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AGRIWANET

# Agricultural sector development, farm restructuring, agricultural policies and national adaptation strategies to climate change in Turkmenistan

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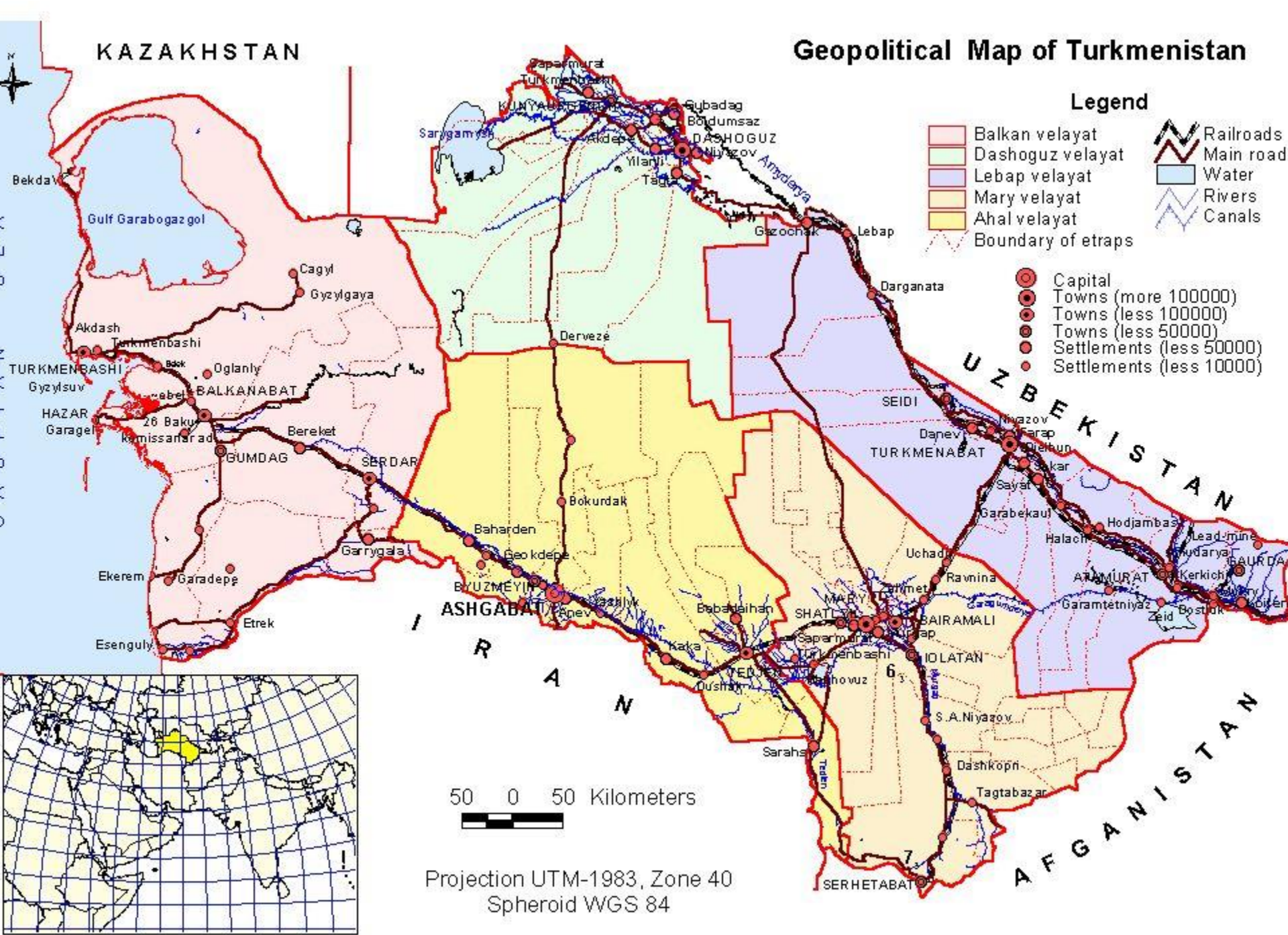
**AGRIWANET Workshop**

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17-18 April 2015 – Halle(Saale), Germany

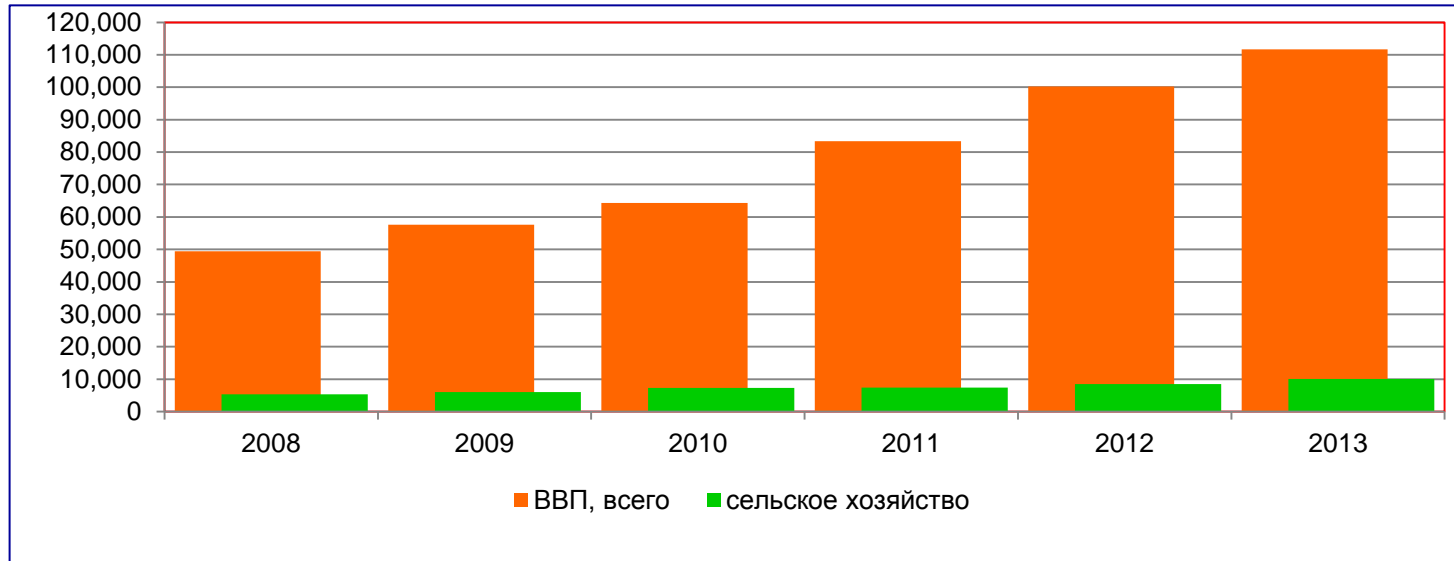
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# Geopolitical Map of Turkmenistan



# Project «Agricultural Restructuring, Water Scarcity and the Adaptation to Climate Change in Central Asia (AGRIWANET)»

## Turkmenistan GDP

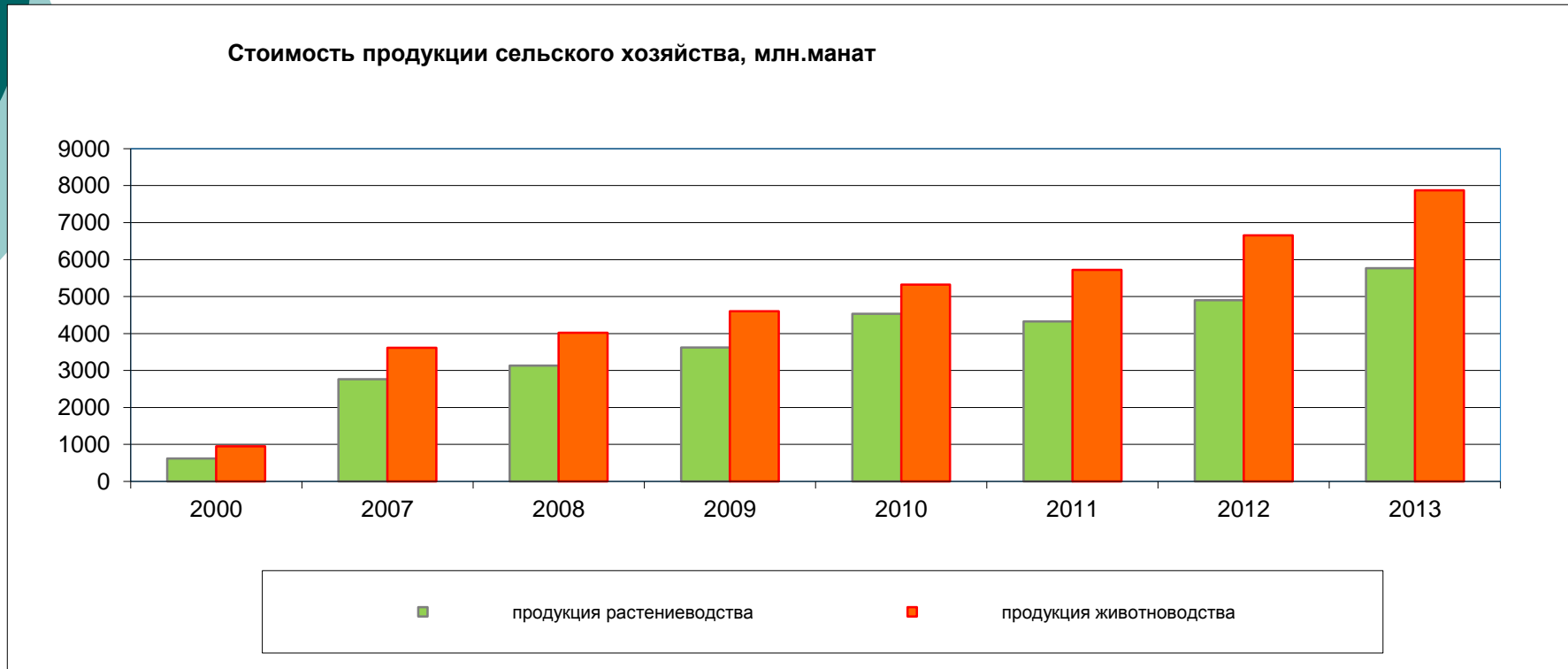


The area of irrigated land in Turkmenistan is about 1.8 million hectares. Agriculture in the national economy makes a considerable contribution (10%) to GDP. Prior to 1991, the share of agriculture in GDP exceeded 20%. Decline in the share of the agricultural sector in the country's GDP was due to the intensive development of various industries and, in particular, the energy sector (especially, a significant increase in gas production).

The importance of sustainable agriculture becomes even more due to the fact that this sector employs about 50% of the population (about 2.3 million)

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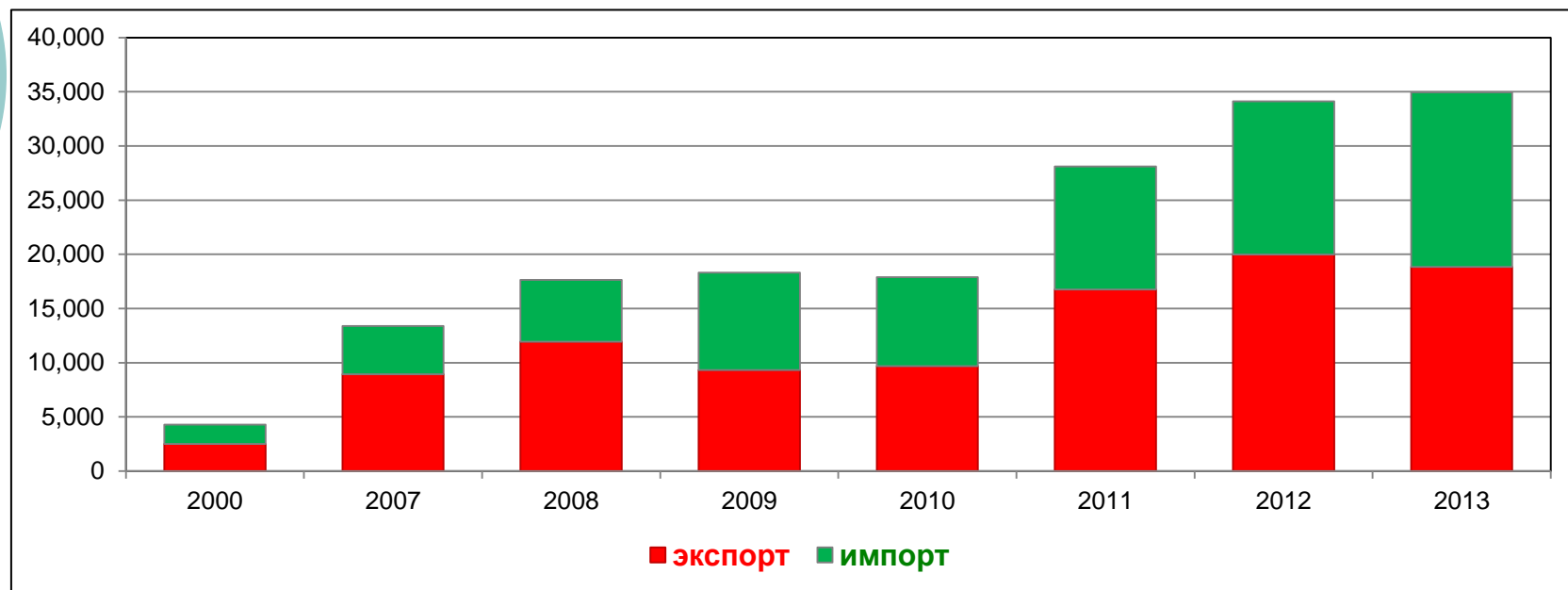
## Agricultural Sector



Over the last decade, the share of livestock/cattle output in the total value of agricultural production has increased. One of the main reasons - currently more than 80% of the livestock is concentrated in private households, no taxing etc.

# Project «Agricultural Restructuring, Water Scarcity and the Adaptation to Climate Change in Central Asia (AGRIWANET)».

## Dynamics of Export

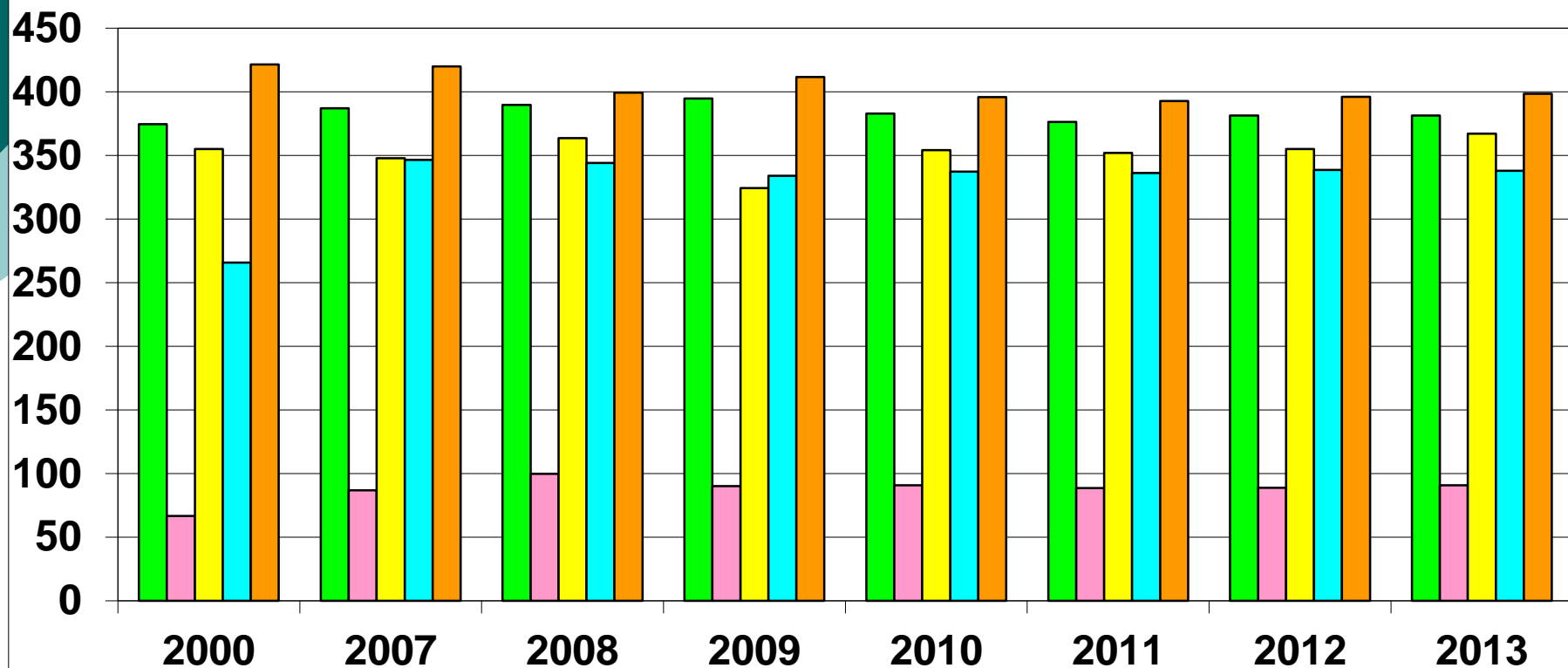


Due to dominance of gas, oil and petroleum products (93% in 2013 ) in total exports, the share of agricultural products account for a smaller part. Exports of agricultural products are as follows:

- cotton fiber;
- cotton fabric;
- carpets and rugs.

# Agricultural diversification policy

## Regional changes in areas of agricultural lands ( in thousand ha )

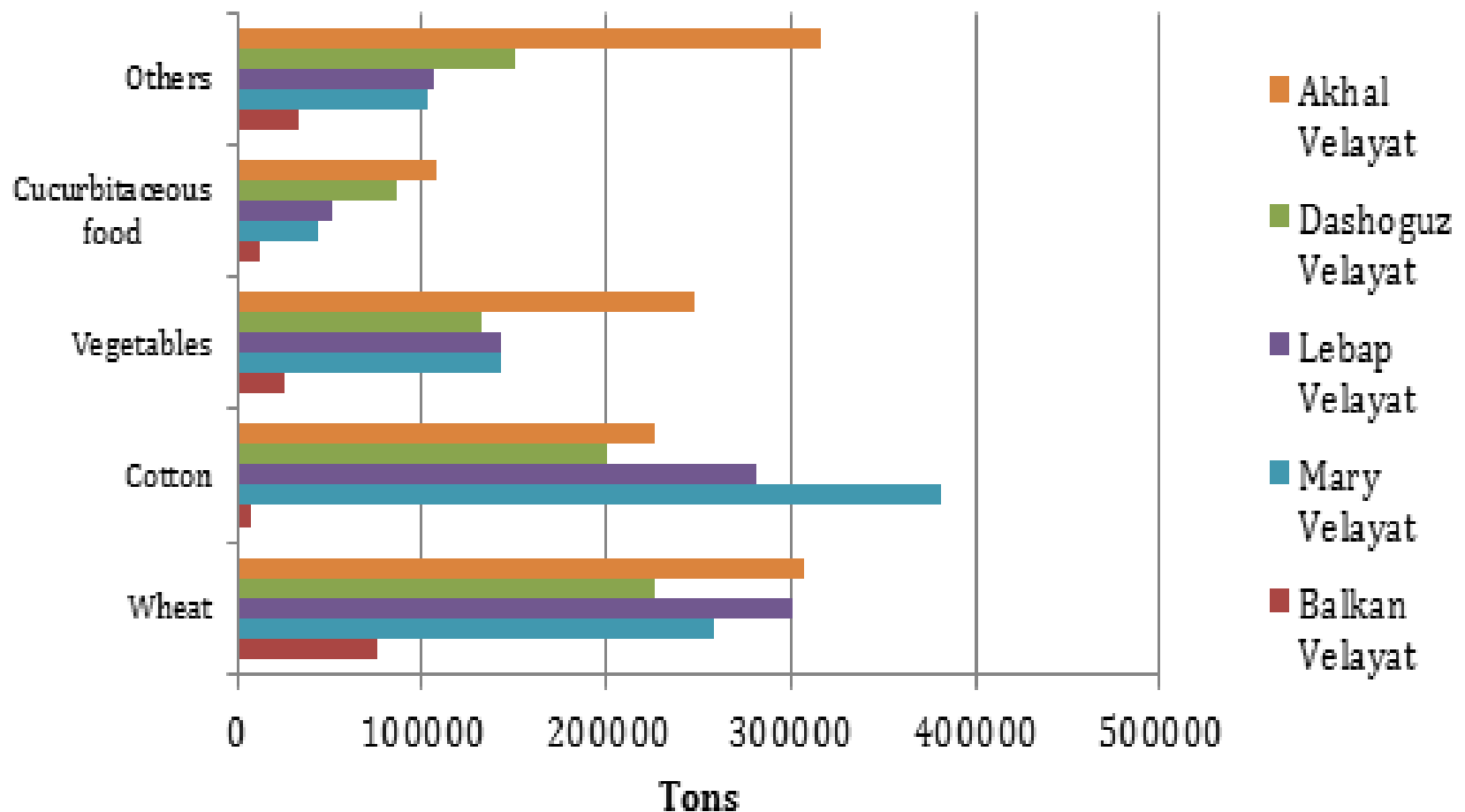


■ Ахалский велаят    ■ Балканский велаят    ■ Дашогузский велаят  
■ Лебапский велаят    ■ Марыйский велаят

# Agricultural diversification policy

## Agricultural specialization of key regions

(Source: Matthew Sawige, Presentaton "The Social and economic analysis..", Seminar UNDP/AF/MNP "Addressing climate change risks to farming systems in Turkmenistan ..." Project , Ashgabat, 01.05.2014)

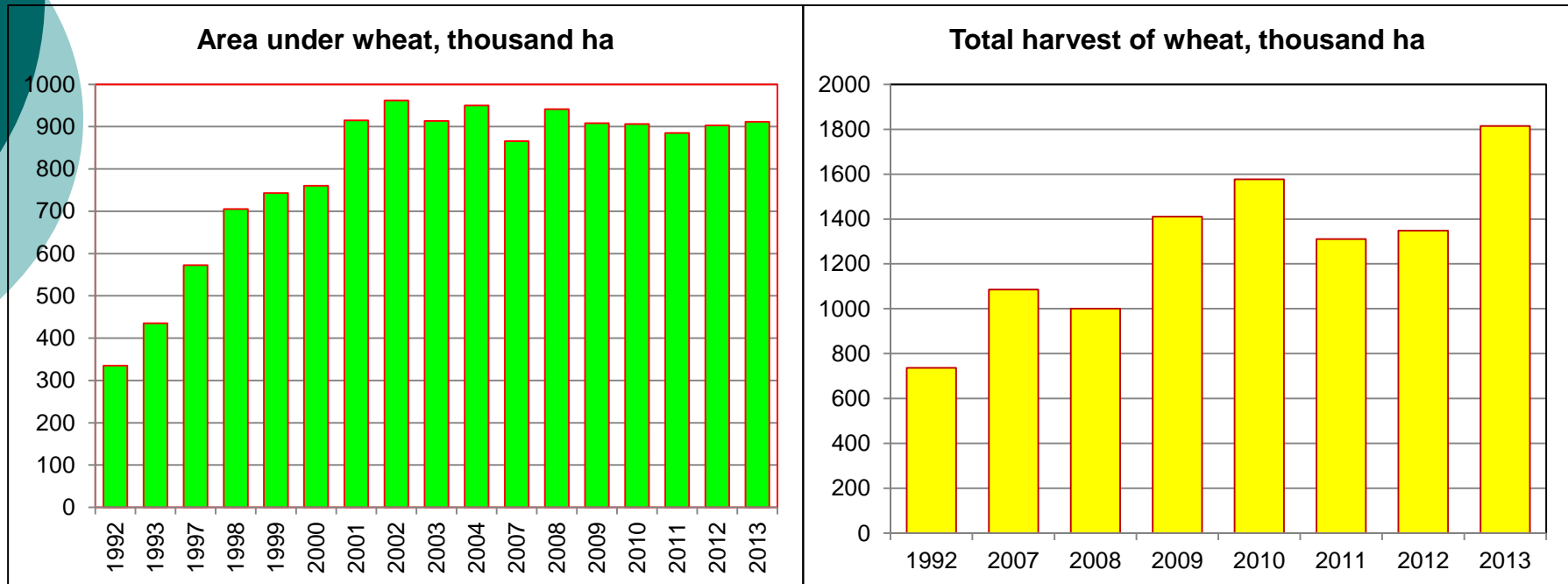




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## Wheat production

### Food security policy

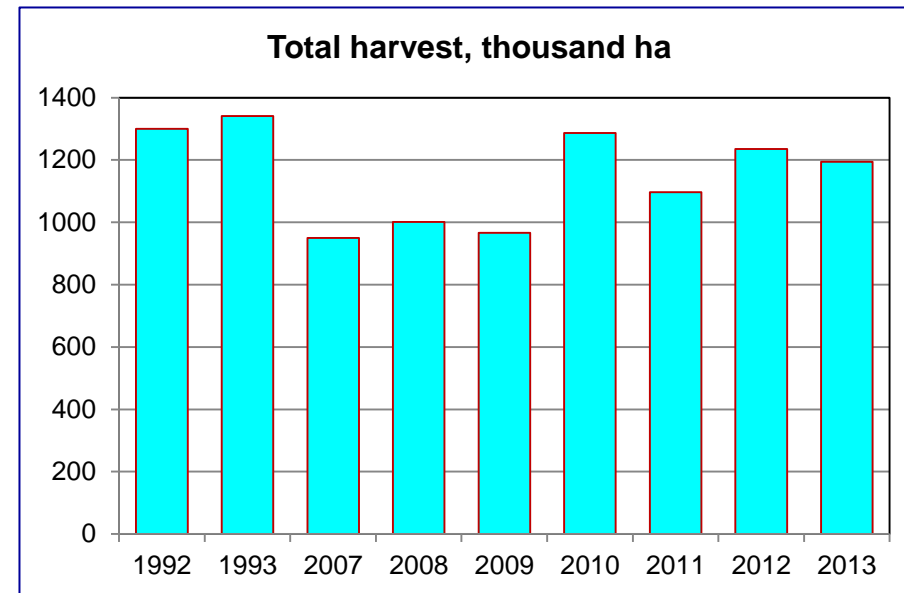
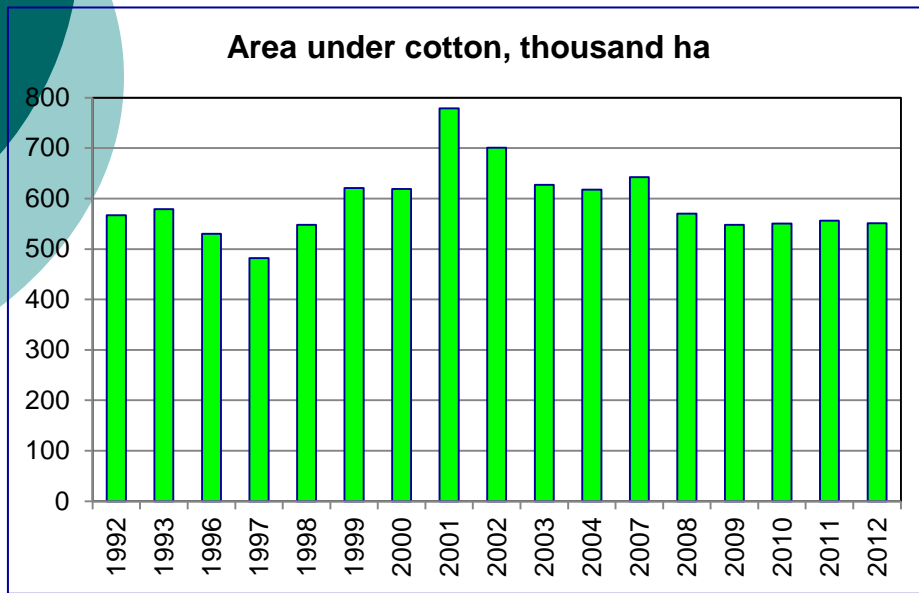


- In 1991, State Program "Grain" was launched in Turkmenistan. The main objective of the program is food security of the country (in 2014, the total amount was 1.2 million tons)
- Since 2011, Turkmenistan exported more than 200 thousand tons of wheat
- In 2013, "National program on healthy nutrition of the population of Turkmenistan for 2013-2017 period" was adopted



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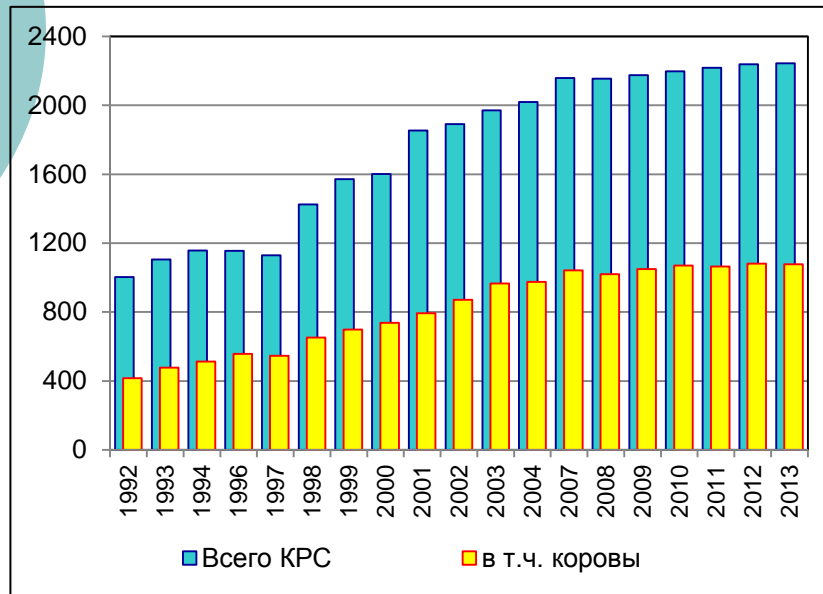
## Cotton Production



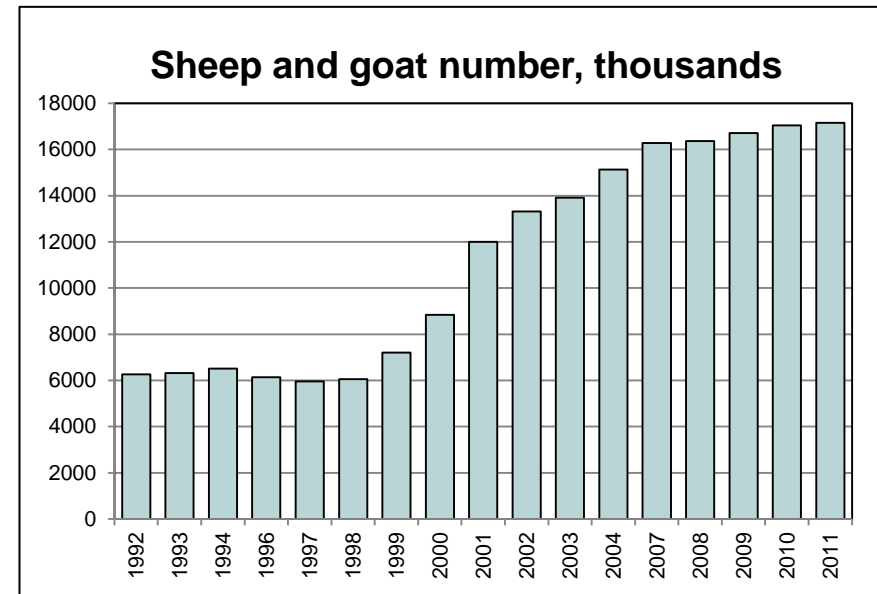
- Cotton production has a long tradition in Turkmenistan. Currently, some decrease in the area of cotton fields takes place which is accompanied by simultaneous increase in production which now exceeds 1 million tons (1.05 million ton in 2014).
- In Balkan region, cotton production was discontinued due to inexpediency.
- Cotton constitutes a considerable share of the country exports (270000 ton in 2013) and provides raw material for dozens of textile enterprises and employment of both urban and rural population

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## Livestock



**Total livestock including cows**

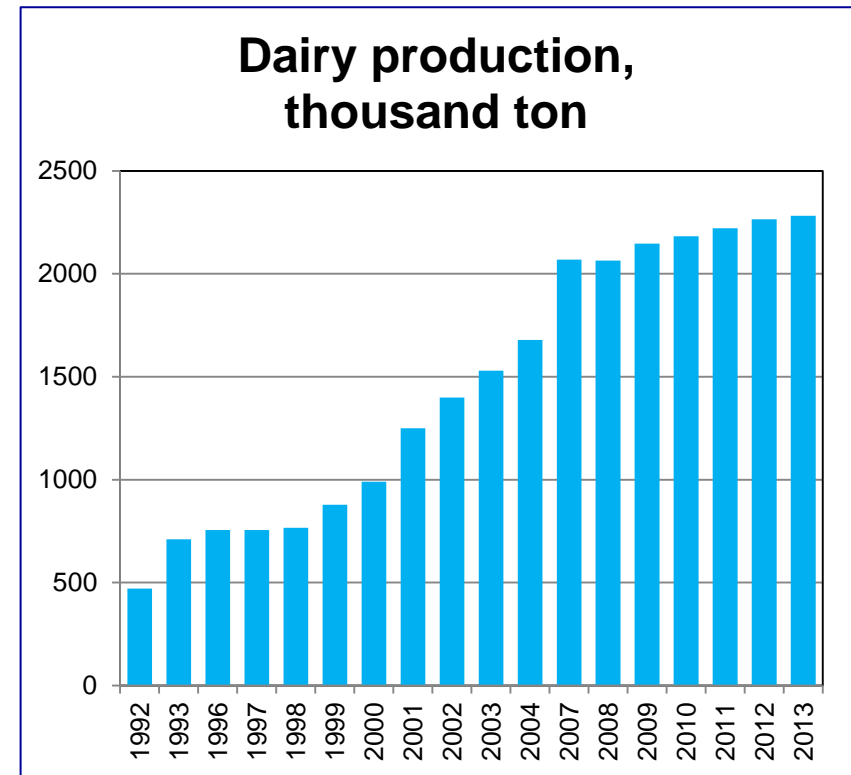
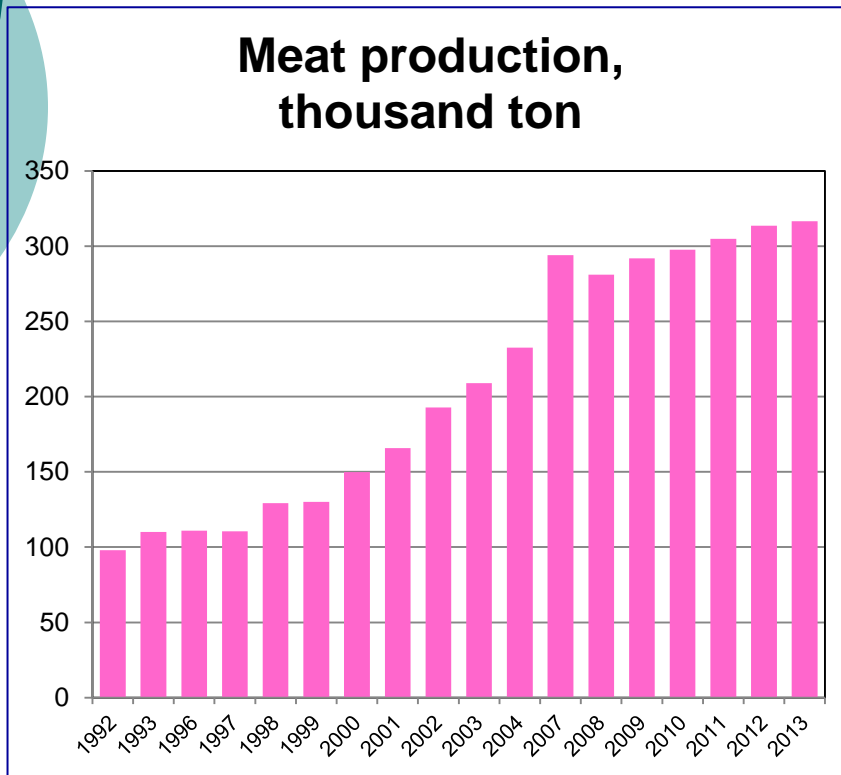


The total number of livestock during the study period (1992-2013) increased by 2.3 times, and number of cows by 2.5 times.

The number of sheep has increased 2.75 times and now exceeds 17 million.

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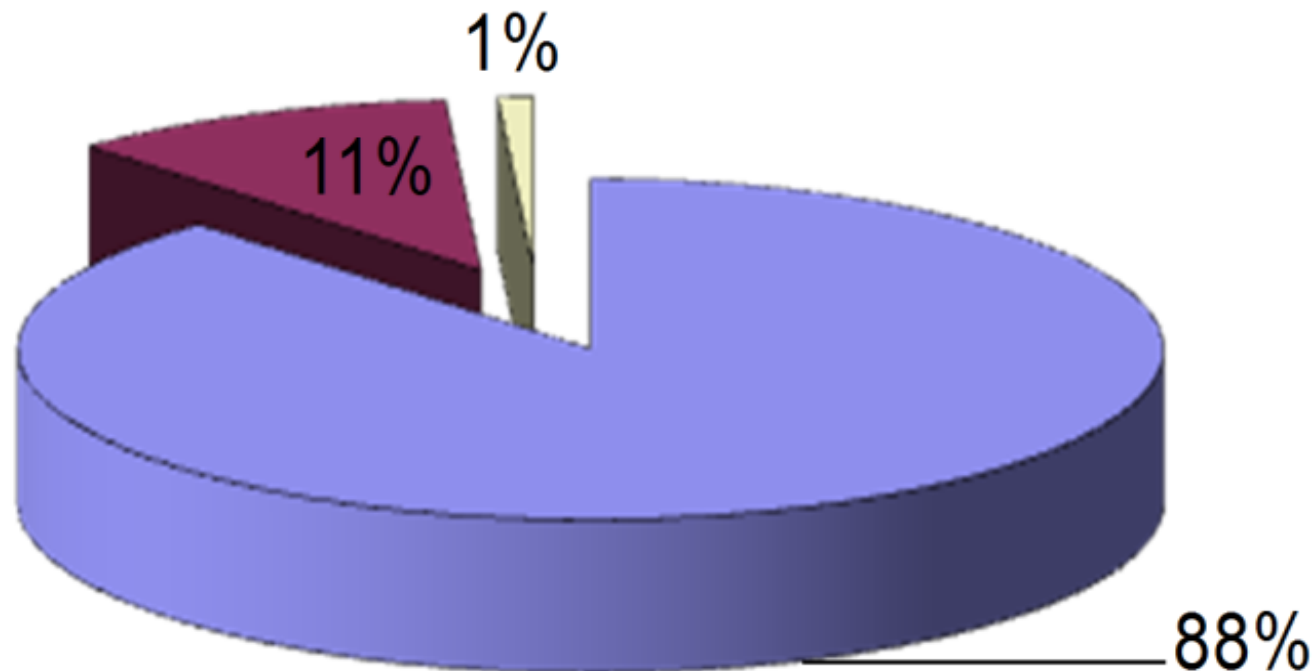
## Meat and dairy



During the study period (1992-2013), meat production has increased more than 3 times, and milk production increased almost 5 times

# Importance of water access for agricultural production

*Water resources ratio by sources (total 25km<sup>3</sup>)*

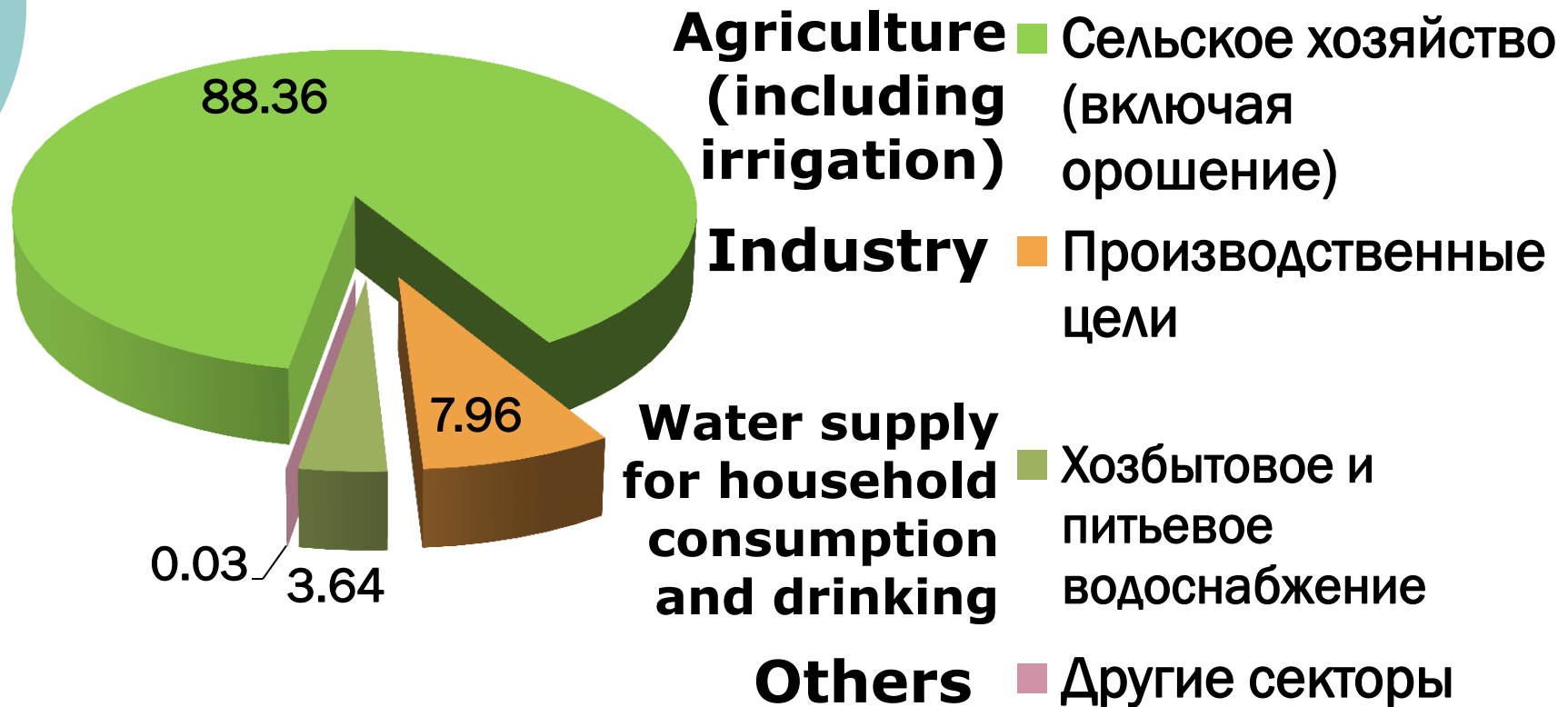


■ Амударья / Amu darya

■ Мургап, Теджен и Атрек / Murgap, Tejen and Atrek

■ малые реки, родники и кяризы (собственные)  
/ Smaller rivers, springs and karez systems (native)

# Water consumption structure in Turkmenistan, 2013 (%)



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## Main items of agricultural producers

Agriculture		2000	2007	2008	2009	2010	2011	2012	2013
Number of enterprises	Thousand units	592	585	593	604	6044	604	604	535
Farms and enterprises belonging to state ministries	Thousand units	0,7	0,3	0,3	0,3	0,3	0,2	0,2	0,2
Private enterprises, total	Thousand units	663,1	752,4	793,6	795,0	807,0	818,7	829,2	843,2
including privately owned individual farms	Thousand units	616,0	714,6	756,5	758,7	770,7	782,9	793,6	807,7
Gardening farms	Thousand units	47,1	37,8	37,1	36,3	36,3	36,3	35,6	35,3
Private manufacturers	Thousand units	7,1	2,5	2,5	2,3	2,3	2,3	2,3	2,3
Farming associations	Units	2131	1676	1714	1785	1827	1806	1864	2048

Production of major crops (wheat, cotton, rice, sugar beet) is concentrated in farming (peasant) associations.

During the period 1992-2013, a significant portion of the number of cattle was transferred to private ownership.

The number of cattle in the private farms increased from 61.5% to 96.5%.

Sheep and goats livestock in the private farms increased from 34.7% to 90%.

## **Main forms of agricultural producers. Land property rights.**

**Agricultural production from private lands and the lands under long-term lease constitute negligible proportion out of the total production (less than 1%);**

**Almost entire agricultural production comes from the farmers belonging to farmers' associations and is based upon the orders from the state agencies;**

- Very often this production is made on short-term lease of no less than one year;**
- Agricultural joint-stock companies were initiated in 2005 but there was no significant advancement afterwards;**
- Farmers do not aspire to maximize their long-term profits (there is no established system of sustainable land management) even though there exist laws providing possibilities of solving land ownership issues.**



# **Project «Agricultural Restructuring, Water Scarcity and the Adaptation to Climate Change in Central Asia (AGRIWANET)»**

## **Important political-organisational reform (main reform initiatives)**

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**During this period (1992-2013), legal acts were adopted to reform agricultural sector, land and water issues, including measures aimed at transition to market economy in agriculture:**

- **Definition of land relations in the Land Code**
- **Access to finance / interest-free loans to farmers from state banks, 50 percent special subsidy provided by some state agencies for agricultural producers, tax exemptions**
- **Significantly amended Water Code, with the definition of water use and payments**
- **Changes in the "Law On Property"**
- **Important State Programs were adopted such as "Grain" (concerning food security), programs directed at improving the water supply to the agricultural sector and building of cattle farms**
- **A number of measures to diversify agricultural policy**
- **The National adaptation strategies to climate change in Turkmenistan were adopted, another National adaptation for climate change, Mitigation & Adaptation is about to be accomplished soon)**
- **Inclusion of Turkmenistan in international / interstate conventions and agreements on water, environment, and climate change**

## **Current agricultural policies**

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### **Producer's & other subsidies**

Currently, Turkmenistan implements a practice of state order for agricultural production such as wheat, cotton, rice, sugar beets. The state provides several benefits to manufacturers of these crops - 50% discount on payment for the basic tools of production (mechanization, seeds, fertilizers, plant protection, the supply of irrigation water, etc.). There is also free shipping from the field to storage places. In addition, postponement of payment for fuel to the state agency during production season is possible.

Prices for other agricultural products are not fixed.

There is a widely used system of subsidies and social benefits. For example:

- tenants / farmers are exempt from all taxes and VAT, which to some extent aligns the total net income of rural population with the level of the urban population;
- housing and communal services (including drinking water, gas, electric energy, transport) are heavily subsidized from the state budget

# Preferential crediting of agricultural production (cotton, wheat, rice, sugar beet)

Credit line is provided for entire agricultural season which is implemented through a designated bank for farmers ("Dayhanbank")

Thereby the tenant farmer uses wire transfers to pay for state agencies for their delivered supplies.

Meanwhile, the farmer contributes 9% of his/her cotton sales revenue to corresponding farmers' association.

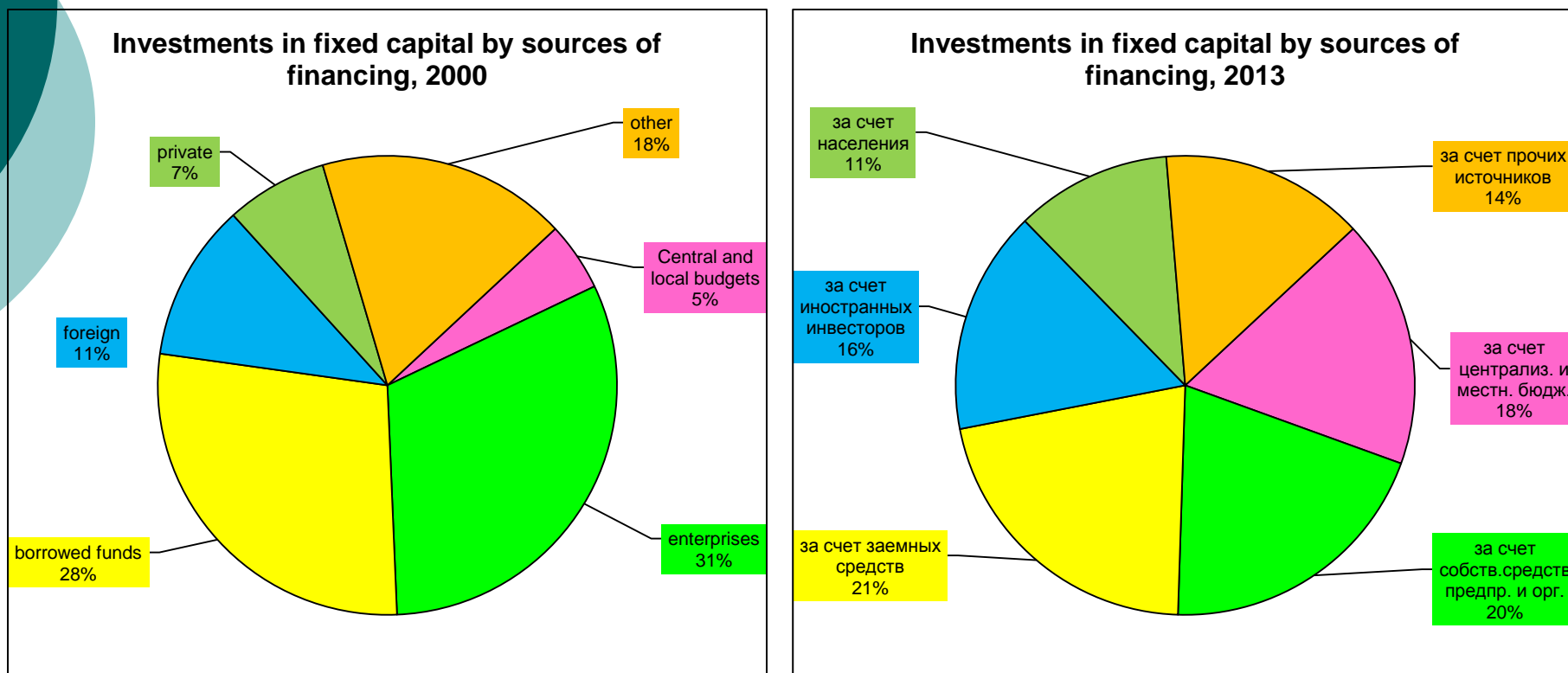
## Procurement price

- of cotton is currently **\$297** per ton and the buyer is the State Concern "Turkmenpagta"
- of wheat is currently **\$115** per ton and the buyer is the Association "Turkmengallaonumleri"



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## Investment policy



Between 2000 and 2013, the share of investment by foreign investors increased from 11 to 16%, investments by the central and local budgets - from 5 to 18%, private investments by the population - from 7 to 11%.

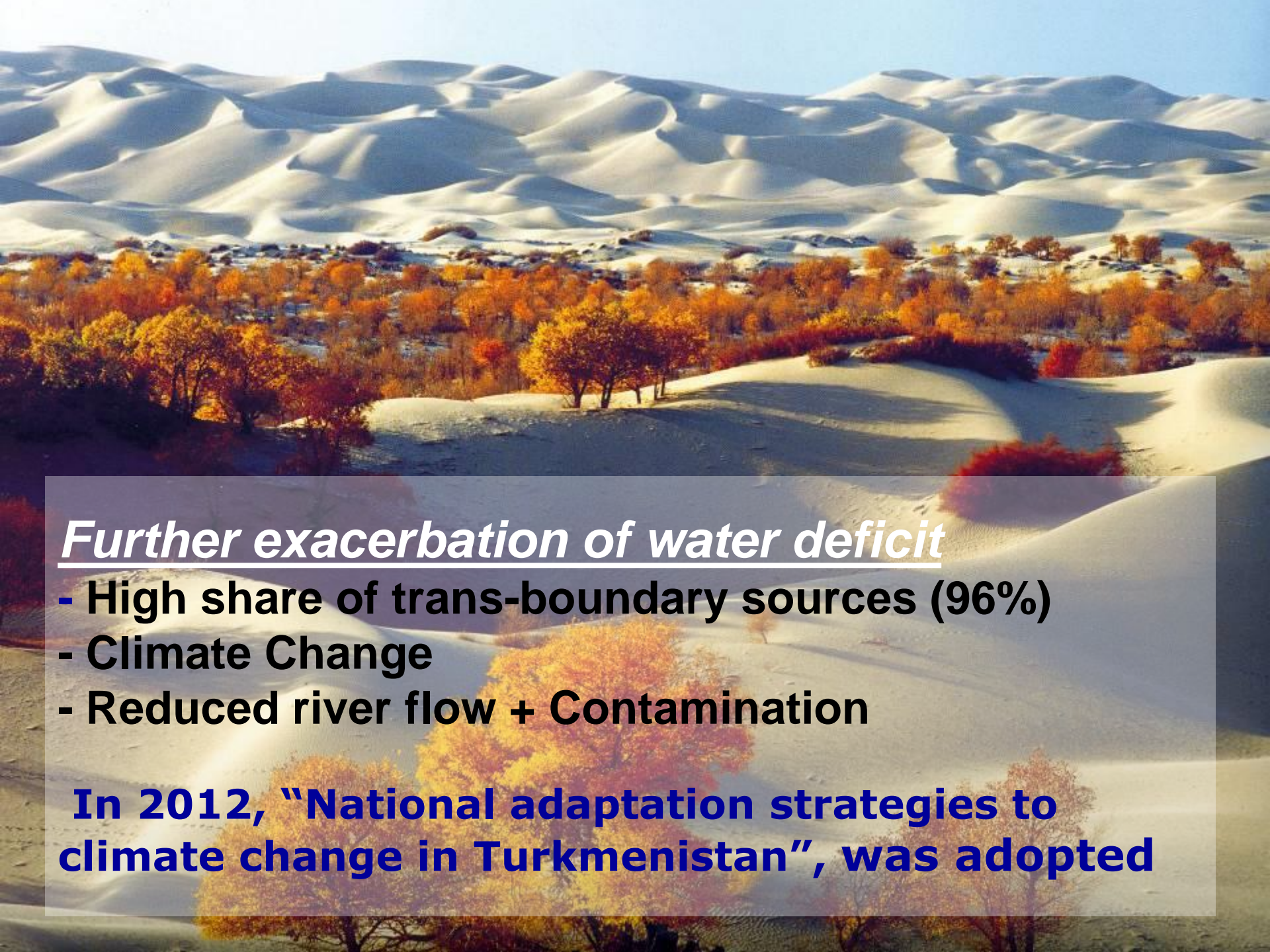
## **Plans in Agricultural sector**

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### **Investment programs**

- 1. In 2015 it is planned to collect 1.6 million tons of wheat and 1,05 million tons of cotton (with 50% state subsidy for farmers) in Turkmenistan***
- 2. In the whole country, construction of 48 cattle-breeding facilities with modern organization and management (involving the private business) is planned in 2015***
- 3. Program of activities for 2015-2020 period on the rational use of water resources and increasing the capacity of the Karakum Canal (preliminary estimated cost is more than \$ 403 million) was adopted***
- 4. Regular public procurement of large batches of different agricultural and earth moving equipment, and fertilizers and tools for plant protection***





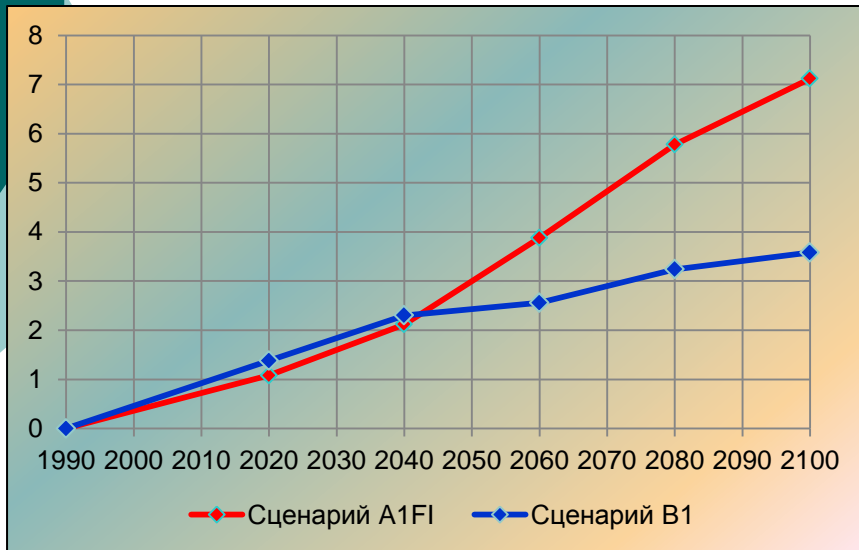
## *Further exacerbation of water deficit*

- High share of trans-boundary sources (96%)
- Climate Change
- Reduced river flow + Contamination

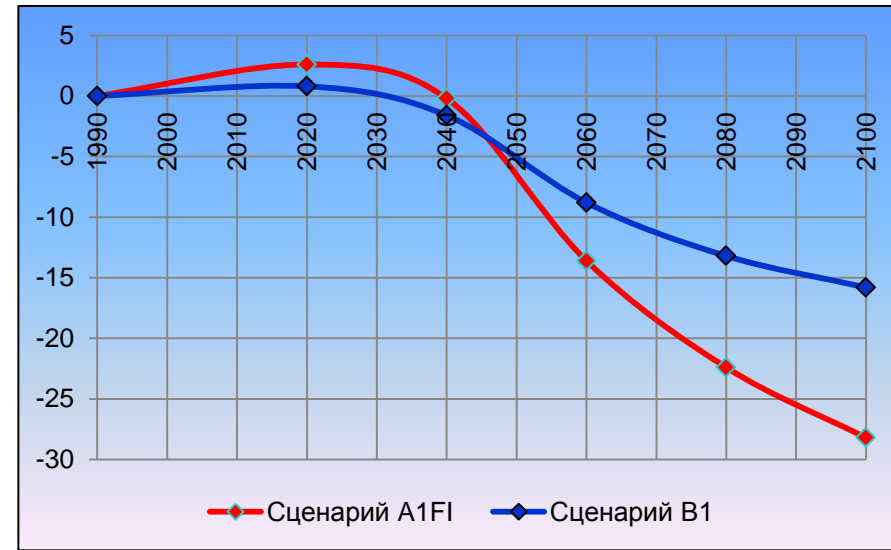
**In 2012, “National adaptation strategies to climate change in Turkmenistan”, was adopted**

# Climate change negatively influences productivity in water management/agriculture

## Climate change forecast scenarios



Deviations in air temperature



Deviations in annual precipitation, мм/г.

According to the "2nd National Communication to the UN Framework Convention on Climate Change" (Ashgabat, 2009) and the National Strategy of Turkmenistan on Climate Change (2012), the average annual temperature in the country increased by 0,18 - 0,2 ° C within a decade . According to the calculations, the temperature rise of 2-3 ° C to 6-7 ° C is expected by 2100. By 2020, a slight increase in rainfall, and then following sharp decrease is expected . The rate of decrease in rainfall will be more noticeable after 2040, and by 2100, rainfall will decrease 8% to 17%. According to forecasts of the Hydrometeorological Center of Uzbekistan, flow of Amu Darya, a major source of surface water of Turkmenistan, would reduce by 10-15% by 2050. Inflow of rivers in Turkmenistan including Murghab Tedjen and Etrek would reduce by 5-8% by 2030. It is particularly important that the flow of local rivers during the plant growing season may be reduced up to 30%.



# Importance of water access for agricultural production

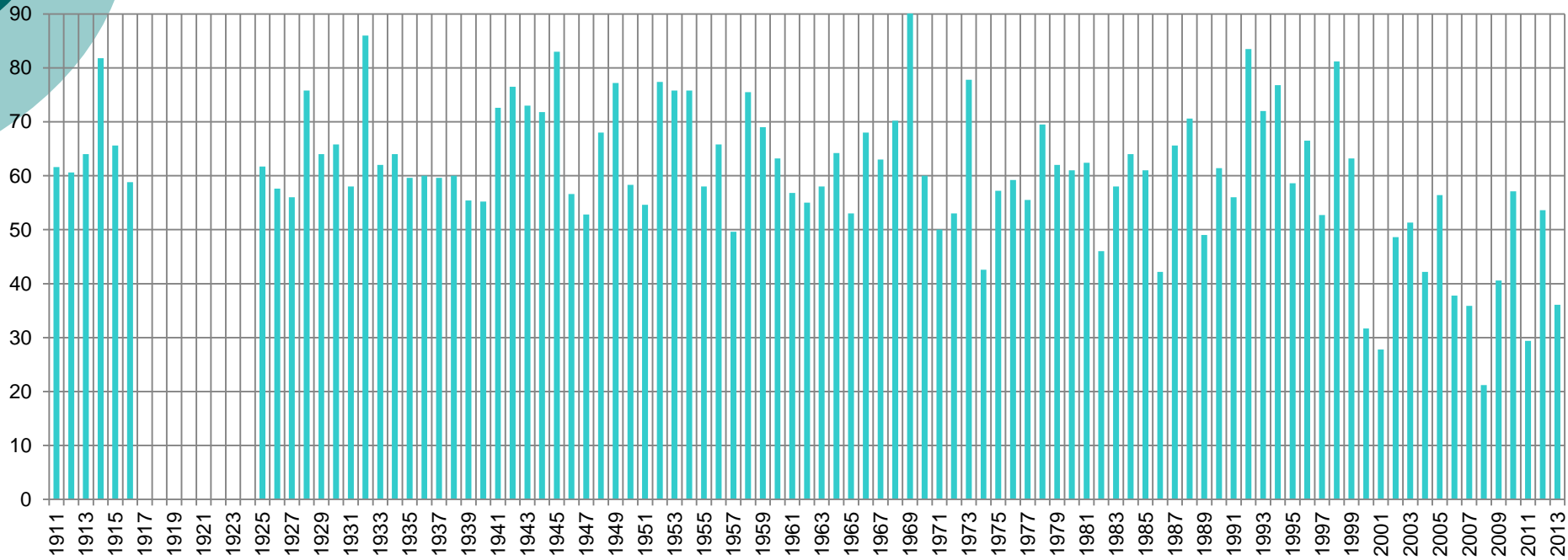
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## *Climate change effect on Agriculture*

**Climate aridity** - possibility for agriculture and life-support of the flora only with an aid of artificial irrigation

- *Watering rates per main agricultural crops will increase by about 13%.*
- **The problem gets even more important considering climate change which will also strongly affect water consumption and hydrological regime of the Amudarya river**

# Volume of flow at Amudarya's Hydro-point Kerki (km 3)



Several levels of administration with regulatory approach – national, provincial, district, farm and farmer – many departments and areas of responsibility

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### **Parties involved in agricultural production:**

**Managers and specialists of the Ministry of Agriculture – several state agencies;**

- **Farmers' associations (managers and specialists);**
- **Local administration – those of the province and district levels;**
- **The State Agricultural Association, the state organization which implements mechanized works in agriculture;**
- **Turkmen Chemical Fertilizers Agency;**
- **Plant Protection Service;**
- **The State Farmer Bank "Dayhanbank".**

# Water consumption

## National legislation on water users

- **Crop growers should be provided with water for irrigation as per established limits which are defined based upon availability of water sources according to legislation of Turkmenistan (the rates are adjusted annually);**
- **Water for irrigation supplied currently to the fields of cotton growers is 7000 cubic meters per one hectare; for wheat growers it is 5300 cubic meters per h.**
- **Local representatives of the Ministry of Water Economy provide the water supply;**
- **Crop growers benefit from a subsidy for payment in water delivery so that they pay only one third of real cost for cotton production and half of real cost for wheat production;**
- **Existing payment method – not for actually consumed water but in aggregated form per unit area of crops (for one hectare of fields)**

# **Influential factors in agricultural yields (in cotton and others)**

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- Supply of water in required time and quantity;**
- Quality and timely delivery of agricultural services (seeds, fertilizers, plant protection tools, mechanized services etc.);**
- Crop rotation;**
- Strong dependence on climatic conditions.**

**Those factors affect productivity and consequently income of cotton farmers.**

**Weather can be very influential during years with low levels of precipitation and rivers water. Temperature during early spring (seeding) season and summer time is another important factor**

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### **Adaptation measures in water sector:**

- **improving the structure of water use;**
- **improving water resources management at all levels (using the approaches and principles of IWRM);**
- **introduction of advanced methods of irrigation, desalination, construction of reservoirs and reconstruction of water facilities;**
- **development of methods for stimulating sustainable water consumption;**
- **strengthening international cooperation for the conservation and use of transboundary water bodies;**
- **improvement of water use in farming.**

## **Project «Agricultural Restructuring, Water Scarcity and the Adaptation to Climate Change in Central Asia (AGRIWANET)»**

### **Adaptation measures in agricultural sector:**

- **optimization of agricultural production location, organizational reforms in farming land use and agricultural relationships**
- **specialization in agricultural production;**
- **conducting of selection work on cultivation and introduction of drought-resistant and salt-tolerant crops;**
- **phytomeliorative operations;**
- **promote the strict adherence to pasture turnover, pasture protection by establishment of zones of fodder trees and shrubs;**
- **development of grazing cattle-breeding;**
- **introduction of methods and practices for yielding several crops per year.**



# ***Open issues related to agricultural development***

## **Adaptation actions related to climate change for water saving on the level of water users**

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### **❖ Irrigation land zone**

- Land planning using laser technology
- Cleaning/development of irrigation and drainage channels
- Constructing water-regulating and water-measuring equipment
- Increasing water-saving technology at irrigation

### **❖ Desert zone**

- Constructing of wells as drinking place for livestock
- Constructing of sardobs for drinking needs of livestock

### **❖ Mountain zone**

- Constructing small water reservoirs

# Questions are welcome. Thank you!

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