

# TRANSBOUNDARY WATERS

PRACTIONER BRIEFING

## WATER ACCOUNTING+

Issue 1

### Water Accounting+

"Complex water problems require negotiated solutions,"<sup>i</sup> and negotiation should begin by establishing the facts as understood by each stakeholder. Transboundary water resources present a variety of complex challenges to riparian nations, ranging from the natural to the technological, as well as political and economic factors. Common issues include the fair allocation of shared water resources, sustainable usage, and coordination of management.

Accurate information regarding water basins and transparency in their usage are critical components for cooperation in such complex water networks. **Water Accounting+** is a methodology that can assist riparians with cooperating on these fronts, and is a tool for the implementation of IWRM—Integrated Water Resource Management.

Water Accounting+ practices, along with Remote Sensing technology, can help to fill information gaps in a transparent manner using independently verifiable information, helping to generate buy-in from riparian partners. WA+ methodologies are part of this equation, but implementing these practices into actionable mechanisms is also required, to better disseminate water data and provide a common set of facts to work from.

### **Practical Summary**

Water Accounting+ ("WA+"), looks to standardize the practice of measuring and presenting data on water resources, similar to public financial statements. For instance, publicly traded companies must have easily comparable and verifiable financial information that allows investors to value the company and make informed investment decisions. For water, it is about understanding



what is available, and how it is used within the environment. WA+ seeks to present that information in clearly defined and concise way.

As water resources become increasingly stressed in a context of multiple users, it is then increasingly important to plan the development, allocation, and management of water resources, while considering the impact of domestic policies in a transboundary context. WA+ can aid policy makers to make decisions based on the actual amount of water available in a basin and with a greater understanding of the potential impacts for all sharing a water basin.

By standardizing the data, information can be more easily shared and leveraged for policy or strategic investment decisions. Water authorities operating on transboundary water basins need to have the right information, which is easily shared between riparian water partners, to make coordinated decisions that are also sustainable. Furthermore, having that is transparent information and independently verifiable, without some of the bureaucratic overhangs of disparate ministries or opposing data standards, will facilitate coordinated decision making between transboundary partners.

Water Accounting+ frameworks and methodologies can help to alleviate points of conflict in shared water resources by increasing knowledge of the supply and nature

of the demand of water basin resources, while encouraging transparency of usage that is independently verifiable and contributed to by all partners.

Current data sets on water resources are often incomplete, absent, or hidden, and their data points are often not comprehensive. Certified data sets are required for use at the negotiation table, standardizing terminologies and definitions, so they can be used by various decision makers—such as hydrologists, policy makers, lawyers, economists, or agronomists.

*Water Accounting+ Methodology* – WA+ uses a "water balance" approach to quantify the

### Water accounting definitions

Water depletion is a use or removal of water from a water basin that renders it unavailable for further use.

Net inflow is the gross inflow

plus any changes in storage.

Srocs

INFLOW

Surface and Subsurface Flows Precipitation

Removal from

Available water represents the amount of water available for use. Available water includes process and non-process depletion, plus utilizable outflows.

Gross inflow is the total amount of water flowing into the river basin or defined area from precipitation, rivers and subsurface sources (groundwater). amount of water entering and leaving a system, classifying the use of water as it moves through the system. Once water is categorized, WA+ indicators refine the picture to inform policy decisions.

**Depleted Fraction** indicators reveal how much scope remains for water resources to be developed, how close they are to being fully committed, and how sustainable the system is. For example, for Pakistan's Chishtian subbasin, the depleted fraction (amount of water depleted divided by gross inflow) was 1.09 meaning more water is being depleted than is flowing into the system. This indicates

**Non-process depletion** occurs when water is depleted, but not by a human-intended process. *Non-process depletion* can be either *beneficial*, or *non-beneficial*-for example, evaporation from fallow land would generally be classified as non-beneficial, while evaporation from forests would generally be considered beneficial. *Classification as beneficial or non-beneficial requires a value judgement and is a good entry point for discussions with stakeholders*.

Non-Bene

Uncommitted

Outflow

Additionto

Itilizabi

Non-Uti

Com

**Process depletion** is that amount of water diverted for use that is depleted to produce a human-intended product.

**Committed water** is that part of outflow from the basin or defined domain that is committed to other uses such as downstream environmental requirements or downstream water rights.

Storage

Uncommitted outflow is water that is not depleted, nor committed and is therefore available for a use within the domain, but flows out of the basin due to lack of storage or sufficient operational measures. Uncommitted outflow can be classified as *utilizable* or *non-utilizable*. Outflow is utilizable if it could be used by improved management of existing facilities.



groundwater overdraft and therefore unsustainable water use.

**Beneficial Utilization** relates the amount of water depleted by all beneficial processes to the amount of water available for use. This indicator offers a more accurate view of basin efficiency than traditional indicators, because it takes into consideration the water consumed by valuable natural ecosystems as well as the water consumed by human activities (such as agriculture). For example, according to the classical definition, the Kirindi Oya sub-basin has an efficiency of 22 percent (counting only water used by crops), but its beneficial utilization is actually much higher— 65 percent (counting water consumed by crops and beneficial natural vegetation).

**Productivity of Water** quantifies the value derived from the water used. In agriculture, it can be expressed as the yield (in kilograms) produced per cubic meter of water consumed by crops. More generally, it can be expressed as the economic value of production per unit of water consumed. These productivity values can also be related to the amount of water available, depleted, or diverted.<sup>ii</sup>

The provided WA+ methodology is separated into eight (8) categories, which can be grouped into three (3) major components:

Excessive Withdrawals | Multiple Water Users | Climate Change Lack of Information | Management | Assessment & Control Plan of Action | Implementation

1) <u>Basic Assumptions</u>: Excessive usage of limited water resources generates competition and competing interests between water users, which is further exacerbated and complicated by climate change. 2) <u>Identified Problems</u>: Lack of information hinders effective policy decisions and limits cooperation between water basin partners, negatively impacting the management of shared water resources, and limiting effective assessment and control across various water stakeholders.

3) <u>Policy Responses</u>: Plans of action must include standardized reporting to be effective, and must be implemented via a management system that is effective for the sustainable use of water as a public good. <sup>iii</sup>

Having provided a logical framework on the need for improved water data collection and reporting, the next challenge is over what form this should take. Large discrepancies in the capacities of riparian partners can create challenges for effective cooperation in IWRM. A common language and common data helps to alleviate this problem, but cooperative capacity development is critical as well.

Data is the first step. It needs to be collected in a comprehensive and transparent fashion at regular intervals in order to develop reliable data sets. Remote sensing techniques are improving capacity in this regard, but must still be supplemented by on the ground measurements of surface water, and integrated with ground water data for a truly complete picture.

Reporting is the second step. Data that is collected but not shared does not contribute to water diplomacy or further cooperation between partners. While many laws require the collection and monitoring of water resources, there is no standardized reporting system in place. Reporting water resource data to a centralized hub, which can be viewed and accessed by all parties contributes to cooperative decision making, while increasing transparency, thereby generating further buyin for cooperation from riparian partners.

The next step is to increase water system capacity with the appropriate infrastructure, developed in cooperative manner, and to monitor its development against the collected data. Such a process is most effective with skin-in-the-game by all parties. The varied nature of water policy has typically led to weak coordination and integration, both within governments, and in particular between governments.

### **WA+ Transboundary Examples**

- Nile basin
- Mekong
- Vu Gia Thu Bon
- Awash river basin
- Helmand
- East Rapti river basin
- Mara
- Naivasha
- Incomati
- Okavango river basin
- Sri Lanka basins

Water Accounting has been used in contexts such as India, Pakistan, Nepal, Sri Lanka, Indonesia, the Philippines, and China to more effectively deal with water scarcity and pollution challenges, and to measure the efficient usage of farming techniques.

WA+ can be applied in either national or transboundary water contexts, helping to give a more complete picture of water resources, or providing standardized information that is comprehensive for transboundary water partners.



Joint-water commissions such as the Mekong River Commission (MRC) and the Nile Basin Initiative (NBI) have utilized these methods, to gather and present data, while serving as an information services resource hub—such as the <u>MRC Data Hub</u> or <u>Nile Information System</u>.

The Nile Basin Initiative (NBI) is an intergovernmental partnership of 10 Nile Basin countries—Burundi, DR Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, The Sudan, Tanzania and Uganda. Eritrea participates as an observer. The all-inclusive basin-wide institution was established on 22nd February 1999 to provide a forum for consultation and coordination among the Basin States for the sustainable management



and development of shared Nile Basin waters and related resources.<sup>iv</sup>

An example project, "Accounting for Nile Waters," set out to explore how WA+ could guide decisions on water allocation, addressing problems from ambitious investments in irrigated agriculture and new irrigation systems in the region. The project such efforts explored whether have contributed to establishing sustainable ecosystem services and gender equality along the basin due to changes in water allocation, with case studies from Ethiopia, Egypt, and Sudan.

"Water use in the eastern Nile basin has grown by many folds due to different factors. However, problems of water accessibility remain unresolved. Water problems can be diagnosed in different ways, including by assessing the overall health of an ecosystem. While improving access to water for all is a mandate of institutions in the water sector, such efforts require information and buy-in from many disciplines.

Water accounting provides relevant and unequivocally understood data about water uses and value, which is central for effective communication with decision makers and other stakeholders. If WLE can demonstrate how water accounting provides information that eases decision making, equitable and transparent water governance for all water users and a sustainable water balance at scale might be possible.

Putting the water accounting methodology into use requires a good understanding of decision-making processes, which would enable WLE researchers to present the research outputs and demonstrate the value of Water accounting at the right place and at the right time. If done successfully, this approach could be an excellent vehicle for securing stakeholders' buy-in."

A product of this project is the <u>Nile Water Lab</u> website, which provides a central hub for case studies and multiple water projects along the Nile—Salam Canal Project (Egypt), Beles Sugar Development Project (Ethiopia), and Waha Irrigation Project (Sudan). The Nile Water Lab presents different stakeholders' experiences of new investment projects and multiple encounters which shape their relations to other stakeholders and infrastructure along the Nile.

Another pilot project by CGIAR's Water, Land, and Ecosystems research program is on the Greater Mekong region, proving project results, basin maps and information, and serving as central hub for a knowledge.

The Mekong River Commission is mandated to achieve strategic objectives in IWRM for the balanced and socially just development of the Mekong River Basin, while protecting the environment and maintaining the region's ecological balance. The MRC Council has approved an IWRM-based Basin Development Strategy since 2010, updated in 2015 and endorsed in 2016. It provides a framework for transboundary governance of this development process, including alignment of national plans and projects, basin management processes and the identification of strategic analyses to address current knowledge gaps.

Approved procedures include Data and Information Exchange and Sharing (approved 2001), and Water Use Monitoring (approved 2003), to operationalize information exchange



and basin monitoring data among MRC member countries. From the 2016 BDS, "The significant and long-term investment that the MRC has made in data and knowledge will greatly facilitate the early identification of opportunities for joint development and benefit sharing. The development of such projects will lead inevitably to higher levels of transboundary cooperation, benefiting many sectors (such as food, energy, navigation, tourism, and flood protection), and thus advance ASEAN integration."

### Water Accounting+ Exhibits

The following exhibits provide examples of Water Accounting+ sheets used for various



tailored contexts, including Resource Base, Evapotranspiration, Agricultural Uses, Utilized Flow, Surface Water, Ground Water, Hydrological Ecosystem, and Sustainability.

Examples of these documents are available on the <u>Water Accounting+</u> website, including for the Nile, Mekong, and other water basins.

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Indoor industry

Livestock & husbandry

Power and Energy

Greenhouses

Others



Sheet 1: Resource Base (km<sup>3</sup>/yr) Basin: Period: Precycled 100 100 400 Trecycl **Protected Land Use** 540 E Landscape 300 200 400 **Utilized Land Use** 550 400 400 600 Gross Inflow External External Net Inflow Consumed water Depleted wate **Modified Land Use** 560 Managed Water Use 570 510 520 530 Protected Land Use 540 400 400 Padvection 400 210 flow **Utilized Land Use** 550 ET 610 Exploitable water Available water men-tal ET 400 **Modified Land Use** 560 Ott Utilized Q<sub>desal</sub> 210 Managed Water Use 570 400 Qouvoutlet 620 Non le flow 510 Q<sub>sw</sub>in 220 **Utilizable outflow** 510 510 Non-consumed water Non-utilizable outflow 510 Qswout 630 Q<sub>gw</sub><sup>in</sup> 230 Outflow Committed outflow Reserved outflow, max. 510 630 Qa out Navigational outflow +AS 240 **Environmental outflow** -AS 250 Sheet 2: Evapotranspiration (km<sup>3</sup>/yr) Basin: Period: ET т ET т 520 400 Forests 520 Protected Land Use Non-Shrubland 550 550 Interception 400 Natural grasslands 400 manage-560 560 Natural water bodies Non-Beneficial 600 able Wetlands 540 540 210 400 300 100 400 Glaciers 560 560 Other 570 570 Total evapotranspiration Evaporation Forests 570 570 Utilized Shrubland 540 540 Manage-400 Land Use Natural grassland 400 400 able 550 550 Natural water bodies Soil 210 220 220 Wetlands 530 530 Other 400 400 Rainfed crops 400 400 Modified Land Use 400 Beneficial 400 Forest plantations 400 400 400 400 Settlements 220 220 Others 400 400 Water 610 100 620 Irrigated crops 510 510 con-ventional Agriculture Environment Managed Managed water bodies 510 510 230 510 Economy Residential 510 510 Industry 510 510 Energy Others 510 510 Leisure Managed Transpiration Water Use non-conventional Indoor domestic 510 510

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### Sheet 3: Agricultural services

Part 1: Agricultural water consumption (km³/yr)

Basin: Period:



### Sheet 4: Utilized Flow



400

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Que Groundwater recoverable

Q\_w Groundwater non-recoverable



Groundwater



ater

Sneet 5. Surface water (km*/yr)	Surface water	(km <sup>3</sup> /yr)	
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Basin: Period:																	
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													/	/	/	Total	
Sub-basin inflow	7	9	5,7	6	8	5	7	2	6	17	2	6	3	1	्व	85	
Natural flow	0	-2	-10,5	0	-3	4	-2	-5	-2	-11	-4	-1	-10	-10	-15	-69	
Manmade withdrawals	0	1	0,7	0	1	3	1	4	1	5	3	0	5	4	6	34	
Return flow SW	0	3	0,5	-1	0	0	0	0	0	0	0	0	3	0	0	5	
Return flow GW	0	3	0.6	-1	0	0	0	0	o	0	0	0	3	0	0	5	
Storage change	7	11	-25,3	5	6	4	6	1	5	11	1	5	1	-5	-8	-69	
Interbasins transfer	7	3	3,9	3	3	3	3	3	0	0	0	0	3	0	0	34	
Sub-basin outflow	0	3	3,6	3	3	3	3	3	0	0	0	0	3	0	0	5	
Contribution to main stream	11	11	11,0	11	11	11	11	11	5	11	1	5	1	-5	-8	5	
Actual flow	7	18	-23,2	28	34	38	44	45	50	61	62	67	68	63	55	55	
Reserved flow	-5	5	8	8	8	10	10	10	14	14	20	20	20	20	20	20	
Downstream allocated	2	0	0	- 3	4	2	5	6	- 11	16	17	22	20	15	0	0	
Utilizable flow	- (41)	13	15	17	22	26	29	29	25	31	25	25	28	28	35	35	
Non-utilizable flow	. 1	13	15	17	22	-26	29	29	25	31	25	25	28	28	35	35	

Sheet 6: Groundwater (Mm<sup>3</sup>/yr)

Basin: Period:







000 11	80.	Groundwater rec	arge (rs) Enhanced atmospheric molsure recying (rs)	000	m <sub>5</sub>
320 m	3/s	Dry season flow ('baseflow') (F	(s) 5 5 7 7 7 7 Aquatic connectivity (fragmentations) (Hs)	500	%
500 m	3	Total runoff (Ps)	4 Leisure (Cs)	2	No/ha
3 N	o/ħa	Leisure (Cs)	5 _ 2 7 4 Total runoff (Ps)	500	m <sup>3</sup>
5 %		Environmental flow requirements (Hs)	5 2 3 Inland capture fishery (Rs)	5	tonnes
5 %	i.	Aquatic connectivity (fragmentations) (Hs)	2 5 2 6 A Natural livestock feed production (Rs)	5	tonnes
58 k	βC	Reduce greenhouse gas emissions (Rs)	Modified Land Lise - 5 Dry season flow (baseflow) (Rs)	58	m³/s
15 %	i .	Natural reduction of eutrophication in water (Rs) 7 5	Incremental ET natural = 17	15	m <sup>3</sup>
5 m	3	Enhanced atmospheric moisture recycling (Rs)	3 Landscape ET = 187 Natural water storage in lakes (Rs)	5	m <sup>3</sup>
2 %	-	Micro-climate cooling (Rs)	5 2 5 Peak flow attenuation (Rs)	2	96
5919 kg	C	Carbon sequestration (Rs)	Utilized Protected -	500	
5899 k	sediments	Reducing erosion and sedimentation (Rs) - 1 4	Incremental ET natural = 7 Incremental ET natural = 133	288	kg sediments
5 %		Peak flow attenuation (Rs)	Landscape ET = 448 Landscape ET = 87 Carbon sequestration (Rs)	5899	kg C
59 m	3	Natural water storage in lakes (Rs)	Micro-climate cooling (Rs)	5	°C
578 m	з	Groundwater recharge (Rs) 7	Managed Water Use	578	m³
567 m	<sup>3</sup> /s	Dry season flow (baseflow) (Rs) 5 3	4 Incremental ET natural = 111 3 5 Natural reduction of eutrophication in water (Rs)	567	%
5789 to	nnes	Fuelwood from natural forest (Rs)	5 - 7 Reduce greenhouse gas emissions (Rs)	5789	kg C
8764 to	nnes	Natural livestock feed production (Rs)	Aquatic connectivity (fragmentation) (Hs)	8764	%
456 to	nnes	Inland capture fishery (Rs)	B 2 3 Environmental flow requirements (Hs)	456	96
5899 m	3	Total runoff (Ps)	4 1 5 7 - 5 Leisure (Cs)	3	No./ha
1 N	o/ha	Leisure (Cs)	- Total runoff (Ps)	877	m <sup>3</sup>
12 %		Aquatic connectivity (fragmentations) (Figure 1 - Aquatic connectivity (fragmentations) (Figure 2 - Aquatic connectivity (fragmentations))	ts) The season flow (baseflow) (Rs)	12	m <sup>3</sup> /s
7654 kg	JC	Reduce greenhouse gas emi	ssions (Rs) Groundwater recharge (Rs)	7654	m <sup>3</sup>
25111	100 P 224				

Sheet 8: Sustainability

### Basin: Katmandu Basin Period: 2004 - 2014

A	caus	se	
Syste	m be	havio	ur
	Ano	malies	10 Year change (%/yr)
Rainfall (mm)	+403	(+22.2%)	
Surface temp (°C)	-1.7	(-12.1%)	-
Soil mois (cm <sup>3</sup> /cm <sup>3</sup> )	-0.02	(-2.1%	• •
ET (mm)	+76	(+0.9%)	) <del> </del>
Open water (ha)	+331	(+1.1%	• •
Vegetation cov (%)	-7.2	(-8.4%)	-
NPP (kg/ha)	-1531	(-7.3%	-
TSS (mg/l)	+5.4	(+8.8%)	-
Chlorophyl (mg/l)	+1.3	(+4.4%)	•
Forest (ha/yr)	-32	(-6.4%)	+
Urban (ha/yr)	+140	(+2.2%)	•
Crop (ha/yr)	+32	(+2.3%	•
% represents A/mean			

				Res	oons	e						
R	eliab	ility		Res	ilien	се		Vulnerability				
Category NL	l Imber	II of wet	III t events	Category	l on of v	ll vet ev	III ents (d)	A(NPP) tonnes	A(ET) m <sup>3</sup>			
A (NPP) A (ET)	7 8	5 4	2 1	A (veg cover) A (LST) A (theta)	11 7 8	5 4	2	PLU +343(+34.7%) ULU +223 (+2.2%)	+343(+34.7%) +223 (+2.2%)			
Mean A 10 yr mean	8 9	5 11	2 5	Mean A 10 yr mean	8 9	5 11	2 5	MLU -33 (-0.3%) MWU +83 (+7.2%)	-33 (-0.3%) +83 (+7.2%)			
Nu	Imber	of dry	events	Duratio	on of c	iry ev	ents (d)					
A (NPP) A (ET)	7 4	2 8	1	A (veg cover) A (LST) A (theta)	18 23 17	2 8	1					
Mean A 10 yr mean	6 6	5 5	1 2	Mean A 10 yr mean	21 20	5 5	1 2	% represents A/mean				

		Effect		
Wate	er reso	ources status and ecos	ysten	n services Arrow is 10 year change
Blue water availability A (+6 km <sup>3</sup> /yr)	4	Safeguarding env water A (-1.1 km <sup>3</sup> /yr)	ŧ	Atmospheric cooling
Utilizable outflow A (+2.3 km <sup>3</sup> /yr)	ŧ	Storage change A (-2.7km <sup>3</sup> /yr)	ŧ	Carbon sequestration A (-11.31 ton C/yr)
Water scarcity A (-2.2 km <sup>3</sup> /yr)	ŧ	Agr. water productivity A (-2.4 kg/m <sup>2</sup> )	ŧ	Sustaining rainfall

Water



### **Sources for Further Learning**

### Websites

Food and Agriculture Organization of the United Nations (FAO)

India Water Portal

International Water Management Institute (IWMI) - CGIAR Research Center

Mekong River Commission

Nile Basin Initiative

Nile Water Lab

UNESCO-IHE Institute for Water Education

Water Accounting methodology (WA+) - Initiative by IWMI, CGIAR, UNESCO-IHE, FAO & WWAP

Water Diplomacy – Cambridge-based water group focused on water diplomacy frameworks

Water, Land and Ecosystems – Greater Mekong

World Water Assessment Program (WWAP)

### **Organization Reports**

Mekong River Commission Publications

Nile Basin Initiative – Trans-boundary Policies

### Articles & Journals

P. Karimi, W. G. M. Bastiaanssen, and D. Molden. Water Accounting Plus (WA+) – a water accounting procedure for complex river basins based on satellite measurements.

Hang Ngo Thu, Uta Wehn, Data sharing in international transboundary contexts: The Vietnamese perspective on data sharing in the Lower Mekong Basin, Journal of Hydrology, Volume 536, May 2016, Pages 351-364, ISSN 0022-1694, <u>https://doi.org/10.1016/j.jhydrol.2016.02.035</u>.



Bastiaanssen, Wim G. M., Lan Than Ha, and Mark Fenn.

(2015). Water Accounting Plus (WA+) for Reporting Water Resources Conditions and Management: A Case Study in the Ca River Basin, Vietnam.

Peiser, Livia, and Wim G. M. Bastiaanssen. (2015). Analysis on Water Availability and Uses in Afghanistan River Basins: Water Accounting through Remote Sensing (WA+) in Helmand River Basin.

Molden, David. (1997). Accounting for Water Use and Productivity. Swim Paper. Colombo, Sri Lanka.

Prior, Alison D. (2016). WA+ as a Technical Tool for Transboundary Water Governance: The Potential of Satellite Data for Water Accounting in Ungauged Basins. Interuniversity Programme in Water Resources Engineering. Katholieke Universiteit Leuven & Vrije Universiteit Brussel

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<sup>&</sup>lt;sup>i</sup> Islam, Shafiqul, Lawrence Susskind. <u>Water Diplomacy: A Negotiated Approach to Managing Complex Water</u> <u>Networks</u>. RFF Press, 2013. <u>waterdiplomacy.org</u>

<sup>&</sup>lt;sup>ii</sup> "Water Accounting for Integrated Water Resources Management," International Water Management Institute <u>www.iwmi.org</u>

WA+ Methodology, <u>wateraccounting.org/methodology</u>

Nile Basin Initiative, <u>www.nilebasin.org</u>