

CENTRAL ASIA: Pathways towards Water Security Economies

Tashkent, 27 April 2023

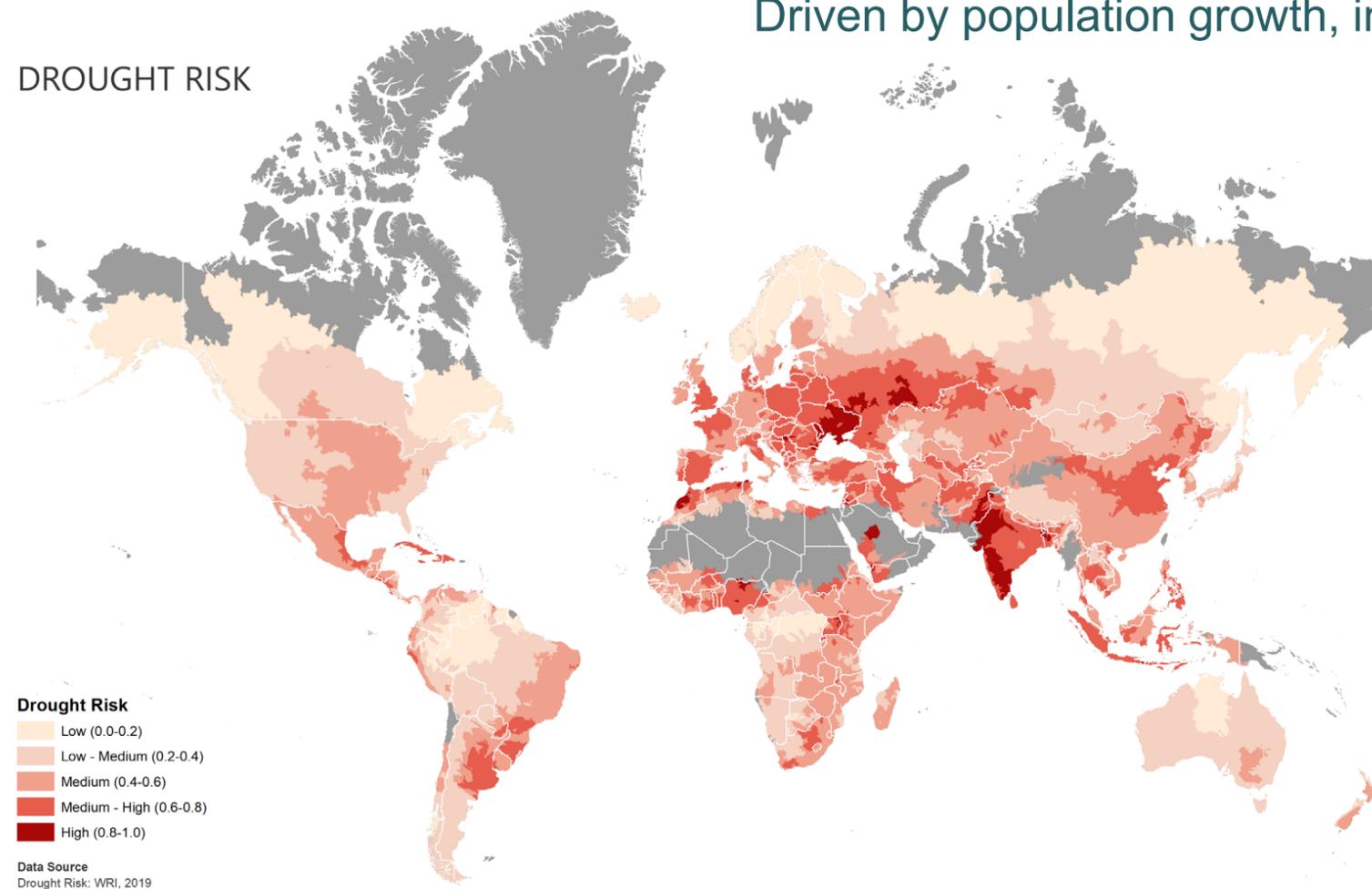


THE WORLD FACES DUAL CLIMATE AND WATER CRISES

WATER STRESS IS INCREASING

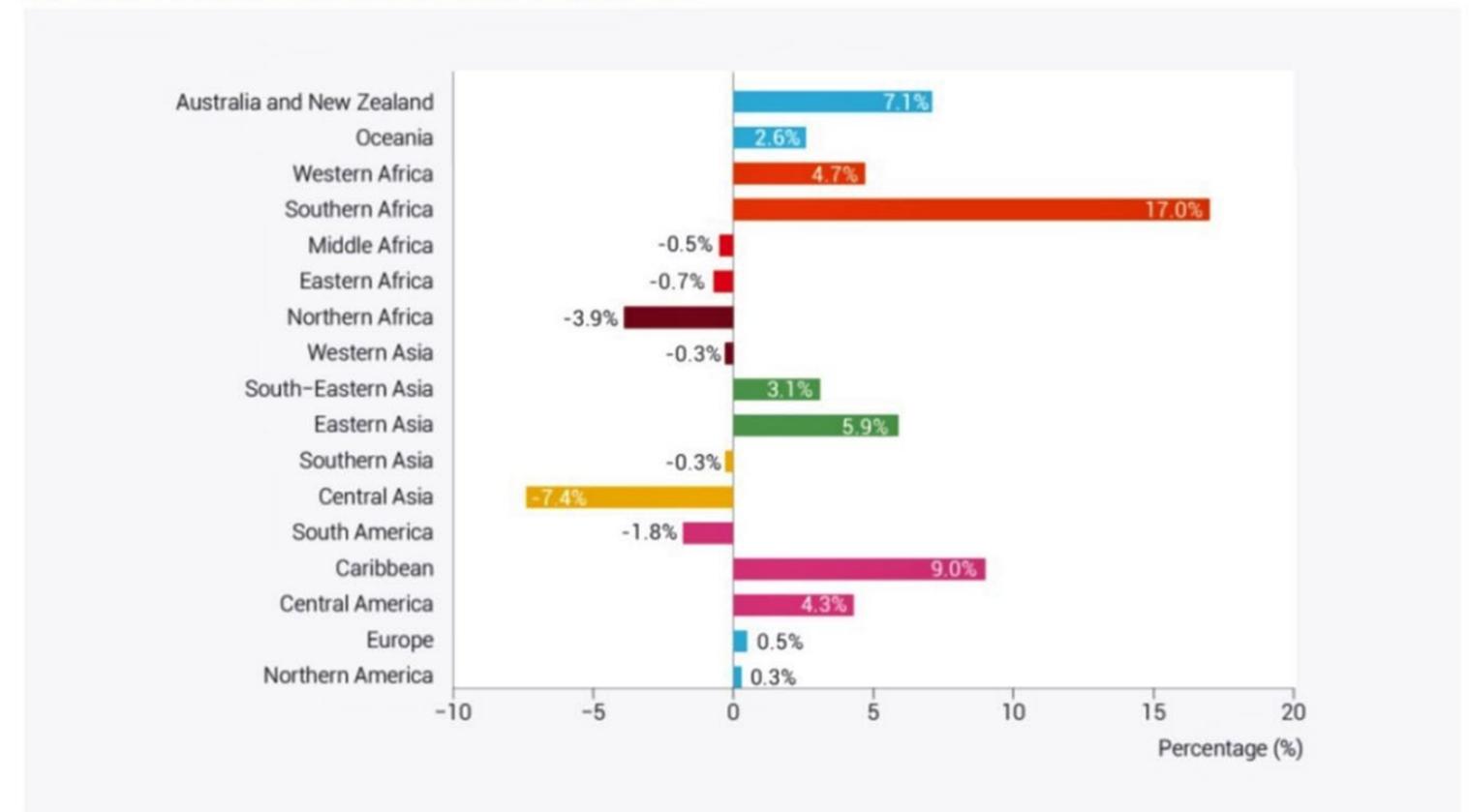
Driven by population growth, increased demand, and climate change

DROUGHT RISK



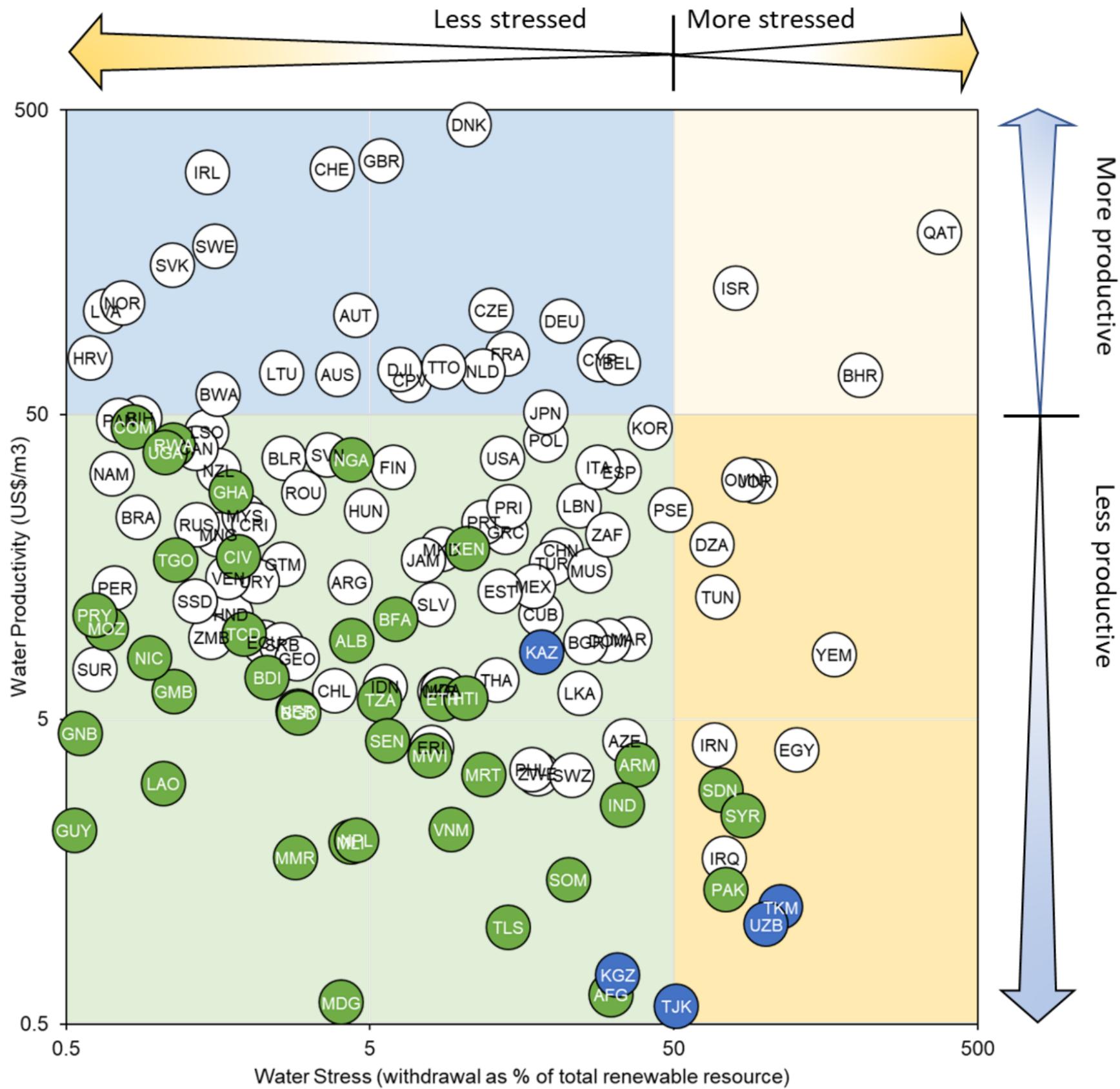
Data Source
Climate Watch and WRI, 2020

Regional analysis: average loss and gain trends of open water



Note: This figure presents the regional percentage change in average spatial extent of open water from 2001 to 2015. It is important to note that the JRC data set includes all open water (natural and artificial), and therefore the data capture the spatial extent of water within new reservoirs and areas that have been flooded for irrigation.

Water stress & productivity?



Amongst the most water stressed and least productive in the world

Water-Related Challenges → 2030 → 2050

- Increase in water, food, energy, demand with **growing population**
- With increasing urbanization projected **urban water demand** increase
- **Population living in climate change hotspots** to increase (77% in TJ; 55.4 % in UZ)

2030	2050
+ 14% 	+ 30% 
+29% 	+82% 
+8% 	+17% 

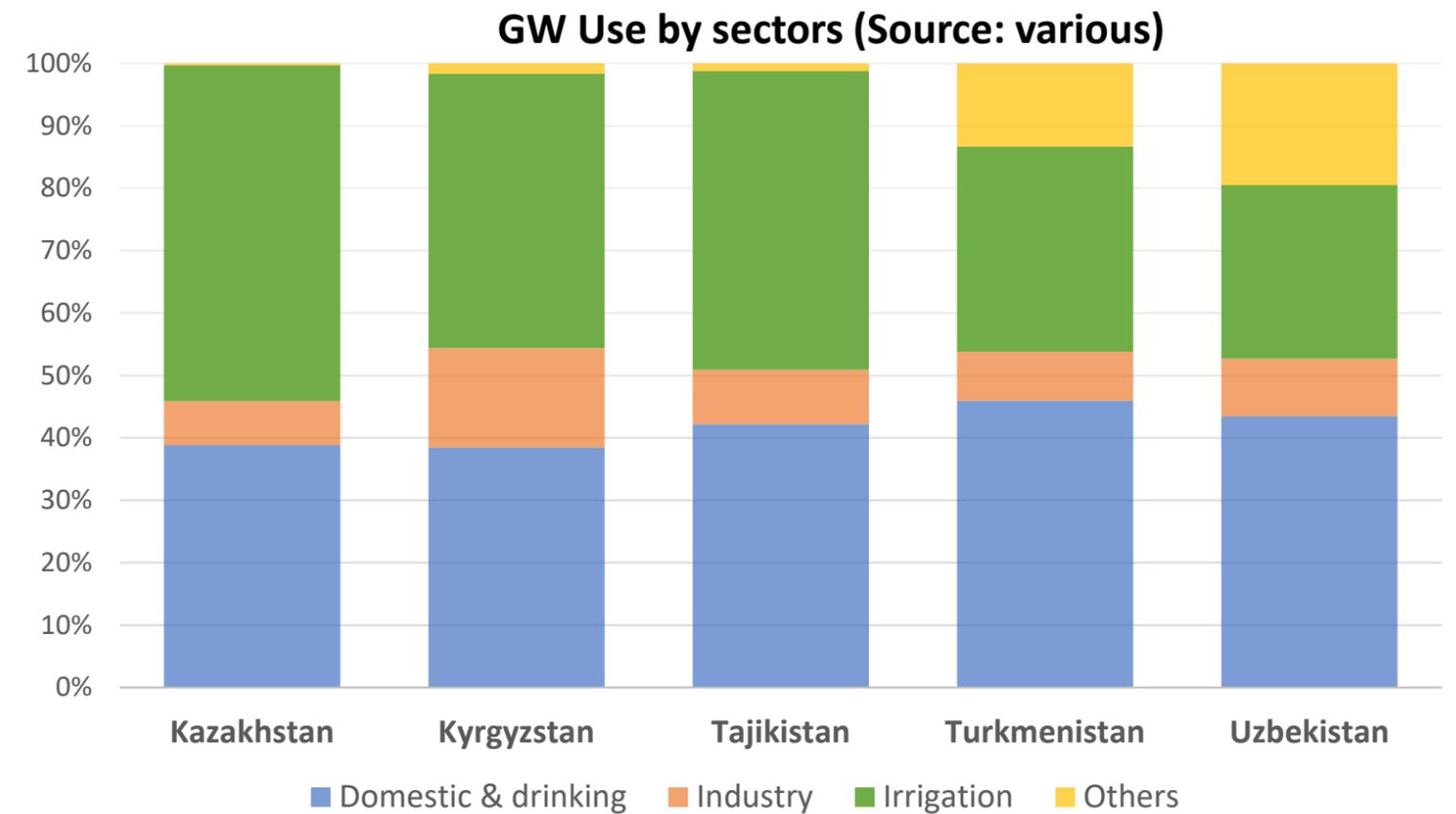
Projected Climate Change Impacts by 2050



Groundwater resources in CA

Issues

- Poor integration into national water development strategies
- Degradation of GW quality
- GW quantity depletion
- Non-existence of managed aquifer recharge (MAR) approaches
- Only quarter of GW forecasted is actually used
- Poor monitoring of GW resources



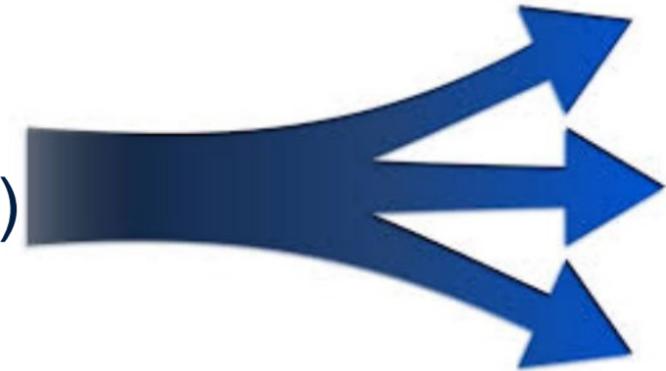
Country	Forecasted potential groundwater reserves	Approved reserves for abstraction	Total actual abstraction
Kazakhstan*	64,280	46,320	15,700
Kyrgyzstan	13,600	5,900	1,890
Tajikistan	18,700	8,200	2,800
Turkmenistan	3,360	1,220	457
Uzbekistan	23,010	8,590	7,749
Total in CA	122,950	70,230	28,596

*whole Kazakhstan not only Aral Sea Basin

Opportunities going forward

➤ *Improve allocation*

- Shift allocation from less productive to more uses (produce, WSS)



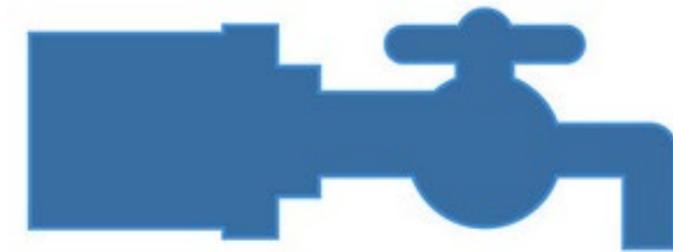
➤ *Increase efficiency*

- Modernize infrastructure to reduce input costs and resource needs (e.g. electricity, pumping costs)



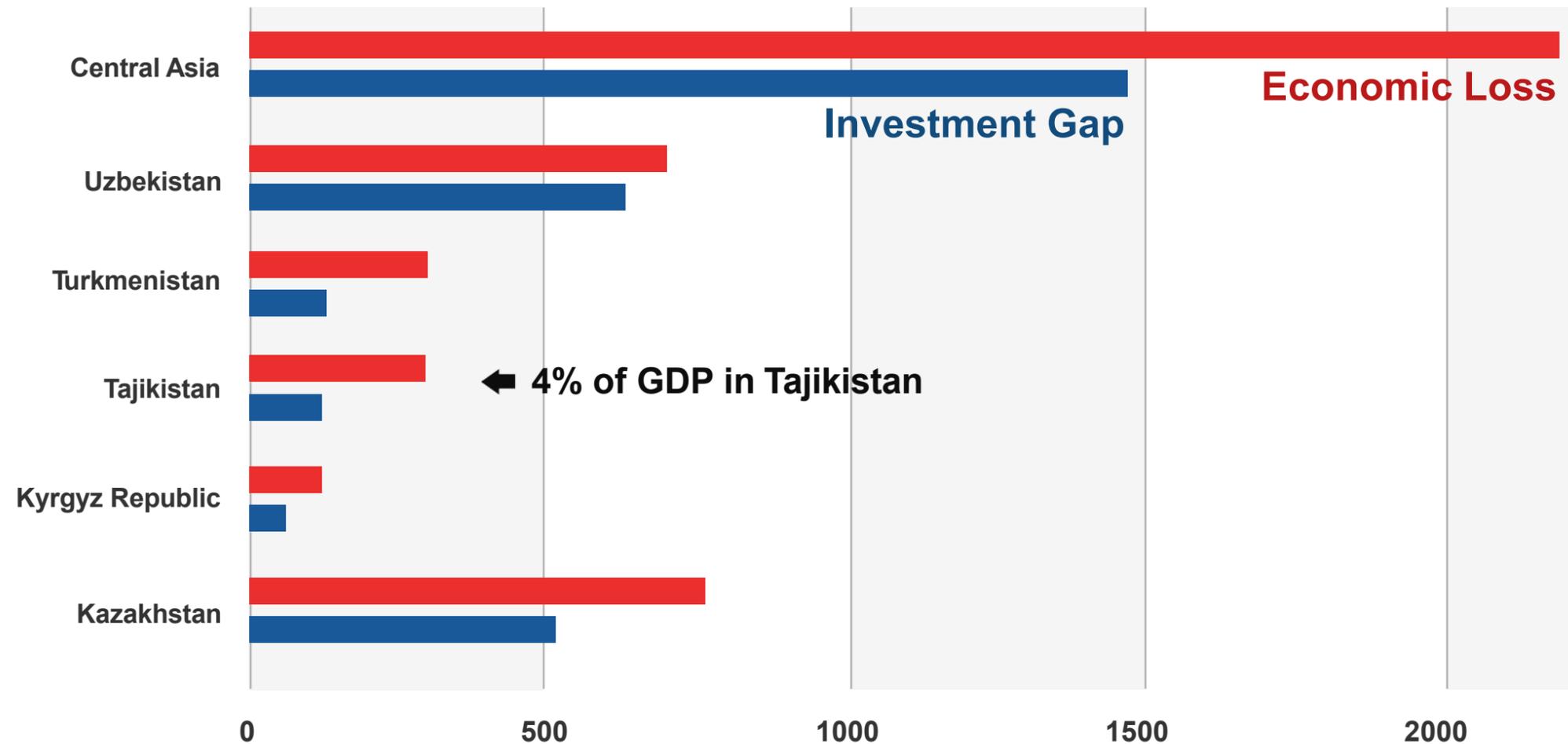
➤ *Manage supply*

- Storage, flow management, information



Water and Sanitation for Social Stability & Human Capital Development

Economic impact of inadequate water supply and sanitation (USD Million)

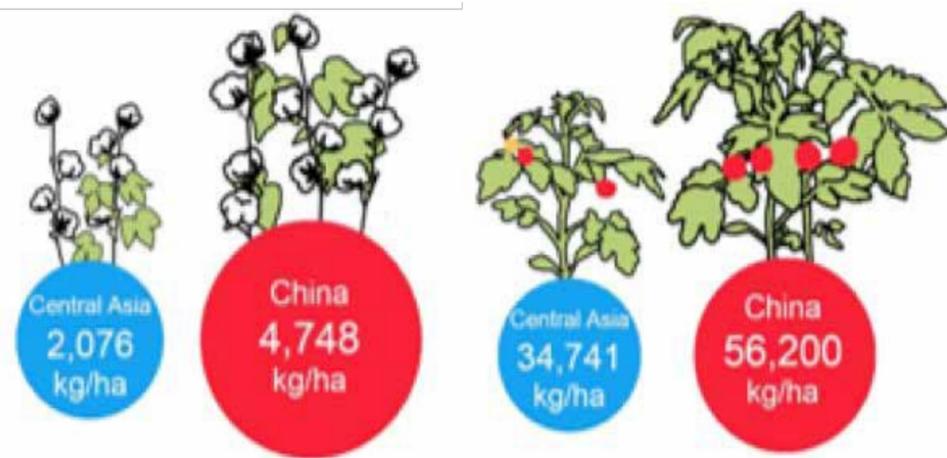
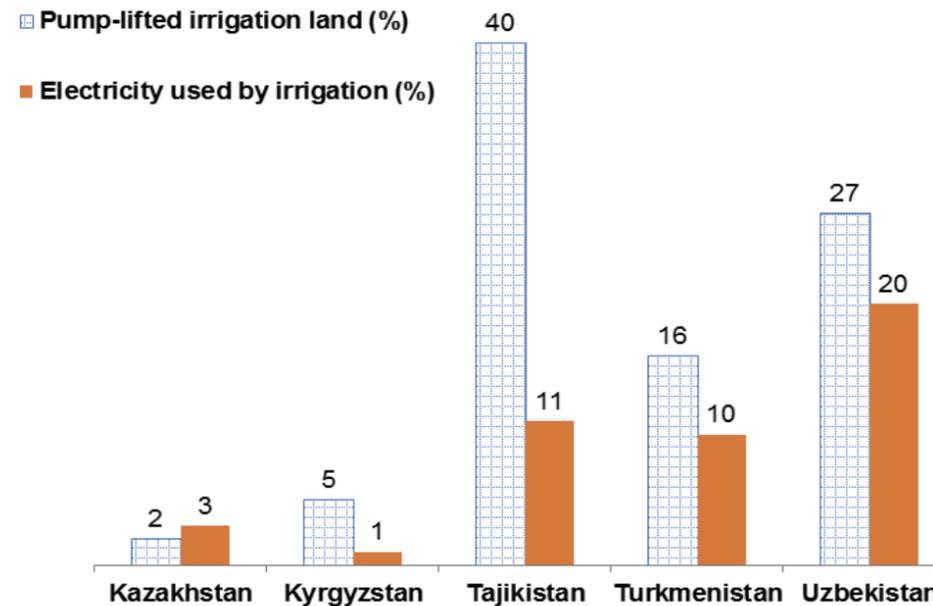
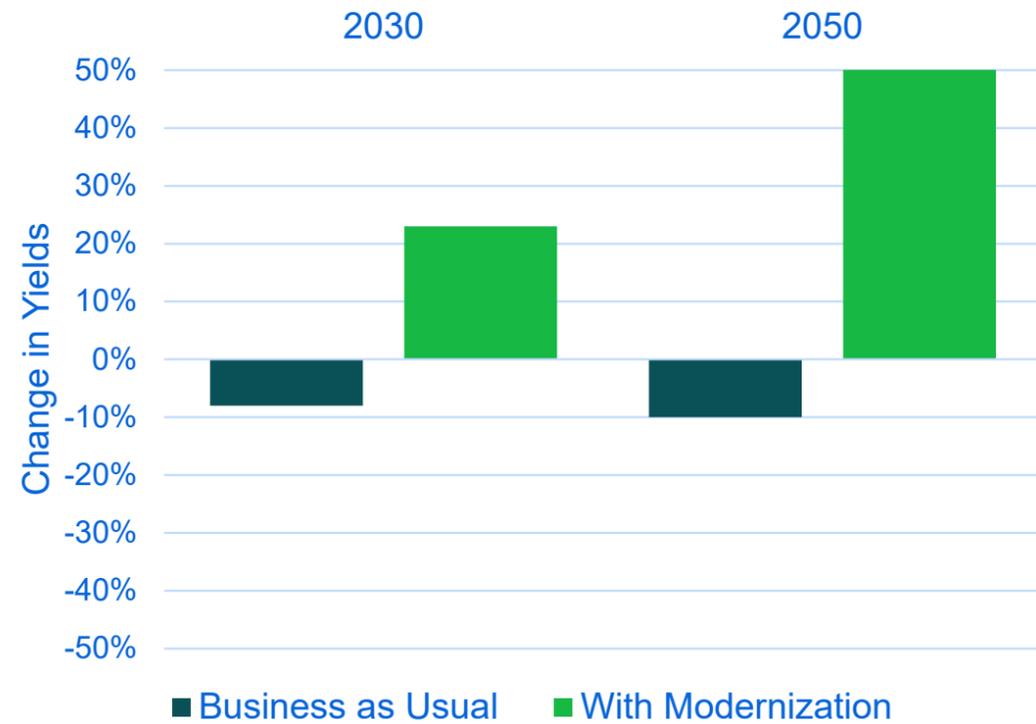


→ Investments towards universal WSS are cheaper than the current costs of inadequate WSS to the Central Asian economies.

Economic losses due to lack of improved water:

- Health care costs
- Productivity costs
- Less economically active labor forces

Water Resources Overhaul for Increased Productivity



Current yield vs Potential yield

Irrigation

- 18% of total irrigated land (1.84 million ha) in CA are watered by electric pumps.
- Irrigation consumes about 14.2 GWh/year in CA or several hundred millions USD.

Planning Horizon 2050

➤ *Improved allocation*

- More agricultural yield?
- More WSS for growing & urbanizing population?
- More industrial uses?

➤ *Increased efficiency*

- Enhanced conveyance efficiency reduces water and energy losses
- Climate resilient crops
- Connected information systems accounting and monitoring

➤ *Managed supply*

- Smart storage (grey and natural) management
- Return and drainage flows (ca.35BCM) re-considering with treatment
- Sustainable groundwater management

Importance of access to data and analytics

*Try our new draft global **HydroInformatics Platform** to illustrate open services related to water resources...*

<http://spatialagent.org/HydroInformatics>

The screenshot displays the 'CENTRAL ASIA WATER AND ENERGY DATA PORTAL' in English. The interface features a navigation bar with categories: Все, Экология, Социальные, Экономические, Климатические, Вода, and Бедствия, along with a 'карты историй' button. Below the navigation bar is a grid of 24 data visualization tiles, each with a thumbnail image and a title in Russian. The tiles include: 'Достижение Национальной стратегии развития в Республике Таджикистан: Проект', 'Изменение поверхностных вод', 'Проект модернизации гидрометеорологической службы в Центральной Азии', 'Уровень воды в озерах', 'Ночные Огни', 'Плотность населения (Landscan)', 'осадки', 'Данные о солнечной энергии', 'Глобальная карта ветра', 'Сравнение земного покрова', 'Анализ вегетационного индекса (Google Планета Земля)', 'МЧС Кыргызской Республики', 'Повышение климатической устойчивости в Центральной Азии', 'Пахотные земли', 'Контуры водосборных бассейнов', 'Лесной покров', 'Гидромет Кыргызской Республики', 'Качество воды в мире', 'Экологический след', 'Инвентарь ледников', 'Слой MODIS', 'Производство сельскохозяйственных культур', 'Данные о пожарах', and 'Исследователь поверхностных вод'.



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