

AGRICULTURE

28.1 INTRODUCTION

The main objectives set by the Eighth Development Plan for the agricultural sector are five-fold: increasing the contribution of agriculture to the diversification of the economic base, improving the efficient use of natural resources to ensure sustainable agricultural development, improving the economic performance of the agricultural sector to keep pace with local, regional and global developments, enhancing the investment capacities of the sector, and preservation of the environment.

Under the Eighth Development Plan, the agricultural sector underwent the beginnings of a radical restructuring process, designed to put the sector on a path of sustainable development, by subjecting agricultural development to the constraints of water resources. The state took a series of measures aimed at rationalising the production and banning the export of water-demanding crops, encouraging the use of modern irrigation techniques to rationalise water consumption, and restricting distribution of fallow land pending completion of the National Water Strategy. In addition, in order to promote national food security, the government began a programme for supporting Saudi investment in agricultural activities abroad. The State also took a number of measures aimed at alleviating the impact of rising food prices. These developments notwithstanding, the agricultural sector was able to grow throughout the period of the Plan, albeit at a rate lower than expected, due to climatic factors and the repercussions of combating the spread of the avian flu disease.

The Ninth Development Plan aims to continue the process of restructuring the agricultural sector, in order to enhance its role in economic, social and environmental development. In addition, it aims to enhance production of highly water-efficient crops; develop and improve the efficiency of agricultural markets; improve the level of support and effectiveness of extension services, particularly for small farmers; support agricultural R&D; improve the management of

fisheries; and work towards sustainable management and development of rangelands and forests. Moreover, the Plan aims to encourage investment in the agricultural sector and the entire agricultural value chain; promote national investment in the agricultural sector abroad; and continue to consolidate regional and international cooperation and partnerships, in order to achieve food security and preserve natural environment and resources.

This chapter addresses the current conditions of the agricultural sector, discusses developments under the Eighth Development Plan, and reviews the key issues and challenges that must be addressed under the Ninth Development Plan. It also presents demand forecasts for agricultural products, and highlights the future vision, objectives, policies and targets set for the sector by the Ninth Development Plan.

28.2 CURRENT CONDITIONS

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28.2.1 Contribution of the Agricultural Sector to Diversification of the Economic Base

Under the Eighth Development Plan, the agricultural sector achieved an average annual growth rate of 1.4%, with the domestic product of agriculture, forestry and fisheries rising, at 1999 constant prices, from about SR37.9 billion in 2004 to about SR40.6 billion in 2009. However, this growth rate was less than the rate of overall economic growth. Hence, the contribution of the agricultural sector to GDP fell over the period from 5.2% to 4.7%, and its contribution to the non-oil economy from 7.6% to 6.2%. This decline was due, primarily, to rationalisation of water use under the Eighth Development Plan, which resulted in the planted area decreasing at an average annual rate of 4.9% over the first four years of the Eighth Plan, while the volume of production remained stable, due to the improvement in productivity, the rate of which averaged 5% per annum over the period (Table 28.1).

In 2008, crop production totalled about 9.3 million tonnes, including about two million tonnes of wheat, about 2.7 million tonnes of vegetables, about 3 million tonnes of fodder, and about 1.6 million

tonnes of fruits. Production of fish, milk, eggs, and red meat increased at average annual growth rates of 8.5%, 4.6%, 4.1%, and 0.9%, respectively, over the first four years of the Eighth Development Plan. The growth rates achieved exceeded or equalled the target rates set by the Eighth Development Plan for all products, except chicken meat production, which fell at an average annual rate of 4.9% due mainly to the spread of avian flu, (Table 28.2).

Table 28.1
Crop Production
Eighth Development Plan^(*)

Crop	2004			2008			Average Annual Growth Rate (%)		
	Area (Thousand Hectares)	Production (Thousand Tonnes)	Productivity (Tonnes/Hectare)	Area (Thousand Hectares)	Production (Thousand Tonnes)	Productivity (Tonnes/Hectare)	Area (Thousand Hectares)	Production (Thousand Tonnes)	Productivity (Tonnes/Hectare)
Wheat	523	2775	5.3	326	1986	6.1	-11.1	-8.0	3.6
Barley	10	67	6.7	4	24	6.0	-20.5	-22.6	-2.7
Vegetables	111	2479	22.3	109	2696	24.7	-0.5	2.1	2.6
Fruits	208	1454	7.0	233	1616	6.9	2.9	2.7	-0.4
Fodder	168	2633	15.7	161	2984	18.5	-1.1	3.2	4.2
Total	1020	9408	9.2	833	9306	11.2	-4.9	-0.3	5.0

(*) Up to the end of the fourth year of the Eighth Development Plan.
Source: Ministry of Agriculture.

Table 28.2
Meat and Dairy Products
Eighth Development Plan^(*)

Product	(Thousand tons)					Realised Average Annual Growth Rate (%)	Target Average Annual Growth Rate under Plan (%)
	2004	2005	2006	2007	2008		
Red Meat	167	169	170	171	173	0.9	1.0
Chicken Meat	522	521	515	490	427	-4.9	5.0
Eggs	145	169	174	188	170	4.1	2.0
Milk	1232	1338	1381	1436	1475	4.6	2.0
Fish	67	75	81	91	93	8.5	3.0
Total	2133	2272	2321	2376	2338	2.3	2.7

(*) Up to the end of the fourth year of the Eighth Development Plan.
Source: Ministry of Agriculture.

In 2008, self-sufficiency in agricultural products, according to estimates by the Ministry of Agriculture, was about 90.2% for wheat, 91.2% for vegetables, 62.4% for fruits, 37.9% for red meat, 102.6% for fresh dairy products, 50.8% for chicken meat, 104.5% for eggs, and 48.1% for fish.

In response to growing demand for meat and animal products, the number of cows increased at an average annual rate of 6.4% to about 418 thousand heads by the end of 2008. Notably, the additional cows were high yielding. In contrast, due to avian flu, the number of chickens decreased at an average annual rate of 1.7%. The number of goats, camels and sheep also decreased by an average annual rate of about 5.7%, 3.9%, and 3.5%, respectively (Table 28.3).

Table 28.3
Animals and Poultry
Eighth Development Plan*

(Thousand Heads)

Type	2004	2008	Average Annual Growth Rate (%)
Camels	284	242	-3.9
Cows	326	418	6.4
Sheep	8047	6975	-3.5
Goats	2372	1873	-5.7
Poultry	474778	443821	-1.7

* Data are up to the end of the fourth year of the Eighth Development Plan. They do not include animals in nomadic areas and outside farms.

Source: Ministry of Agriculture.

In terms of distribution of agricultural activities among regions, the Riyadh region has more than a quarter of the total cultivated area, followed by Qassim, Jawf, Hail and Jazan. Riyadh, Jawf, Qassim and Hail, account for about 82.2% of the wheat area, and produce around 84.1% of total locally produced wheat. Vegetable production is concentrated in the Riyadh region, which produced about 43.7% of total production. Production of fruits, of which dates represent about 70%, is distributed over most regions (Table 28.4). It should be noted that, with progress in implementation of the new agricultural measures,

quality of agricultural activity is expected to change radically over the medium and long term, focussing on areas of renewable water resources and treated wastewater sources, along with a decline in areas planted with water-inefficient crops.

Table 28.4
Relative Distribution of Agricultural Land and Crops over Regions
(%)

Region	Total Crop Area	Wheat		Fodder		Vegetables		Fruits	
		Area	Production	Area	Production	Area	Production	Area	Production
Riyadh	26.4	24.2	20.5	46.1	46.2	46.5	43.7	21.5	19.2
Makkah	3.9	–	–	3.8	2.6	11.1	8.1	6.7	6.9
Madinah	2.9	0.2	0.1	2.3	2.3	1.4	1.1	10.8	10.6
Qassim	15.3	18.8	16.2	13.3	13.3	11.7	12.6	18	14
Eastern Region	6.3	9.4	7.4	2.6	2.5	4.4	7.5	7.1	12.4
Asir	2	1	0.5	1.3	1.3	2.4	3.2	3.7	4.1
Tabuk	5.2	7	7.8	6.1	6.5	3.4	4	4.8	7.2
Hail	11	12.9	14.6	6.8	7.3	10.8	12.6	9.9	10.6
Northern Borders	0.01	–	–	0.1	0.1	0.1	0.1	–	–
Jazan	10.6	–	–	8.1	7.6	3.2	2	2.5	2
Najran	1.1	0.2	0.1	1.5	1.3	1.7	1.7	2.8	3.6
Baha	0.4	–	–	0.1	0.1	0.2	0.2	1.5	1.8
Jawf	14.9	26.3	32.8	7.9	8.9	3.1	3.2	10.7	7.6
Kingdom Total	100	100	100	100	100	100	100	100	100

Source: Ministry of Agriculture.

28.2.2 Improving Efficiency of Natural Resources Use

Council of Ministers Resolution No. 335 of 2007 set the rules and procedures for rationalisation of water consumption in agricultural areas. These measures include: continuing to ban the export of wheat; the Grain Silos and Flour Mills Organization gradually ceasing to receive locally produced wheat at a reduction rate of 12.5% per year for eight years; preventing export of vegetables cultivated on open fields, such as potatoes and melons, over five years; banning export of fodder and facilitating their import; providing credit to investors to

cultivate fodder abroad and import it for domestic consumption; and waiving custom duties on imports of all agricultural products, including wheat and fodder.

Within this strategic framework, the Government decided to stop allotting fallow land pending the completion of the National Water Plan. It also increased its support to high water-efficient cultivations, such as green houses, and promoted use of water-saving irrigation systems such as drip irrigation.

In 2008, the number of farms using reclaimed wastewater was about 470, with a total area of 18 thousand hectares, mostly in Riyadh region. In view of the great potential, especially near large and medium-sized cities, use of this water resource for agricultural purposes is expected to increase steadily over the coming years, given the expansion of sewage networks and development of treatment capacities and techniques.

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28.2.3 Improving Economic Performance of the Agricultural Sector

In spite of the structural changes in the agricultural sector, it was able to achieve significant progress in improving productivity in a number of crops and key products, which improved its regional competitiveness. In 2008, the value of Saudi exports of food crops and livestock was about SR8.0 billion, 135% higher than in 2004. Dairy products and eggs contributed some 33% of the value of these exports, and vegetables and fruits about 26%.

Productivity of cultivated land increased at an average annual growth rate of 5% over the first four years of the Eighth Development Plan, from approximately 9.2 tonnes/hectare in 2004 to about 11.2 tonnes/hectare in 2008 (Table 28.1). This improvement is due to a number of factors, including: the shift towards protected high-productivity cultivations; encouraged production shift to areas of comparative advantage; and promoted cultivation of fruit trees which are best suited for the Kingdom's environment, such as olive

cultivation in Jawf, tropical fruits in Jazan, and citruses in Najran, by using modern irrigation methods.

The services provided by the government, through the Ministry of Agriculture, contributed to improving the productivity and raising the efficiency of agricultural activities, especially agricultural extension services and plant protection and disease control using advanced technological methods such as: aerial spraying, use of GIS and remote sensing, and development of a comprehensive geographic database comprising digital maps of the Kingdom. In addition, agricultural field services covering all regions, have been provided through 13 regional general administrations to which 12 Directorates of Agriculture are connected, with 122 agricultural branches, 18 agricultural quarantines, 15 veterinary units, 9 fishery branches, and 6 research centres.

28.2.4 Consolidation of Investment Capacity in the Agricultural Sector

Through enhancement of the income of citizens in rural areas, and hence, achieving population balance among the regions, the agricultural sector is an important cornerstone of the socio-economic development of the country. The aim of the structural adjustments initiated under the Eighth Development Plan was to place the agricultural sector on the path to sustainable development, and enhance its contribution to socio-economic development. The State continued to consolidate the capacity of the sector by offering soft investment loans through the Agricultural Development Fund (previously, the Saudi Arabian Agricultural Bank), in addition to providing subsidies not conflicting with the commitments of the Kingdom to the WTO.

By the end of 2008, the total cumulative value of the loans offered by the Agricultural Development Fund amounted to SR40.8 billion, provided in about 431 thousand loans. The loans offered by the Fund over the first four years of the Eighth Development Plan amounted to about SR3.7 billion (Table 28.5). Notably, individual farmers, i.e. small farms and medium-sized farms, were the biggest beneficiaries of these loans. In 2008, individual farmers accounted for about 92% of

total beneficiaries, and their share amounted to 70% of total loans offered, while agricultural enterprises accounted for around 1.1% of beneficiaries, receiving some 26.2% of the loans offered. The remaining shares went to fishermen and beekeepers, (Table 28.6).

Table 28.5
Loans and Subsidies Provided
by the Agricultural Development Fund
Eighth Development Plan^(*)

Description	2004	2005	2006	2007	2008	Average Annual Growth Rate (%)
Number of loans	5136	3527	4303	3770	2701	-14.8
Value of loans (SR million)	1043.9	896	968.2	1044.3	791.9	-6.7
Average loan Size (SR thousand)	203.3	254.0	225.0	277.0	293.2	9.6
Value of subsidies (SR million)	246.2	249.8	258.6	81.5	32.8	-39.6
Cumulative total number of loans ^(**)	416749	420276	424579	428349	431050	0.8
Cumulative total value of loans (SR million) ^(**)	37069.9	37965.9	38934.1	39978.4	40770.3	2.4
Cumulative total value of subsidies (SR million) ^(**)	12436	12685.8	12944.4	13025.9	13058.7	1.2

(*) Up to the end of the fourth year of the Eighth Development Plan.

(**) Since beginning of activity in 1964.

Source: Agricultural Development Fund.

Table 28.6
Beneficiaries of the Agricultural Development Fund Loans

2008 Type of Beneficiaries	Beneficiaries		Value of Loans		Average Loan Size (SR thousand)
	Number	(%)	SR Million	(%)	
Individual Farmers	2489	92.1	550.7	69.5	221.2
Agricultural Enterprises	30	1.1	207.2	26.2	6905.8
Fishermen	123	4.6	27.8	3.5	225.8
Beekeepers	59	2.2	6.3	0.8	106.0
Total	2701	100.0	792.0	100.0	293.2

Source: Agricultural Development Fund.

In addition to loans offered by the Agricultural Development Fund, in 2008, the banking sector provided SR10.9 billion, which is approximately 6.2% of total bank credit provided to all economic activities.

Agricultural subsidies declined significantly over the third and fourth years of the Eighth Plan as a result of the application of the new structure of subsidies, as well as meeting the requirements of membership in the WTO. Notably, like other economic sectors, the agricultural sector reaps tangible benefits from the available resources in the Kingdom like the energy products, the investment climate and business environment.

28.2.5 Institutional and Organisational Development

Within the framework of government policies aimed at ensuring sustainability of agricultural development, a number of resolutions related to the agricultural sector were issued under the Eighth Plan. These include Council of Ministers Resolution No. 335 of 2007 concerning the rules of and procedures for water conservation in agriculture. In addition, Council of Ministers Resolution No. 125 of 2008 comprised a package of measures, including: expanding of Saudi investments in agriculture, livestock and fisheries abroad and incentivising Saudi businessmen to invest in these activities through providing credit facilities by public financial institutions, for the purpose of supplying these products to the Kingdom to contribute to medium and long-term food security. The measures also included financing the infrastructure projects needed in the areas of Saudi investments in crops and animals, through the Saudi Fund for Development or the regional and international development institutions.

As part of institutional and organisational development in the agricultural sector, the Saudi Arabian Agricultural Bank was renamed the Agricultural Development Fund, and its capital was increased to SR20 billion; responsibilities of the Irrigation and Sanitation Authority at Al-Ahsaa and the Al-Kharj Agricultural Project were redefined; and work continued on privatising the Grain Silos and Flour Mills Organization.

Box 28.1: King Abdullah Initiative for Agricultural Investment Abroad

The King Abdullah Initiative for Agricultural Investment Abroad aims to contribute to national and global food security, build partnerships with a number of countries around the world with high agricultural capabilities to develop and manage agricultural investment in a number of strategic agricultural crops, in order to secure adequate quantities at stable prices and ensured sustainability. These investments were planned in accordance with the following principles:

- Investing in countries with attractive and promising agricultural resources and conducive governmental regulations and incentives.
- Exporting crops to the Kingdom at reasonable rates.
- Investments must be long-term, either through ownership or long-term contracts.
- Freedom of choice of cultivated crops.
- Signing of bilateral agreements with the states concerned to protect these investments.
- State support and encouragement to these investments.
- Ease of transport of crops to the Kingdom at a reasonable cost.

A royal directive was issued to provide financial and credit facilities to Saudi investors in the agricultural sector abroad, and a ministerial team was formed to implement this directive, headed by the Minister of Commerce and Industry and membership of the Minister of Agriculture and the under-secretaries of the ministries of foreign affairs, finance, agriculture, and trade and industry.

28.3 ISSUES AND CHALLENGES

28.3.1 Non-Renewable Water Resources

The resolutions taken by the government under the Eighth Development Plan aimed at reducing consumption of non-renewable groundwater and limiting expansion of water-demanding cultivations, constituted an important step on the path to sustainable agricultural

development, which requires full reliance on renewable water sources. Hence, it is necessary to continue through: effective enforcement of adopted control measures and regulations; continue to provide support and incentives to farmers to ensure wider use of modern irrigation techniques; intensifying use of non-conventional water resources, such as treated sanitary and agricultural wastewater; and directing agricultural activity to areas in which there are renewable water resources.

28.3.2 Marketing Efficiency of Agricultural Production

Efficient marketing of agricultural production is one of the main factors required for the expansion and prosperity of the agricultural sector, especially for small and medium-sized farmers, the majority of whom are individuals. Lack of nearby markets and the difficulty of reaching distant ones represents an additional burden that raises production costs and impedes agricultural development, especially in rural areas. Hence, there is a need for developing systems and means for marketing agricultural products, along with providing appropriate storage facilities and transportation means from farms to markets, in addition to encouraging production and marketing cooperative societies, and strengthening extension and funding services throughout all stages of the production process, particularly for individual farmers.

28.3.3 Competitiveness of National Agricultural Products

Implementing the Kingdom's commitments to the WTO has led to opening the national market to agricultural products from all member countries. Since many of these countries enjoy a comparative advantage in numerous agricultural products, because of abundance of natural resources or due to advanced agricultural technologies, national agricultural products are expected to face severe competition from imported agricultural products. To improve competitiveness of national agricultural products, it is necessary to: upgrade the technological level of all stages of agricultural operations; support agricultural R&D; improve the level of knowledge among farmers and all workers in the agricultural production chain; develop productivity of the various

factors of agricultural production; take advantage of the comparative advantages of the various agricultural regions and review the crop structure in line with these advantages; and continue to provide overall support to the sector. Concessional finance, through the Agricultural Development Fund, is one of the main support channels under WTO rules.

28.3.4 Fisheries Development

Demand for fish grew at high and accelerating rates, due to improvements in income levels and nutritional awareness among citizens, as well as population growth, which increases total consumption. In response to rising demand, production of fish increased at an average annual rate of 5.8% over the first four years of the Eighth Development Plan; more than the target rate of 3%. However, high rates of growth led to over-fishing, especially in the territorial waters, which could lead to depletion of fish resources and weakening the chances of sustainability. Hence, it is necessary to adopt integrated management of fish resources, which requires organising fishing operations to conserve and develop fish stocks, enhancing fish farming and supporting fishing in international waters.

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28.3.5 Research and Development

The agricultural sector faces significant challenges, especially the limited water resources, the semi-arid climate, and the vast desert. Hence, there is an urgent need to build a strong scientific agricultural base, relying on R&D as a necessary condition for achieving sustainable agricultural development, diversification of the economic base, and improving the standard of living, especially in rural areas. It is noteworthy in this context that importation of knowledge and agricultural technology cannot in any way be an effective substitute for the development of national scientific capacities, particularly in view of the intense competition among countries for acquisition and sustaining of competitive advantages, and also because of the possibility that imported knowledge may not be compatible with the local environment.

Since spending on R&D provides the means for overcoming the above-mentioned challenges, it is necessary to develop a strategy for agricultural R&D, and identify research priorities, objectives, and requirements of various resources. This would be in line with the National Science and Technology Policy, which calls for increasing spending on scientific R&D and innovation to 2% of GDP by 2024, to match spending ratios of leading countries. In addition, there is a need for coordination and cooperation between spending authorities and beneficiaries.

28.3.6 Environment and Public-Health Protection

Environmental pollution is one of the main obstacles to sustainable development, in addition to being a threat to public health through irrational use of fertilizers, pesticides, and hormones. Hence, it is necessary to focus on enforcing all measures taken under the Eighth Development Plan, particularly in relation to controlling the use of chemicals and marine pollution.

28.4 DEMAND FORECASTS

Demand for basic agricultural products under the Ninth Development Plan was estimated on the basis of a set of specific factors including: per capita consumption according to estimates of the food budget, prepared by the Ministry of Agriculture; estimated average per capita income; development of the nutritional awareness of the population; and expected population growth rate over the period, estimated at 2.1% per annum. Demand for wheat, milk, eggs and red meat is thus expected to increase at a rate of 2.1% per annum, which is equivalent to the rate of population growth. In contrast, demand for vegetables and fruits is expected to grow at a rate of 2.6%, which exceeds the rate of population growth. This is attributed to the expected increase in nutritional awareness leading to increasing the share of these products in the food basket. The same is true for demand for chicken and fish white meat, which is expected to increase at a relatively high annual rate of 3.1% (Table 28.7).

Table 28.7
Forecast of Demand for Basic Agricultural Products
Ninth Development Plan

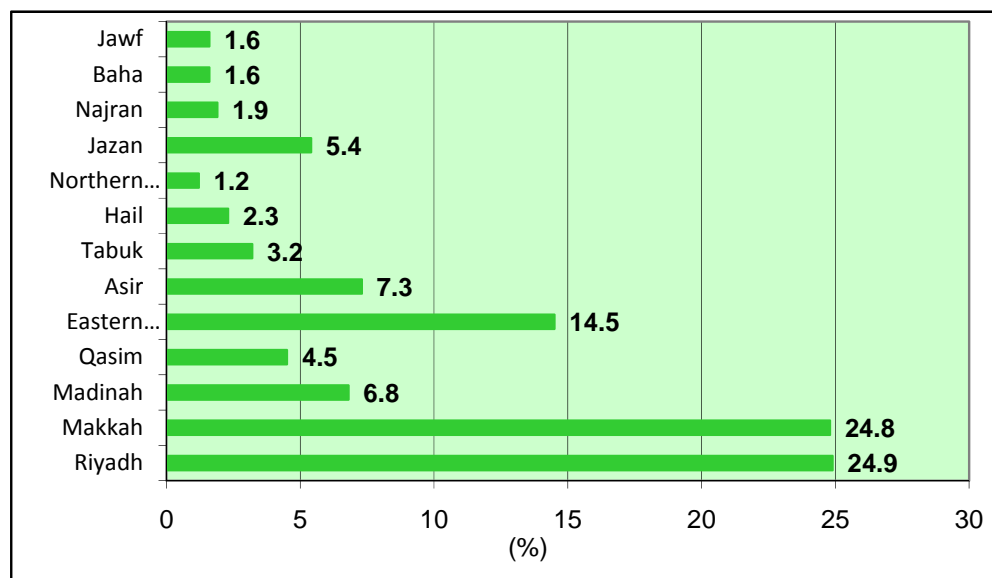
Product (thousand tonnes)	2009	2014	Average Annual Growth Rate (%)
Wheat	2530	2807	2.1
Vegetables	3132	3550	2.6
Fruits	2278	2590	2.6
Milk	1224	1358	2.1
Red meat	371	412	2.1
Poultry meat	990	1153	3.1
Eggs	162	180	2.1
Fish	150	175	3.1

Source: Ministry of Economy and Planning.

Distribution of demand for the main agricultural products at the regional level follows the relative distribution and rates of growth of population, as shown in Figure 28.1. Demand is concentrated on the Riyadh and Makkah regions, each accounting for about 25% of total demand for agricultural products, followed by the Eastern Region, with a share of 14.5%, and the rest of the regions with shares ranging between 1.2 % and 7.3%.

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Figure 28.1
Share of Regions in Total Demand for Main Agricultural Products
Ninth Development Plan



Source: Ministry of Economy and Planning.

The State took several measures to balance consumption of scarce resources, notably water, with ensuring availability of main food commodities. Among such measures were: banning export of virtual water, waiving customs duties on food imports, and instituting consumer-protection regulations.

28.5 DEVELOPMENT STRATEGY

28.5.1 Future Vision

Putting the agricultural sector on the path to sustainable development; promoting scientific research to develop high-yielding salinity-resistant varieties; and diversifying the production base of the national economy, through planting water-efficient crops, in order to conserve available water resources.

28.5.2 Objectives

- Enhancing the role of the agricultural sector in economic and social development.
- Improving efficiency of the use of natural resources in order to attain sustainable agricultural development.
- Increasing investment in agricultural activities abroad.
- Strengthening regional and international cooperation in agriculture.
- Conserving fisheries, diversifying their sources and developing their capabilities.

28.5.3 Policies

- Enhancing competitiveness of agricultural activities, especially of small and medium-sized farms, and softening terms of investment in agriculture.
- Improving access channels of agricultural products to markets and increasing their value added.
- Encouraging innovation and supporting agricultural R&D.
- Determining the agricultural crops to be grown and the

associated water demand, within the strategic framework of rational use of water.

- Expanding use of reclaimed wastewater for agricultural purposes.
- Continuing efforts to achieve ecological balance through combating desertification, and conservation and development of pastures and forests.
- Promoting establishment of a national fishing fleet at high seas, and supporting fish farming.
- Improving labour skills in the agricultural sector.
- Intensifying regional and international cooperation within the food security framework.

28.5.4 Targets

- Increasing realised added value in the agricultural sector at an average annual growth rate of about 1.7%.
- Increasing investment in the agricultural sector at an average annual rate of about 6.6%.
- Improving performance of agricultural markets and supporting establishment of new central markets, with increases amounting to 5% per annum.
- Expanding use of treated wastewater in agriculture at a rate of 10% per annum.
- Increasing the annual growth rates of local production by about 2.3% for vegetables, about 3.4% for fruits, about 1% for fresh milk, about 1% for red meat, about 5% for poultry meat, and about 4% for fish.

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28.6 FINANCIAL REQUIREMENTS

Under the Ninth Development Plan, the financial allocations for government agencies in the agricultural sector (Ministry of Agriculture, and the Grain Silos and Flour Mills Organization) amount to SR13.82 billion.