the agricultural SEEs improved during the reform process, but there still remains ample scope for government intervention. TMO continues to be the major market regulatory agency and can be called upon whenever necessary. Should world prices fall, TMO may need financial support from the government, as has occurred in the recent past. Although TEKEL has now been privatised, the burden of past duty losses persists. Supply control in the sugar sector has been achieved, and the government has taken the necessary steps to limit potential transfers from the budget. The privatisation of TURKSEKER has not yet been accomplished. Since most of its factories are located in the relatively less-developed regions, this will require particular consideration.

… decoupled payments were short-lived and payments based on commodity output have again re-emerged as the core form of budgetary support …

The targets set by the Agriculture Strategy 2006-10 for the distribution of agricultural budgetary support as identified by MARA have not been met (Table 6.3). While the actual allocation for DIS was just under 50% below target, the target for deficiency payments was overshot by 154%. Likewise, the share of total agricultural support included in MARA's budget remained below the target level of 1% of total GDP. According to OECD estimates, the share of the Total Support Estimate (TSE) – which covers a wider range of policies than MARA, mentioned above – was, on average, 3.4% of GDP in 2006-10.

Table 6.3. **Distribution of agricultural budgetary payments, 2006-10**

%

Support instruments	Target (%)	Actual (%)
Direct Income Support (DIS) payments	45	20
Deficiency payments	13	33
Livestock support	12	17
Rural development	10	2
Compensatory payments-alternative crops	5	4
Crop insurance	5	1
Environmental support (ÇATAK, organic farming, good practices)	5	1
Other payments (*i.e.* R&D, agricultural extension and training activities, certified seeds support, credit support, etc.)	5	2
Total	**100**	**100**
Share in GDP	1	0.6

Source: MARA, 2007; SPO, 2011.

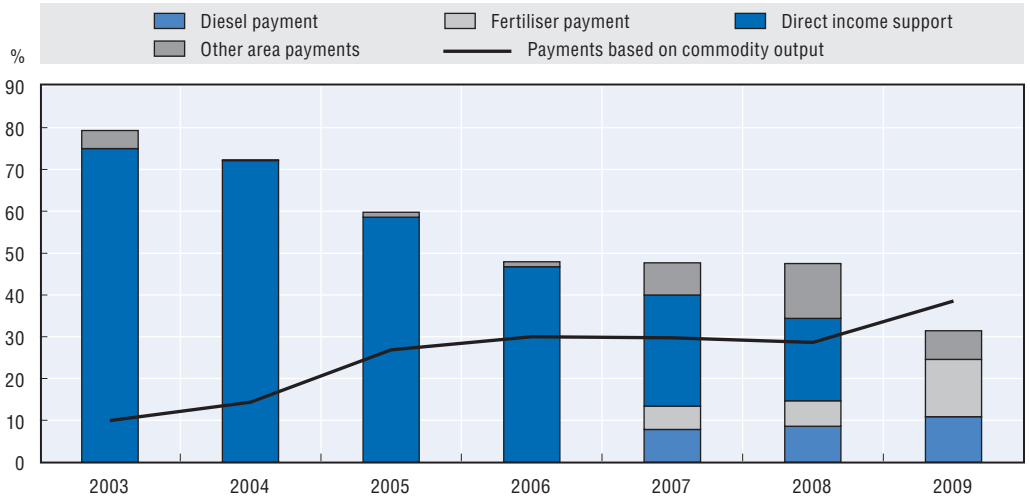
The DIS scheme was intended to become more targeted to specific farmers as the reforms progressed. However, the original plan was not adhered to for very long, and generous flexibilities were introduced in order to complete ARIP. New items were added during the amendment and extension of the loan agreement in 2005, and the allocation of the budgetary transfers was also altered.

The share of DIS payments in total budgetary support to agriculture was gradually decreased, and the scheme was practically eliminated in 2007 (DIS supports in 2008 were delayed payments from 2007). Moreover, the policy framework relating to budgetary expenditures has moved away from area payments, and is now fully coupled to current commodity production level payments. The share in funding for the new items in the

policy agenda, such as the environmental protection schemes, crop insurance support and rural development projects, remains relatively low.

As shown in Figure 6.2, although area-based payments were dominant until 2008, commodity output-based payments dominated budgetary payments in 2009. Diesel and fertiliser support are now the only remaining major area payments. The number of crops receiving fully coupled deficiency payments (called "premium payments") has been increased. Deficiency payments that had been reserved mostly for net imported crops were extended to cereals and feed crops in 2005 and to pulses in 2008. Payments to producers of cotton, wheat, fodder crops, milk, sunflowers and maize are among the top-funded, quantity-based budgetary transfers.[5]

Figure 6.2. **Share of area-based and commodity output-based payments in total payments to farmers, 2003-09**



Source: OECD, PSE/CSE Database, 2010.

… and new, more sophisticated, policies were introduced in 2010 …

The case of budgetary transfers has been further complicated by the introduction in 2010 of a "basin-based support programme", which differentiates the crops that will be eligible for deficiency payments across agricultural basins. By differentiating budgetary crop-specific support across regions, the government aims to change the crop pattern to increase the production of imported crops (*e.g.* oilseeds), while decreasing excess supply in others (MARA, 2010). The boundaries of the agricultural basins have been defined through the use of a very comprehensive model that takes into account the most important aspects of the sector.

Unlike the previous support system, which provided uniform support across the country, the new system, by differentiating deficiency payments by location, takes into account regional comparative advantage, which may bring about a more efficient geographic pattern of production. Although this can be considered a landmark in the history of Turkish agricultural policy, as this is the first time that an ecological model has been used to rationalise the support system to farmers, there are three key issues that merit consideration.

First, support based on commodity production has several undesirable effects which could potentially jeopardise the achievement of the government's key objectives. For example, this form of support does not induce producers to improve efficiency, or to innovate, or to contribute to the increased competitiveness and market-orientation of the agricultural sector; nor does it create opportunities to improve the standard of living in rural areas. Subsistence farmers do not benefit from support based on commodity output, while, for the commercial farmer, little scope is provided to diversify into other crops or activities, or to adapt directly to consumer needs. At the same time, the transfer efficiency of this type of support – the amount of payments actually received by farmers – is very low, implying that producers receive only a small portion of the benefits. Second, it is still too early to fully evaluate the model, and its structure and technical properties have not yet been made publicly available. Third, compared to unified national support, it is not expected to bring about significant differences because the main policy tools remain unchanged and the changes in the crops eligible for support are small (Çakmak and Dudu, 2010a).[6] Finally, the new system is more complex than its predecessor and also more difficult and costly to implement.

6.2. Issues and challenges for policy

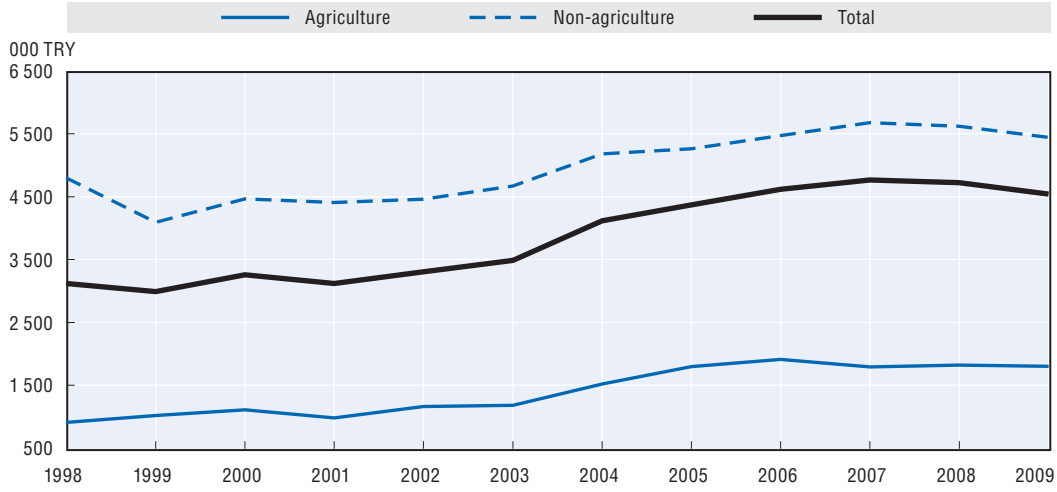
Productivity and efficiency in the agricultural sector

Agricultural productivity is low and is rising only very slowly

Improving the productivity and efficiency of the agricultural sector has been one of the key policy priorities over time. The ARIP agricultural reform programme, apart from its contribution to fiscal stabilisation, was also intended to increase productivity and improve allocative efficiency through more market-oriented policies.

The agricultural policy reforms have brought about important improvements, but the productivity and efficiency of the agricultural sector in Turkey still remain low. Agricultural productivity is well below that of the non-agricultural sector and, as agriculture employs as much as one-quarter of the total workforce, its low productivity is a major impediment to overall productivity (Figure 6.3). The growth rate of productivity in agriculture has also

Figure 6.3. **Productivity in the agricultural and non-agricultural sectors, 1998-2009**



Note: Agriculture includes hunting and forestry.

Source: OECD Secretariat calculations based on TurkStat, 2010.

lagged behind that in other sectors. Studies also suggest that the average Turkish farmer's technical efficiency (*i.e.* ability to obtain maximum production from the resources available) is about 30% (Box 6.1).

This low level of productivity and efficiency can be attributed to several factors, such as various structural impediments – including, for example, socio-economic weaknesses, such as the large number of small and subsistence farms, the use of old technologies, natural conditions, high demographic pressures on land and excess labour – as well as inappropriate policies.

Structural changes proceed at a slow pace, with variations for various production activities and regions

Despite the recent emergence of more commercial and specialised farms, particularly in the Aegean and Mediterranean regions, farm structures are dominated by small-sized, family-owned and highly-fragmented farm holdings, using only elementary technologies. Consolidation of farms into larger and more efficient sizes has occurred only on a very limited scale, and subsistence or semi-subsistence farming continues to be an important feature of Turkish agriculture.

The average farm size in Turkey has remained almost unchanged since 1991, at 6 ha. The majority of farms (about 79%) are smaller than 10 ha – significantly smaller than in most other OECD countries. Arable land on each farm is generally divided into a large number of parcels, and specialised farms – which generally use more up-to-date technologies – account for only 30% of all farms. Approximately 12% of ploughing is still done with draught animals, and 59% of the combine harvesters currently in use are more than 10 years old. Furthermore, prevailing farm structures encourage the continuation of informal marketing chains and large post-harvest losses, thereby preventing the agricultural sector from achieving its potential growth.

Progress towards strengthening the legal and institutional framework in agriculture is impressive, but more targeted policies are needed for realising the potential of agriculture …

Putting an end to the practice of dividing-up farms and beginning to consolidate highly fragmented farmland will be indispensable for raising agricultural productivity. Prior to 2001, the legal and regulatory framework did not facilitate this process, as land was automatically divided, in accordance with the inheritance laws. The modifications of the Turkish Civil Code in 2001 were, however, inadequate to prevent further land fragmentation – mainly because a large part of the agricultural land (between 20-30%) was not covered by formal land registers (cadastres) – and additional amendments were made to the existing legal and regulatory framework, including the decision to determine a non-fragmented minimum land area of 2 ha. Completing and modernising the cadastres, as well as establishing the Land Parcel Identification System (LPIS), which is also a pre-requisite for Turkey's future implementation of the EU's Integrated Administration and Control System (IACS) and other *acquis* requirements, should be a top priority of agricultural policy.

The legislative framework of the agricultural sector has made impressive progress during the last decade and various laws and regulations have been introduced as a result of the government's attempts to restructure the agricultural sector. ARIP and the accession process to the EU have been the major contributors. Notwithstanding the decisive steps that have been taken since the implementation of the 2001 policy reforms to address the structural impediments of the sector, ample scope remains to implement policies to improve the efficiency and increase the competitiveness and market orientation of the sector.

Boosting the productivity and efficiency of the agricultural sector in order to sustain its competitiveness is one of the priorities of the Agricultural Strategy Paper (2006-10) and the Agricultural Law of 2006. But the objectives and priorities of the agricultural policies listed in the Law are quite general – and often conflicting – which weakens their role in achieving structural change.

Targeted policy tools to boost productivity growth are not very well developed. For example, while small-scale production is considered to be one of the most important factors undermining productivity growth and the efficient use of resources, agricultural policy instruments cover all farms in the country, and there is no policy instrument specific to small farms; also, the Law makes no mention of any price policy or trade policy which could contribute to the achievement of these objectives.

Current policy tools, however, also include support for the use of certified seeds and soil analysis to increase productivity and efficiency in the use of variable inputs (*e.g.* inorganic fertilisers). In addition, measures taken to reduce post-harvest losses, such as the implementation of proper handling of the produce and cold chain management of fruits and vegetables, are crucial for enhancing productivity.

… and increasing emphasis on support for R&D could play an important role in the technological upgrading of Turkish agriculture …

The role of public and private research and extension in improving productivity and competitiveness is well established. R&D is one of the three issues which are specifically acknowledged in the Agricultural Law of 2006, and all of the associated legislation places specific emphasis on the need to support and invest in R&D. The Seed Law, the Biosafety Law and the Law on the Protection of Breeder Rights Concerning New Plant Varieties, as well as the by-laws relating to these laws, are the main tools used to implement the measures put in place by MARA, which has overall authority for increasing the level of R&D activity in the agricultural sector.

Two important R&D areas are covered in the laws concerning seed breeding and genetically modified organisms. Other R&D areas, such as pesticides, fertilisers, animal health and machinery, are subject to the laws about industrial R&D activities and have to compete with high-tech consumer goods to attract private and public funds.

Despite these achievements, more action needs to be taken to improve the capacity to adopt and make effective use of technology in the agricultural sector. This requires better co-ordination between the supply and demand of agricultural R&D activities across a wide range of government institutions and with the private sector. The regulations have not been effective in transmitting the needs of farmers to the researchers and, *vice versa*, in passing the research results back to the farmers (Çakmak and Dudu, 2010a).

This is usually achieved through the setting-up of qualified extension services which can provide expertise in identifying the potential use of the research conducted, and by also filtering the demand for R&D. The protection of intellectual property rights will be redundant unless the R&D system is capable of delivering new seed varieties. Extension services should help make farmers more responsive to market needs by diffusing information on the products with higher value-added that attract consumer demand, as well as their production technologies.

… and upgrading human capital in agriculture is essential

The large size of the population working on small farms makes consolidation of the agricultural sector socially difficult and this may be one of the factors that will make the pursuit of reforms politically challenging. A key aspect to structural change in agriculture is the extent to which small, semi-subsistence farms can escape the vicious circle of low technical efficiency and the lack of technological and educational advancements. Development of the agricultural sector's human capital has remained stagnant, with the vast majority of farmers (78%) having only a primary level of education (or less). The illiteracy rate was as high as 15% in 2009.

Improvements in human capital through the introduction of specific policies to facilitate farm labour mobility are crucial to raising agricultural performance. Training and advisory services need to be upgraded to assist farmers to adopt new, efficient and environmentally-friendly farming practices. There is also a need to create activities in rural areas in sectors other than farming, which could complement revenue from farming activities and gradually ease the demographic pressure on land, while at the same time maintaining the rural population.

Social measures to facilitate farm labour mobility might also be necessary, such as encouraging older farmers to retire, or to lease the land currently providing their source of livelihood. Policy makers should be mindful of the fact that, despite the acceleration of labour exits from agriculture in Turkey, the experience of other countries suggests that more labour adjustment is to be expected.

Turkey and the EU

In 1999, Turkey was granted the status of candidate country for membership of the EU. Before full membership can be granted, a number of political, economic and legal obligations have to be met. Concerning agriculture, the conditions include: i) increasing production through sustainable agriculture; ii) phasing-out existing support policies and replacing them with a direct income support system targeted at low-income farmers; iii) establishing a land register system; iv) up-grading food inspection and control mechanisms; and v) establishing a clear strategy for phtyosanitary conditions.

Accession negotiations were opened in 2005, but no potential membership date has yet been announced. Turkey's programme for harmonisation with the EU *acquis*, which includes the necessary legislative changes for the period 2007-13, was released on 17 April 2007 (SPO, 2010). Negotiations on food safety, veterinary and phytosanitary policy were opened in July 2010 (Box 6.2).

Box 6.2. **EC 2010 Progress Report on alignment with the EU *acquis***

Only limited progress has been reported on the legislative alignment and horizontal issues in the recent Progress Report (EC, 2010). Turkey has preferred to proceed in a selective manner to ease the compliance process. Several pieces of legislation, concerning producers' unions, seed law and biosafety law have been passed, in order to ease transition to potential membership (Çakmak and Dudu, 2010a).

The national accreditation of the IPARD (Instrument for Pre-accession Assistance for Rural Development), although delayed – due to difficulties in establishing administrative and organisational structures and procedures for the management of rural development funds in line with EU standards – was completed in July 2010 (EC, 2010). But its actual implementation is still pending, as further checks of these structures' compliance with IPARD accreditation criteria need to be carried out by the European Commission.

Delays in the accreditation of the IPARD and the failure to fully remove technical barriers to trade in bovine products represent significant shortcomings. The Progress Report also points out that further work is required on agricultural statistics, the farm accountancy data network, quality policy and organic farming.

Considerable efforts have been made, and significant progress has been achieved, in modifying Turkish legislation and regulation in the areas of food standards and food safety towards harmonisation with EU standards. The Framework Law on veterinary services, plants, food and feed has been adopted, and a detailed strategy for the transposition, implementation and enforcement of the *acquis* has been prepared.

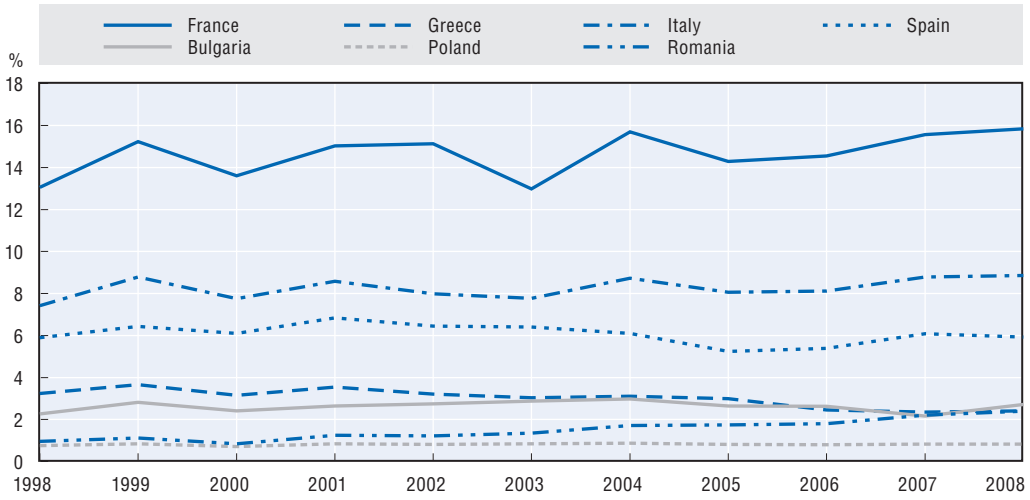
However, a large number of regulatory issues exist where requirements in Turkey currently differ from those laid down in EU legislation. For example, Turkey's current system for financing veterinary inspections and controls is not in line with the *acquis*. No progress is reported concerning import requirements for live animals and animal products, or on the issue of animal welfare (EC, 2010). The small-scale structure of the livestock sector, which impedes appropriate monitoring and control; ineffective border controls for livestock movements (particularly in the eastern and south-eastern borders); and difficulties involved in enforcing the existing regulations and of institutional co-ordination are among the key challenges that Turkey faces in the area of animal health.

Competitiveness of Turkish agriculture is lower than in EU countries

An indication of the ability of Turkish farms to compete on the EU market can be obtained by comparing their respective prices and levels of labour productivity. Turkey's labour productivity in the agricultural sector is lower than in EU countries with relatively large agricultural sectors or similar farm structures, such as Bulgaria and Romania: it is approximately 16 times lower than in France; 9 times lower than in Italy; and between 1-2 times lower than in Greece and the new member states shown in Figure 6.4 (*e.g.* Poland, Bulgaria and Romania).

However, despite lower productivity, for the products shown in Figure 6.5, the prices received by Turkish farmers are, in general, higher than in the EU. Price differentials are particularly high for common wheat, oats, sugar beet and beef, suggesting that producers in these sectors would have to adapt to a much lower price regime upon accession. As beef production is the dominant agricultural activity in the poorest regions of the country (*i.e.* the north-east and east-central rural regions), it would appear that these disadvantaged regions will have to face one of the strongest challenges posed by adaptation to the CAP. Price differentials are very small for soybeans, milk and sheep meat.

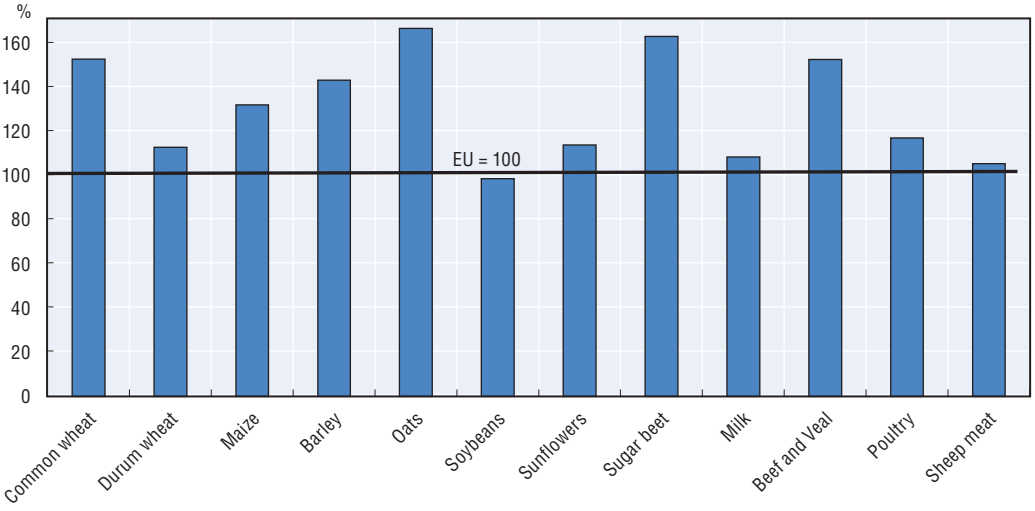
Figure 6.4. **Labour productivity of agriculture in Turkey: Comparison with selected countries, 1998-2008**



Note: Labour productivity in agriculture in Turkey = 1. Labour productivity in agriculture is value added per worker at 2000 prices in USD. Agriculture includes hunting and forestry.

Source: World Bank (2010).

Figure 6.5. **Producer price relation between the EU and Turkey for selected commodities, 2004-09**

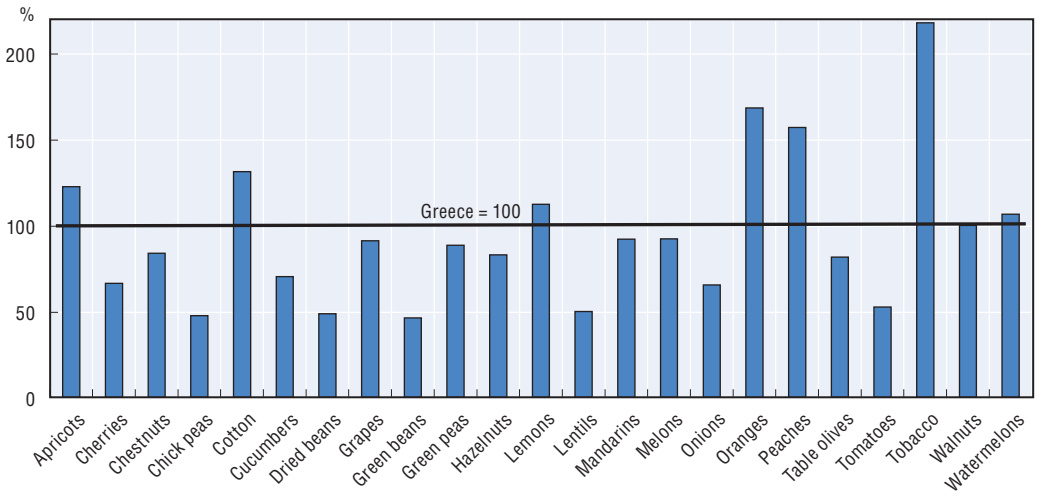


Source: OECD PSE/CSE database, 2010.

Figure 6.6 provides a comparison of the prices received by Turkish and Greek farmers for a selected range of crops, vegetables and fruits typical of the Mediterranean area. In contrast to the situation illustrated in Figure 6.5, the prices for almost all of these products are much lower in Turkey, which would suggest that, following entry to the EU, the economic environment for their production will be more competitive than it is today. Overall, these data suggest that Turkey might be competitive in the production of milk, sheep meat and most Mediterranean products.

Figure 6.6. **Relation of producer prices in Turkey and Greece for selected Mediterranean-zone commodities, 2006-08**

EUR/100 kg



Source: OECD PSE/CSE database, 2010; EUROSTAT; TurkStat.

Persistent price differentials over time can be attributed to several factors, including differences in agricultural support policies, quality, transport costs, marketing inefficiencies and transaction costs. Several studies have found that the transmission of border prices to producer prices for several markets in Turkey is imperfect (Box 6.3). For example, in the case of milk, although Turkish farm-gate prices are lower than the EU milk price, the wholesale prices of processed dairy products (butter and skimmed milk powder) are much higher in Turkey, suggesting high downstream dairy processing margins and transaction costs. Likewise, OECD market price support estimates indicate that, for some years, farm-gate prices for certain fruits and vegetables (*e.g.* apples) are significantly lower than f.o.b. prices in Turkey (16-97% of f.o.b. prices), suggesting weak, but variable, price arbitrage within the country.

Box 6.3. **Price transmission to farmers in Turkey: Some empirical evidence**

Koç's (2010) econometric and statistical analysis indicates the existence of asymmetric price behaviour in several food markets in Turkey, particularly in the fresh fruit and vegetables sector. Concerning wholesale-retail margins, the study finds that consolidation and concentration of food markets at the retailing and wholesale level have increased, particularly for drinking milk, tomato paste, poultry, eggs, packaged rice and tea.

Brosig *et al.* (2010) analyse spatial price transmission among 28 Turkish provinces with regard to wheat markets. They identify market size as a driving force of market integration and transaction costs. Their results suggest that the minimum transaction costs impede full market integration more frequently on smaller, rather than larger, markets.

Budak's (2009) study on the competitiveness of the dairy food chain in Turkey reports high gross margins, mainly due to the large share of the informal market.

Burrell and Kurzweil (2008) focus on the effects of Turkish agricultural and trade policies on agricultural markets and welfare. They find weak transmission of border prices to producer prices in several markets, and consider inefficient and variable price arbitrage within the country to be a potential cause.

Box 6.3. **Price transmission to farmers in Turkey: Some empirical evidence**
(cont.)

Eruygur and Çakmak (2008) provide estimates of production, consumption and welfare effects of integration with the EU CAP. Their simulations for 2015 predict a decline in the prices and production of crops as a result of EU integration, relative to the reference scenario of non-integration.

Koç, Işik and Erdem (2008) provide product-specific results of simulations of the effects of integration with the EU. Relative to their EU non-integration baseline scenario, integration implies, for wheat: 44% lower prices; 5% lower production; and higher domestic demand and imports.

Grethe (2007) evaluates the simulation results of several studies on the integration of Turkish and EU agricultural markets, as well as Turkey's full integration in the CAP. On average, integration would lead to a decline in agricultural prices and production, but there would be large variations between regions, due to spatially heterogeneous production structures.

Atici and Kennedy (2000; 2005) analyse the potential effects of Turkey's accession to the EU. The authors find that integration brings overall positive welfare effects at the cost of higher income inequality, with Turkish producers of goods with low protection levels experiencing a significant reduction of income.

Kiymaz (2008) uses a partial equilibrium model to analyse the effects of liberalisation policies on global and Turkish agricultural markets. Simulations show that, under current conditions, liberalisation policies result in high levels of price reductions on agricultural markets and a loss of competitiveness. To support agricultural production against the adverse effects of these price reductions, the author suggests a structural reform in agriculture, the introduction of region-based policies and income support.

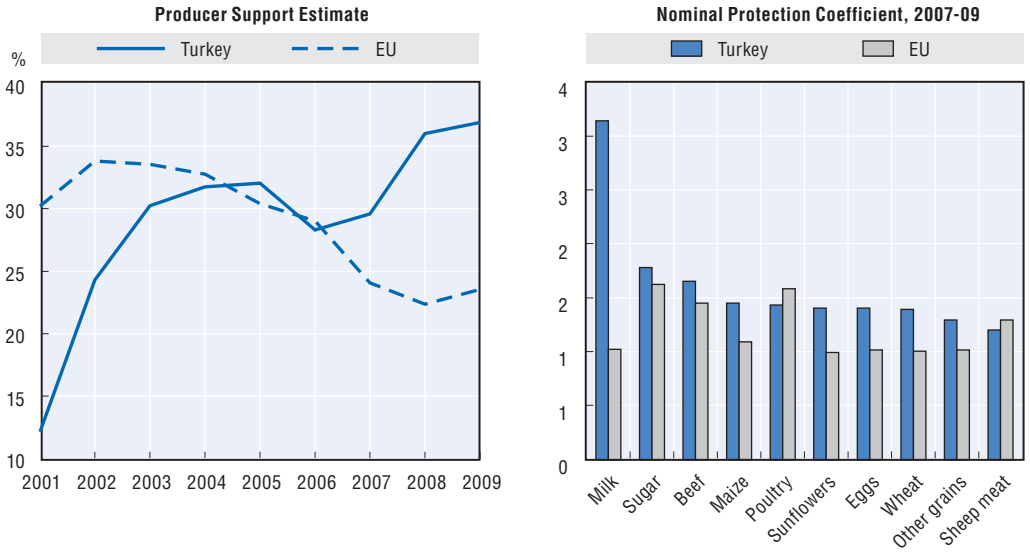
… and there is increased divergence of Turkey's agricultural support policies with the CAP

As shown in Figure 6.7, producer support in Turkey does not follow the same pattern as the CAP and since 2006 the gap with that of the EU has been widening. While in the EU agricultural support is becoming increasingly delinked from commodity production and more targeted to stated objectives, support coupled to commodity production continues to be the main policy instrument in Turkey.

In 2007-09, as much as 87% of producer support in Turkey was based on commodity output (30% in the EU) and only 3% of producer support was made in the form of payments not requiring the production of any commodity (37% in the EU). Moreover, the degree of market protection, as measured by the producer Nominal Protection Coefficient, is higher in Turkey for all the commodities shown, except for sheep meat and poultry meat.

Bringing Turkey's agricultural policy into alignment with the CAP is a key element in the accession negotiations. But the enlargement of the scope of crop-specific deficiency payments and the elimination of DIS under ARIP – payments which were similar to the EU's Single Area Payment Scheme, which was implemented for the new member states in 2004 – manifested a major shift in Turkish agricultural policy away from the CAP. The Agriculture Law, while, in principle, adopting compliance with EU legislation and regulations, singles out support linked to commodity production as a key instrument of agricultural policy.

Figure 6.7. **Producer support in the EU and Turkey**



Source: OECD, PSE/CSE Database, 2010.

Nevertheless, ARIP has left its footprint in the current policy framework as, apart from deficiency payments, almost all budgetary transfers are based on either area or head, albeit without maximum limits. The introduction of payments per head for cattle, sheep and goats in 2010, for example, represents a step towards alignment with current CAP measures.

… and partial compliance with the EU's preferential trade agreement impedes exposure of the Turkish agricultural sector to greater competition …

Notwithstanding the apparent divergence of agricultural policies between Turkey and the EU's CAP, an important issue is whether current agricultural policies can help to improve the competitiveness of the Turkish agricultural sector, and thereby ease the adjustment of the sector in the event of accession to the EU. As noted earlier, the reform programme has paved the way towards the implementation of more market-oriented policies. The Tobacco Law, together with the privatisation of TEKEL, increased the competitiveness of the tobacco sector, while the supply controls on sugar, introduced under the Sugar Law, will ease the harmonisation of related regulations. But delayed privatisation in the sugar sector would impede its exposure to greater competition and the sector would have to undergo radical structural changes on accession to the EU.

The competitiveness issue becomes more apparent in the implementation of agricultural trade policy. Import tariffs for most agricultural products in Turkey are higher than in the EU. As the Customs Union with the EU excludes agricultural commodities, bilateral trade is essentially driven by preferential trade agreements between the EU and Turkey. The trade regime for agri-food products determines the extent of a reduction (which is usually mutual) of the in-quota tariffs for selected products. The industrial component of processed agricultural products is duty-free. The limited coverage of agricultural products under the preferential regime with the EU impedes their exposure to greater competition (WTO, 2008).

The preferential trade agreement with the EU has not yet been fully implemented, as import protection for some agricultural products has not been reduced. During most of the last decade, Turkey imported less than 20 000 tonnes of bovine meat and less than 7 000 tonnes of live cattle *per annum* from the EU, at reduced tariff rates (a minuscule proportion compared to total domestic consumption).

Full compliance with the preferential trade agreement with the EU will also benefit the sub-sectors that are competitive on EU markets and will facilitate further economic integration with the EU. The EU is Turkey's major trading partner in agri-food products, more in terms of exports than imports. Turkey's competitiveness in fruit and vegetables has been enlarged, as it is now concentrating on processed products. Further sustainable diversification in exports is possible through more market-oriented policies in the rest of the agri-food sector (Çakmak and Dudu, 2010a).

International trade

A successful outcome of multilateral agricultural negotiations could trigger further policy reforms

International trade is a vital source of foreign-exchange earnings and provides an important stimulus to the overall Turkish economy. Turkey gives high priority to agriculture in the on-going Doha Development Round negotiations. In the case of market access, as tariffs are important instruments to support agricultural production, Turkey advocates a gradual liberalisation process, and some complementary instruments to minimise the possible negative impacts of liberalisation are being sought. Turkey attaches great importance to the need for Special Products and the Special Safeguard Mechanism.

While Turkey achieved almost full liberalisation in manufactured products by the 1990s, high protection in agriculture continued. Low protection on imports was limited to cotton, oilseeds and some inputs for agricultural production. In general, major staples and related products are heavily protected, while the protection on net imported products and on intermediate inputs to export-oriented manufacturing is relatively lower. Imports of agricultural products and foodstuffs require a license ("control certificate") issued by MARA.

Turkey maintains a temporary import ban on live animals (dairy and beef cattle, sheep, goats and poultry) and meat (beef, sheep, goat and poultry) based on sanitary grounds (WTO, 2008). In 2010, in response to a sharp increase in consumer prices of red meat, a limited, time-specific import quota was announced, which allowed imports of slaughter cattle and red meat, by both private- and public-sector entities, such as the Meat and Fish Institution. Reducing import protection would increase competition in this sector and also improve efficiency, by reducing the rents (which mostly accrue to large producers) as a result of trade-prohibitive protection (Çakmak and Dudu, 2010a). The partial lifting of the import ban on live cattle and bovine meat represents progress in solving this long-standing problem.

Trade liberalisation in the agricultural market has followed the reduction commitments made by Turkey under the URAA. However, the reduction of high tariffs, which was intended to take place under the reform programme, did not materialise (World Bank, 2001). Reductions in import tariffs on grains at the start of the programme were short-lived and the tariffs on major commodities went back to the maximum commitment levels under the URAA (Lundell *et al.*, 2004). As a result, the price-distortionary impact of import policies remains unchanged.

In 2010, the simple average of applied tariffs at the Harmonised System's (HS) two-digit level for all WTO agricultural commodities was estimated at 50%, with considerable variation across commodities. For instance, while the applied tariff on live animals for breeding purposes is 0%, for other purposes it is 135%: likewise, the tariff on wheat seed is 0%, but on wheat it is 130%. Tariffs are higher than 100% for meat, dairy products, sugar and basic cereals.

Tariffs may exhibit a seasonal pattern. For example, imports of wheat and rice imports had a zero tariff in periods of supply shortages, while for red meat the tariff was reduced for a limited period, when its real price surged to an all-time high in August-September 2010 (going down from 225% to 30%).

The average tariff overhang (the gap between bound and applied m.f.n. tariffs) of 25% for all agricultural products, according to WTO classification, could suggest that Turkey's ability to support prices for certain commodities through import controls might be constrained if the Doha Round results in increased market access.

Concerning domestic support, in the URAA, Turkey's domestic support was declared as *de minimis* (i.e. product-specific support amounting to less than 10% of the value of that output in the base period) for which no reduction commitments were required. A Doha Agreement could have the effect of significantly lowering the spending limits for certain types of domestic support. But this could require further reforms, such as changing from production- and trade-distorting forms of support, to policies that are less distorting, decoupled from commodity production, and more targeted.

Export subsidies have not been a major tool in promoting Turkish agricultural exports. The level of commitments for export subsidies in the URAA was low in 1994, and by 2004 it had been sharply reduced. However, a Doha Agreement would eliminate export subsidies.

At the regional level, in the early 1990s Turkey began to enter into a number of preferential agreements with its trading partners. However, coverage of agricultural products under these bilateral agreements, including the preferential regime with the EU, is limited and is generally subject to preferential tariff quotas, which hinders exposure of these products to greater competition.

Rural development

Rural development policies in Turkey are moving closer in line with those of the EU …

Until recently, rural development policy in Turkey was based on sectoral projects (often financed by international donors) aimed at improving basic infrastructure in rural areas, including large-scale investment projects (*e.g.* irrigation). With ARIP and preparations for EU accession, a more strategic sectoral approach to rural development was adopted, and in 2006 the first single national rural development strategy plan was created. This new approach towards rural development is more in line with that of the EU. However, rural policy in the EU has a strong bias towards agriculture.

… but creating opportunities for off-farm employment is a key challenge for Turkey

The size of the rural population in Turkey is important (31%), and agriculture continues to be the main source of rural employment, particularly for women. Development disparities between urban and rural areas still prevail, as rural areas have been unable to keep up with the rapid development of urban areas.

This sizeable rural population, together with the declining share of agricultural employment, generate the pressure on urban areas, in terms of rapid migration from rural to urban parts of the country, which has been experienced over the last few decades. Thus, as the share of agricultural employment declines, the development of off-farm opportunities in rural areas becomes necessary not only for stimulating economic growth in these areas, but also for moderating the pace of rural-urban migration to a more manageable level. At the same time, as noted earlier, phasing-out the small, semi-subsistence and low-productivity farming which prevails in many rural areas and replacing it with more efficient farm holdings is critical for fostering productivity.

Agri-environmental policies

Agri-environmental policies in Turkey are gradually being implemented

The agri-environmental programmes in place in Turkey are limited. They were developed primarily in the context of the amended ARIP reform programme in 2005 and the EU implementation of the IPARD Programme. The Environmentally Based Agricultural Land Protection programme (ÇATAK) is the first programme to be specifically targeted at addressing the negative impacts of agricultural practices on the environment. The ÇATAK programme has some similarities with EU agri-environmental measures in rural development programmes. Despite some difficulties at the start, there now seems to be widespread awareness of its environmental benefits and its coverage has been expanded over the years (World Bank, 2009). Priority Axis 2 of the IPARD programme includes, *inter alia*, provisions for the implementation of pilot agri-environmental measures.

Despite the introduction of policies to address agri-environmental issues, many problems persist (OECD, 2008a). For example, while soil erosion is, in part, a natural occurrence, the absence of a widespread system of soil conservation practices has resulted in a failure to improve soil quality, with over-grazing and the ploughing-up of grassland being important sources of the problem. Notwithstanding the reforms, continued subsidies for water charges and electricity for pumping (and diesel for machinery) are undermining efforts to achieve sustainable agricultural water use, especially of groundwater, and – in the case of energy and diesel – to reduce greenhouse gas emissions.

The agri-environmental monitoring system needs to be considerably improved, to help enhance the quality of information for policy makers to evaluate the environmental effectiveness of newly introduced agri-environmental and environmental policy measures. Some areas of agri-environmental monitoring are now well established, especially those related to irrigation water use and management, and greenhouse gas emissions. But for most agri-environmental issues, monitoring is weak or – where data exist – quality and reliability are poor (OECD, 2008a).

Management of water resources in agriculture

Important reforms have been undertaken ….

Availability of water is a crucial factor for agricultural growth. Efficient management of water resources has very high returns, not only in terms of increasing the productive capacity of the agricultural sector, but also in reducing pressures on the environment from agriculture. It is estimated that irrigation increases *per capita* GDP in agriculture by approximately 5-6 times (DSI, 2009a). However, by the end of 2008, only 62% (5.8 million ha) of irrigated land was irrigated (DSI, 2009a). Overall, compared with many OECD countries,

pressures on water quality from farming are low, although agricultural pollution of water bodies from nutrients is a concern in some irrigated areas (OECD, 2008a).

Irrigated agriculture currently consumes about 75% of total water consumption, which is about 30% of renewable water availability. Half of the crop production in Turkey relies on irrigation. Most of the irrigation water (80%) is derived from surface sources. Approximately 92% of the total irrigated area is irrigated by using surface irrigation methods, such as furrowing. The remaining 8% is irrigated by pressurised irrigation systems, such as sprinklers and drip emitters.

Before the 2001 economic reforms, a combination of inappropriate irrigation policies, a lack of technical knowledge and limited geographical coverage of distribution networks resulted in the widespread, inefficient use of water resources; excess salinity; and wide imbalances between farmers who had irrigation systems in place and those who did not. However, the budgetary constraints imposed by the reforms have slowed the pace of irrigation, including progress under the important South-East Anatolian Project (GAP).

The operation and management responsibilities of irrigation schemes have been gradually transferred from the General Directorate of State Hydraulic Works (DSI) – the central water agency in Turkey – to self-financing local water-user organisations, such as village administrations, municipalities and co-operatives. Approximately 96% of all irrigation schemes are now operated and maintained by water-user organisations, and only 4% by the DSI (compared with 95% by the DSI in 1993).

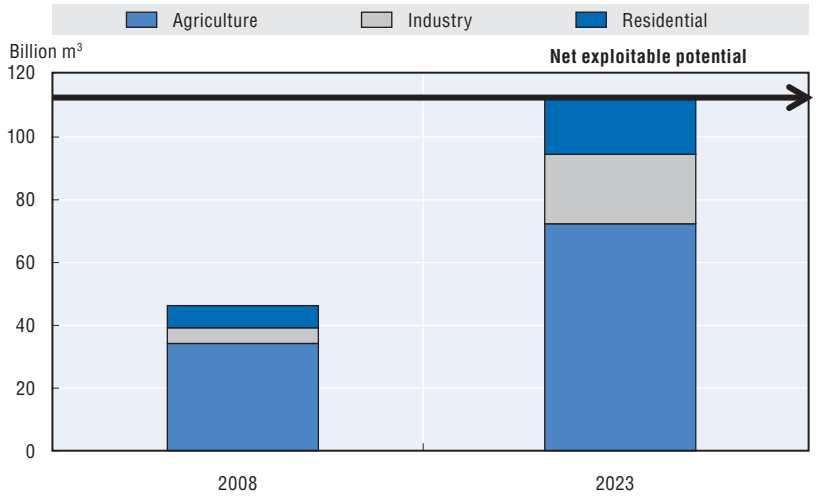
These changes are important steps forward in making efficiency improvements in the use of scarce water resources. They have reduced the burden of the operational and maintenance costs to the government, and increased water prices and collection rates (which were among the lowest in the OECD area in the late 1990s). However, farmers are only paying the operational and maintenance costs for the water supplied, and making little or no contribution towards the capital costs of the infrastructure.[7] Pricing is differentiated according to the crop and is charged on per-hectare basis. There is almost no volumetric system for irrigation, whereas volumetric charges are common in domestic and industrial water-use (Çakmak, 2010).

… but more radical changes in water management policies are needed

While only 41% of Turkey's available exploitable water potential was consumed in 2008, water use could reach the maximum exploitable level by 2023 (Figure 6.8). The combination of expanding urbanisation, unfavourable global climatic conditions and increasing agricultural production will result in increased total water requirements and give rise to sectoral competition for water resources. These pressures will entail the need to make major changes to water policies in both the medium and the long term, and, as the consumer of approximately two-thirds of the country's water resources, agriculture will be required to assume a significant share of the burden.

A more efficient use of water resources in agriculture would require implementation of policies on several fronts. On pricing, for example, charges for water deliveries to farmers should reflect the full cost of water supply, and the determination of irrigation fees proportional to the actual amount of water used would promote a more efficient use of irrigation water.

Figure 6.8. **Water use in Turkey by source, 2008 and 2023**



Source: DSI (2009b).

Irrigation management practices to restrict water losses from the irrigation infrastructure, particularly in areas of high evaporation, need to be improved. Training farmers to adopt crop-soil-water management is of the utmost importance. It has been estimated that if sprinkler and drip irrigation methods were utilised, in place of traditional methods, farm efficiency would increase by 20% and 30%, respectively (DSI, 2009a). For large-scale irrigation projects, such as the GAP (which covers 1.8 million ha, or 20% of the total irrigable arable land in Turkey), in addition to ensuring adequate financing, care should also be taken to address the consequent environmental impacts.

In the field of legislation, the legal framework needs to be strengthened. Several pieces of legislation and regulations have been created to address specific issues, but they do not form an integrated framework for the effective management of water resources. The existing laws and regulations do not provide a definition of water rights. For example, extended periods of drought resulted in the full deployment of water resources in the western and central regions, involving the transfer of water from irrigation to domestic and industrial use (Çakmak, 2010). The legislative arrangements should, at least, identify the levels of priority of water allocation for the intra- and inter-sectors (*e.g.* irrigation, municipalities, industry, recreation, fisheries, etc.).

6.3. Key policy recommendations

Turkey has a mixed record of success in achieving the necessary policy reforms in the agricultural sector. Systemic government involvement and substantially restricted and distorted markets have shielded producers from price signals. In addition, Turkey's agricultural sector has a very complex and heavy legal and administrative structure, reflecting the importance of the sector in the economy and to society as a whole. This complexity, the existence of state monopolies, and the large number of institutions involved in shaping Turkish agricultural policy have made the reform process a very difficult undertaking.

Progress in agricultural reform towards the achievement of more competitive agriculture has been an on-going process, starting in the late 1990s and increasing in pace with the creation of ARIP in 2001. But over the last few years, the momentum for a complete overhaul of the support system has slowed down and policy emphasis has shifted towards forms of support which are more production- and trade-distorting, and most of the benefits are not received by producers. Given rising concerns with commodity price instability and food security, it is important that policy measures are well targeted to meet these objectives in a cost-effective way.

The number of crops receiving fully coupled deficiency payments has increased and some agricultural policy measures have become more complicated to administer. Moreover, the enlargement of the scope of crop-specific deficiency payments and the ending of the DIS scheme manifested a major shift in Turkish agricultural policy away from the reformed CAP. Some key policy recommendations are offered below in accordance with the 1998 OECD Ministerial principles of agricultural policy reform.

Domestic commodity policies

- *Credibility of reform would be enhanced, if there were less frequent and ad hoc changes to policies.*
- *The experience gained with ARIP should be built upon, and consideration should be given to replacing deficiency payments – which are potentially the most distorting and inefficient forms of support in transferring income to farmers – with more decoupled and targeted policies.*
- *Greater efforts need to be made to transform the remaining SEEs and ASCUs into truly commercial entities with economic viability under more competitive market conditions.*
- *The design of crop insurance policies should ensure that such policies do not provide incentives for moral hazard and rent-seeking behaviour.*
- *Efforts should continue to strengthen the legal and institutional framework concerning food safety.*

International trade

- *A more pro-active process of trade liberalisation should be pursued, through lowering very high tariffs and eliminating export subsidies.*
- *Advancing full compliance with the EU's preferential trade agreement should become a priority. Further liberalisation of agricultural trade with the EU would also facilitate increased economic integration with the EU's Single Market.*
- *Marketing and promotion efforts, both domestic and international, should be fostered in order to help the agri-food sector take advantage of new trade opportunities.*

Structural adjustment and competitiveness

- *Competitiveness of the whole agri-food chain should be pursued as a strategic objective.*
- *Building human capital and upgrading the skills of the agricultural labour force should be promoted by raising educational attainment and skills. Coherence with economy-wide labour and social market reforms is crucial.*
- *Continued institutional reforms to prevent fragmentation of agricultural land resulting from the inheritance laws will be vital.*
- *Research and extension services should be better integrated.*
- *The technologies appropriate for smallholders need to be identified and disseminated among them.*
- *Post-harvest losses should be reduced through investment in storage, packaging and transport facilities that eliminate the need for the long-term storage of commodities.*

Rural development

- *Consideration should be given to cross-sectoral approaches to attain greater integration of rural areas into the market economy and to address widespread rural poverty concerns.*
- *The experience gained from the GAP project could be valuable for other countries in the region in developing integrated, multi-sectoral, regional development plans.*

Management of natural resources

- *The scope of including environmental concerns in agricultural policies should be increased.*
- *Institutions and property rights for water management in agriculture should be strengthened.*
- *Charges for water supplied to agriculture should at least reflect full supply costs.*
- *Knowledge and information deficiencies should be addressed so as to better guide water resource management.*
- *Environmental assessments of large projects should be taken into consideration.*

Notes

1. There has been a declining trend in fertiliser use since the early 1990s. The use of fertiliser fell drastically during the crises of 1994 and 2001, while the devaluation of the Turkish lira caused sudden hikes in the domestic prices of fertilisers.
2. Major reasons for the low level of acreage reduction achieved during the course of the project are listed by MARA: most of the farmers did not own the land; licensed quotas were few; fear of losing quota rights in the future; storage and marketing difficulties of alternative crops; and delayed payments (TÜGEM, 2010).
3. For example, following the rise in wheat prices in 2010, an import quota of 1 million metric tonnes for wheat at a zero tariff rate was allocated to TMO in December 2010.
4. The number of tobacco farmers in the Aegean region increased, while tobacco production in the eastern and south-eastern regions almost disappeared. Also, high-quality producers in the Marmara region are now returning to tobacco production (Çakmak and Dudu, 2010a).
5. It should be noted that, in several years since 2001, total deficiency payments for sunflowers and cotton have been higher than the *de minimis* provision of the URAA.
6. Çakmak and Dudu (2010a) found that, under the assumption that farmers respond fully to the incentives created by the new support system, the difference with/without basin support is less than 7 000 ha.
7. According to the DSI Law, the beneficiaries are required to pay back at least the nominal costs of investments related to surface water irrigation. However, in order to activate the reimbursement process, the consent of the prime minister is required and prime ministers have always been reluctant to reclaim the cost of investments (Çakmak, 2010).

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Annex Tables

Table A.1. **Selected economic indicators, 1986-2009**

	1986	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
GDP													
GDP (current USD billion)	75	149	168	265	197	231	305	390	482	526	649	742	617
GDP growth (annual %)	7	9	7	7	-6	6	5	9	8	7	5	1	-5
GDP *per capita* (current USD)	1 459	2 655	2 727	4 130	3 020	3 492	4 559	5 764	7 021	7 583	9 234	10 440	8 578
GDP *per capita* growth (annual %)	5	7	5	5	-7	5	4	8	7	6	3	-1	-6
GDP *per capita*, PPP (current international USD)	3 275	4 282	5 186	8 856	8 320	8 364	8 482	9 806	10 977	12 223	13 111	13 920	
Population													
Rural population (% of total population)	46	41	38	35	..	..	..	..	..	..	25	25	24
Rural population growth (annual %)	-1	-1	0	0	..	..	..	..	..	..	..	3	-1
Urban population (% of total)	54	59	62	65	..	..	..	..	..	..	75	75	76
Urban population growth (annual %)	4	4	3	3	..	..	..	..	..	..	..	1	2
Trade													
Export quantity index (2 000 = 100)	21	39	60	100	116	130	156	177	194	214	247	..	
Export value index (2 000 = 100)	27	47	78	100	113	124	168	222	259	295	385	..	
Exports of goods and services (% of GDP)	13	17	21	20	27	25	23	24	22	23	22	24	23
Exports of goods and services (annual % growth)	..	0	15	16	4	7	7	11	8	7	7	3	-5
Import quantity index (2 000 = 100)	17	37	54	100	76	93	108	137	132	164	188	..	
Import value index (2 000 = 100)	20	41	66	100	76	91	120	177	182	245	309	..	
Imports of goods and services (% of GDP)	16	18	20	23	23	24	24	26	25	28	28	28	24
Imports of goods and services (annual % growth)	..	7	-22	22	-25	21	24	21	12	7	11	-4	-14
Trade (% of GDP)	29	31	44	43	51	49	47	50	47	50	49	52	
Price indices													
Inflation, consumer prices (annual %)	35	60	88	55	54	45	25	11	10	11	9	10	
Inflation, GDP deflator (annual %)	36	58	86	49	53	37	23	12	7	9	8	11	
Net barter terms of trade index (2 000 = 100)	110	109	106	100	98	97	97	98	97	92	95	91	
Macroeconomy													
External balance on goods and services (% of GDP)	-3	-4	-4	-3	4	2	-1	-3	-3	-5	-5	-5	
Foreign direct investment, net inflows (% of GDP)	0	0	1	0	2	0	1	1	2	4	3	..	
Gross fixed capital formation (% of GDP)	17	23	23	20	16	17	17	20	21	22	21	20	17
Current account balance (% of GDP)	-2	-2	-1	-4	2	0	-2	-4	-5	-6	-6	-5	
Exchange rate (% change against USD)	-100	23	54	49	97	23	-1	-5	-6	7	-9	0	19

Sources: TurkStat (2010); World Bank (2010).

Table A.2. **Agricultural employment, 1988-2009**

	Total	Agriculture	Share
	(000)	(000)	(%)
1988	17 755	8 249	46.5
1989	18 223	8 596	47.2
1990	19 030	8 735	45.9
1991	19 209	9 078	47.3
1992	19 561	8 690	44.4
1993	18 679	7 606	40.7
1994	20 026	8 416	42.0
1995	20 912	9 205	44.0
1996	21 548	9 526	44.2
1997	21 082	8 321	39.5
1998	22 334	9 388	42.0
1999	21 507	7 894	36.7
2000	21 580	7 769	36.0
2001	21 524	8 089	37.6
2002	21 354	7 458	34.9
2003	21 147	7 165	33.9
2004	19 632	5 713	29.1
2005	20 067	5 154	25.7
2006	20 423	4 907	24.0
2007	20 738	4 867	23.5
2008	21 194	5 016	23.7
2009	21 277	5 254	24.7

Note: Persons aged 15 or over.
Source: TurkStat.

Table A.3. **Employment in agriculture by rural-urban status and gender, 1995-2009**

%

	1995	2000	2005	2009	1995	2000	2005	2009
	Rural				Urban			
Total	77.4	70.2	64.2	62.6	4.7	3.8	5.3	4.3
Male	66.6	59.6	52.7	50.9	3.8	2.6	3.9	3.3
Female	94.6	89.2	85.7	84.0	9.2	8.7	10.8	7.5

Note: Agriculture includes foresty, hunting and fishing (NACE REV1).
Source: TurkStat.

Table A.4. **Employment in agriculture by type of labour and gender (000)**

	1995	2000	2005	2009
Hired labour	481	429	426	454
Male	287	310	271	281
Female	194	119	155	173
Self-employed	3 388	3 225	2 372	2 371
Male	3 062	2 710	1 919	1 956
Female	326	515	453	415
Unpaid family labour	5 338	4 114	2 357	2 415
Male	1 603	1 241	598	558
Female	3 735	2 873	1 759	1 857
Total agriculture	9 207	7 768	5 155	5 254
Male	4 950	4 261	2 787	2 808
Female	4 255	3 508	2 367	2 446

Note: Data prior to 2009 are based on NACE REV1, and on NACE REV2 for 2009.

Source: TurkStat.

Table A.5. **Distribution of holdings according to economic size and typology classification, 2006**

%

Class type	Small				Middle		Large				Total
	0 - <2	2 - <4	4 - <8.5	8.5 - <13	13 - <17	17 - <26	26 - <35	35 - <86	86 - <200	200 and +	
Total	**34.5**	**24.7**	**23.9**	**8.5**	**3.3**	**2.9**	**1.2**	**0.9**	**0.2**	**0.0**	**100**
Specialist field crops	47.5	18.4	18.0	6.8	2.9	2.6	1.7	1.6	0.5	0.0	100
Specialist horticulture (vegetables and flowers)	48.1	19.8	11.1	2.3	4.9	3.6	7.3	2.8	0.1	0.1	100
Specialist permanent crops	40.9	25.7	20.9	6.5	2.2	2.4	0.7	0.6	0.1	0.0	100
Specialist grazing livestock (bovine animals, sheep and goats)	21.8	26.8	29.4	12.1	4.0	3.9	1.5	0.5	0.1	0.0	100
Specialist granivors (poultry and rabbits)[1]	65.0	-	17.7	2.5	1.1	-	-	4.1	0.5	9.0	100
Mixed cropping	30.0	29.3	25.9	8.0	3.1	2.1	0.7	0.7	0.1	0.0	100
Mixed livestock holdings	21.0	30.4	27.6	10.5	4.8	4.2	0.8	0.7	0.0	0.0	100
Mixed crops and livestock	27.8	26.3	28.2	9.5	3.7	3.0	0.9	0.7	0.1	0.0	100

1. Includes holdings rearing poultry or rabbits (breeding females) in addition to crop production or bovine animal or sheep and goat husbandry.

Source: TurkStat.

Table A.6. **Agricultural land and forest area**

000 ha

Year	Arable land				Land under permanent crops				Land under permanent meadows and pastures[1]	Total utilised agricultural land	Forest area[2]
	Total	Cereals and other crop products		Vegetable gardens	Total	Fruits, beverage and spices crops	Vineyards	Olive trees			
	(A)	Sown area	Fallow land								
1988	24 786	18 995	5 179	612	2 977	1 531	590	856	14 177	41 940	20 199
1989	24 880	19 036	5 234	610	3 017	1 563	597	857	14 177	42 074	20 199
1990	24 827	18 868	5 324	635	3 029	1 583	580	866	14 177	42 033	20 199
1991	24 631	18 776	5 203	652	3 023	1 560	586	877	12 378	40 032	20 199
1992	24 563	18 811	5 089	663	3 012	1 565	576	871	12 378	39 953	20 199
1993	24 481	18 940	4 887	654	3 054	1 615	567	872	12 378	39 913	20 199
1994	24 605	18 641	5 255	709	3 066	1 618	567	881	12 378	40 049	20 199
1995[3]	24 373	18 464	5 124	785	2 461	1 340	565	556	12 378	39 212	20 199
1996	24 514	18 635	5 094	785	2 472	1 344	560	568	12 378	39 364	20 199
1997	24 297	18 605	4 917	775	2 567	1 364	545	658	12 378	39 242	20 703
1998	24 436	18 751	4 902	783	2 530	1 389	541	600	12 378	39 344	20 703
1999	24 279	18 450	5 039	790	2 523	1 393	535	595	12 378	39 180	20 703
2000	23 826	18 207	4 826	793	2 553	1 418	535	600	12 378	38 757	20 703
2001	23 800	18 087	4 914	799	2 550	1 425	525	600	14 617	40 967	20 703
2002	23 994	18 123	5 040	831	2 585	1 435	530	620	14 617	41 196	20 703
2003	23 372	17 563	4 991	818	2 656	1 501	530	625	14 617	40 645	20 703
2004	23 871	18 110	4 956	805	2 722	1 558	520	644	14 617	41 210	21 189
2005	23 830	18 148	4 876	806	2 776	1 598	516	662	14 617	41 223	21 189
2006[4]	22 981	17 440	4 691	850	2 895	1 670	513	712	14 617	40 493	21 189
2007	21 979	16 945	4 219	815	2 909	1 671	485	753	14 617	39 505	21 189
2008	21 555	16 460	4 259	836	2 950	1 693	483	774	14 617	39 122	21 189
2009*	21 375	16 241	4 323	811	2 943	1 686	479	778	14 617	38 935	21 189

1. Data are the results of the 1980, 1991 and 2001 General Agricultural Censuses, and are compiled every ten years.
2. Normal forest area having 11% or more forest tree density and spoiled forest area having 10% or less forest tree density are included.
3. Since 1995, only the closed area of fruit and olive trees is included (the area of scattered trees is not included).
4. The Statistical Classification of Products by Activity of the European Economic Community (CPA, 2002) has been used for crop products since 2006.

* Data are provisional.

Source: TurkStat, 2009.

Table A.7. **Production, area and yields by selected crop, 1988-2009**

	1988-90	1995-97	2000-02	2005-07	2008	2009
			Production (000 tonnes)			
Cereals	28 198	29 079	30 883	33 414	29 280	33 570
Wheat	18 922	18 398	19 841	19 581	17 782	20 600
Barley	6 433	7 900	7 933	8 786	5 923	7 300
Maize	2 033	1 993	2 200	3 849	4 274	4 250
Rice, paddy	274	252	357	648	753	750
Pulses	2 061	1 794	1 470	1 519	960	1 066
Chick peas	774	727	578	552	518	563
Lentils	802	608	479	576	131	1 629
Oilseeds	875	808	894	973	981	989
Soybeans	158	55	57	36	34	38
Sunflower seed	1 087	860	767	982	992	1 057
Tobacco, unmanufactured	262	239	166	103	93	85
Sugar beet	12 150	14 705	15 992	14 016	15 488	17 275
Cotton	…	2 137	2 387	2 355	1 820	1 725
Onions, dry	1 418	2 283	2 133	1 898	2 007	1 850
Potatoes	4 237	4 933	5 190	4 245	4 197	4 398
Tea	137	119	139	209	198	199
Hazelnuts	443	437	565	574	801	500
Vegetable and melons	17 215	21 679	24 876	25 891	27 164	26 733
Grapes	3 427	3 650	3 450	3 821	3 918	4 265
			Area (000 ha)			
Cereals	13 619	13 901	13 878	13 055	11 771	11 956
Wheat	9 349	9 363	9 350	8 609	8 098	8 027
Barley	3 360	3 625	3 623	3 538	2 732	2 977
Maize	507	537	535	551	594	591
Rice, paddy	54	53	59	93	99	96
Pulses	2 225	1 832	1 566	1 224	920	906
Chick peas	816	749	647	527	486	455
Lentils	922	607	478	418	196	210
Oilseeds	2 186	2 029	1 963	1 896	1 897	1 898
Soybeans	72	24	19	10	9	11
Sunflower seed	744	573	534	568	578	584
Tobacco, unmanufactured	281	245	208	159	147	139
Sugar beet	344	402	380	319	321	324
Cotton	…	741	687	556	495	420
Onions, dry	79	115	97	69	75	65
Potatoes	191	207	201	155	148	143
Tea	89	77	77	76	76	76
Hazelnuts	316	328	346	405	412	421
Vegetables and melons	786	928	1 036	1 064	1 106	1 107
Grapes	589	557	530	505	483	479

Table A.7. **Production, area and yields by selected crop, 1988-2009** *(cont.)*

	1988-90	1995-97	2000-02	2005-07	2008	2009
	Yield (kg/ha)					
Cereals	2 070	2 092	2 225	2 555	2 487	2 808
Wheat	2 024	1 965	2 122	2 271	2 196	2 566
Barley	1 915	2 179	2 190	2 475	2 168	2 452
Maize	4 008	3 714	4 112	6 983	7 199	7 188
Rice, paddy	5 036	4 723	6 045	6 997	7 572	7 777
Pulses	926	979	939	1 240	1 044	1 177
Chick peas	948	972	893	1 046	1 065	1 237
Lentils	870	1 003	1 003	1 379	669	7 746
Oilseeds	401	399	455	512	517	521
Soybeans	401	399	455	3 625	517	521
Sunflower seed	2 197	2 340	2 948	1 727	3 649	3 657
Tobacco, unmanufactured	932	974	799	639	636	610
Sugar beet	35 279	36 536	42 039	43 797	48 291	53 322
Cotton	…	2 885	3 476	4 234	3 677	4 107
Onions, dry	17 960	19 798	22 107	27 472	26 762	28 455
Potatoes	22 186	23 833	25 821	27 399	28 391	30 821
Tea	1 548	1 550	1 811	2 727	2 612	2 618
Hazelnuts	1 399	1 331	1 632	1 415	1 941	1 187
Vegetables and melons	21 892	23 374	24 018	24 324	24 558	24 151
Grapes	5 818	6 557	6 509	7 569	8 116	8 903

Source: FAOSTAT, 2010.

Table A.8. **Value of production and cultivated land by region, type of production and type of land, 2009**

%

Region	Value of production			Total land	Arable land		Land under permanent crops	
	Crops	Livestock	Animal products		Cereals and other crops	Vegetables	Fruits, beverage and spice crops	Olive trees
Istanbul	0	1	1	0	0	0	0	…
West Marmara	8	10	13	7	8	9	1	15
Aegean	17	17	19	11	11	18	11	55
East Marmara	8	8	15	6	5	10	12	6
West Anatolia	8	7	8	15	13	11	4	0
Mediterranean	25	9	8	10	10	22	13	16
Central Anatolia	6	8	7	16	15	5	2	…
West Black Sea	9	10	9	9	9	12	9	0
East Black Sea	5	3	4	3	1	1	27	0
North-east Anatolia	2	10	5	5	6	1	0	…
Central-east Anatolia	3	9	6	5	5	2	6	…
South-east Anatolia	8	7	5	13	15	9	14	8

Note: Data on value of production refer to 2008.

Source: TurkStat.

Table A.9. **Agricultural exports, imports and trade balance, 1996-2010**

Year	Trade balance	Exports	Imports	Share in total exports	Share in total imports
	(million USD)			(%)	
1996	528	4 807	4 279	21	10
1997	947	5 305	4 358	20	9
1998	1 147	4 918	3 771	18	8
1999	1 398	4 310	2 912	16	7
2000	201	3 738	3 537	13	6
2001	1 541	4 229	2 689	13	6
2002	406	3 886	3 480	11	7
2003	451	5 073	4 622	11	7
2004	1 107	6 258	5 151	10	5
2005	2 706	8 032	5 326	11	5
2006	2 566	8 331	5 765	10	4
2007	1 376	9 417	8 041	9	5
2008	18	10 970	10 952	8	5
2009	2 534	10 785	8 251	11	6
2010	346	5 557	5 210	10	6

Note: ISIC, REV3 2010 data provisional.

Source: TurkStat.

Table A.10. **Exports and imports of agro-food by principal commodity group and selected years**

(million USD)

Code	Product	1996		2000		2005		2009	
		Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
	Agro-food	4 807	4 279	3 738	3 537	8 032	5 326	10 785	8 251
0	**Food and live animals**	3 458	1 740	2 802	1 122	6 269	1 547	8 788	3 483
00	Live animals other than animals of division 03	85	167	2	33	5	14	24	34
01	Meat and meat preparations	27	26	13	2	41	1	174	2
02	Dairy products and birds' eggs	37	43	22	37	81	78	268	120
04	Cereals and cereal preparations	507	788	406	408	892	226	1 482	1 285
05	Fruits and vegetables	2 219	101	1 817	193	4 374	284	5 354	673
06	Sugar, sugar preparations and honey	211	294	239	16	211	46	301	57
07	Coffee, tea, cocoa, spices and manufactures thereof	144	106	140	124	309	275	472	389
08	Feeding stuff for animals	15	150	10	207	18	341	75	556
09	Miscellaneous edible products and preparations	213	66	153	102	338	280	638	367
1	**Beverages and tobacco**	742	296	529	365	736	299	933	479
11	Beverages	105	19	37	15	146	23	176	79
12	Tobacco and tobacco manufactures	638	277	491	351	590	276	758	400
2	**Crude materials, inedible, except fuels**	384	1 734	309	1 675	621	2 735	639	3 166
21	Hides,skins and furskins, raw	4	677	26	225	25	293	6	123
22	Oilseeds and oleaginous fruits	23	250	23	233	60	625	95	914
26	Textile fibres (other than wool tops) and their wastes	279	732	196	1 117	436	1 643	423	1 895
29	Crude animal and vegetable materials, n.e.s.	78	74	64	99	101	174	114	234
4	**Animal and vegetable oils, fats and waxes**	223	509	99	375	405	745	424	1 122
41	Animal oils and fats	8	83	2	51	0	73	3	106
42	Fixed vegetable fats and oils, crude, refined or fractionated	127	394	72	292	359	626	240	930
43	Animal and vegetable fats and oils, processed; waxes of animal or vegetable origin; inedible mixtures	97	32	26	33	46	46	184	87
	All products	**23 224**	**43 627**	**27 775**	**54 503**	**73 476**	**116 774**	**102 135**	**140 919**

Note: n.e.s. : not elsewhere specified.
SITC, REV3.

Source: TurkStat.

Table A.11. **Turkey's agro-food trade by destination and origin, 2007**

Imports			Exports		
Partner	Value (million USD)	(%)	Partner	Value (million USD)	(%)
Live animals other than animals of division 03					
Total	23 921		Total	7 078	
EU25	10 478	43.8	EU25	4 505	63.6
Germany	2 732	11.4	Belgium	1 947	27.5
Netherlands	1 496	6.3	France	1 272	18.0
Australia	2 953	12.3	Asia	1 533	21.7
Meat and meat preparations					
Total	1 439		Total	54 108	
EU25	839	58.3	EU25	6 739	12.5
United Kingdom	568	39.5	Italy	2 122	3.9
Italy	84	5.8	France	1 140	2.1
Sweden	73	5.1	Vietnam	20 626	38.1
Romania	222	15.4	Middle East	2 502	4.6
Dairy products and birds' eggs					
Total	119 283		Total	178 959	
EU25	63 302	53.1	Middle East	127 967	71.5
France	11 089	9.3	EU25	8 115	4.5
Germany	12 123	10.2	Philippines	3 216	1.8
Netherlands	5 128	4.3	United States	2 872	1.6
Ukraine	31 777	26.6			
Cereals and cereal preparations					
Total	1 023 694		Total	1 036 754	
Russian Federation	264 066	25.8	Middle East	432 159	41.7
EU25	236 331	23.1	EU25	115 128	11.1
Hungary	58 295	5.7	Germany	34 606	3.3
Germany	47 585	4.6	United Kingdom	17 014	1.6
France	34 951	3.4	Libya	103 379	10.0
Kazakhstan	176 070	17.2			
United States	101 825	9.9			
Fruits and vegetables					
Total	456 384		Total	4 901 711	
South America	121 447	26.6	EU25	2 867 264	58.5
Asia	112 590	24.7	Germany	856 499	17.5
EU25	111 150	24.4	Italy	526 281	10.7
Greece	21 412	4.7	France	278 450	5.7
Netherlands	15 545	3.4	Middle East	292 954	6.0
Beverages and tobacco					
Total	353 112		Total	804 555	
EU25	144 230	40.8	EU25	292 943	36.4
Germany	38 888	11.0	Belgium	62 071	7.7
Netherlands	37 346	10.6	Germany	60 083	7.5
Brazil	66 935	19.0	United States	173 363	21.5
United States	33 353	9.4	Middle East	152 814	19.0

Note: SITC, REV3.

Source: TurkStat.

Table A.12. **Top-10 Turkey export markets for selected commodities**

Hazelnuts			Cotton			Tobacco			Fruits and vegetables		
	(tonnes)	(%)		(tonnes)	(%)		(000 USD)	(%)		(000 USD)	(%)
World	140 300		World	65 738		World	643 799		World	4 901 711	
Italy	47 796	34.1	Free trade zones	37 182	56.6	United States	172 112	26.7	Germany	856 499	17.5
Germany	22 188	15.8	Italy	7 384	11.2	Iran	89 419	13.9	Russian Federation	619 385	12.6
France	16 842	12.0	Netherlands	3 913	6.0	Belgium	58 267	9.1	Italy	526 281	10.7
Switzerland	7 709	5.5	Greece	3 282	5.0	Germany	37 011	5.7	United Kingdom	353 052	7.2
Poland	6 613	4.7	China	1 971	3.0	Netherlands	31 712	4.9	France	278 450	5.7
Russian Federation	5 939	4.2	France	1 556	2.4	Indonesia	26 040	4.0	Netherlands	241 707	4.9
Belgium	4 199	3.0	Poland	1 379	2.1	Russian Federation	24 376	3.8	United States	166 476	3.4
Netherlands	3 369	2.4	Germany	1 301	2.0	Algeria	20 343	3.2	Romania	150 564	3.1
Spain	3 277	2.3	Indonesia	1 339	2.0	Poland	18 430	2.9	Ukraine	132 293	2.7
United States	2 980	2.1	Hungary	872	1.3	Romania	14 919	2.3	Belgium	110 884	2.3

Source: OECD Secretariat calculations based on UN, Comtrade Database, 2010.

Table A.13. **EU exports to and imports, from Turkey**

(million EUR)

		1995		2000		2005		2006		2007		2008		2009	
Code	Product category	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
0	**Food and live animals**	453	1 227	359	1 682	416	2 638	491	2 645	639	2 663	850	2 729	724	2 526
00	Live animals other than animals of division 03	137	2	25	3	7	4	9	4	11	3	12	3	11	3
01	Meat and meat preparations	53	6	2	6	5	5	4	4	4	4	6	8	6	5
02	Dairy products and birds' eggs	21	1	29	1	25	2	20	0	30	0	45	0	32	0
04	Cereals and cereal preparations	40	15	103	66	70	70	67	93	160	78	332	98	227	109
05	Fruits and vegetables	13	1 167	29	1 506	53	2 383	59	2 326	77	2 302	67	2 315	66	2 124
06	Sugar, sugar preparations and honey	132	8	13	29	22	53	20	61	17	70	22	78	20	65
07	Coffee, tea, cocoa, spices and manufactures thereof	25	18	55	36	79	54	101	44	108	45	122	49	139	48
08	Feeding stuff for animals	10	4	44	2	58	2	73	1	65	1	67	5	71	4
09	Miscellaneous edible products and preparations	24	6	59	34	97	65	138	112	168	160	178	174	152	169
1	**Beverages and tobacco**	70	111	171	188	323	171	278	223	334	202	309	207	387	213
11	Beverages	43	12	66	23	85	37	87	42	111	53	124	50	139	52
12	Tobacco	27	100	105	165	239	134	191	181	223	148	185	157	248	161
2	**Crude materials, inedible, except fuels**	316	179	512	238	683	298	765	317	791	315	789	283	677	218
21	Hides,skins and furskins, raw	123	5	115	1	137	2	167	2	146	4	104	2	58	1
22	Oilseeds and oleaginous fruits	2	9	23	19	123	29	69	34	151	34	200	31	122	24
26	Textile fibres (other than wool tops) and their wastes	163	89	309	139	328	193	426	203	388	193	366	173	390	129
29	Crude animal and vegetable materials, n.e.s.	27	76	65	79	95	75	103	77	106	83	120	77	106	64
4	**Animal and vegetable oils, fats and waxes**	82	87	98	22	95	123	45	80	32	33	42	20	17	20
41	Animal oils and fats	5	2	4	2	1	0	1	0	1	0	1	4	2	0
42	Fixed vegetable fats and oils, crude, refined or fractionated	67	85	80	19	83	121	31	78	25	32	34	16	10	19
43	Animal and vegetable fats and oils, processed; waxes of animal or vegetable origin; inedible mixtures	10	0	14	1	11	2	13	2	6	1	7	1	5	0
	Total agri-food	1 388	1 981	1 920	2 578	2 617	3 823	2 669	3 885	2 952	3 761	3 131	3 750	2 885	3 429
	All products	13 391	9 245	31 902	18 740	44 625	36 082	50 038	41 720	52 684	46 967	54 136	45 990	43 780	36 086

Note: SITC, REV3.

Source: OECD Secretariat calculations based on EUROSTAT/COMEXT, 2010.

Table A.14. **Turkey: Purchasing prices for cereals, sugar and tobacco**

Product	2007		2008		2009		2010		Change in TRY price 2008/09	Change in TRY price 2009/10
	TRY/t	USD/t	TRY/t	USD/t	TRY/t	USD/t	TRY/t	USD/t	%	%
Wheat										
Durum, Anatolian	440	338	592	456	458	296	505	326	-23	10
Hard, white	425	327	500	385	458	296	505	326	-8	10
Hard, red Anatolian	425	327	592	456	458	296	505	326	-23	10
Barley	320	246	400	308	369	239	417	270	-8	13
Rye	300	231	400	308	369	239	417	270	-8	13
Oats	315	242	-	-	-	-	-	-	-	-
Maize	302	232	371	286	432	279	484	313	16	12
Sugar beet	103	79	108	83	116	75	118	76	7	2
Tea	640	492	737	567	790	511	-	-	7	-
Hazelnuts	5 150	3 962	4 000	3 080	-	-	-	-	-	-
Tobacco, Aegean A	5 760	4 431	6 206	4 778	6 684	4 321	6 696	4 329	8	0

Note: - : not applicable.
Source: Government of Turkey, *Resmi Gazete* [Official Gazette], Ankara, 2010.

Table A.15. **Preferential tariff quotas on agricultural and processed agricultural products, 2010**

Free-trade agreement partner	Number of items	Products affected
EU	108 items at the HS six-digit level	Live bovine animals and their meat, milk powder, butter, cheese, egg yolks, flower bulbs, live plants, fresh cut flowers, foliage, mushrooms, frozen beans, pears, strawberries, potato seed, apples, peaches, tamarinds, passion fruit, tea, wheat, rye, barley, rice, maize, oats, malt, sunflower seeds, sugar beet seed, cotton seed, crude and refined soya bean oil, sugar, crude sunflower oil, crude rape, rape seed and mustard oil, tomato paste, prepared vegetables, jams and jellies, fruit juices, sparkling wine, vinegar, flours, meals and pellets made from meat, meat offal, fish or crustaceans, oilcake and other solid residues, dog or cat food and other animal feed.
EU (Processed agricultural products - PAPs)	8 items at the HS four-digit level	Sugar confectionery, chocolate, malt extract, food preparations of flour, groats, meal, starch or malt extract, pasta, prepared foods obtained by the swelling or roasting of cereals, bread, pastry, cakes, biscuits, ice cream, food preparations, n.e.s. In addition to the tariff quotas for certain PAPs, all PAPs enjoy preferential duty.
EFTA		All processed agricultural products, some cheese and wine are subject to preferential tariff rates. All fish and fishery products enjoy zero duty.
Israel	25 items at the HS four-digit level	Avocados, mangoes, carrots, sweetcorn, citrus fruits, orange juice, coffee, kosher brandy, and vodka.
Former Yugoslav Republic of Macedonia	21 items at the HS four-digit level	Some fresh vegetables (tomatoes, onions, shallots, cucumbers, etc.), beans, watermelons, apples, rice, canned vegetables, and sauces and preparations (mixed condiments and seasoning), soups and broths and preparations (wine made from fresh grapes, un-denatured ethyl alcohol of an alcoholic strength by volume of less than 80% volume).
Croatia	17 items at the HS four-digit level	Cheese and curd, apples, maize, sugar confectionery, chocolate and other food preparations containing cocoa, malt extract, pasta, prepared foods obtained by swelling or roasting of cereals or cereal products, bread, pastry, cakes, biscuits and other bakers' products, fruit and vegetable juices, sauces and preparations thereof, mixed condiments and mixed seasoning, soups and broths and preparations thereof, waters, including mineral waters and aerated waters, containing added sugar or other sweetening matter, or flavoured, beer made from malt, wine made from fresh grapes, un-denatured ethyl alcohol of an alcoholic strength by volume of 80% volume or higher, preparations of a kind used in animal feed.

Table A.15. **Preferential tariff quotas on agricultural and processed agricultural products, 2010** *(cont)*

Free-trade agreement partner	Number of items	Products affected
Bosnia-Herzegovina	185 items at the HS four-digit level	All agricultural products classified under HS Code 1-24 with the exemption of: live bovine animals; live sheep and goats; live poultry (exclusively fowl of the species *Gallus domesticus*); meat of bovine animals; meat of sheep or goats; edible offal of bovine animals, swine, sheep, goats, horses, asses, mules or hinnies; meat and edible offal of poultry (exclusively fowl of the species *Gallus domesticus*) enjoy duty exemption.
Morocco	35 items at the HS six-digit level	Live plants, orchids, cabbages, turnips, asparagus, mushrooms, sweet peppers, sweetcorn, capers, cucumbers, preserved cucumbers, broad beans, avocados, coriander seeds, ginger, saffron, turmeric, thyme, bay leaves, curry, locust beans, preserved apricots, coffee extracts, wine, and bran.
Syria	36 items	Cut flowers, onions and shallots, garlic, capers, grapes, cherries, peaches, anise seeds, cumin seeds, ginseng roots, parts of plants spices, crude soya bean oil, crude sunflower seed oil, sugar confectionery, chocolates, preserved fruit, preserved pepper, jams and marmalades, apple juices, wine, and olive pulp.
Tunisia	32 items at the HS six-digit level	Dates, sardines, mackerel, shrimps and prawns, molluscs, harissa, and wine.
Egypt	227 items at the HS six-digit level	Fish and crustaceans, molluscs, aquatic invertebrates, live plants, cut flowers, potatoes, garlic, lettuce, carrots, turnips, frozen vegetables, provisionally preserved vegetables, dried vegetables, dates, guavas, mangoes, strawberries, spices, rice, groundnuts, sugar confectionery, chocolate, pasta, bakers' produce, preserved cucumbers, preserved fruit, fruit juices, and active yeasts.
Albania	36 items at the HS four-digit level	Cheese and curd, eggs, honey, live plants, tomatoes, onions, cabbages, carrots, cucumber, beans, frozen vegetables, dried vegetables, peas, spices, melons, frozen fruits, plants and parts of plants, preserved fish, chocolates, bakers' produce, preserved cucumbers, preserved tomatoes, jams and jellies, preserved fruit, fruit juices, tomato paste, ice cream, mineral water, wine, vermouth, and ethyl alcohol.
Georgia	39 items at the HS four-digit level	Anchovies, tomatoes, quail eggs, natural honey, pears and quinces, chocolate, extracts, essences and concentrates, of coffee, tea, melons, sunflower seeds, butter and other fats and oils derived from milk, cut flowers, apricots, preparations of cereals, flour, starch or milk, baker's yeast, flours of anchovies, jams, fruit jellies, marmalades, fruit, fruit juices, wine made from fresh grapes. In addition to mentioned products with tariff quota, all agricultural products classified under HS Code 1-24 with the exemption of live animals, meat and edible meat, fish and crustaceans, dairy produce, lemons, grapes, kiwifruit, apricots, tea, cereals, starches, sugar beet, wheat, cereal flours, cane or beet sugar, animal or vegetable fats and oils, hazelnut paste, tomatoes, ice cream, unmanufactured tobacco, apples are subject to zero tariffs.
Montenegro	3 items at the HS four-digit level	Pasta, couscous, jams, fruit jellies, marmalades, fruit or nut purée and fruit or nut pastes, wine made from fresh grapes.
Serbia	37 items at the HS four-digit level	Roses, forest trees, cut flowers and flower buds, tomatoes, leeks and other alliaceous vegetables, white cabbages and red cabbages, carrots and turnips, peas, fruits of the genus *capsicum* or of the genus *pimenta*, beans, sweetcorn, strawberries, sour cherries, prunes, seeds of fennel, juniper berries, sugar beet, lucerne, vetch, forest-tree and Canary, margarine, pasta, wine made from fresh grapes, fruit juices, soups, chocolate, ice cream, bread, pastry, cakes, cucumbers.
Chile[1]	144 items at the HS four-digit level	Salmon, tootfish, sardines, shrimps, oysters, hair, ossein, fish waste, bulbs, tubers, crowns, onions and shallots, garlic, peas, sweetcorn, mushrooms, coconut, avocados, apple, apricot, strawberries, cherries, vanilla, cinnamon, malt, flake, sunflower seed, olive oil, anchovies, sweet biscuit, yams, peanut butter, culture yeast, soya sauce, water, grappa, cognac, calvados, tequila.
Jordan[1]	25 items at the HS four-digit level	Eggs for hatching, edible products of animal origin, cut flowers and flower buds, potatoes, tomatoes, cabbage lettuce, carrots and turnips, cucumbers and gherkins, beans, asparagus, aubergines, fruits of the genus *capsicum*, oranges, mandarins, grapefruit, apples, pears and quinces, peaches, liquorice roots, lemons, melons, strawberries, ginseng roots, tomato ketchup, pasta, fresh grapes, chocolate, bread, pastry, cakes, biscuits, sugar confectionery.

Note: n.e.s. : not elsewhere specified.

1. As of February 2011, these agreements had not yet been enforced.

Source: Undersecretariat of Foreign Trade.

Table A.16. **Fertiliser use by crop in Turkey, 2007**

%

	Total (000 mt nutrients)	% World	Wheat	Rice	Maize	Other coarse grains	Cotton	Sugar crops	Fruits and vegetables
Nitrogen	1 356	1.3	41.5	0.9	6.8	12.1	5.4	2.0	17.0
Phosphate	516	1.3	41.7	0.9	4.7	13.1	5.2	3.4	14.4
Potassium	109	0.4	15.2	0.5	6.1	2.9	4.2	13.2	40.4
Total	1 982	1.2	40.1	0.9	6.2	11.9	5.3	3.0	17.6

Source: International Fertilizer Industry Association (IFA), 2010.

Table A.17 **Organic farming in Turkey, 2004-09**

	2004	2005	2006	2007	2008	2009
Crops						
Holdings (000)	13	14	14	16	15	35
Crops	174	205	203	201	247	212
Area (000 ha)	210	204	193	174	167	502
Production (000 tonnes)	379	422	458	568	530	984
Animal production						
Holdings	n.a.	6	12	27	37	38
Animals (000)	n.a.	12	13	21	17	13
Poultry (000)	n.a.	0.9	6	13	22	0.8

Note: n.a. = not available.

Sources: TurkStat, 2009; MARA.

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