

**Coordinating European Strategies on Sustainable Materials,  
Processes and Emerging Technologies Development in Chemical Process  
and Water Industry across Technology Platforms**

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## Deliverable Report:

### D5.2\_WP5\_UCM

## Report on application of tools for the potential implementation of fiscal measures

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**SUMMARY:** The main part involves the review of supporting tools and indicators that could be used as a reference for the implementation of fiscal incentives to companies. Available tools are analyzed in terms of their usability for the purpose involved. Finally, the way in which the selected tools would be most adequately applied to assess a product, process or service and how the result of such assessment can be better translated into fiscal incentives.

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## 1. Introduction

The synergy between the water and the chemical sectors will be articulated through a shift in the paradigm through which water is perceived in the industry. This change will promote the vision of water as a valuable resource, contributing thus to water security and the safeguard of the natural environment. To consolidate this paradigm shift and enroot it in the social environment, a set of measures will be proposed in the frame of ChemWater. Among these ones, the consortium will select one or various tools from the different schemes available to assess the sustainability of the water management in the companies and based on the results. These tools will be proposed as potential instruments to be used by water authorities deciding to reward with fiscal incentives those organisations carrying out a sustainable water management. The promotion of this kind of initiatives is a requirement if the shift in the water paradigm is to be effectively attained. The materialisation of the granting of fiscal incentives will have a series of benefits for the community. This benefit could be achieved solely with the application of fiscal incentives. If the initiative is complemented with measurements to publicize the compliance of companies with the sustainability practises required to attain the incentives (e.g. through water sustainability label), the programme will turn into a marketing tool that will foster competitiveness and hence, continuous improvement with regards to sustainability. If the public eventually assimilates what the initiative represents, the increasingly higher concerns for the environment will drive customers to acquire products or services having a sustainable approach in what regards the use and consumption of water. A consequence of this would be the protection of European products and services granted with a sustainable water management label.

This deliverable summarized the activities carried out in the WP5.2. The main part involves the review of supporting tools and indicators that could be used as a reference for the implementation of fiscal incentives to companies. Available tools are analyzed in terms of their usability for the purpose involved. Finally, the way in which the selected tools would be most adequately applied to assess a product, process or service and how the result of such assessment can be better translated into fiscal incentives.

## 2. Approach to select supporting tools for the implementation of potential fiscal measures

The present report involves the selection of a water management auditing tool according to its suitability to apply it in the granting of fiscal incentives rewarding the sustainable praxis with regards to water in the chemical industry. The methodology considered in the selection of the auditing tool followed a top down sequence. In a first step, a set of general selection criteria was defined with the purpose of identifying those schemes having an approach such that could be employed as objective water management measuring tools. From this point, the team established the main activities of water management that the potential tool should account for to assess sustainability. A third step involved the compilation of a comprehensive list of indicators, against which each of the tools was assessed. In each step of the process, some tools were discarded according to their compliance with the corresponding criteria.

## 3. Criteria for the selection of supporting tools

### 3.1 General selection criteria and limitations

The tool to be selected must meet with the following criteria:

- Local application, regional scope
- It should account for social, economic and environmental sustainability
- Flexible to be applied to any kind of company/sector
- Quantitative: It must allow for several levels of compliance
- It must allow for external verification/auditing
- It should have a level of complexity that makes it attractive, in other words, such as to meet a compromise between the effort and cost for the company and the benefits that the fiscal incentives bring.
- It should be compatible with the European regulation framework
- It should take into account the performance of the whole supply chain

Given the criteria above, a number of potential limitations of the tool may arise. Among them:

- If the tool is to be flexible so as to be applicable in any company, some significant information concerning water management may be left out of consideration. If fiscal incentives are to be applied in the future, it could be advisable to develop specific tools for the most important sectors.
- The complexity and price of the auditing process may limit the participation of small companies or those ones belonging to traditional sectors.
- Within a given sector some products may involve the use of larger amounts of water than others. If the audit of an organization water management of is to be carried out at

site level, the aspect mentioned before may lead to unfair quantifications of a company's water performance.

### **3.2 Water management activities that the tool should address**

#### **a) Understanding the regional and local water situations.**

In order to be able to evaluate its water impact, the company must be aware of the water situation of the geographical context in which it operates in terms of availability, stress, seasonality, concurrence of water uses, water policy framework, proximity to protected ecosystems or sensitive natural areas, availability of water and sanitation for the population and foreseen changes in the mentioned aspects.

#### **b) Recording water use and understanding its impacts**

The company should keep a detailed account of its water use and relate it to the impacts on the local water situation. The organization should know when and how much water it consumes, the quality of that water, the quantity and composition of the water returned to the water cycle, and the impacts of water abstraction and return from and to the social and natural environments.

#### **c) Identifying specific water risks.**

By knowing the context and their operation, the company should be able to foresee water related risks. These ones will be classified as having an external or an internal origin.

The first will encompass those ones originating outside the company, that is, at local or regional level. Among these risks it is important to consider the impact on the product, staff and customers security and safety, that changes (qualitative or quantitative) in the water supply may entail.

The second set of risks should include those risks related to water that stem from the activities of the company. To be considered here are those risks that eventual failures or changes in the corporate water management chain may have on the watershed and production chain.

#### **d) Monitoring and communicating**

The water use and situation of the company should be communicated to the stakeholders in the company in an effective manner so as to achieve the highest possible involvement of the company staff in water related issues. Additionally, the company should monitor the performance of the three first activities.

### 3.3 Indicators addressed

The following list of indicators was elaborated by the UCM and employed as a reference to evaluate the tools considered in the present study. These indicators have been compiled from several sources such as sustainability reports, scientific and technical papers, official informative resources from European institutions and certification systems. The compilation has been made with the aim of comprehensiveness. They are organised in categories.

#### 1. Water resources

- 1.1. Total water consumption by source ( $\text{m}^3/\text{d}$ )
- 1.2. Water withdrawal as a % of available water by source (%)
- 1.3. Net water consumed per unit of production ( $\text{m}^3/\text{t}$ )
- 1.4. Uses of freshwater ( $\text{m}^3$  for each use)
- 1.5. Regional population affected by water withdrawal (Number)
- 1.6. Rainfall anomaly (Yes/No)
- 1.7. Temperature anomaly (Yes/No)
- 1.8. Freshwater pretreatment (Yes/No. Which one?)

#### 2. Water management

- 2.1. Process water flow ( $\text{m}^3/\text{h}$ )
- 2.2. Internal treatments. (Qualitative\_Type of treatment)
- 2.3. Reuse capacity (% of the input that is reused internally)
- 2.4. Number of circuits/loops (Number)
- 2.5. Water evaporated from process to air ( $\text{m}^3/\text{t}$ )
- 2.6. Water evaporated from cooling towers to air ( $\text{m}^3/\text{t}$ )
- 2.7. Water losses in wastes ( $\text{m}^3/\text{t}$ )
- 2.8. Other water losses ( $\text{m}^3/\text{t}$ )
- 2.9. Environmental management system (yes/no) (Which one?)
- 2.10. External reuse (% of the effluent that is reused)
- 2.11. Water in the final product ( $\text{m}^3/\text{t}$ )

#### 3. Water discharge by quantity, quality

- 3.1. Total effluent flow ( $\text{m}^3/\text{d}$ ,  $\text{m}^3/\text{t}$ )
- 3.2. Net effluent ( $\text{m}^3/\text{t}$ )
- 3.3. Effluent location (% different steps of the process)
- 3.4. Environmental costs Pollution tax on effluent discharge ( $\text{€}/\text{m}^3$ )
- 3.5. Type of effluent treatment

#### - Physical and aggregate parameters:

- 3.6. Conductivity ( $\mu\text{S}/\text{cm}$ )
- 3.7. Temperature ( $^{\circ}\text{C}$ )
- 3.8. Suspended solids ( $\text{mg}/\text{l}$ )
- 3.9. Total dissolved solids ( $\text{mg}/\text{l}$ )
- 3.10. Oil and grease ( $\text{mg}/\text{l}$ )
- 3.11. Color
- 3.12. Turbidity (NTU)
- 3.13. Odor (Number of dilutions)
- 3.14. Acidity ( $\text{mg}/\text{l}$ )
- 3.15. Alkalinity ( $\text{mg}/\text{l}$ )
- 3.16. pH
- 3.17. Taste
- 3.18. Flavour

- 3.19. Total  $\alpha$ ,  $\beta$  radiations (Bq/l)
- 3.20. Radioactive elements (U, Rn, Ra, Cs, Po) ( $\mu\text{g/l}$ )

- Chemical parameters:

- 3.21. COD (mg/l)
- 3.22. BOD (mg/l)
- 3.23. Phosphates (mg/l)
- 3.24. Nitrates (mg/l)
- 3.25. AOX (mg/l)
- 3.26. Organ-Cl (mg/l)
- 3.27. Chromium ( $\mu\text{g/l}$ )
- 3.28. Zinc ( $\mu\text{g/l}$ )
- 3.29. Cyanides ( $\mu\text{g/l}$ )
- 3.30. Fluorine ( $\mu\text{g/l}$ )
- 3.31. Ammonium (mg/l)
- 3.32. Ammonia (mg/l)
- 3.33. Chlorides (mg/l)
- 3.34. Hydrocarbons ( $\mu\text{g/l}$ )
- 3.35. Cadmium ( $\mu\text{g/l}$ )
- 3.36. Copper ( $\mu\text{g/l}$ )
- 3.37. Mercury ( $\mu\text{g/l}$ )
- 3.38. Lead ( $\mu\text{g/l}$ )
- 3.39. Nickel ( $\mu\text{g/l}$ )
- 3.40. Ecotoxicity to aquatic life (EC50)(equitox/ $\text{m}^3$ )
- 3.41. Pesticides (e.g: organochlorines, PCB's...) ( $\mu\text{g/l}$ )

- Biological parameters

- 3.42. Escherichia Coli (CFU/100ml)
- 3.43. Fecal Coliform (CFU/100ml)
- 3.44. Salmonella (CFU/100ml)
- 3.45. Clostridium Sulphate Reducers (CFU/100ml)

#### 4. Natural resources conservation/impact

- 4.1. Effluent destination ( $\text{m}^3/\text{d}$ )
- 4.2. Water discharge as a percentage available water per destination (%)
- 4.3. Population affected down stream
- 4.4.  $\Delta T$  ( $^{\circ}\text{C}$ )
- 4.5. BOD/ COD
- 4.6. Eutrophication potential

#### 5. Capital investment, granting, loans and insurance services

- 5.1. Investment on water supply (€)
- 5.2. Investment on water treatments (€ or €/tproduct)
- 5.3. Public funds for R+D+i projects (€)
- 5.4. Investment in education/employee training expense (€/employee)
- 5.5. Total budget in R+D+i projects (€, % subsidized)
- 5.6. R+D+i projects (Number)
- 5.7. Patents applied and used (Number)
- 5.8. Price of water ( $\text{€}/\text{m}^3$ )
- 5.9. Price of effluent discharge ( $\text{€}/\text{m}^3$ )
- 5.10. Number employees in the R+D+i department/ Total number of employees (%)
- 5.11. Accidents insurance (€)
- 5.12. Scientific publications (Number)

5.13. Funding sources: regional, national or international (% and €)

## 6. Regulatory requirements

- 6.1. Non conformance with environmental legislation (Yes/No and where is the no conformance)
- 6.2. Information, consultation and negotiation procedures with local authorities (Yes/No)
- 6.3. Policies with impacts on communities (Which one? Number)
- 6.4. Consideration of human rights as a part of investment and procurement decision (Yes/ No and % of total investment)

## 7. Safety and occupational health

- 7.1. Accidents (Number and frequency)
- 7.2. Consumer security plans (Yes/No)
- 7.3. Potential risk for employees (Probability)
- 7.4. Internal and external emergency plans

8. Environmental safety: risk of environmental accidents and impacts arising, or likely to rise, as consequence of incidents, accidents and potential emergency situations

- 8.1. Installations included in the biennial audit program for risk and out compliance identification (Number)
- 8.2. Environmental improvements above compliance levels (Number and which one?)
- 8.3. Number of environmental complaints (Number and topic)
- 8.4. Number of successful legal actions taken against company or employees for work related incidents or accidents (Number)
- 8.5. Awareness plans in water conservation for employees (Yes/No)
- 8.6. Programmes for dangerous chemicals substitution (Yes/No)

## 9. Sustainable products

- 9.1. Recyclability of the product (Yes/No)
- 9.2. Eco-design (Yes/No)
- 9.3. Production without specification (% of the total production without the specification limits)
- 9.4. Water consumption per unit of product ( $m^3$ / tproduct)

## 10. Use of energy and energy savings

- 10.1. Amount of energy (KWh, KWh/t)
- 10.2. Source (% from different sources)
- 10.3. Energy production in the process (cogeneration) (W/tproduct)
- 10.4. Electricity (net) ( $\Delta W$ )
- 10.5. Steam (net) ( $\Delta m^3$  and type)
- 10.6. Heat (net) ( $\Delta J$ )

## 11. Global warming prevention

- 11.1. CO<sub>2</sub> (Kg/t)
- 11.2. CH<sub>4</sub> (Kg/t or ppm)
- 11.3. VOCs (g/t)

## 12. Releases to land

- 12.1. Amount of waste per destination (t/product or t/d)
- 12.2. Pesticides (mg/t)
- 12.3. Dismantling of the plant (type of contaminants and t)

### 13. Administrative planning decision

- 13.1. Number of ISO 14001 certificates (Number)
- 13.2. Number of ISO 9001 certificates (Number)
- 13.3. Assessment of suppliers
- 13.4. Stakeholders inclusion (Yes/No)
- 13.5. Social and corporate responsibility policies (Yes/No)
- 13.6. Total training hours (h/employee)
- 13.7. Water awareness plans (Yes/No)

### 14. New markets

- 14.1. New products that involve less use of resources (Type and number)

## 4. Support tools analysis

### 4.1 Overview

Table 1. List of initiatives considered

<b>Support tools</b>	<b>More information</b>
<i>Alliance for Water Stewardship</i>	<a href="http://www.allianceforwaterstewardship.org/">http://www.allianceforwaterstewardship.org/</a>
<i>BIER Water Footprint</i>	<a href="http://www.bieroundtable.com/water_stewardship.html">http://www.bieroundtable.com/water_stewardship.html</a>
<i>CDP water disclosure project</i>	<a href="https://www.cdproject.net/en-US/Pages/HomePage.aspx">https://www.cdproject.net/en-US/Pages/HomePage.aspx</a>
<i>Ceres Aqua Gauge</i>	<a href="http://www.ceres.org/issues/water/aqua-gauge">http://www.ceres.org/issues/water/aqua-gauge</a>
<i>European Water Stewardship</i>	<a href="http://www.ewp.eu/activities/ews/">http://www.ewp.eu/activities/ews/</a>
<i>GEMI Local Water Tool</i>	<a href="http://www.gemi.org/localwatertool/">http://www.gemi.org/localwatertool/</a>
<i>GRI Water Performance Indicators</i>	<a href="https://www.globalreporting.org/Pages/default.aspx">https://www.globalreporting.org/Pages/default.aspx</a>
<i>ISO Water Footprint</i>	<a href="http://www.iso.org/iso/iso_technical_committee.html?commid=54854">http://www.iso.org/iso/iso_technical_committee.html?commid=54854</a>
<i>United CEO Water Mandate</i>	<a href="http://ceowatermandate.org/">http://ceowatermandate.org/</a>
<i>UNEP Finance Initiative</i>	<a href="http://www.unepfi.org/index.html">http://www.unepfi.org/index.html</a>
<i>Water Accounting: an Australian framework for the mineral industry</i>	<a href="http://www.minerals.org.au/focus/sustainable_development/water_accounting">http://www.minerals.org.au/focus/sustainable_development/water_accounting</a>
<i>Water Footprint Network</i>	<a href="http://www.waterfootprint.org/?page=files/home">http://www.waterfootprint.org/?page=files/home</a>
<i>Water Impact Index</i>	<a href="http://growingblue.com/footprint-tools/water-impact-index/">http://growingblue.com/footprint-tools/water-impact-index/</a>
<i>Water Risk Filter</i>	<a href="http://www.waterriskfilter.panda.org/Default.aspx">http://www.waterriskfilter.panda.org/Default.aspx</a>
<i>Water Stewardship Australia limited</i>	<a href="http://waterstewardship.org.au/">http://waterstewardship.org.au/</a>
<i>Water use assessment within LCA</i>	<a href="http://www.lifecycleinitiative.org/">http://www.lifecycleinitiative.org/</a>
<i>WBCSD Global Water Tool</i>	<a href="http://www.wbcd.org/work-program/sector-projects/water/global-water-tool.aspx">http://www.wbcd.org/work-program/sector-projects/water/global-water-tool.aspx</a>
<i>WRI Aqueduct</i>	<a href="http://aqueduct.wri.org/">http://aqueduct.wri.org/</a>

For each one of the initiatives a compilation of information was carried out. It includes first the organisations responsible for the initiative or sponsoring it. It follows summarising the scope of the initiative (applicability) and continues providing a description of the approach with which the tool was conceived. The compilation also

points out which activities of the water management of the company are addressed in the initiative (activities addressed) and the potential internal stakeholders within the organisation

## 4.2 Alliance for Water Stewardship

### Organizations:

This initiative is being developed by eleven board organizations: The nature conservancy (TNC), Water Stewardship Australia (WSA), The Pacific Institute (PI), WWF, Water Witness International, the Water Environment Organization (WEF), the European Water Partnership (EWP), the International Water Management Institute (IWMI), the UN Global Compact's CEO Mandate, the Carbon Disclosure Project (CDP) and the United Nations Environment program.

### Applicability:

It is a global standard designed to be applied in businesses and water service providers. It can be both applied within the sites and in the watersheds.

### Approach

This initiative was built around four principles or statements that should be met to achieve a sustainable water management: good water governance, improve water balance, improve water quality and protection of important water related areas. Each principle is organized in criteria and indicators. Indicators are the smallest information unit and they have an associated punctuation which reflects the degree of effort of the company and the anticipated impact. With this standard water users can be identified as certified, gold certified or platinum certified depending on the points obtained.

This initiative is based on the Deming plan-do-check-act cycle which makes it compatible with other management systems such as ISO 14001 or EMAS.

### Activities addressed

- Determining actions and setting answers
- Monitoring and communicating performance

### Primary Corporate users

- Corporate communications
- External relations
- Sustainability

### 4.3 BIER Water Footprint

#### Organizations:

The Beverage Industry Environmental Roundtable (BIER). This partnership is formed by 18 leading beverage industries

#### Applicability:

This water use and consumption accounting methodology is focused on the beverage sector.

#### Approach

This initiative has developed a methodology to perform water footprint analysis in the beverage sector. The different aspects of water footprint that should be taken into account in the beverage industry are explained and analyzed. This initiative aims to provide governments, non-governmental organizations, customers and consumers with water footprint information that satisfies their demands on sustainable water management.

Within their activities this initiative also promotes performing annual benchmarking and sharing of best practices. These activities allow identifying the weaknesses and thus continuously improve companies' water management.

This tool is compatible with use of other water management initiatives.

#### Activities addressed

- Accounting for and understanding impacts
- Determining actions and setting answers
- Monitoring and communicating performance

#### Primary Corporate users

- Operation
- Sustainability

#### 4.4 CDP water disclosure project

##### Organization:

This initiative is developed by the non-profitable organization CDP. This organization has developed different projects in four different fields: water, forest, carbon and climate change. The water is supported by the Alcoa and Turner Foundation.

##### Applicability:

It can be applied to businesses and cities.

##### Approach

This initiative provides a common platform in which all companies can share their water management and governance issues, making it a useful channel of corporate communication. The companies have to fill a questionnaire that is structure in three areas: water management and governance, water risks and opportunities and water accounting.

Companies can also select if they want their response to be public or not.

This program is currently developing a methodology for grading the performance of companies

##### Activities addressed

- Monitoring and communicating performance

##### Primary Corporate users

- Operation
- Corporate communications
- Corporate finance
- Sustainability

## 4.5 Ceres Aqua Gauge

### Organization:

Ceres in collaboration with the World Business Council for Sustainable Development, Irbaris and Investors Responsibility Centre IRRC Institute, in collaboration with representatives of 50 financial institutions, companies and NGOs.

### Applicability:

Companies

### Approach

The Aqua Gauge is a flexible Excel-based tool with an associated methodology that helps investors to interpret and evaluate the information provided by companies about their water strategy. This tool is also beneficial within the companies because it gives a complete picture on their water practices.

This corporate-level tool is structured in four areas: measurement, management, stakeholder engagement and disclosure.

The results of the tool are presented as a scorecard and it is not designed to give quantitative assessments. It classifies the company performance on the different activities in four categories: leading practice, advanced progress, initial steps and no action.

It was developed in a way that investors should be able to analyze companies based on public available data, for example the ones given by companies in their sustainability reports or CDP water survey.

### Activities addressed

- Determining actions and setting targets
- Monitoring and communicating performance

### Primary Corporate users

- Operation
- Corporate communications
- Corporate finance
- Sustainability

## 4.6 European Water Stewardship

### Organization:

The European Water Partnership, which is an independent value based non-profit organization structured as an open and inclusive member association.

### Applicability:

Industry, agriculture and urban areas. Although it is valid on global scale it aims to be useful in all European Union countries, despite the differences in water availability

### Approach

- The European Water Stewardship (EWS) standard.
- It presents a referring glossary and guideline.
- The EWS multi-site standard.
- It offers a certification scheme.
- The referring EWS group certification scheme.
- The communication scheme.

This initiative defines sustainable water management based on 4 principles, 15 criteria and 49 Indicators.

- 4 principles, which outline the overarching aims of the EWS Standard and associated criteria

-Principle 1: achieve and maintain sustainable water abstraction in terms of water quality.

-Principle 2: ensure the achievement and maintenance of good water status in terms of chemical quality and biological elements

-Principle 3: restore and preserve the water-cycle in High Conservation Value (HCV) areas.

-Principle 4: achieve equitable and transparent water governance.

- Criteria are further divided into indicators, which are used to evaluate compliance with the principles.

- Indicators are classified as major, minor or recommendation.

- The major and minor indicators have to be complied with to achieve the referring objective.

- The indicators classified as recommendation are non-obligatory.

In order to obtain the EWS certification the organization has to achieve compliance with all major indicators. An organization can be certified as gold, silver or bronze depending on their compliance with the minor indicators.

#### Activities addressed

- Determining actions and setting targets
- Monitoring and communicating performance

#### Primary Corporate users

- Corporate communications
- External relation
- Operations
- Procurement
- Sustainability

#### 4.7 GEMI Local Water Tool

##### Organization:

The Global Environmental Management Initiative (GEMI) developed this tool in collaboration with the World Business Council for Sustainable Development (WBCSD) and IPIECA to ensure the compatibility with their tools. GEMI working group consisted of more than 40 companies

##### Applicability:

Companies and other organizations that want to evaluate their water-external impacts. This tool is used for local assessment of specific sites.

##### Approach

This Excel-based tool allows companies identifying specific risks and opportunities, calculate site-level metrics and based on the results obtained document the management plans and opportunities. This tool is structured in 6 modules. Module 1 is related to the influent and effluent data. Module 2 is focused on the watershed conditions by analyzing its water issues. Module 3 is related to the external impact of the company. In Module 4, based on the information provided in the previous modules the risks are determined. Module 5 is related with the management plan. Module 6 is focused on reporting.

##### Water data required

In module 1 influent source and receiving waterbody data are required. For each source the volume of the different water sources withdrawal or discharge is required. Quality parameter such as turbidity, total dissolved solids and COD are also needed. In the Excel file the different water sources are listed for the inflow water and the effluent (table 2)

Table 2. Water sources

Water withdrawal	
Freshwater sources	Non-freshwater sources
Ground water	Oceans
Municipal/potable	Surface water (other than oceans)
External wastewater	Internal recycled

Rain water	Internal reused
	Ground water
	External wastewater
Water discharge	
Freshwater sources	Non-freshwater sources
Ocean	Ocean
Surface water	Surface water
Subsurface water	Subsurface water
Offsite treatment plant	Offsite treatment plant

#### Activities addressed

- Accounting and understanding impacts
- Determining actions and setting targets
- Monitoring and communicating performance

#### Primary Corporate users

- Operation
- Corporate communications
- External relations
- Sustainability

## 4.8 GRI Water Performance Indicators

### Organization:

This tool was developed by the Global Reporting Initiative which is a not-profit organization coordinated by multi-stakeholders body. GRI promotes social, economic and environmental sustainability.

### Applicability:

Companies and other organizations that want to evaluate their water-external impacts. This tool is used for local assessment of specific sites.

### Approach

This approach aims to provide a common framework for sustainability reporting establishing boundaries and common guidelines. The information required is divided into three aspects: economic, social and environmental.

Recently GRI has launched the new G4 guidelines where the concept of “boundary”, as defined in the G3 Guidelines”, has changed. In the G4, companies are requested to consider their impacts inside and outside of companies.

### Water data required

Within the environmental indicators there are 5 related to water

- G4- EN8: total water withdrawal by source
- G4- EN9: water sources significantly affected by withdrawal of water
- G4- EN10: percentage of total volume of water recycled and reused
- G4- EN22: total water discharge by quality and destination
- G4-EN26: Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization’s discharges of water and runoff.

### Activities addressed

- Monitoring and communicating performance

### Primary Corporate users

- Corporate communications Sustainability

## 4.9 ISO Water Footprint

### Organization:

International Organization Standardization (ISO)

### Applicability:

Products, processes and organizations

### Approach

ISO 14046 is a new standard for water to provide water footprints of products, processes and companies based Life Cycle Assessment (ISO 14044). This standard provides consistency and credibility to water footprint analysis.

This verification and certification system applied to water has the following benefits

- Assess and prepare for the future risks to your water use
- Identify ways to reduce the environmental impacts of your water use
- Improve efficiency at product, process and organizational levels
- Share knowledge and best practice with industry and government
- Meet customer expectations of increased environmental responsibility

### Activities addressed

- Accounting for and understanding impacts
- Monitoring and communicating performance

### Primary Corporate users

- Operations
- Sales and Marketing
- Sustainability

#### **4.10 United CEO Water Mandate**

##### Organization:

This public-private initiative was developed by the United Nations Global Compact (UNGC) in collaboration with the Government of Sweden and a group of specialized companies.

##### Applicability:

Companies of all sizes and sectors can join this global initiative.

##### Approach

The CEO Water mandate covers six key areas: Supply Chain and Watershed Management, Collective Action, Public Policy, Community Engagement and Transparency. This initiative was designed to assist companies in the development, implementation and communication of their sustainable water management. It takes into account the direct water related impact but also in the supply chain.

Companies that endorse CEO mandate should annually report their progress in the implementation of the Mandate and its six aspects. Quantitative and qualitative measurements are reported using broadly accepted tools as GRI.

##### Activities addressed

- Determining actions and setting targets
- Monitoring and communicating performance

##### Primary Corporate users

- Corporate communications
- External relation
- Sustainability

#### 4.11 UNEP Finance Initiative

##### Organization:

A global partnership between the United Nations Environment Programme (UNEP) and the global financial sector. The UNEP Regional Seas Programme and the Stockholm International Water Institute (SIWI) has actively collaborated in the development of this water initiative.

##### Applicability:

Companies from all sectors.

##### Approach

The objective is to raise awareness on the business implications of adverse water-related developments and opportunities in water-related investment. It also provides tools to the financial sector for the identification, assessment and management of water-related risks and opportunities.

The activities of the UNEP Finance Initiative are focused on water supply and use. On water supply the objective is to increase channelling of funds into the water sector. With regards to water use, the activities of the initiative focus on introducing water consideration into risk/opportunity assessment processes in the context of both water-exposed businesses “downstream” and private households.

UNEP FI has led two major initiatives in the field of sustainability reporting:

1. GRI Financial Services Sector Supplement
2. Sustainability Management and Reporting: Benefits for Financial Institutions in Developing and Emerging Economies

##### Activities addressed

- Identifying water risks and opportunities

##### Primary Corporate users

- Corporate finance
- Sustainability

## 4.12 Water Accounting: an Australian framework for the mineral industry

### Organization:

This framework was elaborated by the Mineral Council of Australia in conjunction with the Sustainable Minerals Institute of Queensland.

### Applicability:

Metals and Mining Companies in Australia.

### Approach

This water accounting framework was developed to allow companies to quantify, report and compare their performance on sustainable water management.

The MCA Water Accounting Framework provides:

- A consistent approach for quantifying flows into, and out of, reporting entities, based on their sources and destinations;
- A consistent approach for reporting of 'water use' by minerals operations that enables comparison with other users, and relates to water sharing planning processes;
- A consistent approach in quantifying and reporting water 'reuse' and 'recycling' efficiencies such that the reliance on sourced water is reduced
- A model for the more detailed operational water balance as guidance for those businesses which currently do not have an effective operational water model or see an opportunity to develop this new approach.

The water accounting framework has two components:

- The Input-output Model which provides a consistent model to quantify the water withdrawal and discharged per source
- The Operational Model which is a consistent method for the calculation and reporting of water reuse and recycling

### Activities addressed

- Accounting and understanding impacts
- Determining actions and setting targets

Primary Corporate users

- External relations
- Operations
- Sustainability

## 4.13 Water Footprint Network

### Organization

The Water Footprint Network is a non-profit organization is to promote the transition towards sustainable, fair and efficient use of fresh water resources worldwide. This organization collaborates and has to partners from different sectors: academic institutions, governmental agencies, non-governmental organizations, business and international organisations.

### Applicability:

Individuals, businesses and countries.

### Approach

The Water Footprint Network has to work programmes:

- The Technical Work Programme which is focused on providing Water Footprint assessment methodology, statistics and Water Footprint assessment manual and tools.
- The Policy Work Programme which is focused on the development of practical knowledge on how to incorporate water footprint analysis into governmental and catchment policies, into corporate strategies for environmental and social responsibility, and into initiatives on environmental standards and certification schemes.

### Activities addressed

- Assessing global and local water situation
- Accounting and understanding impacts

### Primary Corporate users

- Operations
- Sustainability

#### 4.14 Water Impact Index

##### Organization

Veolia Water and Veolia Environment Research and Innovation

##### Applicability:

Municipal and industrial sectors

##### Approach:

This tool goes further than traditional volume-based water accountancy tool. This single indicator takes into account not only the volume of water used but also the level of stress on the local resources and the water quality.

It considers also indirect water impacts associated with materials, chemicals, the waste generated and energy consumed.

This online tool is designed for those with some degree of operational understanding of water and wastewater systems, and requires an understanding of a variety of factors including water chemistry and the energy-water nexus.

##### Activities addressed

- Accounting for and understanding impacts
- Identifying water risks and opportunities
- Determining actions and setting targets

##### Primary Corporate users

- Corporate communication
- External relations
- Operations
- Sales and Marketing
- Sustainability

## 4.15 Water Risk Filter

### Organization

The World Wildlife Found (WWF) in collaboration with DEG finances private-sector investments in developing countries

### Applicability:

All industries

### Approach:

This tool combines aspects from other initiatives such as the river scarcity data form WFN or questions from the CDP Water questionnaire. This tool identifies and quantifies water –related risks through a system of weighted risk indicators. For each of the indicators five different answer options are possible from 1 (no or very limited risk) to 5 (very high risk). In this online tool some informative indicators are provided automatically (Basin risk indicators) or by the user via a questionnaire (Company risk indicators) which are not taken into account in the risk calculations.

The results of the risk assessment will provide companies guidance on where to focus their actions to improve water management.

In the company related risk questionnaire indicators are classified in different categories and subcategories:

1. Physical Risk
  - 1.1 Scarcity (Quantity)
  - 1.2 Pollution (Quality)

2. Regulatory Risk

3. Reputational Risk

### Activities addressed

- Assessing global and local water situation
- Identifying water risks and opportunities

### Primary Corporate users

- Corporate communications
- Corporate finance
- Sustainability

## 4.16 Water Stewardship Australia limited

### Organization

Water Stewardship Australia (WSA) Limited is a non-profit member based organization. It receives financial support through license fees for pilot studies and training, the membership fees and grants

### Applicability:

Companies in Australia and the Pacific region

### Approach:

Water stewardship standards are defined at the site level with the aim to achieve sustainable water use at the catchment level. Its objectives are to minimize negative impacts and support positive impact outcomes of water use and management in relation to: human health, social and cultural well-being, ecosystem health and sustainable economic activities.

This standard is based on five sustainability principles:

1. Water flow regimen
2. Water quality
3. Protection or restoration of important water-related sites and values
4. Responsible participation in catchment governance
5. Infrastructure governance

For the implementation of these principles this standard is structured around a four step process

- Step 1: recognition of long-term catchment-focussed goals
- Step 2: local specification of the long-term catchment-focused goals
- Step 3: defining the enterprise-specific three-year action plan
- Step 4: monitoring and reporting on progress on the implementation of the action plan.

### Activities addressed

- Determining actions and setting targets
- Monitoring and communicating performance

Primary Corporate users

- Corporate communications
- External Relations
- Operations
- Sustainability

#### 4.17 Water use assessment within LCA

##### Organization

This initiative is being developed by a partnership between The United Nations Environment Programme (UNEP) and the Society for Environmental Toxicology and Chemistry (SETAC)

##### Applicability

It is a global/local initiative for products or processes

##### Approach:

This initiative was built on the idea of taking into account the social, economic and environmental aspects throughout the entire life of a product or service. It provides a tool to quantitative study the environmental performance of products and processes regarding freshwater use and impacts. It implies that everyone in the whole chain of a product's life cycle. A life cycle approach can be use by investors, governments or individuals for decision making.

Nowadays this initiative is on the phase III of activities (2012-2016) where the main objectives to be achieved are:

- Enhance the global consensus and relevance of existing and emerging life cycle methodologies and data management;
- Expand capability worldwide to apply and to improve life cycle approaches; making them operational for organizations;
- Communicate current life cycle knowledge and be the global voice of the Life Cycle community to influence and partner with stakeholders.

##### Activities addressed

- Accounting for and understanding impacts

##### Primary Corporate users

- Procurement
- Research and development
- Sales and Marketing
- Sustainability

## 4.18 WBCSD Global Water Tool

### Organization

World Business Council for Sustainable Development

### Applicability

Companies and organizations operating in multiple countries with different water contexts.

### Approach:

This tool allows companies to analyze and map their water use and identify the risks relative to their global operation and supply chain.

The GWT does not provide specific guidance on local situations so that WBCSD has collaborated with GEMI to develop the Local Water Tool.

This tool consists of two parts:

1. An Excel file where the company introduces the information about its location and water use. Based on these data a water inventory, reporting indicators and other metrics will be generated.
2. An online mapping system where companies can plot their sites with external datasets and download those locations in a map.

### Activities addressed

- Assessing global and local water situation
- Identifying water risks and opportunities

### Primary Corporate users

- Corporate Communication
- Operations
- Sustainability

## 4.19 WRI Aqueduct

### Organization

World Business Institute. This organization collaborates with companies of different sizes and sectors.

### Applicability

Companies from different sectors worldwide

### Approach:

The Aqueduct Water Risk Atlas is an online tool to map and measure water risks for different industrial sectors worldwide. Water risk is analyzed through 12 individual risk indicators classified into three categories. Indicators can be weighted depending on their relevance in each industrial sector. For each of the indicators six levels of risk are possible from 0 (low risk) to 5 (extremely high risk)

1. Physical Risks related to Quantity
  - Baseline Water Stress
  - Inter-annual variability
  - Seasonal variability
  - Flood Occurrence
  - Drought severity
  - Upstream Storage
  - Groundwater Stress
2. Physical Risks related to Quality
  - Return flow ratio
  - Upstream protected land
3. Regulatory and Reputational Risks
  - Media coverage
  - Access to water
  - Threatened Amphibians

Activities addressed

- Assessing global and local water situation
- Identifying water risks and opportunities

Primary Corporate users

- Corporate Communication
- Operations
- Sustainability

## 5. Tool selection and justification

None of the tools analysed fits completely the requirements to apply as a reference on which to base a set of fiscal incentives. The main criteria for discarding the tools were:

- The tool provides no clear means for comparison (BIER Water Footprint, Carbon Disclosure Project, Aqua Gauge, GEMI Local Water Tool, The CEO Water Mandate, UNEP Finance Initiative, Water Accounting: An Australian Framework for the Mineral Industry, LCI)
- More business than sustainability driven (Aqua Gauge, UNEP Finance Initiative, Water Risk Filter)
- Shallowness (GRI, CDP Water Disclosure, UNEP Finance Initiative, Water Footprint Network)
- Partiality: Some tool address only certain aspects of the water management or are detailed to a good extent but leave out of the analyses important aspects such as, e.g. the interaction with the supply chain actors and the water management performance of these (CDP Water Disclosure, UNEP Finance Initiative, Water Risk Filter, WSA, WBCSD Global Water Tool, ISO Water Footprint, WRI Aqueduct)
- Sector specificity. Some tools are too specific for a given sector (BIER Water Footprint, Water Accounting: An Australian Framework for the Mineral Industry)
- The tool presents a difficult application / complexity (AWS)

Two tools have been selected in the process, namely the Water Impact Index (WII) and the European Water Stewardship Standard (EWS). The first one was selected on the basis of its simplicity of application without being shallow, and the second considering its comprehensiveness, user friendliness and promptness of application. By having two options, the decision makers can decide to go either for a simple tool or towards a more comprehensive option.

### 5.1 Water Impact Index

Going into the details, the selection of the Water Impact Index (WII) was made based on the following aspects:

- The tool addresses water management from a local perspective
- It has a very simple structure organised in three clear blocks
- It is provided as a online application tool, what facilitates its accessibility and operation
- It is user friendly from the two sides of the certification process
- It considers not only direct water uses but also the impacts entailed by other factors such as the use of chemicals or energy in the plant

- It can be linked and is complementary with the carbon footprint, enabling the combination of both to determine the anthropogenic pressure on water resources
- It requires the company to have a detailed record of its water use and consumption addressing both, qualitative and quantitative aspects
- The indicators it encompasses are objective and normally available for the corresponding water authorities what it makes it difficult for a company to mask the results.

## 5.2 European Water Stewardship Standard (EWS)

The selection of the European Water Stewardship Standard (EWS) was made based on the following aspects:

- The tool has been developed already taking into account the European regulation in the field, what in itself is a good starting point to facilitate a smooth transit towards its adoption and application by regional or local administrations.
- In line with the above, the tool prepares the companies for the implementation of the Water Framework Directive
- The tool addresses water management from a local perspective
- It considers water not as an isolated asset, but in its social and economical dimensions.
- It is user friendly from the two sides of the certification process, i.e. the company can easily understand what they are required for the audit and the auditing companies can easily follow through the surveillance protocol.
- By having a good control of the water management of the suppliers it promotes the expansion of good water practises in the water supply chain
- It is very well structured in topics
- The follow-up is carried out in two time frames, a major audit every three years and minor surveillances every year, what would guaranty the continuous compliance of the company while not imposing extra costs that would hinder its application
- It requires the company to have a detailed record of its water use and consumption addressing both, qualitative and quantitative aspects
- It provides indicators for the whole water cycle, from abstraction to re-allocation. It includes the greatest number of indicators of the tools revised. In addition it provides the best balance between information gained and easiness of application
- The indicators it encompasses are so comprehensive that it makes it difficult for a company to mask the results.
- The tool comes with a glossary that facilitates the application of the tool and the communication of the different actors involved in the certification process in a common language

## 6. Ways in which selected tools can be used for potential incentives

### Application of the EWS

- The water management performance will be categorised according to several levels of compliance i.e. non-compliance, minimal compliance, level one, two and/or three compliance level. These levels would be translated into fiscal incentives of progressive intensity. This scheme will promote continuous improvement of water management in the companies.
- The application of water management evaluation tools to the chemical sector as a whole presents number of limitations, being the main obstacle the diversity of production processes and products. It would be recommendable to establish categories of companies and devise incentives based on the particularities of each group even if the auditing tool to be applied is the same for all of them. The corresponding regional or national administration should gather a committee of experts to perform this categorisation and also to make recommendations on fiscal incentives addressing the particularities of each group (application of best practises, water use levels, potential for improvement, etc.). It is important to avoid unfair evaluations originating from an insufficient knowledge of the industrial reality of each group e.g. some products intrinsically require more water consumption than others.
- Evolution of the fiscal incentives. Ideally, the tool used for verification should be adapted to each of the industrial groups established above
- The company who opts for a fiscal incentive based on its water management performance must agree to make public the result of the audit whenever this reaches the minimal compliance level. Since the commitment towards sustainability is a powerful marketing tool, the disclosure of the audit result will encourage those companies having in low levels of compliance to continuously improve their water management. The creation of a set of labels corresponding to the water management performance certified will increase the effectiveness of the fiscal measures since it will bind them to the market by fostering competition among the companies to show a more environmental friendly production
- Improvement in the water management can be rewarded after verification
- It is strongly advisable that the corresponding administration organises workshops with the stake-holders from the companies with several purposes, namely to raise awareness about the incentives, to train the companies on the auditing process, to receive feedback from the industry as to the ways to improve the tool and it application

### Application of the WII

- The results obtained with the application of the WII are not categorised into levels of accomplishment. The levels of accomplishment and the correspondence to the

incentives should be established by the competent authorities. For this it is recommended to organize a committee integrating experts of each chemical industry subgroup (see the application of EWS) and relevant stakeholders. As in the case of EWS the levels of water management performance will be categorised according to several levels of compliance i.e. non-compliance, minimal compliance, level one, two and/or three compliance level.

- Being the verification process simpler in this tool than in the EWS, the WII is perhaps more advisable when the hindrance involving the cost of the auditing process is to be minimised.
- As in the case of EWS the company who opts for a fiscal incentive based on its water management performance must agree to make public the result of the audit whenever this reaches the minimal compliance level.
- Improvement in the water management can be rewarded after verification.

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