Summary report of Special Session on: Advance in water accounting and development planning in Africa

2016 WaterNet/WARFSA/GWP-SA Symposium 26-28 October, Gaborone, Botswana

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Centre for Applied Research, November 2016

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This brief report provides a summary of the special session on 'Water Accounting and Development Planning in Africa' that was held on the 27th of October 2016 at the WaterNet symposium, Gaborone International Convention Centre in Botswana. This session was a follow-up of the special session at the 2015 WaterNet Symposium in Mauritius with the theme 'water accounting, IWRM and development planning in southern Africa'. The 2015 session attracted over 30 water resource management experts involved in the construction of water accounts (WA), WaterNet based at universities, research institutes, SADC Water Division, Global Water Partnership-Southern Africa (GWP-SA) and interested individuals.

In Mauritius, it was agreed that there should be communication and exchange of information, experiences, and results on WA and that a Community of Practitioners on Water Accounting (CoP - WA) be established to ensure follow-ups on water accounting activities in Africa. The Centre for Applied Research (CAR) was tasked with ensuring that the CoP follows through. The 2016 session was therefore also meant to offer an opportunity for communication among WA practitioners and policy makers/ users of WA results to interact and discuss progress made. The specific objectives of the session were to:

- a. Exchange country experiences with water accounting & policy applications;
- b. Explore new developments in water accounting and new WA projects in Africa; and
- c. Consolidate and formalise the CoP WA in Africa.

CAR and GWP-SA jointly facilitated the session. The latter is working on a Monitoring & Reporting System for the Water Sector in Africa (M&RSWSA) in Africa with the African Ministers' Council of Water (AMCOW). Therefore, GWP/African Union's interest was to explore the linkages between WA and M&RWSA and promote water accounting in African countries. The session attracted more than 30 participants from various organisations such as departments of Water Affairs, GWP-SA, African Union, SADC, River Basin Organisations, universities, Gaborone Declaration for Sustainability in Africa (GDSA), UNESCO-IHE, Water Research Commission of South Africa and interested individuals.

WA has made progress in Africa in terms of country applications¹ and developing establishing linkages with policy programmes and initiatives (e.g. SADC Regional Strategic Action Plan RSAP4, AU-Priority Action Plan or AU PAP and implementation of the Gaborone Declaration of Sustainability in Africa or GDSA) as well as influencing water resource management and development planning.

Eight abstracts and PowerPoint presentations were received from:

- ✓ African countries working on WA: Botswana, Namibia, Madagascar, and Rwanda;
- ✓ WA programmes: Wealth Accounting and Valuation of Ecosystem Services (WAVES), water accounting +, GDSA, SADC- RSAP4 and the African Union (AU).

The Madagascar work could not be presented, as there was no representative from the country. Although there was no representation from Rwanda, a colleague from Botswana presented on their behalf. Additionally, CAR presented on behalf of WAVES.

Natural capital Accounting (NCA) programmes in Africa

The WAVES and GDSA presentations gave overview of the programmes, their achievements and progress as well as future plans. Generally, both programmes seek to achieve sustainable development through NCA capacity building, implementation and integration in development planning and national economic accounts. WAVES is currently implemented in eight countries (in Africa: Botswana, Madagascar, and Rwanda) and the second phase will focus on:

- ✓ Fast tracking NCA implementation;
- ✓ Strategic learning;
- ✓ Structured policy use of accounts; and
- ✓ Increased south-south knowledge exchange.

More information can be attained from the WAVES website www.wavespartnership.org.

Initiated in 2012 at the Africa sustainability summit in Gaborone, Botswana, the GDSA covers ten African countries and supports the implementation of Multilateral Environmental Agreements (MEAs) such as the CBD, UNFCCC, UNCCD etc. as well as the UN resolution on the SDGs. The GDSA therefore does not establish another layer of commitments and does not duplicate any of the existing conventions and/or international agreements; it supports countries achieving their international commitments through NCA. The programme has focused on:

- ✓ NCA awareness raising through publications, side events and workshops; and
- ✓ Country level assistance through NCA demonstrations and knowledge exchange as well as regional collaborations.

Planned activities are centered on increasing support for NCA regionally/nationally, enhancing implementation and mainstreaming NCA in policy decision making. GDSA also plans the development of a CoP for NCA in Africa. WAVES and GDSA are not confined to water accounting and cover other accounts such as mineral accounts, energy accounts and ecosystem accounts.

WA methods

At last year's special session, the SEEA Water was presented; this was not repeated this year. The SEEA Water is the global standard for Water Accounting developed by the United Nations. There is a SEEA general framework that covers different types of natural capital accounts (e.g. water, energy,

¹ Known WA countries are Botswana, Mauritius, Madagascar, Namibia, Rwanda and recently South Africa. Efforts to contact South Africa prior to the session were not fruitful. However, contacts have now been established.

minerals) and a specific SEEA Water (there is also an experimental SEEA for Ecosystem Accounts). Further information: www.unstats.org/unsd.

The WA+ presentation by UNESCO-IHE emphasised how the WA+ approach can strengthen monitoring of key SDG indicators, in particular SDG 6.4 and 6.6, and that it can complement the global standard of UN SEEA-water. WA+ uses globally available data, is GIS and remote sensing based, covers hydrological units, and emphasises agriculture and ecosystems.

SEEA Water and WA+ serve different target groups. The SEEA water framework targets economic planners, and is closely linked to countries' System of National Account, which generates the economic performance indicator of Gross National Product²). Most SEEA water applications are national. The WA+ can strengthen SEEA-Water where the approach provides information on biomass production, net water consumption and generate spatially explicit data. WA+ covers blue, grey, and green water while SEEA Water applications do not cover green water (although it can be included as sub soil water). WA+ typically targets land use and agricultural development planners, and is less focused on economic planners. A case study of the Mara River Basin was provided. An earlier WA+ case study has been done in the Cubango Okavango River Basin.

Country WA reports

Countries reported on progress made on WA work, applications, challenges incurred and future activities. Botswana reported considerable progress in terms of reporting as well as institutionalisation of the accounts in government. The Department of Water Affairs (DWA) has a WA unit, which now updates and expands the accounts without external assistance. In other words, WA have become sustainable and are no longer dependent on individual projects. The following achievements are noted (Source: Mr Ogopotse Pule- WA unit, also refer to www.water.gov.bw for detailed information):

- ✓ Technical assistance by local consultant (CAR) seen as key to a strong laying foundation;
- ✓ Institutionalisation at DWA
 - Three technical water accounts reports completed: UN SEEA-Water styled accounts (2010-2015)
- ✓ Four Policy briefs for planners and decision makers on:
 - Findings of Botswana Water Accounts (Dec 2013)
 - Irrigation and Water Resources (Sept 2014)
 - Mining and Water Resources (Sept 2014)
 - Botswana's Agriculture and Water Resources (May 2015)
- Case Studies completed:
 - Botswana Meat Commission Water risk study
 - Water Resources Management Zones concept note
- ✓ Stakeholder buy-in: Water Utilities Corporation, Botswana Chamber of Mines, Statistics Botswana, Ministry of Agriculture, Ministry of Finance and Development Planning, Ministry of Land Management, Water and Sanitation Services.

Namibia reported mostly on earlier work done and current plans for updating and expanding the water accounts. Through the Biodiversity Resource Mobilisation Project, the Ministry of Environment and Tourism (MET) and GIZ have collaborated to embark on a programme for environmental-economic accounting and water accounting has been prioritised. The project has fast tracked the production of WA for 2014/15 and recommended that full accounts should be developed. The following table captures the water supply and use information for three years based on the previous accounts and the fast-tracked account of 2014/15.

² In fact, SEEA water adds water related indicators to GDP and other macro-economic indicators.

Table 1: Water supply, use and losses from primary sources of water in Namibia (MCM)

Supply, Use & Loss	1997	2001	2015
Dams+ Ephemeral rivers (installed capacity)	-100	-100	-100
Supply	83.8	96.6	103
Use	71	82.9	95
Loss	12.8	13.7	7.5
Groundwater (developed capacity)	150	150	165
Supply	112.5	121.8	130
Use	96.3	104.7	111
Loss	16.2	17.1	15
Perennial Rivers (Abstraction capacity)	-170	-170	-210
Supply	77	98	170
Use	66.2	85.9	89
Loss	10.8	12.6	12.5
Reclaimed (Recycled capacity)	-7.5	-7.5	-12.5
Supply	2.8	1.3	6.3
Use	2.3	1.2	6.2
Loss	0.5	0.1	0.1
Desalination			26
Total Supply	276.1	318.1	435.3
Total use	235.8	274.7	301.2
Total loss	39.8	43.4	35.1
Demand Total	334	334	513.5

Source: Namibia Presentation - Olimpio Nhuleipo, MET Namibia

Through the WAVES programme, Rwanda has developed physical supply and use tables as well as physical assets accounts. These are modelled within the SEEA-WA framework. Figures 1 and 2 show some of the results of the accounts.

Figure 1: Rwanda primary water use by sector (MCM; 2012)

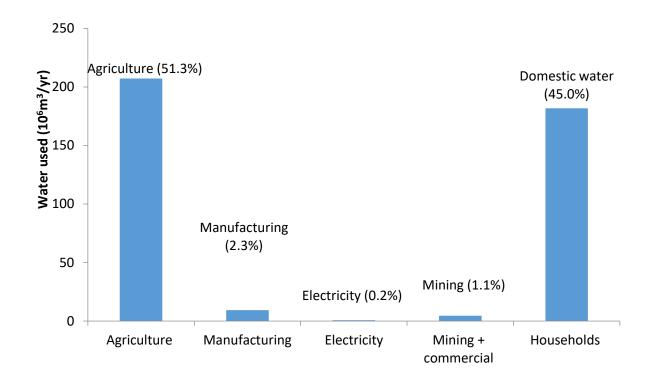


Figure 2: Physical Asset account (MCM; 2012)

МСМ		Surface water		Soil water	Groundwater	Total
	Lakes	Rivers	Artificial reservoirs			
Opening stock water resources	553,838	6,822	54,253	33,494	62,127	710,534
Additions to stock						
Returns of water	223,990		XX	xx	XX	223,990
Precipitation	27,507	321	2,550	261	2,921	33,560
Inflows from other territories		0.143	XX			0.143
Inflows from other inland water resources	XX	XX				XX
Total additions to stock	251,497	320.831	XX	261	2,921	257,550
Reductions in stock						
Abstraction of water	279,987	xx	XX	xx	XX	279,987
Evaporation and transpiration	20,686	xx	XX	xx	?	20,686
outflows to other territories	0	11	?			11
outflow to the sea	0	0	0			0
outflow to other inland water resources	xx	0	XX	xx	XX	X
Total reductions in stock	300,673	11	XX	0	0	300,684
Closing stock water resources	504,662	7,132	XX	XX	65,048	667,400

Source: Rwanda presentation

As stated above, Madagascar WA staff were unable to attend, but they submitted their presentation. A few highlights are captured below. While Madagascar (as Rwanda) has abundant water resources, the spatial distribution is uneven and government wishes to use water efficiently and sustainably. Madagascar has developed a framework for renewable stock and flow accounts and has implemented WA in two watersheds (Marovoya and Lake Alaotra).

F.1 Eau potable 0.109 AEP Ménages F.1 0.036 1.1 Fabrication, 0.055 extraction, E.1 0.912 H.1 H.1 0.20 services 0.255 0.03 Eau pour irrigation Hydro-eléctricité Réseaux E.1 E.1 Agriculture d'assainissement 14.34 H.1 Eaux de surface 5.4 et eaux 1.1 souterraines H 1 Н1 н1 0.50 0.285 0.97 H.1 Retours 1.73 E.1 0.064

Figure 3: Water flows in the economy of Madagascar (2012)

Milliards de mètres cubes annuelles (km3/an)

AEP= Approvisionnement d'eau potable. E.1, H.1, F.1, F.3, I.1 sont codes des RISE.

Figure 4: Water use by sector in Madagascar (MCM; 2012)

Use of the water	Surface water	Ground water	Total
Agriculture	10 424	3 630	14 186
Domestic use (potable)	37	93	130
Industry	81	1	82
Total	10 542	3724	15 393

Source: Madagascar presentation for session.

Lively discussions were held about the country presentations. The discussions showed that WA is in many counties 'work in progress'. There is need to be more rigorous with data and result checks (e.g. units of measurements and identical data for different years). There is also need to build strong capacity within government to construct and sustain water accounts. In the end, WA need to be fully institutionalised within government. Finally, there is need to explain and discuss the results with policy makers and implementers as well as with key stakeholders that provide data (e.g. technical working group, policy briefs and/or seminars).

WA policy programmes

SADC fully endorses development of WA in SADC countries and river basins and proposes a three-stage model for implementation and institutionalisation of water accounting in the region. This model emphasises the tools and methodologies (EAW/SEEA-WA); institutionalisation through enhanced data collection, construction of the accounts, capacity building and CoP; as well as entrenched WA practice that ensures utilisation of the accounts, that accounting is entrenched in key policy frameworks to ensure its sustainability and that a culture of WA is maintained in the region.

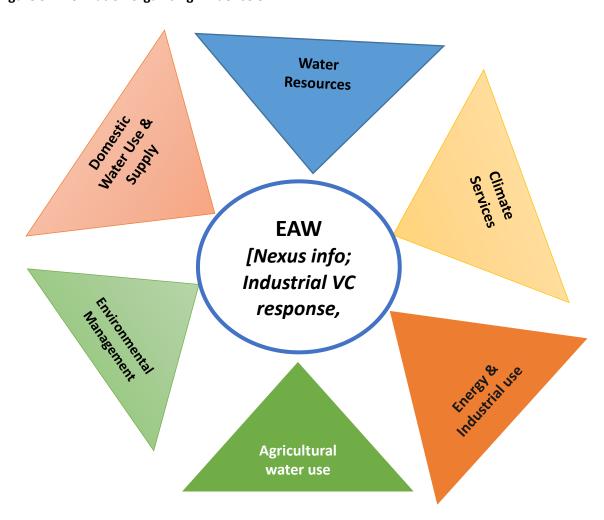


Figure 5: Information organising influence of EAW

Source: SADC presentation at session.

The AU's African Water Resources Management Priority Action Programme 2016-2025 (AWRM-PAP) has four broad key strategic goals to enhance sustainable planning, utilisation and management of water resources in the continent. Among the key interventions under the 'Water Security' focus area the establishment of economic accounting for water in Africa. This would ensure better prioritisation of water resources management in domestic economic planning and financial allocation and will also build a case for sustainable funding of the water sector especially considering sectoral productive water utilisation. Therefore, the AU views the current efforts on water accounting in SADC (and elsewhere in Africa) as a way of implementing the PAP. AMCOW (GA/10/2016/Dar/5) has called on African countries to develop SEEA WA-styled national Water Accounts, develop the required institutional infrastructure for EWA and to ensure that the results are fully integrated into economic planning, investments, and financial resource allocations.

Panel discussion

The panel discussion focused on policy applications of water accounting. Panellists were asked to comment on three questions:

- 1. How can water accounts be used in policy decision making?
- 2. What are the priorities for the accounts;
- 3. How would you link up with policy makers and other stakeholders to communicate the accounts?

The distinguished panellists represented a range of policy makers and implementers at the national, regional, and continental level:

- 1. Mr. Phera Ramoeli Head, SADC Water Division
- 2. Dr. Rasheed Mbaziira African Union
- 3. Mr. Lenka Thamae Executive Secretary, ORASECOM
- 4. Dr. Obolokile Obakeng Deputy Permanent Secretary Botswana Ministry of Minerals, Energy and Green Technology

After the panellists had presented their views on the three questions, a lively discussion with the audience ensued. The discussion concluded that WA are an important instrument for IWRM and development and should be pursued by (more) African countries. Likely WA priorities for most countries would be development of physical supply and use tables as well as stock accounts, and translating the results into policy relevant information and recommendations. Initially, monetary accounts would be limited and focus on the expenditures (capital and recurrent) and revenues of the water sector as well as subsidies. This would lead to indicators for water use efficiency by sector and assist water allocation efficiency. Water accounts can also be useful for shared river basins and at subnational level, particularly in terms of water allocations and economic benefits from water use in various sectors. Data may be more problematic and more assumptions may be required. While SEEA WA would provide most useful information for country planning, the presentation on WA+demonstrated that it can be a useful complement, also in terms of measuring progress with SDG implementation.

WA should be collective and shared responsibility of all stakeholders and that WA findings should target policy and decision makers to improve IWRM and development planning. This can, among others, be done through policy briefs and direct consultations with policy makers. Reaching out to policy makers is necessary, but may not be sufficient. It is also important to explain WA and its results to the stakeholders and the population at large, who can in turn pressurise their politicians to take the required action.

Some countries still lag behind in WA construction and support is required to facilitate this process. South-South collaboration is important in this respect. The collaboration between Botswana and Rwanda is a good example. Lack of national accounts may constrain the development of transboundary water accounts. Capacity building and continued awareness raising of WA will enhance the uptake of WA in the region. Monitoring and standardisation systems for WA should be in place and the AU's PAP offers such an opportunity. If more countries develop WA, cross country comparisons are possible and countries can learn from countries that use water more efficiently. WA also allow countries to assess their performance in time (is water increasingly used efficiently?).

Conclusions

The SEEA WA framework is the global and African standard for the development of (economic) Water Accounts (as recommended by AMCOW and SADC). While progress with WA is encouraging, WA efforts need to be strengthened in African countries using the SEEA-WA standard as per AMCOW resolution (and where possible adding and complementing with WA+). SADC, AU and GDSA have opportunities to support country and RBO efforts through RSAP4, AU PAP and GDSA implementation. WA is on-going work in most countries that needs to be more rigorously quality controlled, refined and extended in terms of years covered, type of accounts developed and WA details. There is need to link these efforts to SDGs and performance monitoring of the water sector (AU PAP).

WA needs to be properly institutionalised within government as has now been done by Botswana and Namibia. Capacity building to support institutionalisation is critical. WA is already on the professional course registry of WaterNet, and WA should become part of the WaterNet IWRM M.Sc. programme.

There is urgent need for capacity building in WA construction and integration of the results into policy making and implementation through policy briefs and direct consultations/ information sharing. WA can provide vital information for measuring progress with the SDG implementation as well as performance of the water sector in general.

The session concluded that a wider platform such as the CoP Water Accounting is necessary to influence IWRM and economic development as well as WA construction and expansion. WaterNet was identified as the most appropriate host of the CoP WA. CAR and WaterNet Secretariat were tasked to discuss how this can be best done (e.g. CoP WA Terms of Reference or concept note). It was agreed that all session participants will be added to CoP-WA list and receive this report, the presentations, and future up-dates and newsletters.

Annex 1: Programme of the session

Item	Presenters – panellists	Duration
1.Introduction of the WA session	CAR (Arntzen)	13.30 – 13.35
2. Up-date on new WA project	GDSA (Mpho)	13.35 – 14.05
developments in Africa	WA+ (Van der Zaag)	
	WAVES (Setlhogile)	
3. Results from country water accounting:	Botswana (Pule)	14.05- 15.00
Botswana, Madagascar, Namibia, Rwanda	Madagascar (not available)	
	Namibia (Mwapopi)	
	Rwanda (Pule on behalf of WAVES	
	Rwanda)	
4. Water Accounting in Regional Strategic	SADC (Mndzebele)	15.00 – 15.15
Action Plan 4		
5. AU Priority Action Plan 2016-2025 and	AU Commission (Mbaziira)	15.15 – 15.30
Water Accounting		
Tea-coffee break		15.30 – 15.45
6. Panel & plenary discussion about policy	Panellists: SADC (Ramoeli), AU	15.45 - 16.30
applications of WA in Africa	(Mbaziira), MMEWR-Botswana	
	(Obakeng) & ORASECOM (Thamae)	
8. Community of Practitioners of Water	CAR (Setlhogile) & WaterNet	16.30 – 16.35
Accounting in Africa		
8.Wrapping up & closure	GWP-SA (Takawira)	16.35 – 16.45

Annex 2: List of presentations

Arntzen, J. Session opening remarks: Development of water accounting and its policy uses in Africa.

Bastiaanssen, W. J van Opstal, T.Hessels, X. Cai, P van der Zaag, S de Vries, R. Horst, T. Kroon, M.F. Sanchez, C. Graveland, K.Baas, M.Bierkens, M. McClain & V. de Oliveira. *How WA+ can strengthen the water accounts that monitor water efficiency, water stress and the state of water-related ecosystems, key SDG indicators.*

Castaneda, J.P. WAVES Partnership: results of the first four years. (Presented by T. Setlhogile).

Mbaziira, R. Priority Action Programme (PAP) for addressing Water Resources Management and mainstreaming AMCOWs Strategic Framework on Water Security and Climate Resilient Development

Mndzebele, D. & K. Msibi. Economic Accounting for water; a Regional SADC approach.

Munyaneza, O, C. Uwera, C. Graveland, T.H. Brown, V.de Paul Kabalisa & S.E. Ahlroth. *Water Resources Accounts in Rwanda using Natural Capital Accounting Process*. (presented by O.B. Pule).

Nhuleipo, O., F. Mwapopi & V. Siteketa. Water accounting in Namibia; a historical perspective.

Reuter,K. NCA under the GDSA: an opportunity for WA development and its policy uses. (Presented by T.Mpho).

WAVES Madagascar. Water Accounting in Madagascar. (prepared but not presented)

Annex 3: Session participants

Name	Organisation	Country
Esther Mosase	South Dakota State University/BIUST	Botswana
Laurent Ahiablame	South Dakota State University	USA
Shoopala Ugulu	University of Namibia	Namibia
Olimpio Nhuleipo	Ministry of Environment and Tourism	Namibia
	Resource Mobilisation for Biodiversity	Namibia
Ferdinad Mwapopi	Protection Project	
Edson Tsiababa Selaolo	BIUST	Botswana
Mareledi Selabe	Water Utilities Corporation	Botswana
Bogere Robert	Ministry of Water	Uganda
V. Lieshout	University of Twente	Netherlands
Joanna Fatch	University of Western Cape	South Africa
Kenge James Gunya	GWPO	
Obolokile Obakeng	Ministry of Minerals, Energy and Green Technology	Botswana
Kenneth Msibi	SADC Water Division	Botswana
Rashid Mbaziir	African Union Commission	Ethiopia
Cosmo Ngongondo	University of Malawi	Malawi
Emmanuel Manzungu	University of Zimbabwe	Zimbabwe
Michael Ramaano	GWP-SA	South Africa
M. Werner	UNESCO-IHE	Netherlands
Peter Nthathakane	ORASECOM	South Africa
Jean-Marc Mwenge Kaunda	CSIR	South Africa
Kobamelo Dikgola	Department of Water Affairs	Botswana
Batlokwa Pule	Department of Water Affairs	Botswana
Banda Maswabi	DEBSWANA	Botswana
Dimpho Galegane	Department of Water Affairs	Botswana
Irene Madilola	Department of Water Affairs	Botswana
Patricia Lumba	GWP-SA	South Africa
Barbara Lopi	SADC secretariat	Botswana
Tiego Mpho	GDSA	Botswana
Lapologang Magole	WaterNet Board/University of Botswana	Botswana
Emmanuel Opong	World Vision International	
Larry Swatuk	University of waterloo	Canada
Pieter Van der Zaag	UNESCO-IHE	Netherlands
Casper Bonyongo	SASSCAL	Botswana
Mavuto Tembo	Mzuzu University	Malawi
Jean-Marie Kileshy Onema	WaterNet Secretariat	Zimbabwe
Makaru Mdemu	Ardhi University	Tanzania
Jaap Arntzen	Centre for Applied Research	Botswana
Tshepo Setlhogile	Centre for Applied Research	Botswana

Annex 4: Some examples of relevant literature and websites

I. Community of Practitioners of Water Accounting in Africa (CoP WAA)

- a. Summary of WA session at 2015 WaterNet Symposium in Mauritius
- b. Newsletter 1 (April 2016).
- c. Documents available from CAR (soon on its website: www.car.org.bw)

II. SEEA documents (www.unstats.org/unsd)

- a. UN (2012). System of Environmental Economic Accounting: Central Framework. Department of Economic & Social Affairs, Statistics Division.
- b. UN (2012). System of Environmental Economic Accounting for Water. Department of Economic & Social Affairs, Statistics Division.
- c. UNSD (2014). Guidelines for the compilation of water accounts and statistics (draft).

III. SADC (www.sadc.int)

SADC (2016). 4th Regional Strategic Action Plan on Integrated Water Resources Development and Management (2016 – 2020)

IV. AU

UNEP/ DHI (2016). Establishment of a Monitoring and Reporting System for the Water Sector in Africa.

V. FAO (<u>www.fao.org</u>)

- a. Batchelor, C, J. Hoogeveen, J. M Faures and L. Peiser (216). Water accounting and auditing a source book
- b. Arntzen, J., J. Hoogeveen & L.Peiser (2014). Synthesis report: water audit of the Cubango Okavango River Basin. FAO .

VI. WA+

- a. FAO (2015). Water accounting through Remote Sensing (WA+) in Helmand River Basin.
- b. Water Watch (2010). WA+ in the Cubango Okavango River Basin. FAO report.
- c. Molden, D (1997). Accounting for water use and productivity. SWIM Paper 1. Colombo, Sri Lanka: International Irrigation Management Institute.

VII. Water audits

a. Batchelor, C, J.Hoogeveen, JM Faures & L. Peiser (2016). Water Accounting and water Auditing: a source book. FAO Water Reports 43.

VIII. GDSA (www.gaboronedeclaration.com)

The Gaborone Declaration of the summit for Sustainability in Africa.

IX. Country water accounts

Botswana WA reports and policy briefs are available on www.water.gov.bw. WA reports are also available on www.wavespartnership.org.