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Economic tools and indicators for improving water security in Botswana

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Water, food and energy security are closely interlinked and need to be balanced. Botswana's past achievements in food and energy security may not be sustainable because of its dependency on imports. In addition, water insecurity has recently been experienced. Therefore, effort to increase sustainable food and energy security need to be balanced with achieving water security. Natural capital accounting (water and energy) provides information that supports decision making. Agriculture is one of the leading water using sectors in Botswana (41% of water consumption and 35% of water abstraction over the period 2010-2015; source: Botswana water accounts). Irrigation water use is expected to increase in future if plans for large-scale irrigation materialise. The sector's contribution to the economy is currently around 0.6% to GDP and generates the least benefit per m3 of water used of all economic sectors. Water use of the electricity sector has significantly increased with the new power plants. Further expansions toward energy security could lead to more competition with other economic sectors. Although agriculture plays a critical role in ensuring food security and spurring rural development, there is need to improve water productivity and efficiency in the agricultural and energy sectors. To better understand the economic value of water and water use efficiency, the tools of water accounting (UN-SEEA) and audits (FAO) are used. These approaches could be integrated for more comprehensive assessment of water use in the economy for better decision making on water allocation and resource management. The accounts produce indicators related to water availability and use, water intensity and productivity as well as costs and revenues. Energy accounts can be used to demonstrate the synergies between water and energy for water security. The paper demonstrates the various economic tools that demonstrate the synergies and interactions between the food-energy sectors for improved water security.

Key words: efficiency, food and energy security, energy and water accounts, water security