WAVES
Country Report
Botswana
June 2015

Wealth Accounting and Valuation of Ecosystem Services (WAVES)

Botswana Country Report 2015

WAVES

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Wealth Accounting and the
Valuation of Ecosystem Services

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WAVES – Global Partnership for Wealth Accounting and Valuation of Ecosystem Services

Wealth Accounting and Valuation of Ecosystem Services (WAVES) is a global partnership led by the World Bank that aims to promote sustainable development by mainstreaming natural capital in development planning and national economic accounting systems, based on the System of Environmental-Economic Accounting (SEEA). The WAVES global partnership (www.wavespartnership.org) brings together a broad coalition of governments, UN agencies, nongovernment organizations and academics for this purpose. WAVES core implementing countries include developing countries—Botswana, Colombia, Costa Rica, Guatemala, Indonesia, Madagascar, the Philippines and Rwanda—all working to establish natural capital accounts. WAVES also partners with UN agencies—UNEP, UNDP, and the UN Statistical Commission—that are helping to implement natural capital accounting. WAVES is funded by a multi-donor trust fund and is overseen by a steering committee. WAVES donors include—Denmark, the European Commission, France, Germany, Japan, The Netherlands, Norway, Switzerland, and the United Kingdom.

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1| WAVES in Botswana

1.1| Background

The overall goal of the Global Partnership for Wealth Accounting and Valuation of Ecosystem Services (WAVES) is to support partner countries to achieve sustainable development by systematically integrating natural capital into development plans and national accounts systems. The global WAVES partnership is led by the World Bank in partnership with UN agencies, other developed and developing countries, academics, NGOs and other partners.

The Government of Botswana has indicated a strong commitment to the WAVES Partnership. The Botswana Steering Committee for WAVES was established in 2012 and is chaired by the Deputy Secretary Macroeconomic Policy of the Ministry of Finance and Development Planning (MFDP). The Steering Committee has now met four times to guide and oversee the work plan and to provide overall policy direction in the implementation of the Botswana WAVES project. WAVES continues to feature in key national development and sustainable development platforms, with the expectation that the next cycle of National Development Planning (NDP 11) will be informed by the results from WAVES, and by the water and minerals accounting activities in particular.

> *"...Government also remains committed to ensuring that the Gaborone Declaration for Sustainability in Africa bears fruit. To this end we are undertaking an exercise to value the contribution of different streams of natural capital to GDP. In addition to our water and minerals, we wish to assess the values of other resource based economic activities such as pastoral agriculture, tourism, and land management so as to ensure that our measure of the national wealth is inclusive. In this regard the findings of the Wealth Accounting and Valuation of Ecosystem Services (WAVES) project will be used to reform our accounting systems..."*
>
> **State of the Nation Address by the President of Botswana, His Excellency Lt. Gen. Seretse Khama Ian Khama (November 2014)**

1.2| Recent Developments

Water, mineral and energy accounts: The water accounts under Phase 2 of the WAVES partnership have recently been updated following guidance from the Botswana Economic Advisory Council (BEAC) in May 2012. Mineral accounts are also being updated to cover monetary aspects and planning is now underway for the preparation of energy accounts. As part of this process, the energy sector has decided to prioritize electricity and coal, and during NDP 11 work will unfold to include transport fuels.

Links to National Development Planning: In order to respond to high level government aspirations to adopt natural capital accounting, links have been established with the National Development Planning process. To this end, a brief was developed to infuse NCA into the NDP 11 Policy Keynote Paper in August and subsequently into the Macro-Economic Outline in October 2014, which provides guidance on the key elements to consider when sectors formulate their projects for NDP 11. Recently, the NDP process was halted to complete the National Vision beyond 2016, an equally important framework that WAVES-Botswana is working with to incorporate NCA objectives.

Coordination: To strengthen the coordination of WAVES-Botswana, a new Country Coordinator was recruited in July 2014, based at the Ministry of Finance and Development Planning (MFDP). For its part, the MFDP recruited a Chief Economist in September 2014, who is a counterpart to the WAVES Coordinator. In addition, an Assistant Economist (former WAVES intern) has been assimilated into the Macro-economic Policy section in March 2015 to serve within the WAVES secretariat.

Communications: Given the need to integrate NCA into development planning, communication has been identified as an integral part of the process and a communications officer was recruited to work with the WAVES Coordinator in disseminating key messages to all government and public sector entities. A communications strategy was developed with the support of the IIED and already a number of media (radio, Botswana TV and newspapers) slots and articles have been utilised since December 2014 to communicate WAVES messages.

Capacity-building: WAVES Botswana has benefitted from capacity building initiatives by expertise mobilized by the World Bank, where minerals, water and energy accounting teams have been introduced to concepts, SEEA methodologies and policy applications as part of NCA work. The ecosystem team also participated at the first ecosystem accounting training held in Manila, Philippines in February 2015.

2| Macro-economic and Environmental Context in Botswana

Economic growth: Between Independence in 1966 and the mid-1990s, Botswana was the fastest-growing economy in the world, with average annual GDP growth rates of over 10%. This prolonged growth took Botswana from being one of the poorest countries in the world in 1966 to middle-income status by the 1990s, with *per capita* income now around US$7,600.

Natural capital: Different forms of natural capital, but particularly diamond resources, have played a key role in Botswana's development. Initial estimates suggest that natural capital currently accounts for around 31% of Botswana's total wealth (dominated by minerals). Protected areas, including a unique ecosystem that was recently designated as a World Heritage Site (Okavango Delta) and the Makgadikgadi wetlands, form the basis of a valuable eco-tourism industry, and tourism was targeted as a sector for growth and diversification in Botswana's 10th National Development Plan (NDP10). Agriculture and rangelands are less important commercially, but provide livelihoods for a large number of the predominantly poor, rural population.

Diamond mining: Rapid economic growth has been built upon the foundation of the diamond mining industry, with Botswana now being the largest producer of diamonds by value in the world and a large share of the revenues accruing to government, which is a partner with De Beers in mining operations. Diamond mining is the largest single contributor to gross domestic product (GDP), and the mining sector as a whole accounts for 31% of economic output.

The government sector: The government is the second largest sector of the economy, after mining, and is the largest single employer. Government, however, depends on the mining sector for a large (though declining) proportion of its revenue. Other important (large or fast-growing) sectors include trade and tourism, transport and communications, finance and business services.

Job creation: Despite its outstanding record of economic growth, Botswana has been less successful at creating jobs. The rate of job creation, especially in the formal sector, has generally

lagged behind the economic growth rate and new entries into the labour market. The 2013 unemployment rate was 20%[1]. The poverty rate, while high for a middle-income country, shows signs of improvement, but is still high. In 2002/3 the headcount poverty rate was 31%, while by 2009/10 this had fallen to 19%.

Economic diversification: The government of Botswana has always been keenly aware that in the long term it must use revenues from diamonds, a non-renewable resource, to diversify the economy. In recent years, the need for economic diversification to develop new sources of economic growth has become acute. The overarching development objectives, highlighted in both the long-term Vision 2016 strategy, and in the medium term NDP10, stress economic diversification, job creation and poverty eradication.

Several natural-capital based sectors have been targeted for a major role in achieving growth with diversification:

- diamond beneficiation; the global headquarters of the Diamond Trading Company has relocated from London to Gaborone, and a number of diamond cutting and polishing operations have been established;
- new mining activities, especially development of Botswana's vast coal reserves to alleviate regional energy shortages as well as for possible export;
- expanded ecotourism with an emphasis on greater participation by local communities and benefits to the Botswana economy;
- expanding commercial agriculture through irrigation;
- more efficient use of scarce water resources, which underpin all economic activities;
- more efficient use of energy resources, especially electricity, with an assessment of the roles of coal and renewables.

Optimizing use of Botswana's natural capital: This is key to achieving its long-term development objectives. Vision 2016 states:

> *"The natural resources of Botswana are one of its greatest assets. The strategy for protecting these resources must be based upon sound domestically based research. This should include the extent of mineral and water resources, the possible implications of increases in manufacturing, urbanization, tourist volumes or long-term changes in climate, and the effect of the use of water resources both within Botswana and in neighbouring countries…The results of the research must then be translated into effective measures that will protect the resource base and environment in a sustainable way so that they can be enjoyed by the citizens of the future"* (p46).

Minerals and Energy: In addition to diamonds, Botswana possesses other mineral deposits, particularly coal. Several plans have been developed to mine more coal for generation of electricity, alleviating acute shortages[2] in the southern African region, and possibly for export. Mining coal for export would require vast investments in new regional rail lines and expanded port facilities-investments that would take decades to recoup. Furthermore, coal requires large amounts of water to utilize and it is not clear that sufficient water resources are available, or that the best use of this scarce resource is for large-scale coal mining.

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[1] Results of the Botswana AIDS Impact Survey, 2013 (Statistics Botswana, 2014).

[2] Electricity supply constraints have led to frequent power outages and load shedding in 2013–14, and have necessitated permanent use of high cost diesel power plants, meant for meeting peak power demand.

Water Resources: Water resources are very limited and are expected to constrain future economic growth if not used efficiently. The country currently faces acute water shortages in south eastern Botswana and its capital Gaborone, which have led to severe water restrictions and supply interruptions. In Botswana rainfall is low, highly erratic and unevenly distributed. Surface and ground water resources are scarce. Three new dams have been constructed but further new large supply schemes are linked to international rivers and utilisation is subject to agreements with other riparian countries, where demand for water is also increasing fast. Climate change is expected to exacerbate the situation, leading to more droughts (and floods), increased stress on water resources and reduced primary land productivity. Integrated water resource management and careful assessment of trade-offs are critical for future economic development.

Land and Ecosystems: Botswana's rural land is used for agriculture (both subsistence and commercial) or under some form of protection and management for wildlife conservation, which supports an important and growing tourism industry and some subsistence use. Botswana has rich and varied ecosystems that support large populations of wildlife and form the backbone of the rapidly growing tourism industry. Protected areas designated for wildlife and biodiversity conservation constitute 19% or the land area and wildlife management areas (sustainable use and conservation) another 17%. No clear figures are available for the contribution of tourism to the economy, but two recent estimates give a range of 3–4% for direct contribution and roughly double that for total impact.

The agricultural potential of land is generally low due to semi-arid conditions and low soil fertility. Given both soil and water constraints, land is mainly utilized for livestock production; and crops can only be grown commercially under irrigation. Agricultural land, particularly in communal areas, is generally underutilised due to lack of investments and low input production strategies. Unfortunately, large areas of land have been subject to environmental degradation.

3| Policy Priorities and Work Plan in WAVES Implementation

Optimizing natural resource use: This is key to achieving growth with diversification and poverty reduction, but the necessary economic information to transform these strategies into effective policies, investments, and other actions is often incomplete or missing. WAVES aims to provide technical support for environmental accounting in order to fill that information gap and improve economic decision-making in two ways:

- Supporting a new way of assessing economic growth—beyond GDP—that takes Natural Capital into account in order to better assess prospects for long term development.
- Compiling information that can be integrated with the national accounts to optimize use of Botswana's Natural Capital in the following four priority sectors: water, minerals, energy, land/ ecosystems & tourism.

The policy objectives of WAVES Botswana are summarised below and a more detailed work plan is given in the subsequent table. The lead agencies and policy inputs are also included in that table. As indicated above, Government prioritised water accounts (component 3) for the first year of the Implementation of WAVES Botswana, and other components were only started after that.

Component 1. Water Accounts: Managing scarce water resources to support long term growth, diversification and poverty eradication

Information to support implementation of the National Water Master Plan and associated water sector reforms, the National Master Plan for Wastewater and Sanitation and the IWRM plan; inform NDP 11 and Vision 2016/2030

Component 2 – Minerals and Energy Accounts: Supporting Economic Growth and Diversification

Mineral and energy asset accounts generate information that contributes to policy dialogue on rent recovery, distribution and investment, and to provide the appropriate basis for long-term investment decisions, especially with regard to energy sources. Information on energy use and supply accounts supports decisions regarding the optimal energy path for Botswana.

Component 3 – Macro-economic indicators: Is Botswana on a growth path that is sustainable in the long-term?

New macro-economic indicators that integrate natural resource values and that are complementary to existing macroeconomic indicators are developed to monitor sustainable development. Examples include Adjusted Net National Income (ANNI), Adjusted Net Savings (ANS) and Comprehensive Wealth.

Component 4 – Land/Ecosystem/Tourism Accounts: Balancing competing uses of ecosystem to optimize growth, job creation and poverty eradication.

About 40% of Botswana's land area is under some form of protection or management, and four major systems account for much of this: the Okavango Delta, Makgadikgadi Pan, Chobe area and the Kalahari. Land/Ecosystem accounting provides the value of ecosystem services to support optimal management of different land use zones (e.g. Protected Areas, Wildlife management Areas, communal areas, Forest areas, agricultural). The work will start in 4 major areas under protection and will scale up to land use in the rest of the country.

Tourism is a major component of the economic value generated and has been targeted as a sector to lead growth and diversification. Linking tourism and ecosystem accounts will help address the balance among competing users and identify strategies to increase benefits from tourism that accrue to local communities.

4| WAVES Activities (May 2013–April 2014)

WAVES has carried out substantial work on water accounts, mineral accounts and fiscal policy indicators, has carried out a scoping study for energy flow accounts, and has begun planning for land/ecosystem/tourism accounts. The work is summarized below. Technical reports and policy briefs for i) water accounts, ii) mineral accounts and fiscal policy indicators, and iii) the scoping report for energy accounts have been published and are available. These reports provide detailed results, policy recommendations and, in the case of water accounts, a roadmap for the next phase of the work.

4.1| Water Accounts

The Technical Report on Water Accounts now includes a time series of use of water by industry from 1993–2012; stock accounts for surface water stored in dams; analysis of water productivity and water allocation; preliminary monetary accounts and economic analysis of the allocation of

Table 1. Work Plan for WAVES in Botswana

Timeframe	Activities
Component 1 – Water Accounts: Managing scarce water resources to support long term growth, diversification and poverty eradication *Construct Water Accounts to support full integration of water resource management concerns in development planning* *Contribute to National Water Master Plan Review implementation, National Water Tariff discussion, IWRM Strategy implementation, Water sector reforms, Midterm review of NDP10, NDP11 process, and Vision 2016/2030* *Lead Agency: Dept of Water Affairs (MMEWR) chairs Technical Working Group that includes Water Utilities Corporation, Statistics Botswana, Department of Mines, Ministry of Agriculture, Dept of Geological Survey, Ministry of Lands and Housing, and others as needed*	
Year 1: 2012/13	Phase 1: i) Develop a Water Accounts framework based on the SEEAW and water sector reforms and ii) Update the water use accounts for 2010/2011 for BEAC and link to water accounts compiled under earlier Natural Resource Accounting Programme to create a time series of water use accounts
Years 2 & 3: 2013/14–2014/15	Phase 2: i) Update water accounts for 2011/2012; ii) construct stock accounts for surface water; iii) identify policy needs of DWA and how water accounts supports other units of DWA notably IWRM unit and International Rivers unit; and iv) scope out issues for spatial disaggregation of water accounts Provide initial policy briefs on trends for water use and resources; policy options for dealing with water scarcity Phase 3: i) update accounts and create the institutions for continuous updating of the accounts in the new Water Accounting Unit of DWA; ii) construct monetary accounts; iii) construct spatially disaggregated accounts; iv) construct framework for accounts for recycling and reuse of water (likely to become more important in the future; v) case studies of important sectoral use and options for more efficient water us in irrigation and mining Policy analysis and briefs on national, subnational and sectoral water issues for input to Sector Reform, National Water Master Plan Review, NDP 11, IWRM, and other policy initiatives
Year 4+: 2015/6+	Phase 3 continues with policy analysis, monetary valuation of water accounts, and construction of accounts for wastewater/recycling of water
Component 2 – Minerals and Energy Accounts: Supporting Economic Growth and Diversification *Construct mineral accounts to ensure comprehensive inputs to macro-economic indicators. Construct energy accounts to assess optimal energy mix for Botswana. What is the best use of Botswana's coal-is it a strategy for diversification? Renewable energy policy contributes to Midterm Review of NDP 10, NDP11, and Vision 2016/2030, energy strategy, Coal Roadmap, and others.* *Lead agency: MFDP chairs Technical Working Group Mineral Accounts and Macroeconomic (uses existing MFDP Working Group on Macroeconomic Forecasting) with members from MFDP, Statistics Botswana, Bank of Botswana, Ministry of Minerals Energy and Water Resources, University of Botswana, BIDPA and others as needed* *Note: A combined TWG is used for both the Macroeconomic Accounts and the Mineral Accounts, given their close relationship. This TWG makes use of an existing TWG established by MFDP for Macroeconomic Policy and Forecasting, adding WAVES to the scope of that Group's responsibilities.*	

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Table 1. Work Plan for WAVES in Botswana *(continued)*

Timeframe	Activities
Year 1: 2012/13	No work started, as Water accounts were prioritized in this year
Years 2 & 3: 2013/14–2014/15	Phase 1: Preliminary mineral accounts constructed using readily available data and linking to mineral accounts compiled under the Natural Resource Accounting program in the 1990s and early 2000s, to create a time series from 1980. Phase 2: More accurate and comprehensive mineral accounts including full range of mineral based on i) data collection and compilation of accounts for produced capital; and ii) addressing methodological issues arising from the Phase 1 accounts, such as long term pricing, discount rates, treatment of new discoveries and environmental issues. Policy analysis of mineral and energy asset accounts
Year 4+: 2015/6+	UNDER CONSIDERATION BY STEERING COMMITTEE: Energy flow accounts (supply and use) constructed Case studies of several large companies to determine the impact on the costs and competitiveness of these companies of unreliable grid electricity Policy analysis of alternative energy strategies and the cost-effectiveness of renewable energy, energy conservation incentives
Component 3 – Macro-economic indicators: Is Botswana on a growth path that is sustainable, is growth really long-term growth? *Construct indicators "Beyond GDP"— Adjusted Net National Income (ANNI), Adjusted Net Savings (ANS), Comprehensive Wealth* *Contributes to Midterm Review of NDP 10, NDP11, and Vision 2016/2030.* *Lead agency: MFDP chairs Technical Working Group Mineral Accounts and Macroeconomic with members from MFDP, Statistics Botswana, Bank of Botswana, Ministry of Minerals Energy and Water Resources, University of Botswana, BIDPA and others as needed* *Note: A combined TWG is used for both the Macroeconomic Accounts and the Mineral Accounts, given their close relationship. This TWG makes use of an existing TWG established by MFDP for Macroeconomic Policy and Forecasting, adding WAVES to the scope of that Group's responsibilities.*	
Year 1: 2012/13	No work started, as Water accounts were prioritized in this year
Years 2 & 3: 2013/14–2014/15	Phase 1: Preliminary estimates of wealth based on available data, including preliminary mineral accounts (Component 2) and linking to wealth accounts compiled under the Natural Resource Accounting program in the 1990s and early 2000s, to create a time series from 1980. Phase 2: Improvement of macro-economic indicators as more accurate and comprehensive data become available on mineral accounts and a time series for produced capital is developed Policy analyses of key issues such as i) options for the use of mineral revenues and an appropriate fiscal rule for such revenues; and ii) sustainability of the economy and prospects for maintaining long term growth

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Table 1. Work Plan for WAVES in Botswana *(continued)*

Timeframe	Activities
Year 4+: 2015/16+	Phase 3: Further improvement of wealth and macro-economic indicators to include asset accounts for land and ecosystems as they become available from those work components. Institutionalization of reporting on macroeconomic indicators in MFDP
Component 4 – Ecosystem/land/tourism accounts—optimizing management of land and ecosystems to contribute to long term growth, diversification and poverty alleviation *Contribution to NDP11, Vision 2016/2030, monitoring and management plans for 4 specific ecosystem sites (Okavango, Makgadikgadi Pans, Chobe, Kalahari) poverty eradication efforts, tourism & agricultural diversification & growth* *Lead Agency: Dept of Environmental Affairs (MEWT) and Ministry of Lands & Housing co-chair the Land/ Ecosystem Technical Working Group that includes MEWT, MLH, MFDP, Statistics Botswana, Ministry of Agriculture, Bank of Botswana, Botswana Tourism Organisation, Kalahari Conservation Society, Univ of Botswana, and others as needed* *Note: This TWG works closely with a Working Group on Tourism Statistics already established by the govt of Botswana (chaired by the Dept of Tourism, MEWT) because of the close linkages between Ecosystems and Tourism in Botswana.*	
Year 1: 2012/13	No work started, as Water accounts were prioritized in this year
Years 2 & 3: 2013/14–2014/15	No work started in 2013/2014 due to lack of updated Tourist arrival statistics, and turnover of key staff 2014/2015: Scoping study for land/Ecosystem/Tourism accounts to develop detailed workplan and identify roles and responsibilities of different agencies Design framework for comprehensive land and ecosystem accounting in Botswana Provide initial ecosystem accounts and gaps analysis for 2 of the 4 major ecosystem sites (Okavango Delta and Makgadikgadi Pans) based on previous studies and existing data Review previous tourism satellite accounts and design framework for expanded tourism surveys
Year 4+: 2015/6+	Update data for ecosystem accounts for Okavango Delta and Makgadikgadi Pan Design input to BioChobe study for economic valuation and ecosystem accounting and carry out valuation of ecosystem services in the Chobe area Apply ecosystem accounting to Kalahari ecosystem National tourism surveys—contribute to ongoing surveys and conduct supplementary WAVES survey (tourist expenditures and tourist enterprises Develop method to scale up from the case studies comprehensive, national land and ecosystem accounts, biophysical and monetary (incorporating values from ecosystem studies and additional land)

water by sector. A policy brief and flyer that summarizes the main results was prepared and disseminated in March 2014 at the annual Water 'Pitso' a large, 2-day multi-stakeholder workshop on water issues.

A critical achievement of the work on water over the past year and a half is the agreement on a roadmap for water accounting in Botswana, which is described in the technical report on water accounting.

Activities in the Past Year

a. Presentations:
   - Presentation of framework for wastewater incorporation and policy indicators to senior DWA management (June 2014)
   - Presentation of results of training needs assessment and training programme to senior DWA management (June 2014)
   - Presentation of water accounts to macro-economic unit of MFDP in October 2014
   - Breakfast meeting for senior Government Officials of relevant WAVES Ministries (March 2015);
   - Up-date on Water Accounts at Water 'Pitso' (workshop), March 2015

b. Account development:
   - Preparation of survey among irrigation farmers (survey will be carried out by DWA and Ministry of Agriculture in period May–June 2015)
   - Templates for direct data collection from mining enterprises and water service providers;
   - Development of monetary aspects of water accounts ongoing;
   - Development of framework for wastewater coverage completed;
   - Development of policy indicators based on water accounts;
   - Updated Water Accounts using the 2013/14 data (draft report in place).

c. Policy briefs:
   - Development and Finalisation of two policy briefs on water and mining (published through WAVES) and water and irrigation (published through DWA);
   - Draft Policy Brief on Water and Agriculture is in place awaiting approval by end of April)

d. Water accounting enterprise level pilot study:
   - Development of work plan for enterprise level pilot project. This is ready for implementation from May onwards. BMC and others have been selected for an Enterprise Pilot Study on how water interruptions affect business. This study will commence in May 2015.

e. Institutionalisation:
   - Meetings with the Water Accounting Working Group led by the Deputy Permanent Secretary, MMEWR
   - Establishment of the interim Water Accounting Unit within the Department of Water Affairs. The proposed unit is part of the proposed new DWA structure has been submitted for approval to the Directorate of Public Service Management. Formalisation of the unit is part of the approval of the overall re-organisation plan of DWA and MEWT.
   - Operational technical working groups for irrigation, water reservoirs and water service providers established.

f. Capacity building:

- Based on a training needs assessment, the Centre for Applied Research (CAR) developed a training programme (together with Dr.Mmopelwa, UB), which was discussed and finalised with DWA (along with the WA policy indicators). As the scoping studies for energy and ecosystem accounting showed that training was also needed in these areas, the training programme was broadened to include all NCAs for Botswana and to develop a short course training programme at the University of Botswana under a Memorandum of Understanding with the Ministry of Finance & Development Planning. Course preparation will start once the agreement between MFDP and UB is finalized
- Regular in-house project training in water accounting by CAR linked to the updating of the water accounts
- Training workshop of TWG members and DWA staff in March 2015 with Steven May (ASB) and Centre for Applied Research

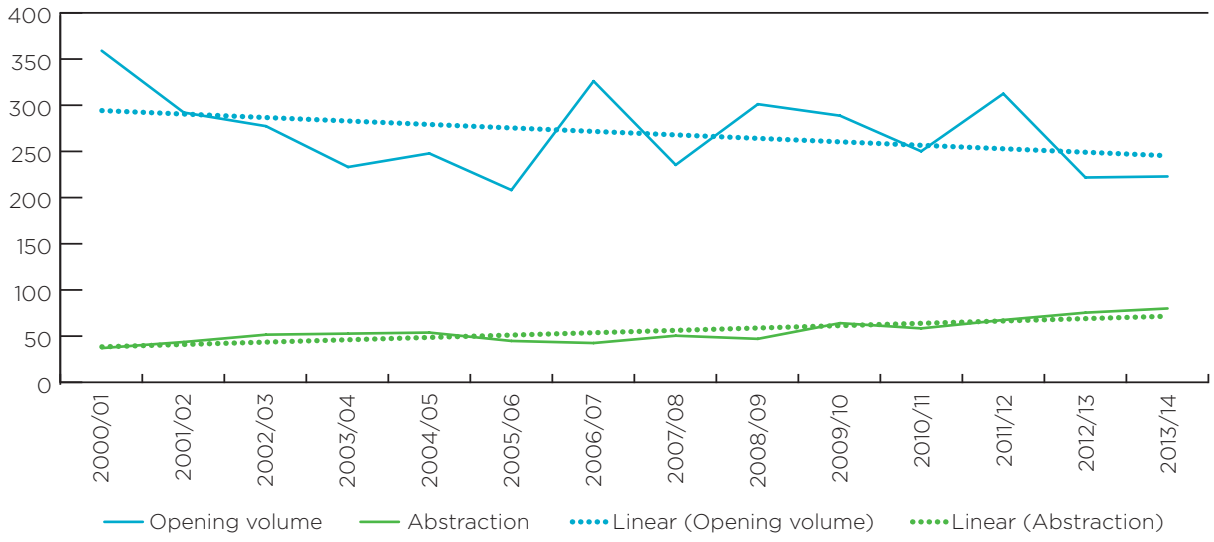
Highlights of Results from Water Accounting

The water accounts include physical water supply and use accounts, and stock accounts for large reservoirs. A few highlights are presented here (detailed results can be found in the two WA reports):

Stock accounts (Figure 1):

- The opening stocks show a decreasing trend since 2000 while abstraction has increased. There is therefore more pressure on existing dams and abstraction now exceeds safe yields. Construction of new dams was a wise move but the main bottleneck is now the inadequate capacity of the north south carrier scheme.
- *Water resources availability*. Safe yields of reservoirs (96L/p/day) are well below per capita water use (267 L/p/day); there will be growing reliance on transboundary water resources, whose abstraction is subject to the SADC Protocol on Shared Water Courses

Figure 1. Trend in Reservoir Stock and Abstraction (2000/01–2013/14; Mm^3)



Note: this excludes Ntimbale. Thune Lotsane and Dikgatlhong dams (new dams).

- *Water abstraction and use*. Groundwater remains the largest source of water country-wide, but its share is decreasing; mines and livestock and rural settlements depend on groundwater; Abstraction for own use exceeds the abstraction by water service providers
- *Water use productivity*: Economy-wide, Botswana Pula 0.37 of value added is created per 1000 m^3 although this varies enormously by sector
- *Water losses:* In 2010–12, water losses are just over 25%

Water abstraction and consumption:

- The water service supply sector is the largest water abstracting sector followed by agriculture and mining (agriculture and mining mostly provide their own water)
- Agriculture, mining and households are the largest water consumers

Botswana's water accounting efforts date back to the 1990s. The combination of earlier work with the current water accounting offers opportunities to identify long term water trends. Water abstraction has increased, but not as fast as population, so per capita water use has slightly declined (by about 12%). Abstraction has stagnated since 2008, probably as a result of supply challenges associated with the implementation of the water sector reforms programme and the drought in south eastern Botswana.

In terms of water resources, groundwater is the most important source of water, but its share has been decreasing in time from over 60 % to just over 50%. Reservoirs have become more important and now account for just over 40% of water abstraction. This figure is likely to rise further once the new reservoirs are fully incorporated in the water infrastructure network.

An example of water use indicators is shown in Table 2.

Cost and revenue indicators show that water service provision is dependent on public funds: roughly a quarter of the O&M expenditures and all capital expenditures.

Figure 2. 2013/14 Water Abstraction and Consumption across Economic Sectors

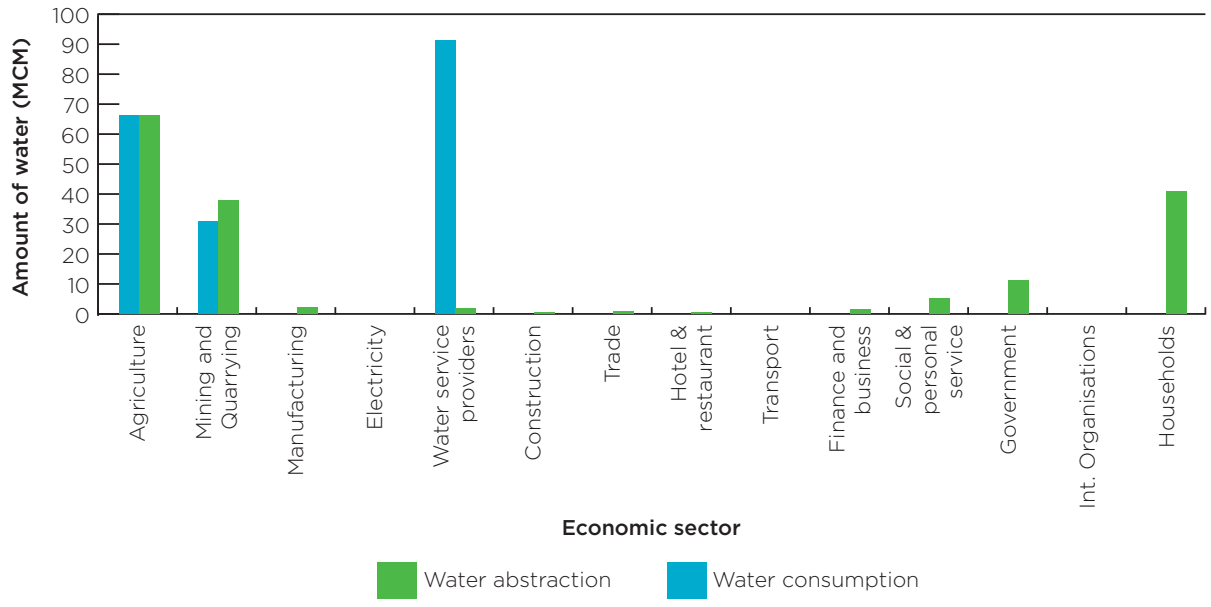


Figure 3. Trend in Water Abstraction (Mm^3)

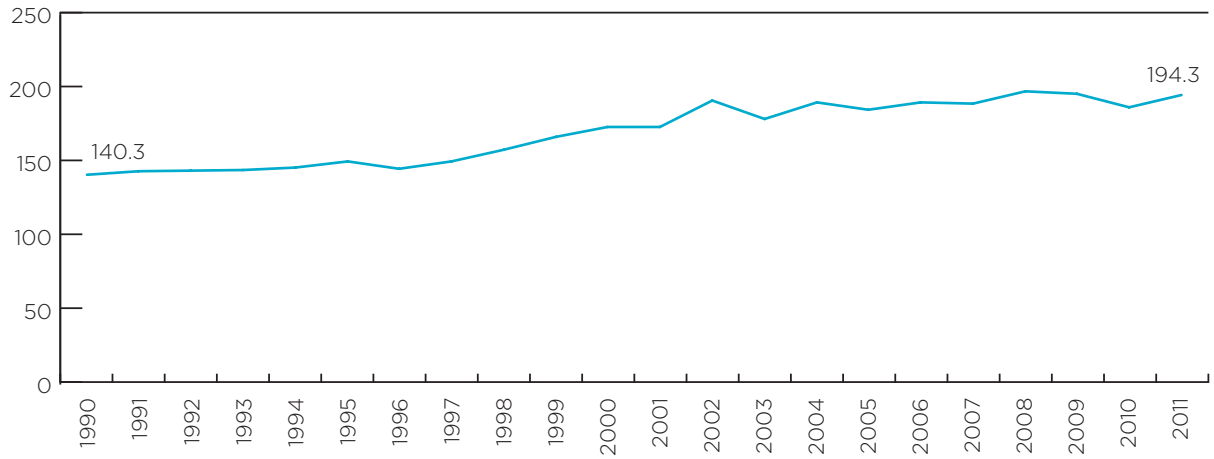
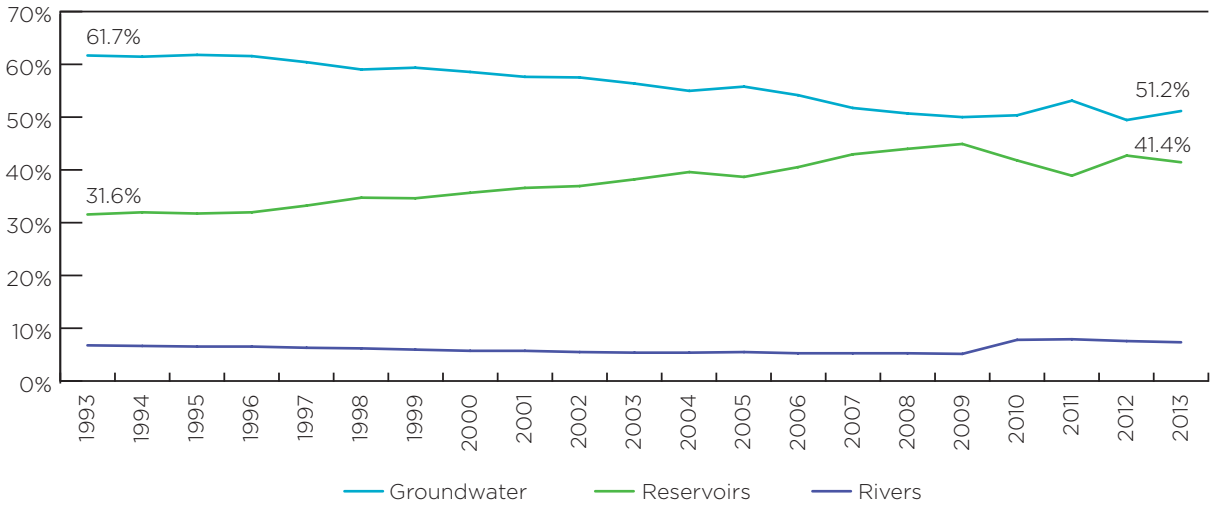


Figure 4. Trend in Water Abstraction by Water Sources (as % of total)



Water abstraction and consumption growth remain behind population and economic growth due to higher water use efficiency and possibly supply constraints. The trend in value added/m^3 is shown in Figure 5.

Figure 5. Trend in Value Added/ m^3 of Water (constant 2006 BWP)

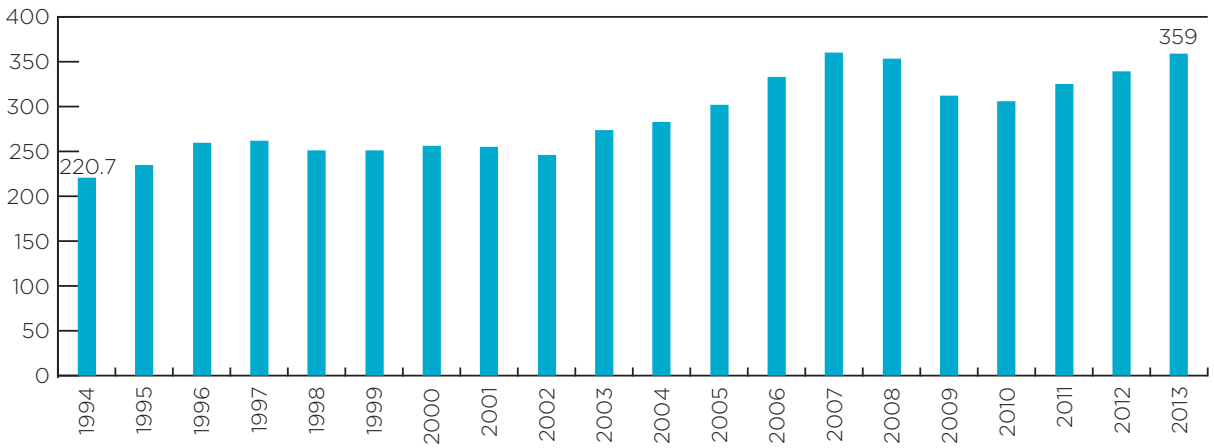


Table 2. Water Use Indicators

			2010/11	2011/12	2012/13	2013/14
Total water abstraction		**Mm³**	197.2	194.4	194.1	194.4
Abstraction for own use		Mm³	99.5	103.4	91.5	94.9
Abstraction for distribution		Mm³	97.7	91	102.6	99.5
Imported water		Mm³	7.3	7.2	7.7	6.5
Abstraction by source:						
	Groundwater	Mm³	99.3	103.4	95.9	99.6
	Reservoirs	Mm³	82.5	75.6	83.4	80.6
	Rivers	Mm³	15.4	15.4	14.6	14.3
Total water consumption			172.5	171.6	178.3	169.8
Households		Mm³	37.2	38	37.9	40.8
Government		Mm³	15.7	11.5	16.1	11.3
Agriculture		Mm³	74.6	74.6	66.2	66.2
Mining		Mm³	32.4	34.6	40.8	38
Other prod. sectors		Mm³	12.6	12.8	17.3	13.5
Per capita:						
Abstraction		L/p/d	271.9	263.0	257.7	253.3
Consumption		L/p/d	237.9	232.1	236.7	221.3
Household water consumption		L/p/d	51.3	51.4	50.3	53.2

4.2| Mineral Accounts

Over the past year, the work component on mineral accounts and macroeconomic policy has continued. The work carried out in the first phase of the project has been developed considerably, as follows:

- Mineral rent calculations have been extended from the three main minerals initially considered (diamonds, copper-nickel and coal) to include soda ash and coal
- Rent figures have been used to calculate asset values (in situ) for the five minerals
- The quality of the calculations has been improved through the use of more up to date information on physical stocks and reserves

Table 3. Indicators for Water Costs and Revenues in the Public Sector (BWP)

		2010/11	2011/12	2012/13	2013/14
O&M expenditures	O&M/m^3 abstracted	9.54	12.83	11.99	12.37
	O&M/m^3 sold	12.47	19.09	15.12	15.58
Revenues	Revenues/m^3 abstracted	7.36	6.09	8.02	9.72
	Revenues/m^3 sold	9.63	9.04	10.11	12.24
% O&M cost recovery		77.1%	47.5%	66.9%	78.6%
Non revenue water	NRW as % of abstraction	23.6%	32.8%	20.7%	20.6%
Capital expenditures of the public sector	BWP million	600.1	818.7	1,336.0	1,236.8

- Considerable work was carried out on developing data series on capital stock, investment and depreciation. This provided an input into the calculation of mineral rents with improved information on fixed assets used in mining

Presentations and Training:

- Technical training workshop on mineral accounts for staff of MMEWR, MFDP, Statistics Botswana (members of the Technical Working Group), December 2014.
- Presentation on mineral accounts to high-level breakfast meeting on wealth accounting, February 2015
- Follow up training workshop on mineral accounts to members of the Technical Working Group, February 2015

Macroeconomic and Public Finance Indicators and Analysis

Considerable progress has been made in developing macroeconomic indicators over the past year. Specific initiatives include the following:

- Development of data series for investment (GFCF), depreciation, and capital stock for a variety of asset types (residential buildings, non-residential buildings, construction works, machinery and equipment, and transport equipment), for the economy as a whole, for the mining sector and key sub-sectors (diamonds, copper-nickel).
- Results for produced capital, mineral assets and financial assets & liabilities have been used to produce a national balance sheet series from 1994 to 2013, illustrating trends in national wealth
- Results for mineral depletion, depreciation of produced capital and education expenditure have been combined with the available GDP series to generated results for Adjusted Net Savings (Genuine Savings).

Presentations and training:

- A presentation on the national balance sheet calculation and results was made to technical staff from MFDP, MMEWR and Statistics Botswana in February 2015.

4.3| Highlights of Results from the Mineral Accounts and Macroeconomic Policy Report

The updated calculations of mineral rent confirmed that diamonds account for the large majority of rents. Furthermore, the combination of prices and costs of production for copper-nickel and coal mean that rents for those minerals have been negative in recent years, resulting in zero valuations for the unmined stocks (on the basis of the simplifying assumption that costs and prices will remain unchanged into the future).

Resource rent – by mineral (in real terms)

Annual mineral extraction has generally increased but sharply declined, especially for diamonds, during the 2008 global crisis (Figure 6).

The work on the national balance sheet shows that, in line with expectations, the value of mineral assets has declined over time, due to a combination of price changes and resource depletion.

Figure 6. Resource Rent – by Mineral (in real terms)

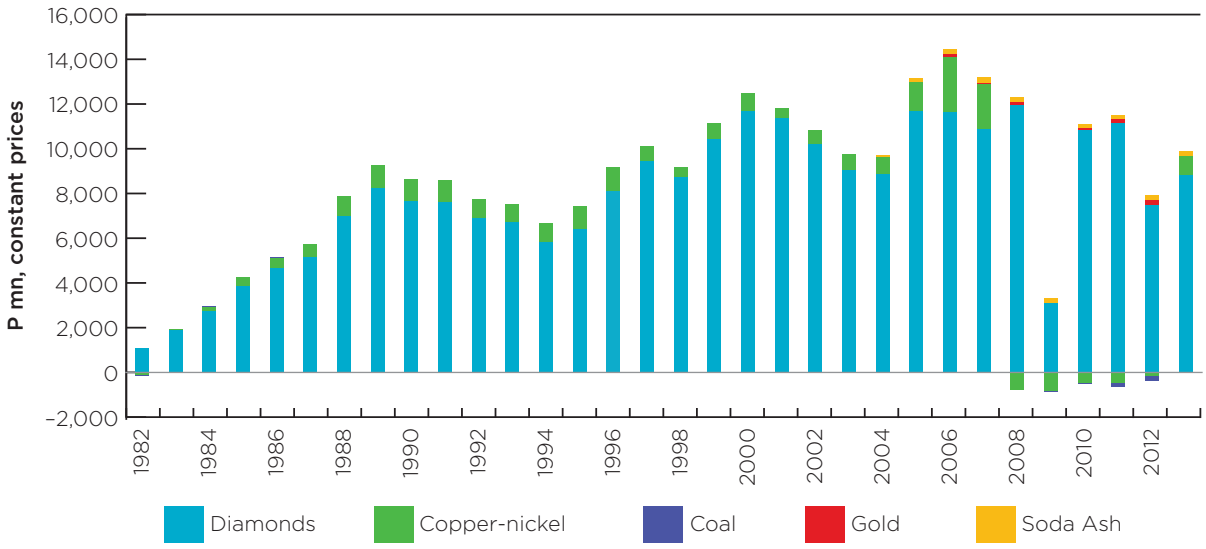
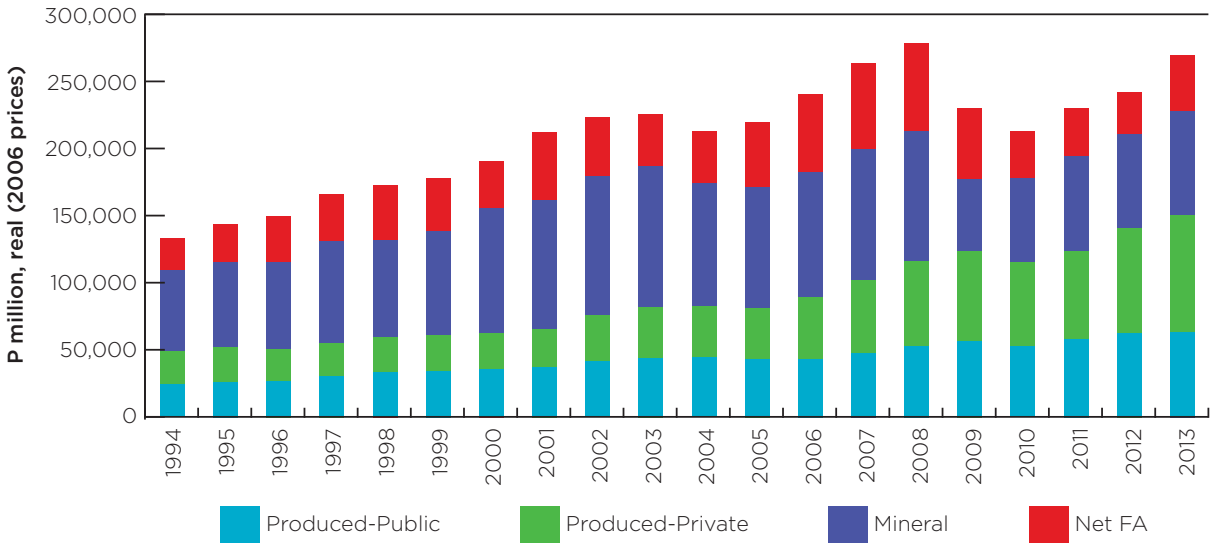


Table 4. Rents Generated by Mineral, Annual Avg. 2009–2013, and Asset Valuation, 2013

Mineral	Rent (P million)	% of total	Asset value (P million)
Diamonds	12,132	99.6%	120,861
Copper-nickel	-243	-2.0%	0
Coal	-128	-1.1%	0
Gold	166	1.4%	902
Soda Ash	255	2.1%	1,945
TOTAL	12,182		123,707

Figure 7. Components of National Wealth, 1994–2013 (real Pmn)



However, this has been accompanied by the accumulation of produced capital. Taking into account mineral assets, produced assets and net financial assets, there has been an increase in overall national assets over time. By 2013, the value of national assets totaled P428 billion, equivalent to around 350 percent of GDP and just over P200,000 per head of population. There has been some success in transforming mineral assets to other assets as they have been depleted.

The work on adjusted net savings (ANS, or genuine savings), shows that Botswana has maintained positive ANS—in contrast to many other mineral producing economies, where mineral depletion can easily lead to negative ANS. A high level of gross domestic savings is partially offset by the depreciation of produced capital and the depletion of mineral assets, and supplemented by expenditure on education.

In the 1990s and early 2000s, Botswana's Natural Resource Accounting Programme compiled mineral accounts. In the first phase of the WAVES work on mineral accounts and macroeconomic policy, these earlier mineral accounts were updated and expanded, covering several decades up to 2012. Stock and monetary accounts were constructed for diamonds, coal and copper/nickel. Most of the monetary figures were estimated by extrapolating from past

Table 5. Estimates of Botswana's National Wealth in 2013

Type of wealth		Value (Pula billion)
Mineral wealth	Total	123.7
Produced capital	Public sector	100.4
	Private sector	138.6
Financial capital (IIP)		65.4
Total		428.1

Figure 8. Gross Domestic Savings and Adjusted Net Savings, 1994–2013

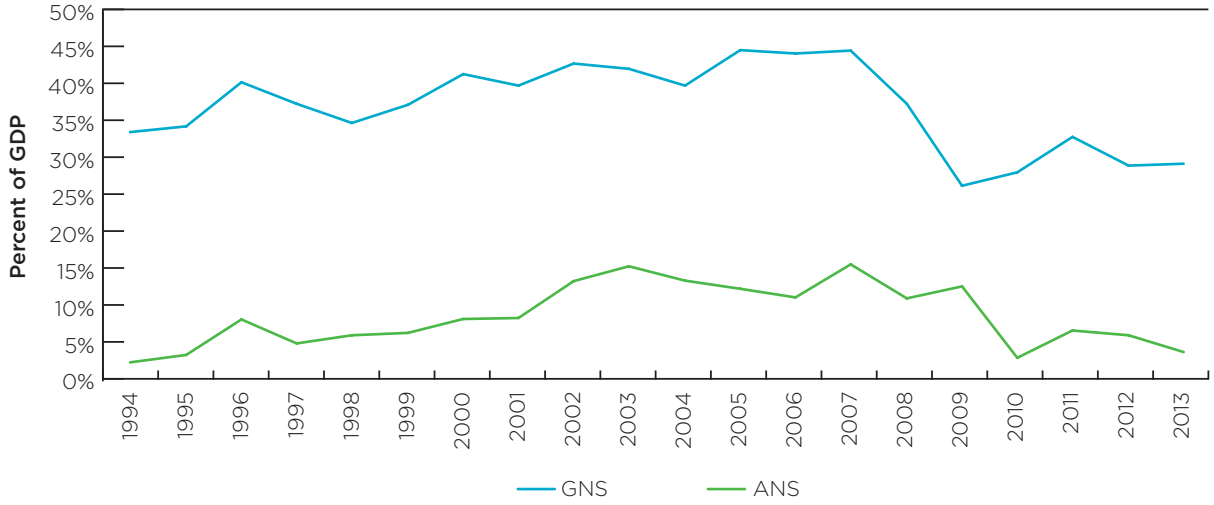
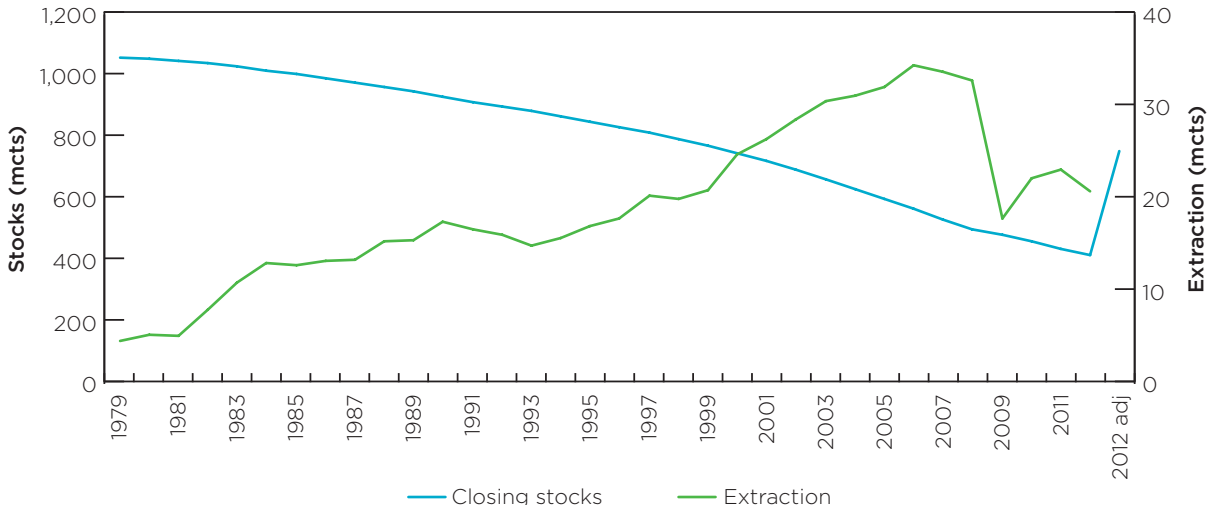


Figure 9. Diamond Extraction and Stocks (mcts)

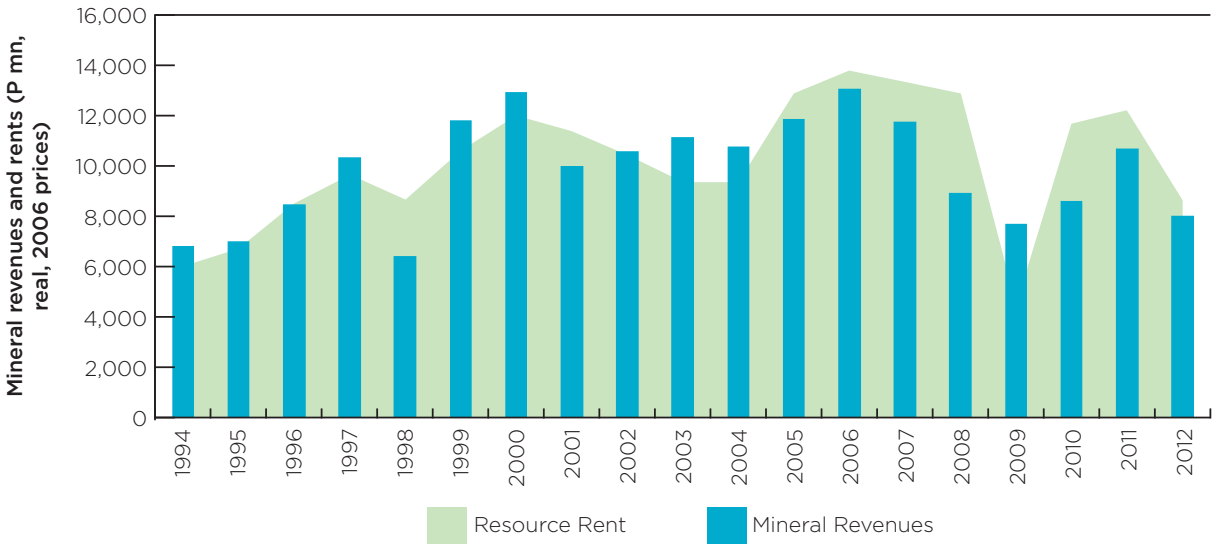


trends, and several difficult methodological issues remain to be resolved. These will be addressed in the next phase of the work on mineral accounts and macroeconomic policy. Highlights are reported here, and more information can be found in the technical report.

Estimates of resource rent and the share of rent recovered by government indicate that government has managed to capture a large share of resource rents since 1994 (Figure. 10). This is a remarkable achievement. The declining rent in real terms and as part of GDP demonstrate the need for economic diversification and prudent public fund management. Government uses the Sustainable Budget Index to monitor the use of mineral revenues. The Sustainable Budget Index (SBI) is the ratio of non-investment spending to recurrent[3] revenues. An SBI figure of less

[3] Expenditures on education and health care are treated as investments in human capital and not as recurrent expenditures (similar to the net genuine savings index calculations).

Figure 10. Resource Rent and Mineral Revenues (Pula million)



than 1 indicates that mineral revenues are not used for recurrent expenditures and is sustainable. The SBI is currently well below 1 after a brief period of exceeding 1 between 2001–2005.

Public finance policy has aimed to convert mineral revenues into other assets. This objective has largely been achieved, with recurrent spending financed from recurrent revenues, and mineral revenues used to accumulate other assets. Public sector asset accumulation has largely resulted from investment in physical capital and human capital. However, there are concerns about the quality of some public sector investment decisions, and whether the resulting assets will generate sufficient future income to replace income from mineral assets.

A first estimate of fiscal policy indicators is shown in the table below, for Botswana's National Wealth. The construction of macroeconomic indicators, like Adjusted Net National Income or

Table 6. Estimates of Botswana's National Wealth in 2012

Type of wealth		Value (Pula billion)
Mineral wealth	Diamonds	127.3
	Copper-nickel	6.9
	Coal	n/a
	Other	n/a
Produced capital	Public sector	120.7
	Private sector	n/a
Intangible capital		n/a
Financial capital (IIP)		84.3

Adjusted Net Savings, depends on the availability of the asset accounts for minerals and other natural resources. In the next phase of the work, as the asset accounts are more fully developed, the macroeconomic indicators will be constructed.

4.4| Energy Accounts

In the original work plan for WAVES Botswana, only energy stock accounts (coal) were included; energy flow accounts (supply and use by sector) were not included. Over the past year, there have been considerable difficulties in the energy sector, due to a shortage and unreliable supply of electricity. Based on the example of the usefulness of the water accounts, the MMEWR requested that energy flow accounts be constructed. Following the adoption of the energy scoping report in August 2014 the process to elaborate an action plan was pursued through the support of Centre for Applied Research. An Action Plan will be considered by the WAVES Project Steering Committee in April 2015 and it is framed around key objectives of:

- Providing a systematic information on the supply and use of energy sources in the economy over a period of time using internationally accepted System of Environmental and Economic Accounting (SEEA) methodology
- Increasing knowledge about energy accounting among those aiding the construction of the energy accounts and those using the energy accounts results (policy/ decision makers)
- Analysing trends in energy supply and use with the aid of energy indicators (e.g. energy efficiency) in terms of energy and development planning and management
- Ensuring that the findings and policy implications are widely distributed among stakeholders and used in energy planning, development planning and other sectoral/ resource planning (e.g. water).

For the MMEWR, there is an urgent need for information on electricity use by economic sector from the Botswana Power Corporation and measures that users have taken to compensate for unreliable electricity supply. Many companies as well as households have introduced backup generators to compensate for power interruptions, increasing their energy costs.

The major policy issues that need to be addressed immediately are i) the impact on the competitiveness of Botswana's industries posed by an unreliable electricity supply, and ii) the cost effectiveness of renewable energy resources, given the likelihood that electricity supply will continue to be unreliable.

4.5| Land, Ecosystem and Tourism Accounts

Land/ecosystem/tourism accounts are much more complex than the other accounts, and require a multi-disciplinary Technical Working Group including many different agencies. Furthermore, the SEEA provides only 'best practice' guidelines because this is a relatively new area for accounting. A two-week ecosystem scoping exercise, facilitated by Dr Lars Hein from Wageningen University, Netherlands was undertaken in July 2015 with a view to determine the structure, priorities and institutional arrangements for ecosystem accounting. Priorities were identified around natural capital accounts for major ecosystems of the Okavango, Makgadikgadi and Chobe ecosystems. It was established that collaboration be sought with key ecosystem management planning frameworks for these in order to draw data that is already available to determine the gaps that can support ecosystem accounting in future.

At a meeting the with Permanent Secretary of Environment and Wildlife, mention was made of the formulation of a broader more encompassing ecosystem management plan for the northern

region of Botswana. Tourism has been identified as an important component of ecosystem accounting, due to its significance in Botswana's strategy for economic growth and diversification. To this effect, a Tourism data capture exercise was initiated led by the Department of Tourism in collaboration with Statistics Botswana. To-date the data input exercise is at a status where data from 2010 to 2012 is done, while data for 2013 and 2014 is still being processed and expected by the end of April 2015. Once the data is available, the World Bank will procure a consultant to assist in structuring the tourism accounting programme.

4.6| WAVES Botswana Communication Strategy

A communications and engagement strategy aimed at building awareness of WAVES has been developed and a communications officer was recruited in December 2014 to implement the strategy. The main objective of the strategy is to build momentum and generate enthusiasm around natural capital accounting, and to ensure that decision-makers, academics, private sector, media and NGO community gain an understanding of the WAVES program and its potential impacts on key policy issues.

A press release highlighting President Khama mentioning the WAVES program in the State of the Nation address was issued on 10th December 2014, and appeared on the Government of Botswana Facebook page, amongst others. This press release served as a platform for a feature article on NCA which appeared in the Botswana *Daily News* on 22nd December 2014.

In February 2015, WAVES Botswana hosted the World Bank mission led by Dr Glenn-Marie Lange accompanied by Mr Ross Hughes. Bi-lateral meetings were held with the WAVES-Botswana steering committee chairman, Mr Kelapile Ndobano (Deputy Secretary for Macroeconomic Policy), MMEWR Permanent Secretary, Mr Kgomotso Abi and Ministry of Environment, Wildlife and Tourism Deputy Permanent Secretary, Mr J. Opelo.

WAVES also held a High Level Sensitization Breakfast Meeting on Wealth Accounting on 10th February 2015. Over 90 participants attended including senior officials from government, parastatals, the private sector, NGOs and members of the multi-sectoral technical working groups.

An article on the High Level Sensitization Breakfast Meeting on Wealth Accounting appeared in *Botswana Daily News* of 12th February with the headline 'Botswana leads in nature preservation'. The High Level Sensitization Breakfast Meeting was covered by Botswana Television and appeared on the evening news of 10th February. WAVES coordinator, Ms Portia Segomelo, was interviewed on the Botswana Television breakfast show on 11th February.

The WAVES coordinator Mrs Portia Segomelo and Chief Economist Mr Edwin Itshekeng attended a knowledge exchange workshop on ecosystem systems in Los Banos, Philippines from 23rd to 27th February 2015.

5| Institutionalization: Progress and Challenges

Institutionalization is based on four components

- Continuing strong support from the highest levels of government
- Mainstreaming in NDP11
- Technical Working Groups established to lead the work
- Commitment to staffing by lead ministries, and other institutional actions needed to institutionalize NCA in Botswana

- Training and capacity building
- Undertaking communication and engagement activities on NCA and results of accounting activities

5.1| High-Level Support for NCA from Government

There is continuing strong support from the highest levels of government indicated by, for example,

- State of the Nation Address given by H.E. President Khama to Parliament in November 2014 in support of NCA and WAVES
- A High-Level Sensitization Breakfast Meeting on Wealth Accounting was held on 10th February 2015. The meeting was attended by over 90 participants including senior officials from Government, parastatals, the private sector, NGOs and members of the multi-sectoral Technical Working groups.
- Opening speech by the Minister of Minerals, Energy and Water Resources calling for water accounts at the National Water 'Pitso' (Workshop), a large annual multi-stakeholder meeting on water issues in March 2015.
- The Botswana Economic Advisory Council (BEAC), chaired by the President, included an update on WAVES in November 2014 and May 2015.
- The formulation of the National Strategy for Sustainable Development identifies Natural Capital Accounting work undertaken through WAVES as instrumental in informing sustainability objectives

5.2| Mainstreaming NCA in NDP11

The strongest support for institutionalization of NCA will come from mainstreamining NCA in the next 5-year National Development Plan, NDP11 (2016–2021). NDP11 is a legal document that identifies the goals and activities of each ministry, and the approved budgets and investment projects to support them. The process for designing NDP11 is led by MFDP and is expected to commence mid-2015 once the Framework for the National Vision beyond 2016 is completed. MFDP is committed to mainstreaming WAVES Natural Capital Accounting in NDP11. The results from the on-going water and mineral accounts will provide policy messages and quantitative information about the stocks and flows of natural assets to inform the NDP 11 programmes and projects across relevant sectors of the economy.

5.3| Technical Working Groups

Technical Working Groups have been established for all accounts. Each TWG is led by a senior government official at the level of Deputy Permanent Secretary, who is also a member of the WAVES Steering Committee. These TWGs include members from all relevant ministries and agencies needed to construct the accounts and to use them for policy analysis.

To help ensure institutionalization and mainstreaming, WAVES Botswana makes use of existing Technical Working Groups already established by government wherever possible. The existing Working Group for Macroeconomic Policy and Forecasting, chaired by MFDP, will take over the role of Technical Working Group for Mineral Accounts and Macroeconomic Indicators. The existing Working Group for Tourism Statistics, chaired by the Dept. of Tourism MEWT), has taken on the role of guiding tourism accounts for the Land/Ecosystem/tourism accounts.

5.4| Staff Commitments for NCA

Staff commitment for water accounting

Over the past few years, MMEWR has been reviewing options for restructuring the Ministry and has now finalized a plan that includes a 5-person Water Accounting Unit for the Department of Water Affairs (including one official from Water Utilities Corporation). This proposal has been submitted to the Directorate of Public Service Management for consideration. This will ensure that staff currently assigned to work on the water accounts can continue to do so on a permanent basis.

Water Utilities Corporation and Statistics Botswana: Actions to Make Information Generation Simple and Routine

Institutionalization of water accounting will succeed when it becomes simple to regularly update the accounts. Water use accounts by industry are the most critical. A key step in this process is coding the client billing database maintained by the parastatal, Water Utilities Corporation (WUC), to the classification of industries used by Statistics Botswana, the International Standard Industrial Classification (ISIC). This was done manually for the first update of the water accounts and was very time consuming. WUC has agreed to add the codes assigned to each client billing record so that the water accounts can be automatically generated every year.

Collaboration with Statistics Botswana is key for long term success. Statistics Botswana is in the process of updating its Business Register and will use the coding of the WUC client database to assist in this. The coding will be re-examined when the update of the Business Register is complete, resulting in more accurate coding, and the subsequent water accounts.

5.5| Staff Commitments: Other Accounts

The other accounts are at an early stage of development and 'proof of concept' relative to the water accounts so no commitments to institutionalization have been made yet. Issues of exactly what part of the accounts will be institutionalized, how often accounts will be generated and the roles and responsibilities of each organization will be determined as there is more experience with the accounts. With respect to energy accounts, three officers have since been appointed with dedicated duties towards energy accounting, while for mineral accounts five officers are engaged from Department of Geological Surveys (including one from Mines Department and one from Mineral Affairs Department).

5.6| Training and Capacity Building

In an effort to better prepare Botswana to institutionalize Natural Capital Accounting, a series of sessions were held to train technical teams on tools, methodologies and policy applications. A great deal of training and capacity building has already taken place, particularly for the water accounts. Additional training sessions included the following:

- Econsult trained the mineral accounting team on the methodologies for accounting. The training was on the 16th December 2014.
- A more comprehensive training led by World Bank experts for energy, minerals and macro indicators (for MFDP) was conducted during the week 9th to 13th February 2015.
- The water team was trained during the week of 02nd to 06th March 2015.
- Officials from the Ministries of Environment, Wildlife and Tourism (MEWT), Lands and Housing (MLH) and Finance and Development Planning (MFDP), participated in the ecosystem training session in the Philippines between 22nd and 26th February 2015.

- A Memorandum of Understanding is at an advanced stage between the Ministry of Finance and Development Planning and the University of Botswana to introduce a Natural Capital Capital accounting training module within the environmental sciences and economics departments at the University of Botswana. This is expected to reinforce future NCA training across all sectors on short-term basis.

6| Next Steps

6.1| Continued implementation of Mineral and Water Accounts

The *mineral accounting* work (1 year) focuses on four component: improvement of the mineral accounts based on SEEA, preparation of macro-economic indicators based on SEEA, policy analysis and communication of the results and capacity building, dissemination and support for institutionalisation. The *water accounting* work (2 years) will focus on four components: up-dating and expansion of the accounts with partial monetary accounts and with wastewater, policy analysis and dissemination of results and finally capacity building completion of institutionalisation and capacity building.

6.2| Initiating the Land, Ecosystem and Tourism Accounts

Commencement of tourism accounting is expected during 2015 under the auspices of ecosystem accounting led by the Ministry of Environment, Wildlife and Tourism

6.3| Development of the Energy Accounts

The April 2015 Steering Committee is expected to approve the energy accounts action plan and to agree on prospects to finance its implementation both during WAVES and beyond.

6.4| Capacity Building and Institutionalisation

A Memorandum of Understanding is at an advanced stage between the Ministry of Finance and Development Planning and the University of Botswana to introduce a Natural Capital Capital accounting training module within the environmental sciences and economics departments at the University of Botswana. This is expected to reinforce future NCA training across all sectors on short thorough short courses

7| Results Framework: Review of the Monitoring and Evaluation Framework

WAVES Secretariat and the Steering Committee agreed to a Monitoring and Evaluation Framework in July 2013. The M&E Framework has four components, corresponding to the four Project Development Objectives (PDOs) of WAVES:

- PDO 1: Implement natural capital accounting at national or sub-national level in several developing and developed countries.
- PDO 2: Incorporate natural capital accounting in policy analysis and development planning
- PDO 3: Develop standardized guidelines for ecosystem accounting for global implementation
- PDO 4: Promote adoption of natural capital accounting beyond the WAVES partner countries

The first two PDOs are reported at both the global level and the country level. The global level results are included in the Annual Report. Country level results will be provided as part of the progress report for each country. The M&E framework for Botswana includes a proposed extension of the end-date by one more year. The main reason for this is the delay in starting the ecosystem accounts, as will be discussed below. It should be noted that the extended time frame does not imply additional funding.

7.1| PDO1 Implementing Natural Capital Accounting

In terms of PDO1, institutionalization (PDO1.a), is on track with its targets. Botswana completed the milestones for the Preparation Phase (PDO1.1) early on and has met its targets for constructing asset accounts, flow accounts, and macroeconomic indicators of sustainability (PDO1.2, PDO1.3, and PDO1.5). Construction of ecosystem accounts (PDO1.4) has started more slowly than originally planned. The delay, as explained in the report, was largely due to the unavailability of updated tourist statistics. Moreover, extensive consultation and discussion is needed about the scope and linkages of land, ecosystems and tourism accounts, including institutionalization in Botswana. This data gap has now been addressed and the first step, a scoping study is expected to being in June or July 2014. In the next year, we expect to have preliminary results for at least one of the pilot sites in Botswana, building on existing work for the Okavango Delta. The late start on ecosystem accounts plus the need for extensive consultation are the main reasons for proposing an additional year for Botswana to complete the ecosystem accounting element of the work program.

Regarding development of capacity for compiling accounts (PDO1.6), there are very strong training and capacity building program in place, and Botswana has been able to take advantage of both domestic and regional training opportunities. The proposal to develop a university-based 2-week course in water accounting, a model which may be followed for other accounts, provides a strong institutional base for on-going capacity building that can be maintained over time. In addition, the institutional basis for compilation of accounts, in terms of staff commitments, institutional responsibilities and Technical Working Groups have all been established.

7.2| PDO 2: Incorporate Natural Capital Accounting in Policy Analysis & Development Planning

With PDO2, Botswana is also meeting or exceeding their targets. In terms of outcome indicators (PDO2.a), Botswana has played an important regional role in promoting NCA, with strong support from the President as well as the Minister of Mineral, Energy and Water Resources, and the Minister of Environment, Wildlife and Tourism. There is commitment from the Ministry of Finance and Development Planning to mainstream NCA as a tool for economic growth in the next National Development Plan, and NCA has been recognized as an important tool for resources management across key ministries and agencies evidenced by its inclusion in key policies and management plans. In Botswana, the results of the NCA program are being used to inform dialogue on the new Country Partnership Framework, which is expected to be finalized next year.

The intermediate indicators, PDO2.1 and PDO2.2, are critical to provide the technical background and communicate results to policy-makers in order to achieve PDO2.a. Botswana has started providing these reports and policy briefs with the support of an in-country communications plan and staff (with a major role played by IIED, as described in the Annual Report). Finally, WAVES will only succeed with in-country capacity to use the accounts for policy analysis. In-country

capacity is being developed in several ways: first, most of the work is being carried out by government staff with technical support and training from experts. Botswana is fortunate to have strong domestic technical expertise, so that there is a large component of 'learning by doing', but also draws on international experts. In addition, there is formal training through seminars, workshops and training courses, offered possibly through the University of Botswana. Learning from peers through regional and international workshops is also critical, and participation in regional and international workshops is an important component.

8| Annexes:

Annex 1. Country Results-Based Monitoring Matrix – PDO 1

Objectives & Outcome (Results) Indicators	Base-Line June 2011	Prep year June 2012	Yr 1 Jun-13	Yr 2 Jun-14	Yr 3 Jun-15	Yr4 Jun-16	Yr5 Jun-17 (proposed)
PDO 1. To implement natural capital accounting in partner developing and developed countries							
Outcome Indicators:							
a. Country has committed to institutionalize natural capital accounting based on lessons learned from the WAVES program	None	None		**Target** • Water accounts partially institution-alized **Achieved** • Department of Water Affairs proposes unit for water accts with 3 staff	**Target** • DWA unit ap-proved	**Target** • Staff commitments for additional ac-counts in respec-tive government agencies (minerals, finance, energy); included in NDP11 • Agreement on reg-ular reporting on key indicators for water, minerals and macro indicators	**Target** • 5
Intermediate Outcomes Indicators							
11.1 Country has completed the milestones for the WAVES Preparation Phase[a]	None	Fully achieved					

(*continued on next page*)

Annex 1. Country Results-Based Monitoring Matrix – PDO 1 (*continued*)

Objectives & Outcome (Results) Indicators	Base-Line June 2011	Prep year June 2012	Yr 1 Jun-13	Yr 2 Jun-14	Yr 3 Jun-15	Yr4 Jun-16	Yr5 Jun-17 (proposed)
1.2 country has asset accounts for selected natural assets	None			**Target** • Preliminary mineral accounts • Achieved: • Surface water stock accts, sub-soil asset accts (phase 1)	**Target** • Phase 2 mineral accounts, pre-lim groundwater water stock accts; prelim. land accts for 1 ecosystem site (Okavango)	**Target** • Land accts for 3–4 ecosystem pilot sites; subsoil assets updated; water stock accts by region	**Target** • Update existing accounts; land & ecosystem pilot accts scaled up to regional/national level • Colombia - TBD
1.3 Country has flow accounts for selected natural resources	None	**Target** • None		**Target** • Updated flow accts for 2012, time series from 1992 **Achieved** • Updated flow accts for 2012, time series from 1992; Prelim energy balances	**Target**	**Target** • 5 countries	**Target** • 5 countries
1.4 Country has experimental ecosystem accounts (if intended in country work-plan)	None	**Target** None		**Target** • Scoping study for ecosystem accounts completed • Achieved: scoping study to take place in June or July 2014	**Target** • Scoping study completed + prelim results for 1 of 4 pilots	**Target** • 3 add'l pilot ecosystem sites	**Target** • Scale up pilot site ecosystem accts to national level

(*continued on next page*)

Annex 1. Country Results-Based Monitoring Matrix – PDO 1 (*continued*)

Objectives & Outcome (Results) Indicators	Base-Line June 2011	Prep year June 2012	Yr 1 Jun-13	Yr 2 Jun-14	Yr 3 Jun-15	Yr4 Jun-16	Yr5 Jun-17 (proposed)
1.5 Country has macro-economic indicators derived from the SEEA accounts (if intended in country work-plan)	None	**Target** None		**Target** • Prelim macro indicators estimated • Achieved: Prelim Macro indicators estimated	**Target** • Revised Macro indicators estimated with input from mineral accts and other;	**Target** • Macro indicators updated and further improved with results from land/ ecosystem accts; country agrees to report on indicators	**Target** • Macro indicators updated and further improved with results from land/ ecosystem accts;
1.6 Country has capacity for maintaining NCA (evidenced by dedicated government staff for NCA and regular reporting mechanism for production of natural capital accounts)	None	**Target** None		**Target** • Dedicated unit for water accts in DWA **Achieved** • Water Accts unit in Department of Water Affairs created with 3 staff trained; • Technical Working Groups (TWG) for all accts established and receiving training; Water acc'ting seminars in DWA; initial training seminar on energy accts	**Target** • Water acc'ting seminars in DWA; training course in water acc'ting as part of Univ course for 15–20; initial training of 20+ staff for ecosystem acc'ting; training of 15 stff in MFDP on minerals/macro; • Training continues through in-country, regional and other training workshops, and by working with int'l experts on the accts;	**Target** • Water acc'ting seminars in DWA; 2-week training course in water acc'ting as part of Univ course for 15–20; • Training of 20+ staff for ecosystem acc'ting and valuation; • Training of 15 staff in MFDP on minerals/macro;	**Target** • Water acc'ting seminars in DWA; 2-week training course in water acc'ting as part of Univ course for 15–20; • Training of 20+ staff for ecosystem acc'ting and valuation; • Training of 15 staff in MFDP on minerals/macro;

(*continued on next page*)

Annex 1. Country Results-Based Monitoring Matrix – PDO 1 (*continued*)

Objectives & Outcome (Results) Indicators	Base-Line June 2011	Prep year June 2012	Yr 1 Jun-13	Yr 2 Jun-14	Yr 3 Jun-15	Yr4 Jun-16	Yr5 Jun-17 (proposed)
					• Staff attend regional training workshop on NCA	• Training continues through in-country, regional and other training workshops, and by working with int'l experts on the accts; Staff attend regional training workshop on NCA and training of trainers workshop by UNStats	• Training continues through in-country, regional and other training workshops, and by working with int'l experts on the accts; Staff attend regional training workshop on NCA and training of trainers workshop by UNStats

[a] National Steering Committee (NSC) established, Feasibility study approved by NSC and WAVES Secretariat, Stakeholder consultation on draft work plan, Work plan approved by NSC and WAVES Secretariat

Annex 2. Country Results-Based Monitoring Matrix – PDO 2

Objectives & Outcome (Results) Indicators	Base-Line June 2011	Prep year June 2012	Yr 1 Jun-13	Yr 2 Jun-14	Yr 3 Jun-15	Yr4 Jun-16	Yr5 Jun-17 (proposed)
PDO 2. To incorporate natural capital accounting in policy analysis and development planning in core implementing countries							
Outcome Indicators:							
a. NCA informs policy dialogue on growth, environment and poverty reduction, evidenced by citing NCA or using NCA indicators and data in, development plans, sector strategies and plans, executive orders, legislative documents, and the broader policy analysis literature (may include World Bank ESW, AAA and project formulation documents)	None	**Target** • None **Achieved** • President calls for water accts; Govt hosts Heads of State Summit on African Sustainability, resulting in Gaborone Declaration to implement NCA signed by 10 countries	**Target** • Govt recommends NCA in Mid-Term Review Of NDP10 Achieved: • Mid-term Review of NDP 10 calls for NCA in NDP 11; • President's BEAC calls for NCA and includes progress on NCA in briefing pack for its biannual meetings	**Target** • 2 countries **Achieved** • Pres. State of Nation Address calls for NCA; • National water policy and IWRM policy call for NCA; • Govt policy brief on water mgmt. call for water accts as mgmt. tool; Botswana hosts follow up to 2012 Gaborone Summit to establish secretariat for NCA.	**Target** • MFDP commits to mainstreaming NCA in draft of NDP 11; NCA informs World Bank CPF	**Target** • NDP11 w NCA adopted by govt. as mgmt. tool; • Ecosystem accounts inform mgmt. plan for Chobe (one of the ecosystem sites); Water accts used to monitor IWRM and Natl Water Master Plan implementation, inform dialogue on sharing water from int'l rivers	**Target** • Ecosystem accounts inform national Land Mgmt, and Tourism Strategy; NCA used to monitor implementation of NDP11; • Water accts continue to use as in Yr.4

(*continued on next page*)

Annex 2. Country Results-Based Monitoring Matrix – PDO 2 (*continued*)

Objectives & Outcome (Results) Indicators	Base-Line June 2011	Prep year June 2012	Yr 1 Jun-13	Yr 2 Jun-14	Yr 3 Jun-15	Yr4 Jun-16	Yr5 Jun-17 (proposed)
				• MFDP and key ministries leading prep of NDP 11 ask for briefings to mainstream NCA in NDP11 • NCA informs draft of World Bank CPF			
Intermediate Outcomes Indicators							
2.1 Country has policy notes and analytical work based on NCA.	None	**Target** • None	**Target** • 1st report to update water accounts **Achieved** • Update of water accts presented to BEAC, 1st technical report	**Target** • Technical report, policy note on water accounts; 1st prelim technical report on mineral accts/ macro policy **Achieved** • New Technical report, policy note and flyer on water accounts; 1st prelim technical report on mineral accts/ macro policy; 1st tech. report on energy;	**Target** • 2nd technical report, 2 policy briefs and 2 flyers on water accounts; 2nd technical report, policy brief and flyer on macro indicators and sustainability; 1st technical report and policy note on ecosystem accts	**Target** • 3rd policy note and brief on sustainability, macro indicators and minerals; • 3rd technical report, policy note and briefs on water accts/mgmt; 2nd tech report on ecosystem accounting, tourism and land mgmt.; note on scaling up ecosystem accounting to rest of country	**Target** • Technical reports, policy notes on ecosystem accounts for the country

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Annex 2. Country Results-Based Monitoring Matrix – PDO 2 *(continued)*

Objectives & Outcome (Results) Indicators	Base-Line June 2011	Prep year June 2012	Yr 1 Jun-13	Yr 2 Jun-14	Yr 3 Jun-15	Yr4 Jun-16	Yr5 Jun-17 (proposed)
2.2 Country has capacity for using NCA in policy dialogue (evidenced by government staff trained in using NCA)	None	**Target** • Policy-makers workshop for 35+ people **Achieved** • 2 policy-makers workshops for 35+ people (1 dedicated to NCA, 1 in prep for Rio+20)	**Target** • Training by technical expert and at least 3 seminars in DWA **Achieved** • 5 staff attend water acct training workshop; 3 internal training seminars on policy uses of water accts at DWA	**Target** • 3 training seminars on water accts at DWA; 2 workshops on NCA; briefing to MFDP on mineral/macro accts and sustainability; initial training on ecosystem accts. **Achieved** • -2 workshops on NCA w for 40+ participants; 3 training seminars on water accts. at DWA; seminar on uses of energy accts; initial seminars held for land-ecosystem-tourism TWG	**Target** • Water acc'ting seminars in DWA; 2-week training course in water acc'ting as part of Univ course for 15–20; initial training of 20+ staff for ecosystem acc'ting; training of 15 stff in MFDP on minerals/macro; • training continues through in-country, regional and other training workshops, and by working with int'l experts on the accts; • Staff attend regional training workshop on policy uses of NCA	**Target** • Water acc'ting seminars in DWA; 2-week training course in water acc'ting as part of Univ course for 15–20; training of 20+ staff for ecosystem acc'ting and valuation; • training of 15 staff in MFDP on minerals/macro; • training continues through in-country, regional and other training workshops, and by working with int'l experts on the accts; Staff attend regional training workshop on policy uses of NCA	**Target** • Water acc'ting seminars in DWA; 2-week training course in water acc'ting as part of Univ course for 15–20; • training of 20+ staff for ecosystem acc'ting and valuation; • training of 15 staff in MFDP on minerals/macro; • training continues through in-country, regional and other training workshops, and by working with int'l experts on the accts; Staff attend regional training workshop on policy uses of NCA

Wealth Accounting and the Valuation of Ecosystem Services

Wealth Accounting and the Valuation of Ecosystem Services (WAVES) is a global partnership led by the World Bank that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts.

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