Challenges and Opportunities in Agriculture and Forestry Management under Climate Changes:Russia's Case

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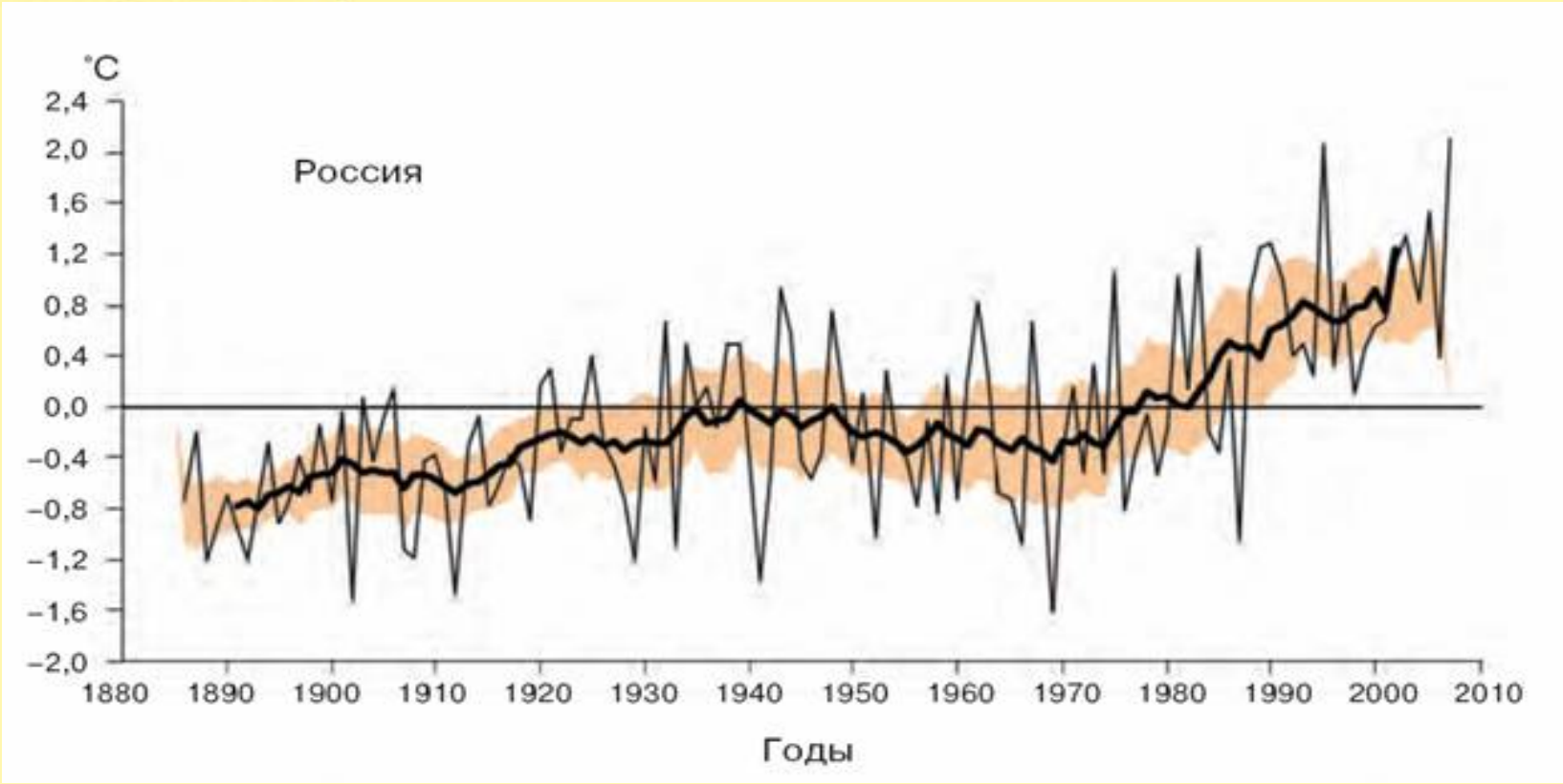
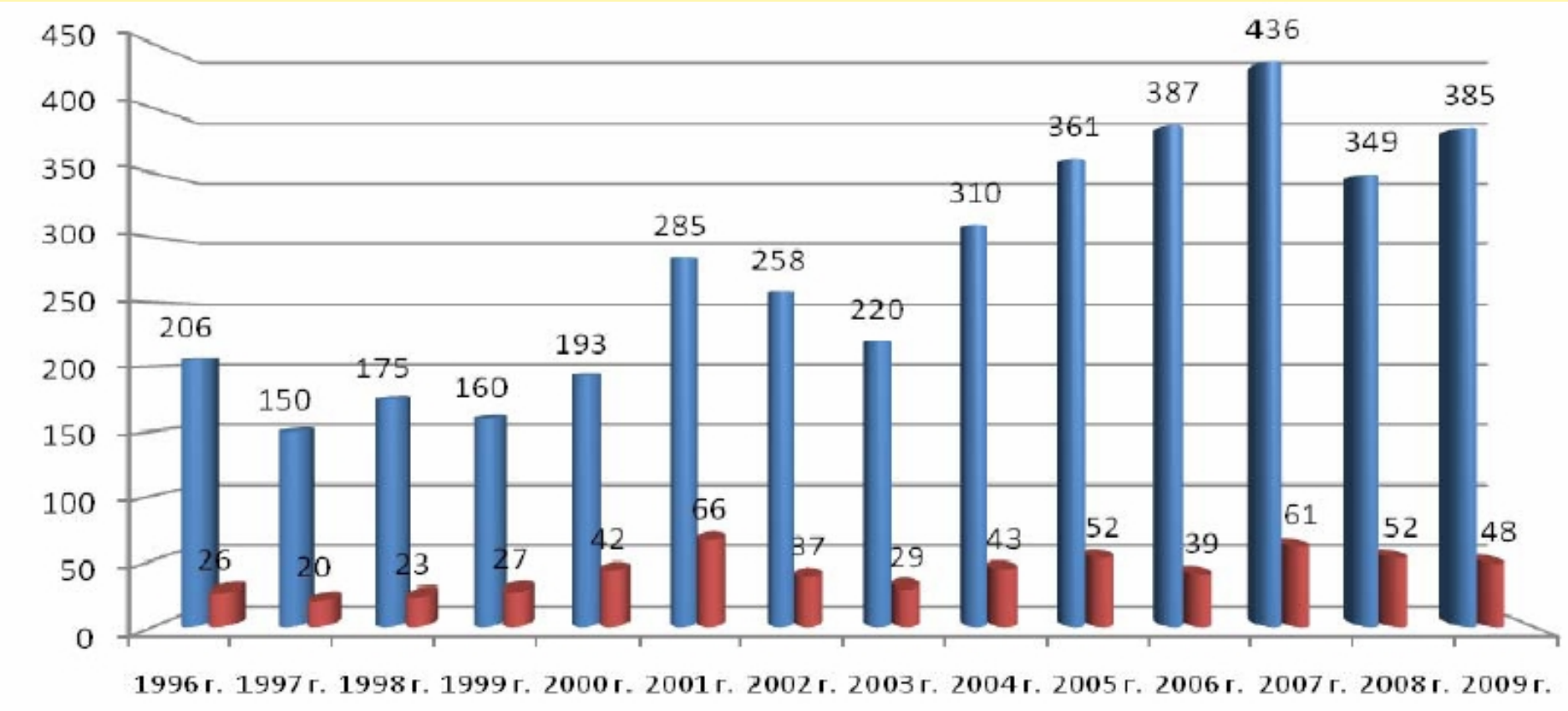
Climate changes in Russia (1)



- **Temperature increased in 1975-2006 on 1,33º C**
- **Σ precipitation increased on 7,2 mm/10 years**
- **No increase in dryness index for major ag. areas**

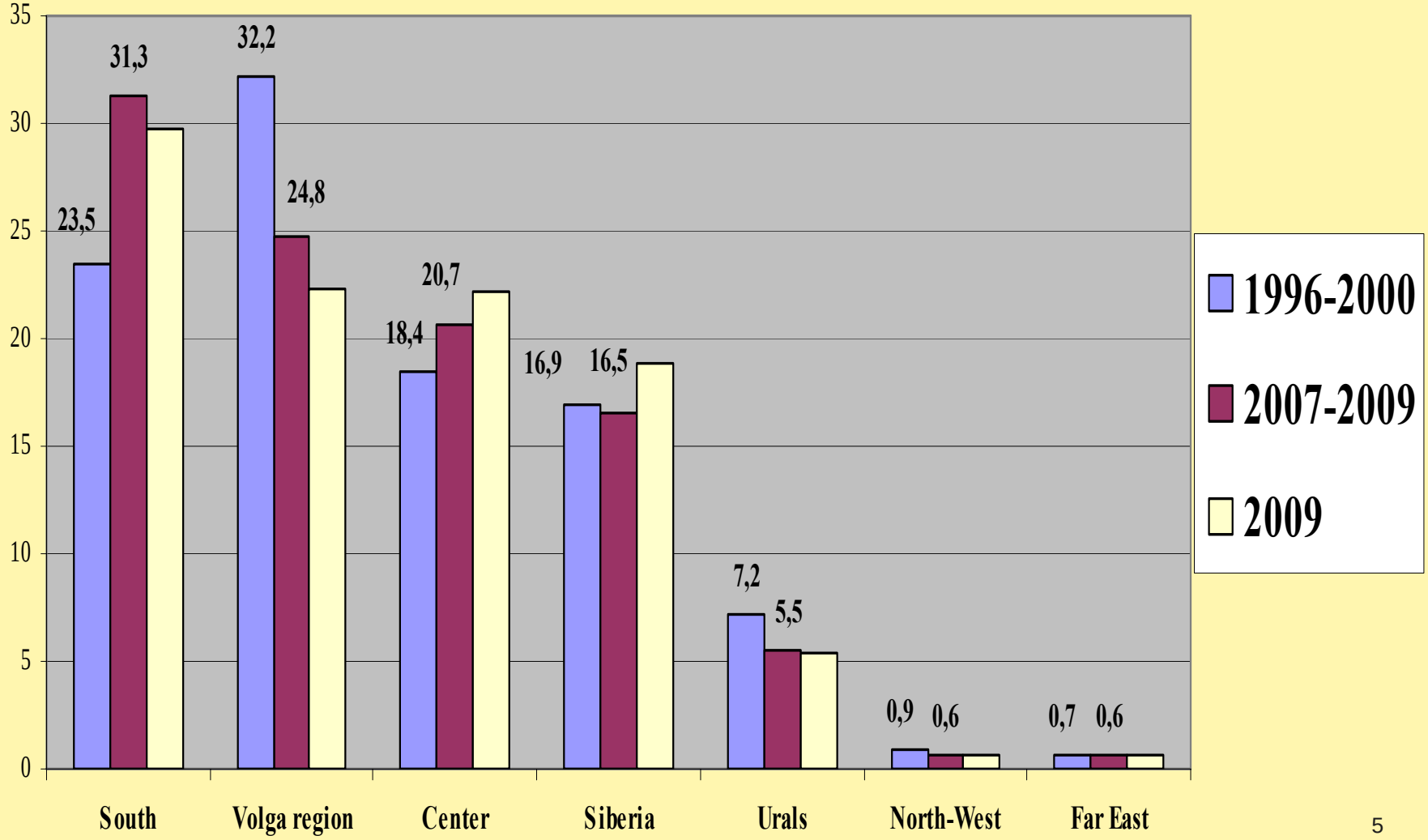
Climate changes in Russia (2) – frequency of dangerous events



Climate changes in season's dimension (3)

- Warming of Winter
- Spring is early
- Autumn is lately
- Small changes of temperature in Summer

Regional shifts in wheat production



Major advantages and disadvantages of climate changes for Russia

- increase of land suitable for agriculture
- increase of durability of vegetation
- increase of warm supply
- improving of wintering for crops

- increase of dangerous events (severe droughts, forest fires, etc.)
- increase of anomalies
- increase of aridity for arid areas (south of Russia, south of Siberia)
- lack of water resources
- degradation of soil fertility

Government efforts

- Priority National Project on Development of Agro-Industrial Complex (2006-2007)
- State Program on Development of Agriculture (2008-2012)
- Federal Task Program on Soil Fertility (2006-2012)
- Water Strategy of the Russian Federation (up to 2020)
- State Monitoring of Agricultural Land (from 2010)

Government efforts

- Unfavourable changes in forest legislation (new Forest Code)
- Elimination of the State Forest Guards and special Forest Enterprises
- Elimination of separate Forest Service

Government efforts

- Beginning of establishing Eurasian Center for Food Security under the umbrella of MSU
- Knowledge base center
- Information, Soil science, Economics, Climate change
- Science and Education
- Russia, Tajikistan, Uzbekistan, Kirgizstan, Armenia, etc.
- Close cooperation with CGIAR

Ways of adaptation

- Resource saving technologies
- New varieties of crops
- Forestation
- Green investments
- Special government policy

Importance of protective forestation

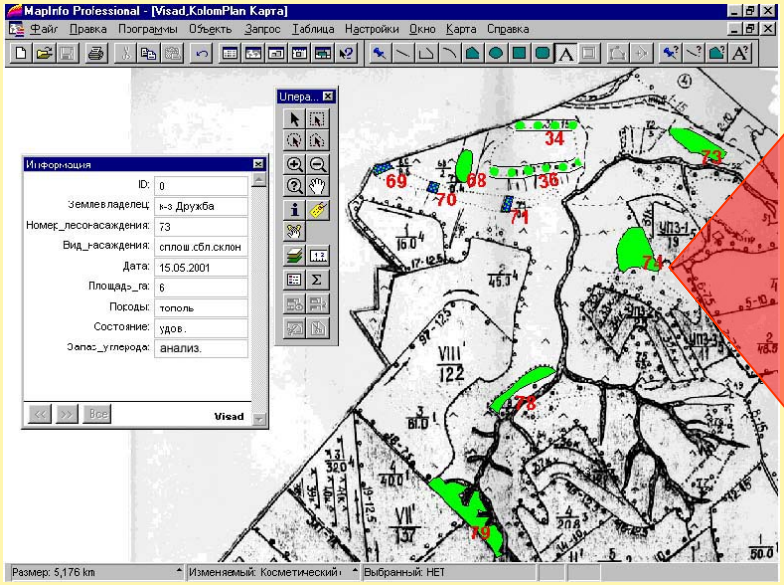
- ✓ prevention of droughts
- ✓ increasing of yield
- ✓ prevention of soil erosion
- ✓ biodiversity;
- ✓ sequestration CO_2

Protective forestation – opportunities (possible projects)

Regions	Square, ha	Expenditures per ha
Voronezh region	8720	280$
Republic of Buryatia	500	320$
Belgorod region	10400	280$
Kaliningrad region	1500	350$

Protective forestation (projects) – Voronezh region (2001)

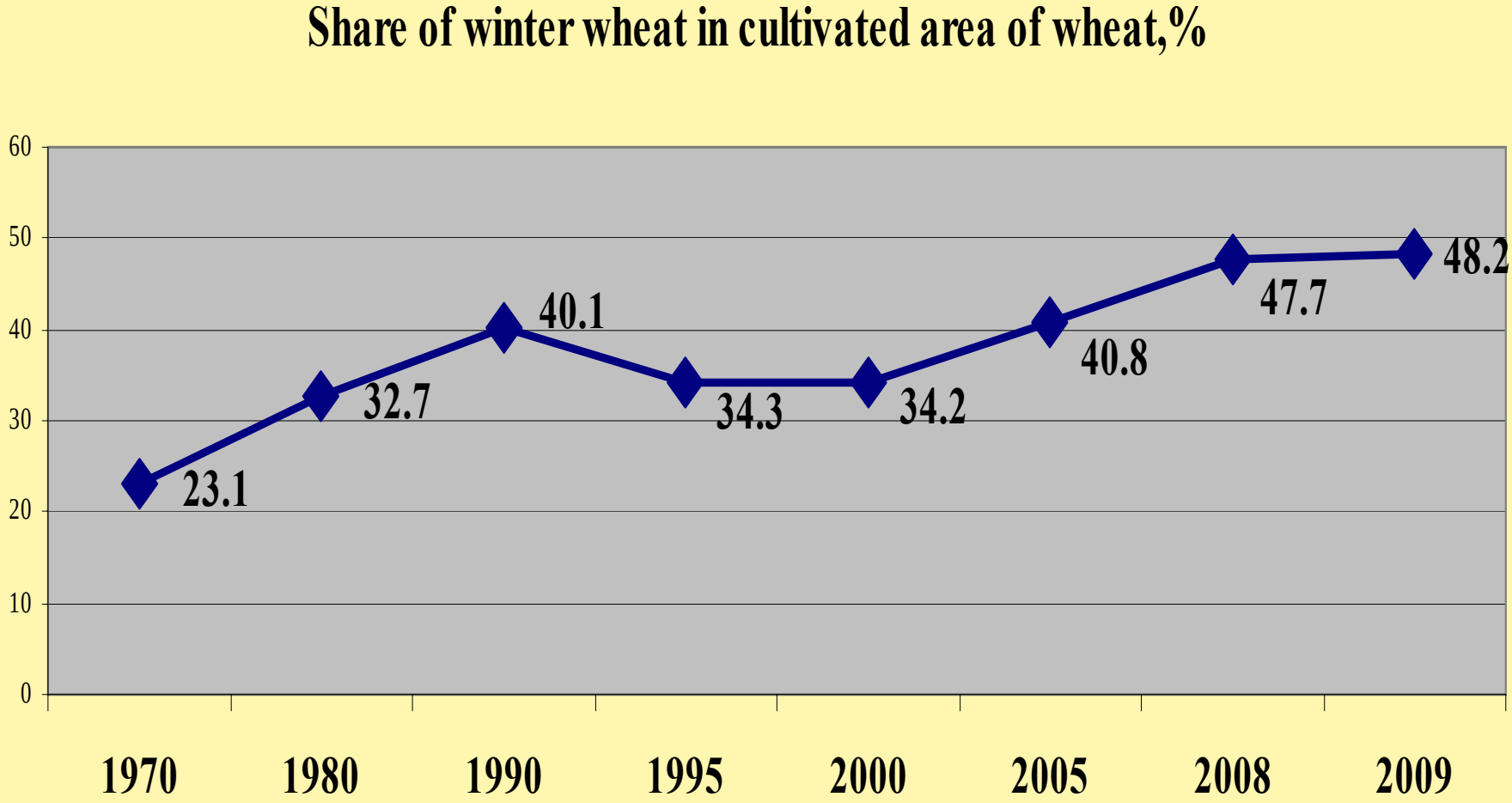
- **Forestation with introducing GIS**



Decreasing of reforestation

	Reforestation		
	Total	including man-made reforestation	
			% of total reforestation
2000	972,9	263,3	27,1
2002	886,8	254,3	28,7
2003	834,1	233,1	27,9
2004	796,7	230,4	28,9
2005	812,3	187,1	23,0
2006	877,3	194,5	22,2
2007	872,5	202,4	23,2
2008	828,4	191,4	23,1

Way of adaptation - winter wheat



Challenges

- **Possible increasing of dangerous events**
- **Depletion of soil fertility, especially in dry areas**
- **Necessity of adaptation “in advance”for new conditions (changes of technology, new varieties of crops, changes in mentality, new policy…)**
- **Real shift from short-term to long-term policy approach**
- **Lack of funding**