

Water and industry

Applicability of Water Footprints in South Africa

A completed Water Research Commission (WRC) study has explored the applicability of water footprint assessments in South African industry.

Background

In South Africa and other water-scarce countries, tools which can inform efficiency and raise awareness and create dialogue with people not previously involved in water debates are potentially very useful. Water footprints have the potential to contribute in this way, bringing new and important decision-makers into the water debate in a way that is intuitive and cuts across sectors.

Additionally, water footprints create an opportunity for companies to join a global process of disclosure, understand risk and integrate an understanding of water into planning decisions. With this potential, the concept of water footprint has gained significant traction in the past 10 years in the private and public spheres across a variety of sectors.

However, water footprint as a tool is still developing and many conceptual and methodological questions remain.

Investigating the applicability of water footprints in SA

To explore the applicability of water footprints in South Africa, the WRC commissioned this project. The purpose of the project was to understand how water footprints may contribute to sustainable management of water in South Africa primarily in the industrial sector, and to explore linkages between water and energy and the concept of water offsetting.

Three reports were produced as part of this study. *Volume I: Literature Review* explores the international experience with

water footprints and linkages to carbon footprints and offsetting.

This report also summarises the purposes for which water footprints are being explored in the industrial sector, and highlights questions that must be addressed to use water footprint as a reliable and meaningful indicator.

Volume II: Policy and Regulation places the water footprinting tool in context with various other water resource management strategies, policies and tools. This study investigated in particular the applicability of using water footprinting as an accounting method through which water offsetting and neutrality could be achieved.

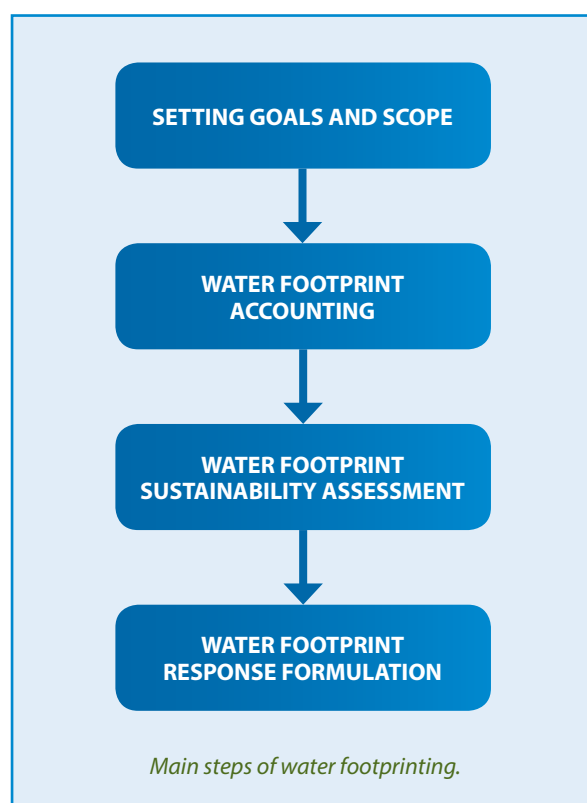
Water accounting is required to ensure that the offsetting of water use has been carried out as claimed. Water footprint, as a form of water accounting however, is not the most relevant tool to use.

In agriculture for example, the variable water footprints of crops across seasons and regions is too variable to be of use as an exact accounting method. Water neutrality may be carried out through the use of market mechanisms to offset water use in one region through the investment in water saving or quality improvement in another (nearby) region. This becomes complex however through the recognition of water as a public good, and therefore the commodification of the resource needs to be managed in order to ensure social and environmental requirements are still met.

Although water footprinting can be used, the footprint needs to be repeated at a number of intervals to gauge the change spatially and temporally. Therefore, the application of water footprinting to the regulation of water accounting and neutrality is not suggested.

Water footprinting is seen as one of many potential alternatives through which water accounting may take place. The decision regarding which tool to use is dependent on the context of the water offset.

Volume III: Key insights from South African Case Studies summarises the key learnings from the South African case studies and makes recommendations for the applicability of water footprinting for the corporate sector.



A range of case studies were conducted to understand the applicability of water footprinting to different sectors using different lenses. The sectors most important to address in case studies include those which are significant water users, have significant water quality implications, and are important to the South African economy.

These sectors include agriculture, manufacturing, electricity, gas and water, mining, wholesale and retail. A water footprint has four steps as shown in the figure elsewhere on this page. While these steps provide good guidance for a typical water footprint study, the design of case studies in this project diverged slightly from these steps to reflect the project's primary objectives and to stay within the scope of the project.

Key insights from case studies

Water footprint assessments have rapidly evolved, with several companies and countries having undertaken water footprint assessment. In South Africa, it's mostly large companies with global links that have undertaken water footprint assessment.

This could be attributed to the fact that there are still many issues that act as a barrier to the effective uptake of water footprint in South Africa. Some the challenges are related to the following issues broadly:

Institutional, regulatory & policy implications

- The South African water policy does not include the water footprint assessment and its potential for use by large water users. This lack of clarity in the policy framework has created uncertainties in how business should interpret the results of water footprint assessments and its implications on their water use.
- Water footprint assessment methodology places a lot of emphasis on the hydrological aspect, which is a hindrance to effective integration into policy. This is because water footprint assessments are very complex and they are more effective in being used as a metaphor than a metric. There is a need to incorporate economic and ecological aspects of water footprint, to move into a more holistic goal of sustainable development.
- There are different players in the water footprint field, which complicates the issues because of differences in methodological approach. There is need to develop closer alignment of the different initiatives being implemented and align with global processes.
- In many cases there are no clear regulatory framework for disclosure and the reporting of water footprint assessment outcomes, In addition there is no clarity on the application of water footprint tools. Due to the disparity in the application of the water footprint concept, there is a need to agree on an industry wide approach on the application of water footprint approaches.
- There is a need to mainstream water footprint assessments as water resource management tool to enable ease of their application. This is specifically related to the ease of accessing data that is required for water footprint sustainability assessment, which is mostly held by the biodiversity conservation sector. However due to the fact that water footprint has still not been mainstreamed effectively as a management tool,

this information is not readily available for application in water footprint assessment.

- There is a need to push for voluntary disclosure by companies on their water use to aid uptake of water footprint as a management tool.

Methodology

- The natural assimilative capacity of the environment is not accounted for in greywater footprint assessments, as result estimates of the greywater footprint are not very accurate in many cases.
- Difficult of greywater assessment is partly attributed to the variation in water quality standards and therefore there is a need to standardise accounting framework for greywater. Furthermore, greywater footprint for extractives is not well developed and needs further investigation.
- It is important to note that the greywater footprint is different to that of the blue- and green-.

Data and assessment

- Successful application of water footprint tools requires that key decision-makers related to water use in the company are involved from the onset. This helps to clarify the purpose of the assessment and to get a high level buy-in from key stakeholders in the company, because outcomes of a water footprint assessment might require a fundamental change in water use by the company.
- Data usage for all stages of the water footprint assessments need to be standardised, to ensure that the same national datasets are used when carrying out water footprint assessment.
- Water footprint assessments can be very complicated, it is therefore advisable for a company seeking to undertake an assessment to involve expert practitioners to help guide the process to avoid any potential pitfalls.

- Consideration of the contextual issues such as the social, environmental and political dynamics at the point of water use is critical for understanding impact. This is especially pertinent for South Africa, where issues of readdress to water access need to be considered, and the fact that water resources are unevenly distributed, as a result the impact of water abstraction is dependent on when and where the water was abstracted.

Overall, it can be concluded that water footprinting is indeed a useful tool that companies can use as a first estimation of their water use and impact. The major pitfall is the lack of consensus on the use and reporting of the water footprint studies.

Companies need to be careful on the reporting of water footprints based just on the numbers, especially for areas that are not well understood and even more critical, on misrepresenting the numbers to suit their outcomes. Furthermore, the study showed the water footprint data and knowledge base for industries is not well developed, and more work is required to gain confidence in the tool.

Going forward, a standardised guide on the use of the water footprint and its application needs to be developed. A starting point would be the updated report that will be released later this year by the Water Footprint Network.

Further reading:

To order the report, *Water Footprints for Industry in South Africa Volume 1 (Report No. TT 616/14)*, *Volume 2 (Report No. TT 617/14)*, *Volume 3 (Report No. TT 618/14)* contact Publications at Tel: (012) 330-0340, Email: orders@wrc.org.za or Visit: www.wrc.org.za to download a free copy.