Strengthening Capacity for Water Resources Management in the post 2015 Development Framework

Water accounting and policy applications

UN November 26, 2016
John M. Matuszak - Head of Global Engagement
WAVES  World Bank
It said that because we have made money in wasting and eroding large human resources and piled up nominal wealth in securities and bank balances, we have lost sight of the fact that the natural resources of our land – our permanent capital - are being converted into those nominal evidences of wealth at a faster rate than our real wealth is being replaced.

That is well worth thinking about. That is the unbalanced budget that is most serious and it is to balance that budget that the great program of conservation and useful public works is being carried out. The success of that form of budget balancing is just as important to the future of America as that of the Treasury, important as that may be.

As a matter of fact, the Treasury is all right and we are balancing that budget – you needn’t worry – but, in addition to it, we are going to use every effort to balance the budget of our human and natural resources’
What Do Policy-Makers Need from Water Accounts?

Economic information to make decisions:

- Allocation of water, water infrastructure among competing users:
  - economic users and water productivity
  - ecological requirements
  - international requirements for shared water resources

- Water pricing and economic instruments:
  - Variation of water delivery costs/scarcity by region
  - Impact of water tariffs on different industries and different social groups, especially the poor

- Managing water pollution: sources, costs & benefits of reducing pollution

- Coordinating policy in related sectors: agriculture, rural development, tourism, etc.

- Planning for future water requirements, water demand mgmt.
Water issues and policy objectives: A broad grouping

I. Improving water supply and sanitation services

II. Managing water supply and demand

III. Improving the state of the environment and water resources

Adapting to extreme hydro-meteorological events

Water security

Policy objectives

• Limited access
• Unequal distribution

• Reduced quality and pollution

Allocating water among competing users: contribution to GDP, employment, social wellbeing

• Managing for increased floods/droughts
Water accounting

Country examples

Netherlands
Australia
Botswana, South Africa
Colombia
Mexico
Guatemala
NETHERLANDS

Water issues

- Safety, protection against flooding
- Water management: excess of water
- Water management: water resources and water use
- Water pollution
- Water quality
NETHERLANDS

Is there decoupling between water use and economic growth?

Volume change GDP, employment and tap water used for production

Source: CBS
NETHERLANDS
Water Profiles: What are the most important users of water? Is their water productivity improving between 2003 and 2010? (liter/ euro of sector value-added)

Source: CBS
NETHERLANDS
Are there regional differences in emission intensity?

Emission-intensity per river basin (only producers)

heavy metal equivalents per million euro
nutrient equivalents per million euro

Source: CBS
Australia:
Increasing water efficiency by sector, 2004 & 2008

Source: ABS
A closer look at water use for Agriculture in Australia, 2004 and 2008 (in Gigaliters)

Source: ABS
AUSTRALIA:
Are scarce water resources allocated efficiently?
Water Productivity by sector, 2004 & 2008 ($GDP per GL)

From $54m/GL in 2004-05 to $95m/GL in 2008-09

Source: ABS
AUSTRALIA: Who uses water and who pays for water?

Monetary vs. physical use of distributed water in key sectors, 2008-9 (Australia)

- Agriculture
- Mining
- Manufacturing
- All other Industries
- Households

Source: ABS
Projecting future water demands
Australia, 2050

How is this done?
Economic models that include water use accounts
• Simplest models are Input-Output models
• More complex models include simulation, programming & CGE models

[Diagram showing water use by main sectors over time]
BOSTWANA
Are scarce water resources allocated efficiently?

% share in GDP, employment & water use, 2011

Source: DWA
International Trade & Water Use

Are water-scarce countries exporting water?

How does export promotion drive water demand in Namibia, Botswana and South Africa?

How much can ‘virtual water’ in imports reduce pressure on water demand?

Exports in these countries are dependent on primary & processed primary commodities especially agriculture, mining--water intensive products
Water intensity of trade
(m3 per 1000 rands of imports or exports)

South Africa is net exporter not only because volume of exports > imports, but also because water intensity of exports > imports.
MEXICO
Are scarce water resources allocated efficiently in the Valle de Mexico Watershed?

Productivity by economic activity, 2008 (value-added /m3 water)
COLOMBIA
Identifying main water users

Water use by sector, 2009

- Basic metal products (except...)
- Non-metallic mineral products
- Rubber and plastic
- Chemicals and chemical products
- Products of petroleum refining,...
- Publishing, printing and the like
- Paper products, cardboard and products
- Products of wood, cork, straw and...
- Tanning and prepared leathers,...
- Knitted and crocheted fabrics,...
- Textile articles, except apparel
- Yarn and thread, textile fabrics,...
- Snuff products
- Beverages
- Foodstuffs n.c.p.
- Cocoa, chocolate and sugar...
- Sugar and panela
- Coffee products and threshing
- Grain mill products, starches and...
- Milk products
- Oils and animal and vegetable fats
- Meat and fish

Million m3
GUATEMALA
Is water supply enough to population’s demands?

Population density, 2005

Water scarcity index, 2005 (rainy season)

Water scarcity index, 2005 (dry season)
GUATEMALA
What are the pressures in the different watersheds?

Domestic water use in relation to watershed surface (m$^3$/ha), 2003
Thank you!

http://www.wavespartnership.org/waves/