

# *Adapting agricultural water use to climate change in a post-Soviet context: challenges and opportunities in southeast Kazakhstan*

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**Adapting agricultural water use to climate change in a post-Soviet context: challenges and opportunities in Southeast Kazakhstan**

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**Table A1. Challenges to water use in agriculture in Koram and Karaoi.**

Study site	Challenge	Problem area	Mentions in individual cards (Exercise 1)	Total mentions in group cards (Exercise 2)	Small holders		Middle and large holders		NGOs and agrobusinesses		Scientists		State structures		
					Ranking		Ranking		Ranking		Ranking		Ranking		
					Mentions	positions	Mentions	positions	Mentions	positions	Mentions	positions	Mentions	positions	
Koram	Inadequate water supply	Water supply	9	2	-	-	1	4	1	3	-	-	-	-	
	Untimely water supply		11	4	2	1, 5	2	1, 5	-	-	-	-	-	-	
	Water supply rules		11	3	1	3	-	-	-	-	-	-	2	2, 4	
	Poor infrastructure/maintenance	Poor infrastructure	20	3	-	-	1	2	-	-	1	2	1	1	
	No/bad consumption measurement		8	3	1	2	-	-	1	5	-	-	1	3	
	High water prices	High water prices	4	3	1	4	1	3	1	2	-	-	-	-	
	Bad soil cultivation	Other	1	1	-	-	-	-	-	-	1	5	-	-	
	Climate change		2	1	-	-	-	-	-	-	-	-	1	5	
	Irrigation practices		3	-	-	-	-	-	-	-	-	-	-	-	
	Lack of knowledge		6	-	-	-	-	-	-	-	-	-	-	-	
	Lack of irrigation technology		2	-	-	-	-	-	-	-	-	-	-	-	
	Land use		4	-	-	-	-	-	-	-	-	-	-	-	
	Little penetration of new crops		1	1	-	-	-	-	-	-	1	4	-	-	
	No problem		2	-	-	-	-	-	-	-	-	-	-	-	
	No science-user connection		1	1	-	-	-	-	-	-	1	3	-	-	
	Other		5	-	-	-	-	-	-	-	-	-	-	-	
	Reducing water stock		2	1	-	-	-	-	-	-	1	1	-	-	
	Salinisation		1	-	-	-	-	-	-	-	-	-	-	-	
	Water losses		5	2	-	-	-	-	2	1, 4	-	-	-	-	
Water quality	2		-	-	-	-	-	-	-	-	-	-	-		
Study site	Challenge		Problem area	Mentions in individual cards (Exercise 1)	Total mentions in group cards (Exercise 2)	Small holders		Middle and large holders		NGOs and Agrobusinesses		Scientists		State structures	
Karaoi	Inadequate water supply		Water supply	16	4	-	-	3	1, 2, 3	-	-	1	3	-	-
	Poor infrastructure/maintenance		Poor infrastructure	21	5	1	1	-	-	1	2	1	2	2	1, 3
	Lack of irrigation technology	Lack of technology	7	3	1	5	-	-	-	-	-	-	2	4, 5	
	Climate change	Other	2	1	-	-	-	-	-	-	1	4	-	-	
	Corruption		1	-	-	-	-	-	-	-	-	-	-	-	
	High water prices		3	1	-	-	-	-	-	-	1	1	-	-	
	Irrigation practices		3	-	-	-	-	-	-	-	-	-	-	-	
	Labour intensity		1	-	-	-	-	-	-	-	-	-	-	-	
	Lack of financial resources		1	-	-	-	-	-	-	-	-	-	-	-	
	Lack of knowledge		1	-	-	-	-	-	-	-	-	-	-	-	
	Lack of technical personnel		2	1	-	-	-	-	1	5	1	5	-	-	
	Land use		2	-	-	-	-	-	-	-	-	-	-	-	
	Loss of Soviet irrigation system		1	1	-	-	1	5	-	-	-	-	-	-	
	No/bad consumption measurement		2	1	-	-	-	-	1	4	-	-	-	-	
	Non rational water use		1	1	-	-	-	-	1	1	-	-	-	-	
	Other		3	-	-	-	-	-	-	-	-	-	-	-	
	Water supply rules		11	2	1	2	-	-	1	3	-	-	-	-	
	Untimely water supply		1	1	1	4	-	-	-	-	-	-	-	-	
	Water losses		2	2	1	3	-	-	-	-	-	-	-	1	2
Water quality	3		1	-	-	1	4	-	-	-	-	-	-	-	