



# **IRRIGATED AGRICULTURE UNDER CONDITIONS OF GROWING WATER CRISIS AND SOCIO-ECONOMIC REFORMS IN CIS COUNTRIES**

**Peter Kovalenko,**

Director, Institute of Hydraulic Engineering and Land  
Reclamation, Ukrainian Academy of Sciences,  
ICID Vice-President



# Challenges Emerged

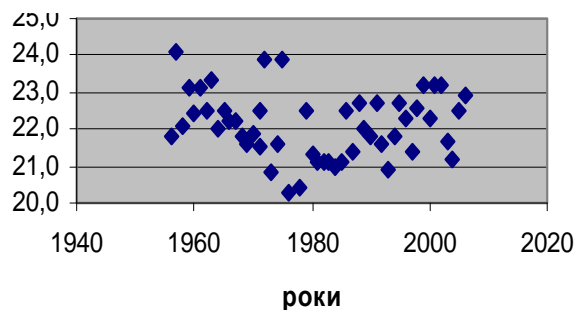
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- Global climate changes
- Population growth
- Food security
- Extension of irrigated areas

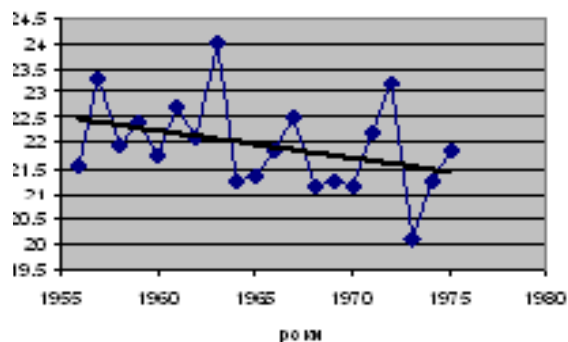


# Change in average summer temperatures over last 50 years

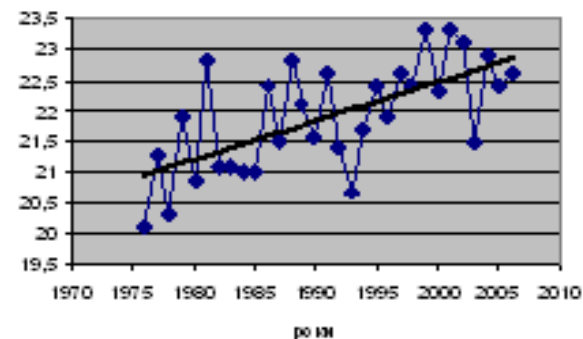
Average temperature, 1956-2006, Dzhankoi, Crimea



Negative trends in 1956-1976



Positive trends in 1976-2006





# Number of years with atmospheric drought

European continent (April-August)

XVIII century	34	
XIX century	40	
XX century	46*	53**

\* April-June

\*\* April-August



## State of irrigation in CIS countries, th.ha

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Country	until 1990	2008-2010	difference
Armenia	316	270	- 46
Azerbaijan	1243	1215	- 28
Georgia	414	150	- 264
Kazakhstan	2253	1300	- 953
Uzbekistan	4280	4270	- 10
Russia	6160	4500	- 1660
Ukraine	2600	700	-1900
Moldova	316	30	-286
Turkmenistan	1185	1842	+ 657
Kyrgyzstan	1080	1030	-50
Tajikistan	715	755	+40



## State of irrigation in European countries, th.ha

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	until 1990	2008- 2010	difference
Hungary	300	200	-100
Bulgaria	1250	40	-1210
Macedonia	128	22	-106
Poland	343	79	-264
Czechia	153	30	-123
RRoumania	3077	405	- 2672



# First-priority tasks

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- Rehabilitation of irrigation system functions, their reconstruction and modernization
- Reduction of system operation costs
- Adoption of new forms of interaction with water users
- Development of regulations and norms that take into account socio-economic reforms



# Management in land reclamation <sup>(1)</sup>

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<b>PRODUCTION ENTERPRISES</b>				
<b>Ownership entities</b>	<b>State enterprises (SE)</b>		<b>Agricultural cooperatives or Water User Associations (WUA)</b>	
	<b>Main Canal Management</b>	<b>State Land Reclamation System Management</b>	<b>Territorial associations</b>	<b>Agricultural producers</b>





## Management in land reclamation (2)

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<b>LAND RECLAMATION INFRASTRUCTURE, RECLAIMED LAND</b>				
<b>SE</b>			<b>CCK/WUA</b>	
<b>Ownership entities</b>	<b>Main canals</b>	<b>Inter-farm canals</b>	<b>On-farm systems</b>	<b>Reclaimed land</b>



# Management in land reclamation <sup>(3)</sup>

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<b>GENERAL OWNERSHIP</b>			
<b>Ownership forms</b>	<b>SE</b>	<b>CCK/WUA</b>	
	<b>Public</b>	<b>Municipal</b>	<b>Private</b>



## Management in land reclamation (4)

FINANCIAL RELATIONSHIPS				
Source of funds for maintenance and development	SE		CCK/WUA	
	State budget	Payment for services of water delivery and disposal	Local budgets	Sale of agricultural products (market)
	Sale of securities	Bank credits	Bank credits	



***THANK YOU FOR ATTENTION!***