Water footprint application at different geographical scales

CEO Water Mandate meeting
UNEP-Mandate Corporate Water Accounting Workshop
New York, 14-16 April, 2010

Erika Zarate, Maite Aldaya, Derk Kuiper
Water Footprint Network

Overview presentation

1. WF application at different geographical scales

2. Policy framework and measures

3. Framework of the WF application in geographical areas

4. Conclusions

1

WF application at different geographical scales

WF at different geographical scales

1. WF within a geographical area

- total amount of water that is used by all the production processes in the geography (green, blue, grey)
- virtual-water balance: net import of virtual water

2. WF of the consumers in the geographical area

1. Internal water footprint – WF inside the geography
2. External water footprint – WF in other geographies

WF at different geographical scales

- Literature review - Existing case studies (17)
- WF and VWT a powerful tool for IWRM
- More research is needed on:
  1. WF assessment technical aspects:
     - Database improvement
     - WF industrial goods
     - Grey WF
     - Sustainability assessment indicators
     - Practical guidance non-scientific community
  2. Insertion of WF assessment results into a decision-making system

Existing case studies

Geographic unit	Source
GLOBAL	
International	Chapagain & Hoekstra (2004), Hoekstra & Chapagain (2008)
NATIONAL	
Indonesia	Bulsink et al. (2009)
Netherlands	Van Oel et al. (2009)
Spain	Aldaya et al. (2008), Garrido et al. (2010)
Germany	Sonnenberg et al. (2009)
China	Liu & Savenije (2008), Ma et al. (2006)
India	Verma et al. (2008), Kampman et al. (in press)
Cyprus	Zoumides (2008)
Tunisia	Chaded et al. (2008)
UK	Chapagain & Orr (2008)
Morocco	Hoekstra & Chapagain (2007)
REGIONAL AND RIVER BASIN	
Mancha Occidental Region	Aldaya et al. (2009)
Doñana Region	Aldaya et al. (2009)
Guadalquivir river basin	Rodríguez-Casado et al. (2009)
Guadiana river basin	Aldaya & Llamas (2008)
Lower Fraser valley and Okanagan basins	Brown et al. (2009), Schreier et al. (2007), Schendel et al. (2007)
Heihe river basin	Chen et al. (2005)

2

Policy framework and measures

WF policy framework

- WF assessment can:
  - Inform cross sectoral policy making
  - Build citizen awareness
  - Inform water allocation decisions at different levels
- Currently no systematic and practical framework exists
- Better understanding and agreement needed on:
  - Water offsetting and water neutrality
  - VWT consideration in the Doha Development round of the WTO
  - Developing countries

WF policy framework

Water policy

- National water statistics, national water plan and river basin plans
- Indicator beyond GDP
- Water pricing
- Allocating water more efficiently
- Drought management
- Financing water efficiency
- Fostering water efficient technologies and practices
- Development of a water-saving culture
- Improvement of knowledge
- Promote coherence between water and other policies: environmental, agricultural, energy, trade, foreign policy

WF policy framework

Agricultural policy

- Main water consumer (86% green and blue WF)
- Optimal cropping pattern planning (suitable to climate conditions)
- Allocate water where its value added is highest
- Increase water productivity
- Water-saving irrigation techniques along the whole supply chain (storage – distribution – application)
- Reduce/eliminate or reform of environmentally harmful subsidies
- Reduce pollution - Non-point source pollution indicator – Grey WF

WF policy framework

Environmental policy

- Include WF and VWT analysis in the river basin plans.
- Plan water allocation taking the environmental flows into account.
- Implement WF reduction measures ensuring environmental flow requirements and ambient water quality standards.

WF policy framework

Trade policy

Water saving through trade

- National water saving

  A water scarce nation can save water by importing a water-intensive commodity instead of producing it domestically.

- Global water saving

  International trade can save water globally if a water-intensive commodity is traded from an area with high to an area with low water productivity.

- WTO – Doha Development Round

WF policy framework

Energy policy

The water sector is becoming more energy-intensive

- desalination
- pumping deeper groundwater
- large-scale (inter-basin) water transfers

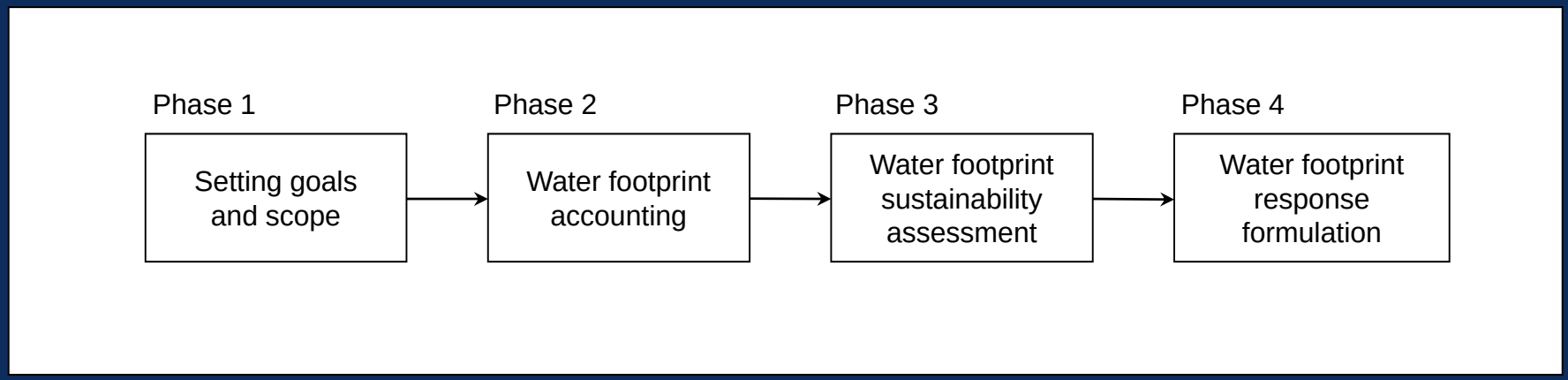
The energy sector is becoming more water-intensive

- biomass

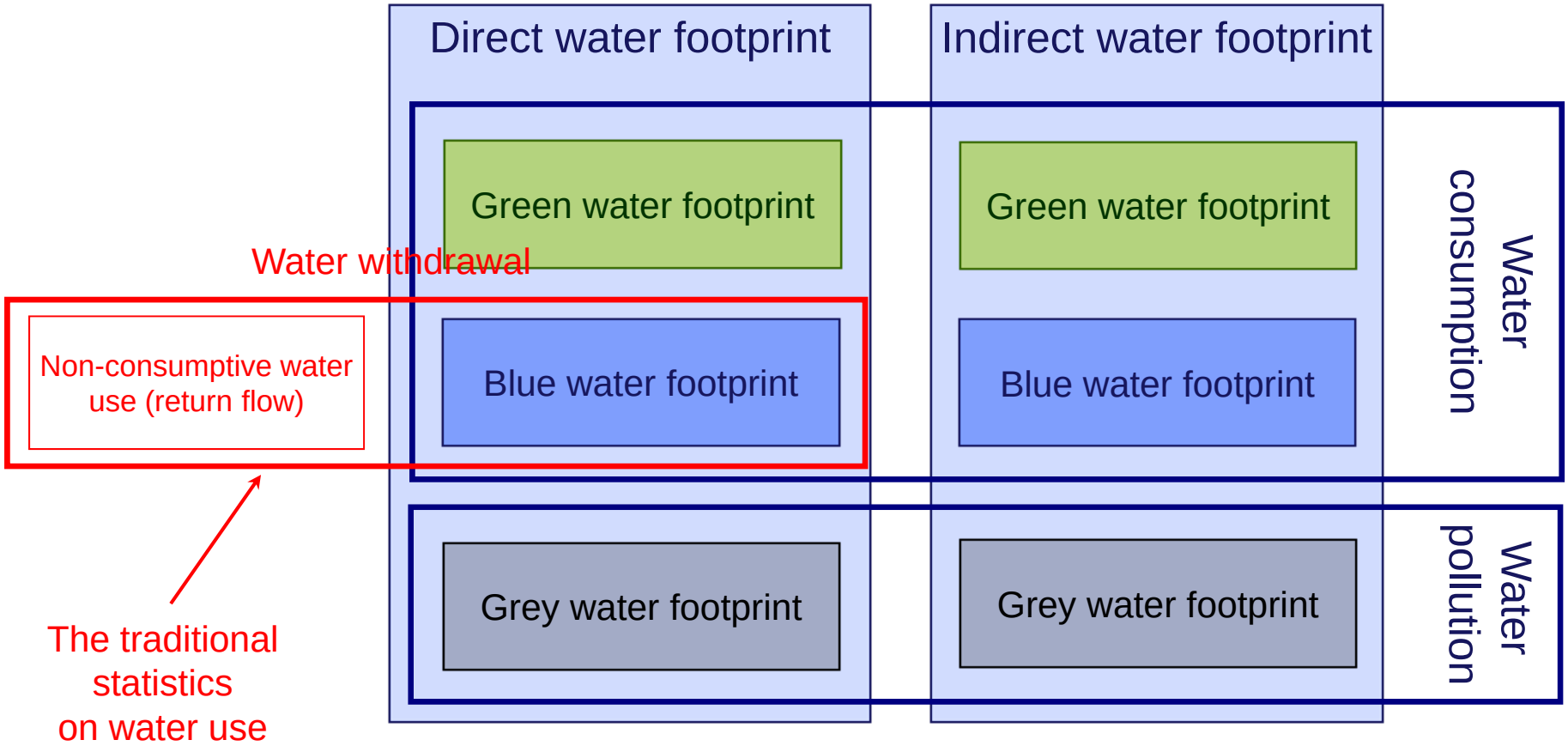
3

Framework of the WF application in geographical areas

WF assessment steps

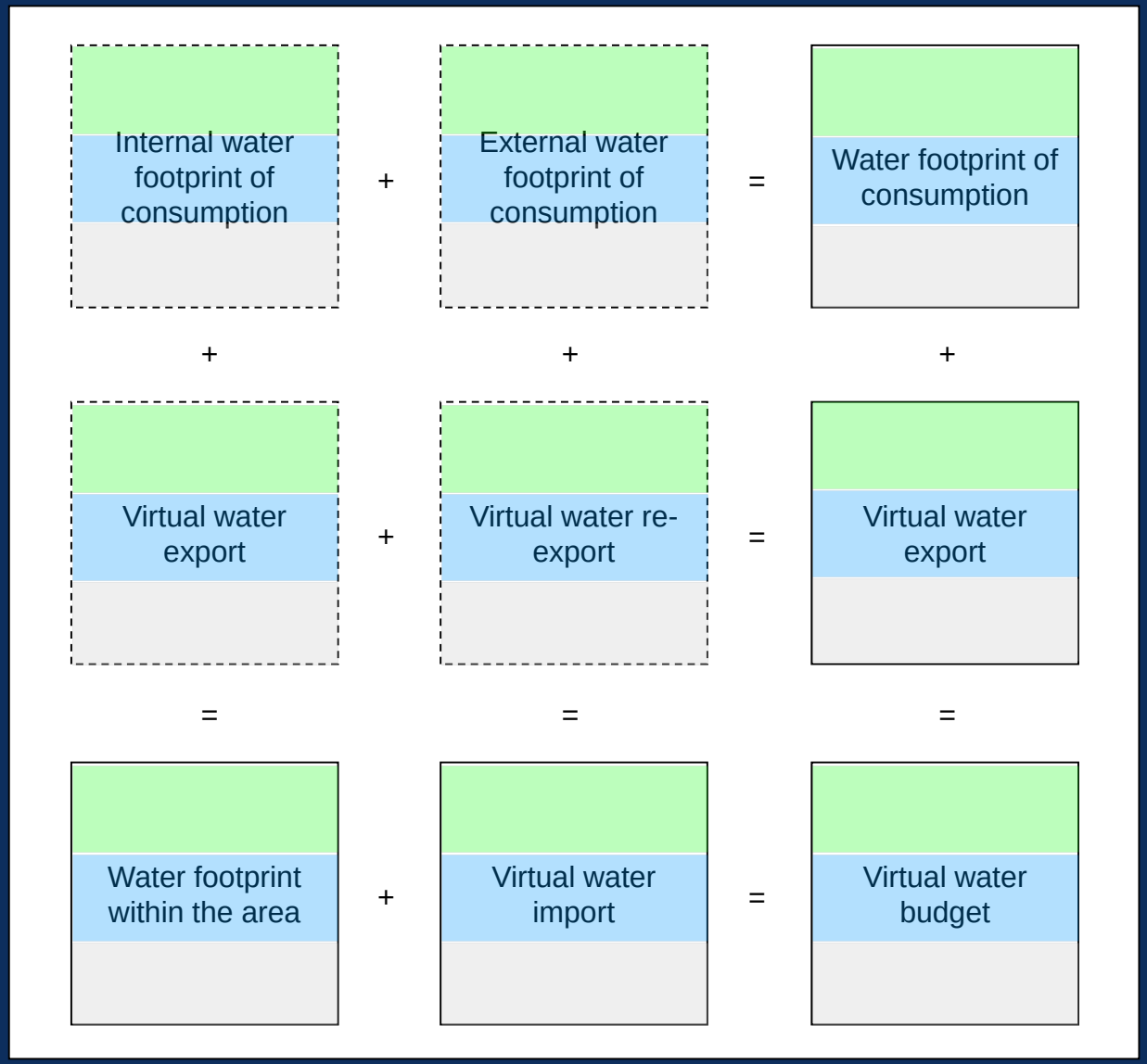


WF accounting framework



[Hoekstra et al., 2009]

WS accounting framework



4

Conclusions

Conclusions

1. None of the existing studies includes the complete WF assessment

2. Common language between different sectors

3. Framework to inform and support decision-making

Conclusions

Further work is needed

Testing WF framework in different geographical areas:

- Lake Naivasha (Kenya)
- Sao Paulo (Brazil)
- Chile
- China (Beijing)
- Spain
- Peru
- India
- Nile basin

Key areas R&D

- Grey WF
- Analysis and testing of WF sustainability indicators
- Elaborate and test response scenarios (s. optimization)
- Test the framework in the context of business WF assessment
- Test the effectiveness of the framework in guiding decision making

Thank you