International Letters of Natural Sciences *Online: 2014-05-30*
ISSN: 2300-9675, Vol. 16, pp 157-163
doi:10.56431/p-kcy8t4

Check the status of water resources management in comparison with management and the role of the Australian Accounting Standards

Bahram Meihami

Department of Accounting, Ghorveh Branch, Islamic Azad University, Ghorveh, Iran

E-mail address: meyhami4@gmail.com

ABSTRACT

With population growth, rising living standards and increasing attention given to environmental issues Water resources management has increased in many countries, water is fast becoming a scarce input. It is study of human development in the twentieth century, and a judgment is only a question of human optimization of water resources and their future generations what it was composed of such questions under the present conditions of as the water crisis (crisis of the Third Millennium) have mentioned, it is appropriate here because the water crisis and lack of use. the effectiveness of this critical resource of local, regional and trans-national and gone and the world has become a complex issue. In this regard, planning and optimal utilization of water resources of the fundamentals principles of sustainable development of natural resources optimal design of irrigation and fertilization management can control the transport of contaminants or so that any combination of water management and to reduce nutrient runoff and deep percolation, providing opportunity for solute infiltration ,reducing sediment and gradually applying fertilizer in due to problems with the economy and ease of use can be substantial.

***Keywords*:** water resources; management; water resources management; Australia; Accounting Standards

1. INTRODUCTION

Agriculture and related systems can be a useful addition to the literature on leading to potential negative impacts on water quality and ecosystem are surface water drainage by enriching. Drainage water from fertilizers containing nitrogen, phosphorus and potassium takes place. In addition to nutrients escaping into drainage water environmental issues and the ecological damage region, threats to human health and the agricultural and economic perspectives production efficiency is also decreased. In this issue the increase in operating costs of water supply facilities drinking cities, clogging irrigation channels in the found. Since the concentration of salts, nutrients and other substances hemicals in surface water and groundwater drainage design and management of drainage systems and irrigation methods depends Analysis of solute transport in a variety of design options and their management is very important. Water has officially been recognized as a scarce resource by the international community since the 1992 Dublin Statements which clearly stated that water resources are

not infinite and they are "vulnerable" (WMO, 2007). The Fourth Principle of 1992 Dublin Statements defines water as an economic good. On the other hand, the first principle of 1992 Rio Statements that supplemented the Fourth Dublin Principle implicitly suggests that water is a social good, therefore humans are entitled to at least certain levels of water especially under the responsibility of their respective governments (Dinar and Saleth, 2005).The scarcity of water has been on the agenda of policymakers and researchers in certain parts of the world, such as Middle East and Africa, for quite some time prior to the Dublin Statements. The first papers about the problems induced by water scarcity appeared as early as 1910s (Bontemps and Couture, 2002), but recognition of water scarcity as a global threat and its effects on both developing and developed countries became a widely discussed topic in the second half of 20th century (e.g., Ciriacywantrup (1956, 1961); Smith (1951); Tolley and Hastings (1960)). In these early papers the central question was the allocation of water resources among different industries. Tolley and Hastings (1960), for example, follow a partial equilibrium analysis approach to determine the optimal allocation of water between energy production and irrigation. These studies do not consider any market based solution and they attempt to develop "planning routines" to allocate water in an economically efficient way. There was a significant expansion in irrigation activities throughout the 20th century (Schoengold and Zilberman, 2005). An important part of this increase has occurred in the post-WW II period. However, expansion was especially sizable in 1980s and 1990s (Tsur, et al. 2003). Although the estimates about the growth of irrigated land for the forthcoming 30 years are moderate around a 0.4 percent per year (Tsur *et. al.,* 2003), the potential for irrigation is still enormous with increase of more than 350 percent for Africa, 150 percent for Asia, and nearly 500 percent for South America (Schoengold and Zilberman, 2005). Such a huge potential has attracted the attention of scientists from different disciplines, mainly hydrologists and economists. If water had not been scarce, this would have been "good news" for the international community. However, as the irrigated area grows, the increase in demand for water for irrigation raises more questions about efficiency, equity and justice as it is well known that water resources around the globe are limited. Since the 1980s, the need for institutions that would stimulate efficient use and equal and fair allocation of irrigation water has become a widely recognized concept by economists.

2. WATER ACCOUNTING IN AUSTRALIA

Reform in Australia by improving the transparency and comparability of water information, but they are not yet well understood at this early stage of adoption. Since accountants have long been involved in dealing with inventory management and the presentation of decision-making information, we could have some expertise critical to the successful development this new type of accounting. Water accounting tracks quantities of water, aiming to maximise the way that available water can be managed to meet known water needs. The function of water accounting becomes more important where available water is fully, or over-, allocated. This is certainly the case in many catchments within the Murray-Darling Basin, Australia's "food bowl". Some Canterbury groundwater aquifers may be approaching a critical point too. In Australia, the typical person doing water accounting is a water engineer or bureaucrat responsible for river operations, dam management or consent/entitlement regulation. The users of water accounting products are potentially even more diverse. For instance, local managers need to know that storages hold sufficient water to meet daily orders placed by irrigators. Regulators need to know whether projected water

supplies will be sufficient to allow approval of new water entitlements. Own stream users need to know that upstream users are not using more than their share and wider communities need to know that sufficient water is available to meet environmental and other social needs. The needs of these doers and users have driven development of water accounting products including inventory management software, complex water availability models and improvements to public reporting. Lately there have been calls for more believable and consistent water data, especially driven by new Murray-Darling Basin governance and proposals for changed water sharing arrangements. Recent developments have focused on reporting, with new country scale public reports using two different water accounting standards. In recent years there has been a greater awareness of the need to find a better means of measuring and reporting on water resources. As a response to the general concerns about the scarcity of water in existing dams the Australian Federal Government set up a National Water Initiative (NWI), which has as one part of its overall strategy the production of a framework that would provide better and more consistent information about water across the country. The responsibility for the development of this particular project falls to the Water Accounting Standards Board (WASB). This Fact Sheet outlines the role of the WASB and its progress to date.

3. WATER ACCOUNTING STANDARDS BOARD

The Water Accounting Standards Board (WASB) is an advisory body that sits within the Bureau of Meteorology (BoM). It is charged with the task of developing a national reporting framework that helps deal better account for water resources. This body was previously known as the Water Accounting Development Committee (WADC). Five members sit on the WASB. It is chaired by civil engineer Mike Smith who has 27 years of experience in water resources management. He is currently the Director of State and National Programs, Department of Water, Land and Biodiversity Conservation South Australia. The other members are former regulation and company direct Peter Day, Goulburn Valley Water director Denis Flett, high profile accounting academic Professor Jayne Godfrey and Tom Vanderbyl, an expert in water management and the design of water rights systems. The WASB has two documents on its web site on which it is seeking public comment although no feedback deadline has been specified. These documents – their purpose and content – are briefly outlined below.

4. CONCEPTUAL FRAMEWORK

The WASB issued a Water Accounting Conceptual Framework for the preparation and presentation of General Purpose Water Accounting Reports in June 2009. This 60-page document is based on the conceptual frameworks that have been in place for several decades in the area of financial reporting, but the financial terminology has been replaced with the terminology that relates it directly to the environment and water. The glossary refers to a range of water-related terms such as water assets, groundwater assets, group water reporting entity and claims to water.

While readers familiar with the accounting framework will recognise the notion of general purpose and special purpose reports these are transposed into the context of reporting on water resources. While the Australian financial reporting conceptual framework stopped at

four statements the water accounting conceptual framework tackles this area with eight. They are as follows:

SWAC1: Definition of the Water Reporting Entity;

SWAC2: Objective of General Purpose Water Accounting Reports;

SWAC3: Qualitative Characteristics of General Purpose Water Accounting Reports;

SWAC4: Definition of Elements of General Purpose Water Accounting Reports;

SWAC5: Recognition of the Elements of General Purpose Water Accounting Reports;

SWAC6: Quantification of Attributes of Elements of General Purpose Water Accounting Reports;

SWAC7: Compliance Disclosures in General Purpose Water Accounting Reports; and

SWAC8: Assurance of General Purpose Water Accounting Reports.

The status of these statements of concepts is non-mandatory although they do create a framework for the WASB to set standards related to the way in which information regarding water is measured, recognised, presented and disclosed. Individual standards could override the water accounting conceptual framework.

This conceptual framework may require the attention of accountants involved in the provision of environmental assurance as it incorporates a concept statement on assurance that makes mention of ethical requirements and compliance with such requirements as a part of its content. The initial effort at a water accounting standard is available on the WASB web site. This document is modelled on the way in which financial reporting standard setters draft their documents with the main body of the accounting standard taking up 35 of the 71 pages. The rest of the content relates to the Basis for Conclusions and Implementation Guidance, which explain the rationale behind the decisions made by the WASB and also provide some insight to how the standard should be implemented by those affected by the content. Prescribed in the PAWAS are the following components of a general purpose water accounting report:

Contextual statement;

Accountability Statement;

Statement of Water Assets and Water Liabilities;

Statement of Changes in Water Assets and Water Liabilities;

Statement of Physical Water Flows;

Note Disclosures; and,

An Assurance Statement

The WASB has used the conceptual framework described above to develop the PAWAS. Both the water accounting standard and the conceptual framework are considered as being exposed for public comment by the WASB. No formal comment date is set in the documents.

4. 1. Role and importance of water accounting

Water accounting is a systematic process of identifying, recognising, quantifying, reporting and assuring information about water, the rights or other claims to that water, and the obligations against that water2. Water accounting facilitates informed decision-making based upon information about water resources. The Australian Water Accounting Standards borrow concepts from the financial accounting discipline, such as a comprehensive annual report, and adapts them to the unique needs of the water industry. The result is General Purpose Water Accounting Reports (GPWAR) that are prepared about a water entity to meet the information needs of external users who may be unfamiliar with the water entity. An analogy can be made between financial accounting's annual reports and water accounting's GPWAR: Financial accounting's annual reports provide financial information for economic decision-making; water accounting's GPWAR provide water-related information for making and evaluating decisions about the allocation of resources.

4. 2. Next steps for water accounting

Building on the pilot program and general feedback, the next stage of standard development has proceeded with the development of the exposure draft of AWAS 1,to be released in June 2010. From this, work will commence with the Audit and Assurance Standards Board (AUASB) on developing a standard for the assurance of water accounting. After a period of time for voluntary adoption, testing and feedback, AWAS 1 and the WACF will be reconsidered by WASB and re-issued, together with the assurance standard. During this period, WASB intends to conduct a range of activities to communicate and develop the practice of water accounting in Australia. A substantial amount of work is required at the intergovernmental level to support implementation and adoption, and WASB's ongoing activities will depend on agreement at this policy level. Activities include a cost-benefit analysis for the production of GPWAR; capacity building of the water accounting discipline in the water industry as well as among assurance practitioners. At the broader level, irrigation water entities are encouraged to follow Harvey Water's lead and prepare GPWAR using the Exposure Draft of AWAS 1 on a voluntary basis. As indicated above significant further testing of the AWAS 1Exposure Draft will occur in the future. The decision on whether adoption of the AWAS will ever be made mandatory is one for the Bureau of Meteorology and the Australian Governments to make once the AWAS 1 has evolved to a suitable level.

4. 3. Why do we need water accounting?

Water availability is a major issue for Australia, particularly when considering our rainfall variability: seasonally, yearly and across the continent. Water accounting aims to improve public knowledge and understanding of how Australia's water resources meet economic, environmental and social needs. To meet these needs, water rights are increasingly being traded between regions. In 2010–11, 1,204 gigalitres of water entitlements and 3,493 gigalitres of water allocations were traded throughout Australia. While there has been a fall in the trade of water entitlements over the recent period, water allocations have increased by 40 per cent compared to 2009-10 levels. Systems are currently in place to account for the volume and value of water being traded, but ad hoc and inconsistent development of those systems have the potential to lead to divergent understandings.

4. 4. Who benefits from water accounting?

Water accounting assists informed decision-making about the allocation of resources. In the way general purpose financial reports assist financial and business decision-making, general purpose water accounting reports, prepared in accordance with the Australian Water Accounting Standard 1 (AWAS 1), will assist users making and evaluating decisions about the allocation of resources. The reports will usually be prepared by water managers and will address the general information needs of water users, water market investors, traders and brokers, environmental organisations, auditors, financiers, local governments, researchers, planners and policy formulators, who cannot normally gain this information directly from the organisations that hold it.

5. CONCLUSIONS

Water accounting is a new science that organizes and presents information related to the physical volume of water, water economics, water economics ten. However, from the mid-1960s, has provided information on water resources in Australia. The adaptation of financial accounting principles to the water sector has been tested both generally and specifically in relation to the needs of the irrigation industry, with positive results. The role of WASB is to work with the water industry and accounting bodies to develop consistent and comparable standards for water accounting. Involvement by the water industry has included consultation and early adoption by organisations that participated in the Pilot Program This has proven to be beneficial to those organisations: both as report preparers as it assists in meeting reporting obligations and in disseminating information to stakeholders; and also as report users as it provides relevant, comparable, assured information that is important to core businesses. By releasing AWAS 1 as an Exposure Draft, WASB is continuing to engage with the water industry, by inviting comments and encouraging early adoption by organisations. In this way, the final product will meet the needs of the water industry as well as the intent of the National Water Initiative in providing consistent and comparable information about water accounting practices. Information that supports public and investor confidence in the amount of water being traded, extracted, and recovered and managed for environmental and other public benefit outcomes.

References

[1] Abu-Zeid M., *International Journal of Water Resources Development* 17(4) (2001) 527-538.

[2] Australian Water Reform , Second biennial assessment of progress in implementation of the National Water Initiative, Australian National Water Commission, Canberra (2009).

[3] Canterbury Water Management Strategy, ECan and Canterbury Water, Christchurch (2009).

[4] Edward Tello, Lorne Cummings and James Hazelton, *Journal of Behavioral Economics* (1990).

[5] F. W. Owa, *International Letters of Natural Sciences* 3 (2014) 1-6.

[6] Hussain, I. Assessing impacts of irrigation on poverty: Approaches, methods, case studies and lessons. International Water Management Institute (IWMI), BOKU-Sieberdorf-EARO-Arbamintch, Ethiopia (2004).

[7] Hasan Dudu, Sinqobile Chumi, Policy Research Working (2010).

[8] Paolo Rosato, Carlo Giupponi, Department of Agronomy, Environment and Plant Production University of Padova (2002).

[9] Slattery M., *International Journal of Water Resources Development* 17(4) (2001) 481-487.

[10] Vardon, M., M. Lenzen, S. Peevor, M. Creaser, *Journal of Ecological Economics* (2007) 550-559.

[11] Water Account Australia, Australian Bureau of Statistics, Canberra (2008).

(Received 19 May 2014; accepted 26 May 2014)