Supplementary Information for

A diagnostic dashboard to evaluate country water security

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Introduction

Figures S1-1 through SI-4 are additional dashboards created for Afghanistan, Tajikistan, Turkmenistan, and Uzbekistan. These figures were created using the data listed in Table 1 from the journal article.

Figure SI-1: Water Security Dashboard for Afghanistan

Water Security Dashboard: Afghanistan



Drivers

				1990–MRV	Future
	Population:	35,530,081		↗	↗
	Urban Population:	25.25	% of total	↗	↗
	Net Migration:	-314,602		↘	
$	**HDI:**	0.50*		↗	
$	**Gini Coefficient:**	-			
$	**Gender Gap in Wages:**	-		2017	
$	**Ag Employment:**	38.77	% of Employment	↘	
$	**GDP per Capita:**	583.87*	2010 USD/inhab	↗	
	Economic Makeup				
$	Total GDP:	20.74*	10^9 2010 USD	↗	↗
$	Ag Value Added:	20.47	% of GDP	↘	
$	Industry Value Added:	22.13	% of GDP	↘	
$	Services Value Added:	52.66	% of GDP	↗	
	Fragile States Index:	105		↗	
	Technology Development:	0*	No. of water-related patents	2000-2016	
	Environment				
	Average Yearly Temp:	13.82	° Celsius	↗	↗
	Intraannual Temp CV:	0.68		↘	
	Total Yearly Precip:	287.8*	mm	↘	
	Intraannual Precip CV:	0.95		↘	

The Water Resource System

	Conventional Water Endowment			
	Total Renewable Freshwater:	65.33	10^9 m³ /year	
	Renewable Groundwater:	10.65	10^9 m³ /year	
	Renewable Surface water:	55.68	10^9 m³ /year	
	Transboundary Dependency Ratio:	28.72	%	
	Total Renewable Freshwater per Capita:	1,839*	m³/inhab/year	↘
	Unconventional Water Endowments			
	Desalinated Water Produced:	-	10^9 m³ /year	
	Direct Use of Treated Wastewater:	-	10^9 m³ /year	
	Net Virtual Water Imports:	1.36*	10^9 m³ /year	1996-2005
	Usage			
	Agriculture:	39.15	10^9 m³ /year	↗
	Industry:	0.25	10^9 m³ /year	↗
	Municipal:	0.30	10^9 m³ /year	↗
	Environment:	18.89	10^9 m³ /year	
	Renewable Groundwater[a]:	3.04	10^9 m³ /year	
	Renewable Surface water[a]:	17.24	10^9 m³ /year	
	Infrastructure			
	Cultivated Land Equipped for Irrigation:	41.38*	%	↗
	Treated Wastewater:	0*	%	2018
	Total Storage Capacity:	2,000	m³	-
	Institutions			
	Government Institutions:	3		
	International Freshwater Treaties:	4		

System Performance

	Number of Recorded Droughts:	4		1990-2017
	Number of Recorded Floods:	75		1990-2017
	Water Stress:	85.49	%	↗
$	Water Productivity:	0.48*	2010 USD /m³	↗
	Water Quality - Pollution Index:	0.36		2014
	Continuity of Service:	-	hrs/day	2018
	Degree of IWRM Implementation:	12*		2018

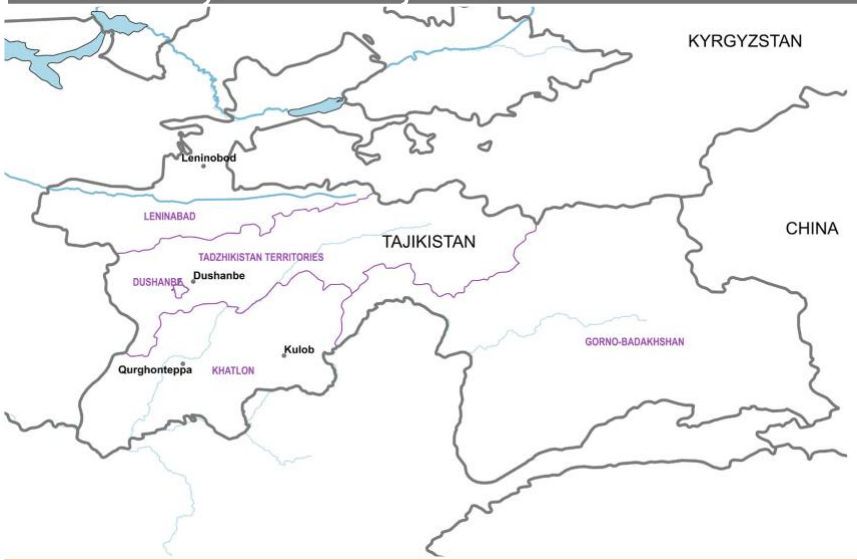
Outcomes

	Access to Improved H20:	70.24*	%	↗
	Access to Improved Sanitation:	53.24*	%	↗
	Deaths from Flood:	4,263		1990-2017
$	Agriculture Gross Value Added:	4.71	10^9 2010 USD	↗
$	Cost of Flood:	0.14	10^9 2017 USD	1990-2017
$	Cost of Drought:	0.15	10^9 2017 USD	1990-2017
	Biodiversity Threat Index:	0.67		2014
	Flow Violations Index:	0.54		2014

Most recent value (MRV) shown, unless otherwise noted. For example, technology development, flood and drought data are all cumulative values for the range of years listed.
Trends indicated when available for 1990 – MRV, unless otherwise noted. Arrow size represents average annual growth. For example, ↗ Large Positive Growth (>3%) ↗ Medium Positive Growth (1-3%) ↗ Low Positive Growth (<1%)
Indicators within the top 75th percentile are highlighted, with the majority being ranked from highest to lowest. An * indicates a ranking from lowest to highest.
[a] Groundwater and Surface water usage sum to a different total water usage value than the summation of sectoral water usage. Please see text for further explanation.

Figure SI-2: Water Security Dashboard for Tajikistan

Water Security Dashboard: Tajikistan



Drivers

				1990–MRV	Future
	Population:	8,921,343		↗	↗
	Urban Population:	26.98	% of total	↘	↗
	Net Migration:	-99,999		↗	
$	**HDI:**	0.65*		↗	
$	**Gini Coefficient:**	34		↗	
$	**Gender Gap in Wages:**	-		2017	
$	**Ag Employment:**	51.28	% of Employment	↘	
$	**GDP per Capita:**	1,020.14*	2010 USD/inhab	↗	
	Economic Makeup				
$	Total GDP:	9.10*	10^9 2010 USD	↗	↗
$	Ag Value Added:	20.4	% of GDP	↘	
$	Industry Value Added:	27.24	% of GDP	↘	
$	Services Value Added:	42.26	% of GDP	↗	
	Technology Development:	126.31*	No. of water-related patents	2000-2016	
	Fragile States Index:	77.7		↘	
	Environment				
	Average Yearly Temp:	2.83	° Celsius	↗	↗
	Intraannual Temp CV:	3.37		↘	
	Total Yearly Precip:	488.6*	mm	↗	↘
	Intraannual Precip CV:	0.86		↗	

The Water Resource System

	Conventional Water Endowment			
	Total Renewable Freshwater:	21.91	10^9 m^3 /year	
	Renewable Groundwater:	6	10^9 m^3 /year	
	Renewable Surface water:	18.91	10^9 m^3 /year	
	Transboundary Dependency Ratio:	17.34	%	
	Total Renewable Freshwater per Capita:	2,456*	m^3/inhab/year	↘
	Unconventional Water Endowments			
	Desalinated Water Produced:	0	10^9 m^3 /year	
	Direct Use of Treated Wastewater:	0	10^9 m^3 /year	
	Net Virtual Water Imports:	-0.92*	10^9 m^3 /year	1996-2005
	Usage			
	Agriculture:	9.58	10^9 m^3 /year	↘
	Industry:	0.37	10^9 m^3 /year	↘
	Municipal:	0.59	10^9 m^3 /year	↗
	Environment:	6.23	10^9 m^3 /year	
	Renewable Groundwater[a]:	0.53	10^9 m^3 /year	↘
	Renewable Surface water[a]:	9.89	10^9 m^3 /year	↗
	Infrastructure			
	Cultivated Land Equipped for Irrigation:	84.91*	%	↗
	Teated Wastewater:	58.85*	%	2018
	Total Storage Capacity:	29,500	m^3	↗
	Institutions			
	Government Institutions:	8		
	International Freshwater Treaties:	12		

System Performance

	Number of Recorded Droughts:	2		1990-2017
	Number of Recorded Floods:	29		1990-2017
	Water Stress:	67.28	%	↘
$	Water Productivity	0.58*	2010 USD /m^3	↗
	Water Quality - Pollution Index:	0.31		2014
	Continuity of Service:	21.95*	hrs/day	
	Degree of IWRM Implementation:	-		2018

Outcomes

	Access to Improved H20:	83.52*	%	↗
	Access to Improved Sanitation:	99.43*	%	↗
	Deaths from Flood:	1,612		1990-2017
$	Agriculture Gross Value Added:	1.72	10^9 2010 USD	↗
$	Cost of Flood:	0.97	10^9 2017 USD	1990-2017
$	Cost of Drought:	0.08	10^9 2017 USD	1990-2017
	Biodiversity Threat Index:	0.65		2014
	Flow Violations Index:	0.35		2014

Most recent value (MRV) shown, unless otherwise noted. For example, technology development, flood and drought data are all cumulative values for the range of years listed.
Trends indicated when available for 1990 – MRV, unless otherwise noted. Arrow size represents average annual growth. For example, ↗ Large Positive Growth (>3%) ↗ Medium Positive Growth (1-3%) ↗ Low Positive Growth (<1%)
Indicators within the top 75th percentile are highlighted, with the majority being ranked from highest to lowest. An * indicates a ranking from lowest to highest.
[a] Groundwater and Surface water usage sum to a different total water usage value than the summation of sectoral water usage. Please see text for further explanation.

Figure SI-3: Water Security Dashboard for Turkmenistan

Water Security Dashboard: Turkmenistan



Drivers

				1990–MRV	Future
	Population:	5,758,075		↗	↗
	Urban Population:	51.15	% of total	↗	↗
	Net Migration:	-25,001		↘	
$	**HDI:**	0.71*		↗	
$	**Gini Coefficient:**	40.8			
$	**Gender Gap in Wages:**	-		2017	
$	**Ag Employment:**	22.94	% of Employment	↘	
$	**GDP per Capita:**	7,317.55*	010 USD/inhab	↗	
	Economic Makeup				
$	Total GDP:	42.13*	10^9 2010 USD	↗	↗
$	Ag Value Added:	9.30	% of GDP	↘	
$	Industry Value Added:	56.97	% of GDP	↗	
$	Services Value Added:	28.14	% of GDP	↗	
	Fragile States Index:	71.4		↘	
	Technology Development:	151.51*	No. of water-related patents	2000-2016	
	Environment				
	Average Yearly Temp:	16.31	° Celsius	↗	↗
	Intraannual Temp CV:	0.66		↘	
	Total Yearly Precip:	141.6*	mm	↗	↘
	Intraannual Precip CV:	0.88		↗	

The Water Resource System

	Conventional Water Endowment			
	Total Renewable Freshwater:	24.77	10^9 m³ /year	
	Reneable Groundwater:	0.41	10^9 m³ /year	
	Renewable Surface water:	24.36	10^9 m³ /year	
	Transboundary Dependency Ratio:	97	%	
	Total Renewable Freshwater per Capita:	4,302*	m³/inhab/year	↘
	Unconventional Water Endowments			
	Desalinated Water Produced:	0	10^9 m³ /year	
	Direct Use of Treated Wastewater:	-	10^9 m³ /year	
	Net Virtual Water Imports:	-3.05*	10^9 m³ /year	1996-2005
	Usage			
	Agriculture:	32.09	10^9 m³ /year	↗
	Industry:	1.02	10^9 m³ /year	↗
	Municipal:	0.92	10^9 m³ /year	↗
	Environment:	7.65	10^9 m³ /year	
	Renewable Groundwater[a]:	0.31	10^9 m³ /year	
	Renewable Surface water[a]:	27.56	10^9 m³ /year	
	Infrastructure			
	Cultivated Land Equipped for Irrigation:	94.81*	%	↘
	Treated Wastewater:	74.79*	%	2018
	Total Storage Capacity:	6,220	m³	↗
	Institutions			
	Government Institutions:	5		
	International Freshwater Treaties:	7		

System Performance

	Number of Recorded Droughts:	0		1990-2017
	Number of Recorded Floods:	1		1990-2017
	Water Stress:	198.77	%	↗
$	Water Productivity:	0.60*	2010 USD /m³	↗
	Water Quality - Pollution Index:	0.55		2014
	Continuity of Service:	-	hrs/day	
	Degree of IWRM Implementation:	-		2018

Outcomes

	Access to Improved H20:	100*	%	↗
	Access to Improved Sanitation:	99.97*	%	↗
	Deaths from Flood:	0		1990-2017
$	Agriculture Gross Value Added:	2.56	10^9 2010 USD	
$	Cost of Flood:	0.17	10^9 2017 USD	1990-2017
$	Cost of Drought:	-	10^9 2017 USD	1990-2017
	Biodiversity Threat Index:	0.66		2014
	Flow Violations Index:	0.10		2014

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Indicators within the top 75th percentile are highlighted, with the majority being ranked from highest to lowest. An * indicates a ranking from lowest to highest.
[a] Groundwater and Surface water usage sum to a different total water usage value than the summation of sectoral water usage. Please see text for further explanation.

Figure SI-4: Water Security Dashboard for Uzbekistan

Water Security Dashboard: Uzbekistan



Drivers

				1990–MRV	Future
	Population:	32,387,200		↗	↗
	Urban Population:	50.55	% of total	↗	↗
	Net Migration:	-44,314		↗	
$	**HDI:**	0.71*		↗	
$	**Gini Coefficient:**	35.3		↘	
$	**Gender Gap in Wages:**	-		2017	
$	**Ag Employment:**	33.52	% of Employment	↘	
$	**GDP per Capita:**	2,031.05*	2010 USD/inhab	↗	
	Economic Makeup				
$	Total GDP:	65.78*	10^9 2010 USD	↗	↗
$	Ag Value Added:	16.98	% of GDP	↘	
$	Industry Value Added:	29.47	% of GDP	↘	
$	Services Value Added:	39.85	% of GDP	↗	
	Fragile States Index:	75.7		↘	
	Technology Development:	177.86*	No. of water-related patents	2000-2016	
	Environment				
	Average Yearly Temp:	13.27	° Celsius	↗	↗
	Intraannual Temp CV:	0.87		↘	
	Total Yearly Precip:	197.2*	mm	↘	-
	Intraannual Precip CV:	0.76		↗	

The Water Resource System

	Conventional Water Endowment			
	Total Renewable Freshwater:	48.87	10^9 m^3 /year	
	Renewable Groundwater:	8.8	10^9 m^3 /year	
	Renewable Surface water:	42.07	10^9 m^3 /year	
	Transboundary Dependency Ratio:	80.07	%	
	Total Renewable Freshwater per Capita:	1,509*	m^3/inhab/year	↘
	Unconventional Water Endowments			
	Desalinated Water Produced:	-	10^9 m^3 /year	
	Direct Use of Treated Wastewater:	-	10^9 m^3 /year	
	Net Virtual Water Imports:	-10.23*	10^9 m^3 /year	1996-2005
	Usage			
	Agriculture:	42.16	10^9 m^3 /year	↘
	Industry:	1.25	10^9 m^3 /year	↘
	Municipal:	3.43	10^9 m^3 /year	↗
	Environment:	13.46	10^9 m^3 /year	
	Renewable Groundwater[a]:	0.49	10^9 m^3 /year	↘
	Renewable Surface water[a]:	58.41	10^9 m^3 /year	↗
	Infrastructure			
	Cultivated Land Equipped for Irrigation:	90.29*	%	↗
	Treated Wastewater:	0*	%	2018
	Total Storage Capacity:	22,160	m^3	-
	Institutions			
	Government Institutions:	4		
	International Freshwater Treaties:	20		

System Performance

	Number of Recorded Droughts:	1		1990-2017
	Number of Recorded Floods:	1		1990-2017
	Water Stress:	112.96	%	↘
$	Water Productivity:	0.97*	2010 USD /m^3	↗
	Water Quality - Pollution Index:	0.48		2014
	Continuity of Service:	21.30*	hrs/day	
	Degree of IWRM Implementation:	45*		2018

Outcomes

	Access to Improved H20:	97.83*	%	↗
	Access to Improved Sanitation:	100*	%	↗
	Deaths from Flood:	0		1990-2017
$	Agriculture Gross Value Added:	10.44	10^9 2010 USD	↗
$	Cost of Flood:	-	10^9 2017 USD	1990-2017
$	Cost of Drought:	0.07	10^9 2017 USD	1990-2017
	Biodiversity Threat Index:	0.71		2014
	Flow Violations Index:	0.48		2014

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