



Resources: Water & waste

Sustainable development analysis framework



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Sectors: Water supply, wastewater treatment, waste treatment, manufacturers of waste and water treatment equipment.

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The Water & Waste sector is central to the development of a sustainable management for natural resources, both at environmental and social levels. On the environmental level, how can we ensure the sustainable use of water and other natural resources in order to ensure the sustainability of ecosystems? How can we adapt to the consequences of climate change on water resources, including increased droughts and floods? On the social level, with one in nine people without access to clean water, how can we address obvious human development challenges? Beyond the critical issue of access to clean water, it is also establishing appropriate water management, in order to preserve its availability, especially in areas prone to drought, despite climatic hazards, and to limit the damage suffered by the inhabitants of the flood-prone areas. With regard to waste and its growth, especially for certain categories such as plastic and electronic waste, the potential for recovery is largely untapped: circular economy is still underdeveloped, and represents opportunities to explore for the private sector.

Main sustainable development issues for the sector

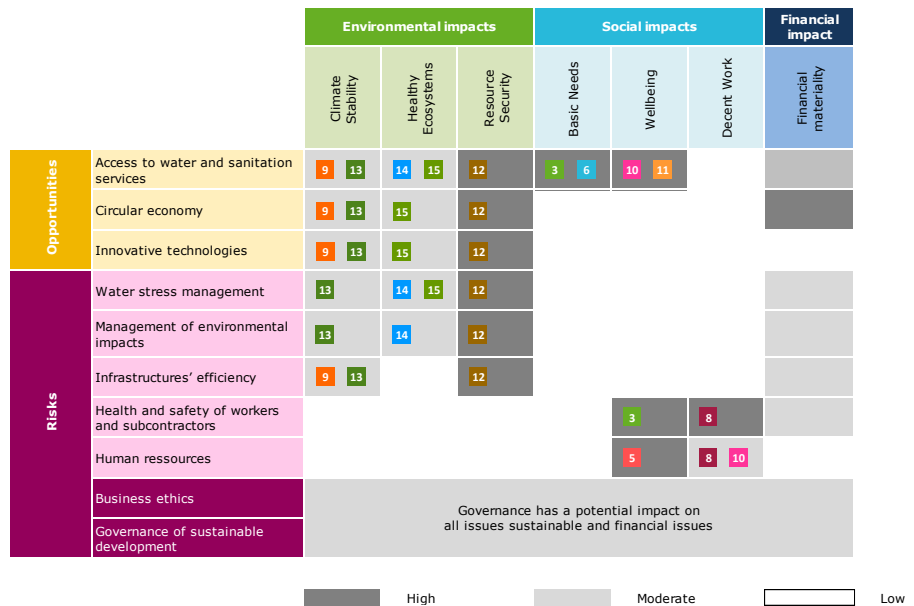




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Water & waste: at the core of the Sustainable Development Goals

The sector's players develop solutions for water resource management, water distribution, wastewater and waste management.

These topics represent sustainable development issues for all countries, and are explicitly included in the Sustainable Development Goals (SDGs) defined by the UN in 2015. Goal 6 is dedicated to access to water, and Goal 12 is partly related to the transition towards a circular economy:



Ensure access to water and sanitation for all



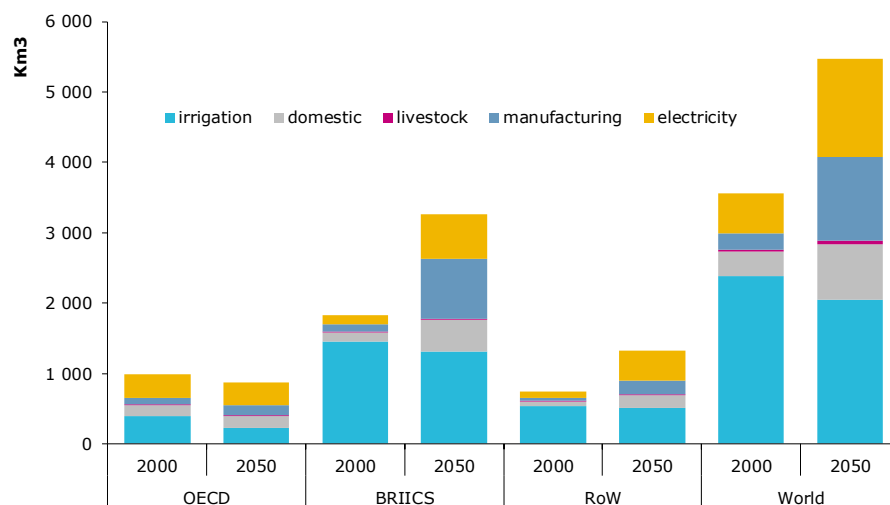
Ensure sustainable consumption and production patterns

With regard to water, first of all: ensuring access to clean water for all and securing access to this resource in a context of increasing water stress is a major challenge.

Without investment, existing water distribution and treatment equipment and networks will deteriorate, leading to further water losses and quality problems: on the one hand, as the equipment becomes obsolete, maintenance and renewal operations are necessary to control the obsolescence and its effects, including significant water leaks. On the other hand, changes in lifestyles and consumption influence the nature and concentration of water pollutants, to the extent that current treatment technologies may become inadequate to filter new pollutants (high concentration of chemical and medicinal residues in domestic water, high concentration of nutrients and chemical biocides in agricultural water, etc.).

At the same time, population growth and economic development are driving a sharp increase in water demand, while climate change is exacerbating the problem of water availability. This trend is expected to worsen in the coming decades, making water stress an increasingly difficult challenge.

Figure 1: Global water demand



Source: OECD Environmental Outlook to 2050: The Consequences of Inaction

In addition, services such as waste collection and treatment are basic environmental services that are necessary for all, but are still not available in many parts of the world. These services also face two challenges: the increase in the amount of waste produced and the development of complex waste (toxic or electronic waste in particular).

However, the subject of waste is not limited to its management. The development of a circular economy, making it possible to upcycle waste into useful goods (recycling, energy recovery) and therefore reducing the extraction of natural resources, is necessary to meet the challenge of resource availability.

As a result, all stakeholders in the water and waste sectors are positioned on key environmental themes, and all have the opportunity to contribute to the Sustainable Development Goals. Nevertheless, certain specific activities can be identified as having particularly strong impacts, and therefore greater opportunities: activities in developing countries, activities for the development of a circular economy and innovative technologies to significantly improve the state of practices. These activities will therefore be further promoted as part of an impact-oriented investment approach.

Sustainable development opportunities



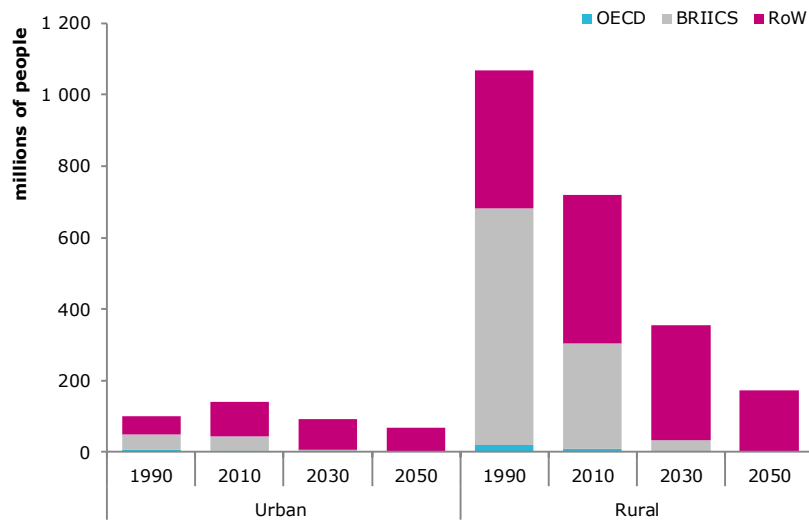
Access to water and sanitation services

844 million people still have no access to clean water, more than a third of them living in sub-Saharan Africa.

(WHO, UNICEF, 2017)

While access to water and basic sanitation services is historically widespread in developed countries, this issue is still relevant in many emerging countries. Despite considerable progress on this issue, with an additional 1.8 billion people gaining access to clean water between 1990 and 2008, 844 million people are still without access today, 37% of whom live in sub-Saharan Africa (OMS, UNICEF, 2017).

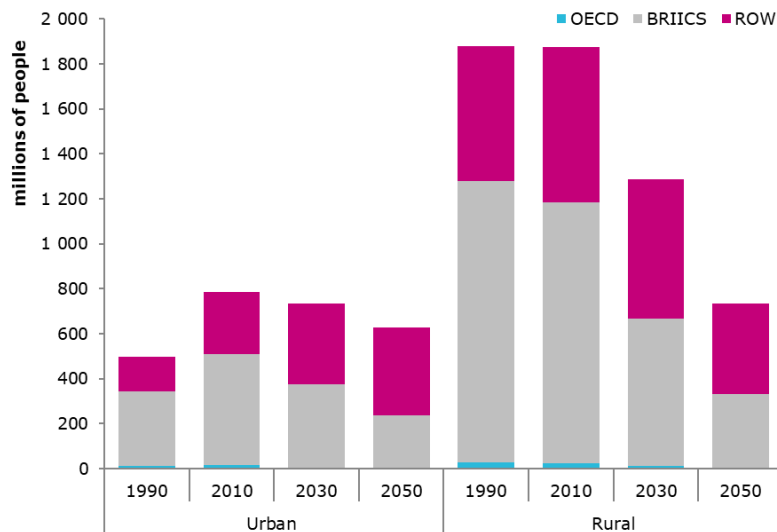
Figure 2: Population without access to a clean water source



Source: OECD Environmental Outlook to 2050: The Consequences of Inaction

Also, in sub-Saharan Africa, less than one-third of the population have access to sanitation facilities. Worldwide, 2.3 billion people lack basic sanitation facilities (WHO, UNICEF, 2017).

Figure 3: Population lacking access to basic sanitation facilities



Source: OECD Environmental Outlook to 2050: The Consequences of Inaction

However, it is estimated that up to 80% of diseases in developing countries are linked to poor sanitation and access to clean water (UN Water, 2013). Therefore, achieving the sustainable development goals by 2030 requires expanding development project initiatives in those areas where health structures are still lacking.

Companies showing a greater penetration in developing countries are the best positioned to have a positive impact for human development. Therefore, they will be given priority in the context of an impact-oriented responsible investment strategy.

Key indicators

- ▶ Share of turnover generated in countries where there is no access to water and sanitation services
- ▶ Budget for actions to increase access to water and sanitation services in developing countries

4.3 billion

people will be living in urban areas in 2025 and generate 1.42 kg of solid waste per day.

(The World Bank, 2012)

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Circular economy

Waste management is an essential service, but it may refer to a wide variety of practices. From landfilling to material recycling, not all solutions are of equal environmental interest. The most environmentally friendly waste management solutions are, in descending order: material recovery (i.e. reuse or recycling), energy recovery (incineration with energy recovery), landfilling with generation and biogas recovery, and finally landfilling without recovery.

In Europe, according to the European Environment Agency, each European generates an average of 3.5 tons of waste per year (Eurostat, 2015). Nearly two-thirds of this waste is sent to landfills or incinerated.

The objectives defined in the European framework directive are ambitious and clearly direct the sector towards circular economy: by 2020, half of household waste will have to be recycled in the Member States. This goal reaches 70% for waste from construction and demolition activities.

In the waste treatment sector, with the increase in the volumes of waste to be treated and the greater consideration given to challenges of resource depletion, companies that focus on the most advantageous solutions in terms of resource conservation, i.e. reuse and recycling, will be considered as providing solutions and favorably exposed to the market opportunities associated with the transition towards a circular economy.

Key analysis indicators

- ▶ Proportion of turnover generated by recycling activities
- ▶ Proportion of waste recycled

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Innovative technology

The sector is facing the emergence of problems requiring advanced technological solutions: new types of water pollution (such as micropollutants in drinking water or from cosmetics, medicines, etc.), development of complex waste (Waste Electrical and Electronic Equipment, known as WEEE),

toxic and dangerous waste (e.g. radioactive), scarcity of resources, etc. Stakeholders from various sectors are developing innovative solutions to meet these challenges. In addition to major environmental service groups (water treatment and distribution, waste collection and treatment), these specialized industrial players offer products with a high environmental impact.

In particular, the treatment of hazardous waste is an activity that requires both specific expertise from companies and the development of innovative solutions. Some growing sectors generate hazardous waste whose volume growth is expected to be significant in the coming years. For example, WEEE, generated by the increasing use of information and communication technologies, contains various hazardous substances and is the fastest growing source of waste in Europe. By 2020, they will have reached 12 million tons per year.

The private sector can also bring solutions on the Water theme. For example, advanced membrane filtration technologies, or "smart irrigation", can drastically improve the efficiency of water use and treatment. Similarly, technologies that enable or improve rainwater harvesting and storage are part of the solutions that will be developed to meet the objective of resource safety.

Technological developments and innovations are necessary to meet current and future challenges related to water and waste. Innovative players designing solutions that are technically, environmentally and economically efficient will therefore be favored as part of a responsible investment strategy.

Key analysis indicators

- ▶ Proportion of turnover generated by innovative technology

Exposure to opportunities

Indicators Considered		
High exposure	> 50 % of turnover generated by water and waste activities And > 10% of exposure to developing countries Or > 50% of turnover generated by recycling, treatment or decontamination activities of hazardous waste Or > 50% of turnover generated by management or innovative activities	The analysis of budgets for water access or sanitation actions in developing countries will be complementary source of information that may justify increasing the use of turnover-based assessment.
Significant exposure	> 50 % of turnover generated by water and waste activities	
Low or no exposure	< 50 % of turnover generated by water and waste activities	
Negative exposure	No activity in the Water & Waste sector is currently evaluated at this level	

Social and environmental risks

E Water stress management

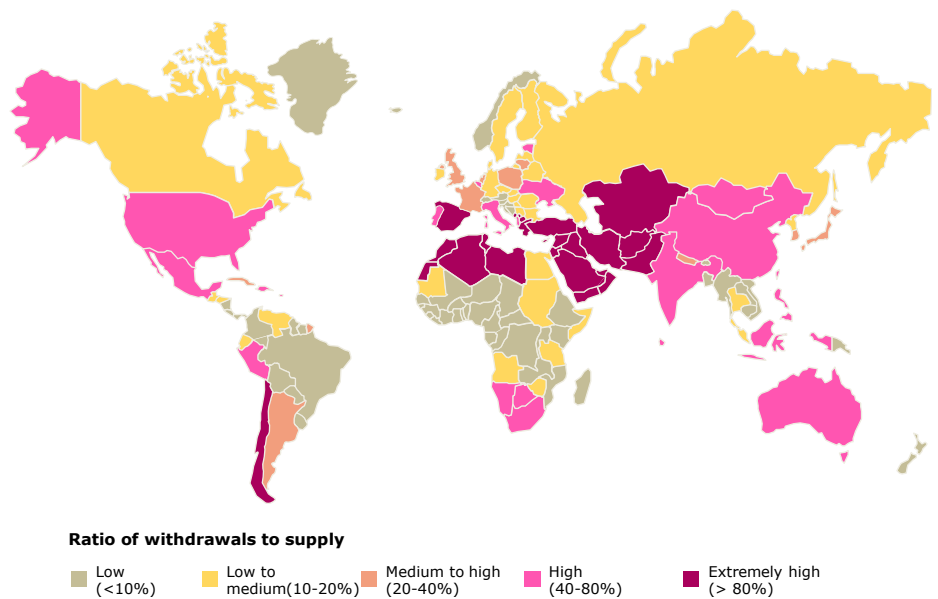
33 countries will face extremely high water stress by 2040.

(World Resources Institute, 2015)

Water stress is a ratio that is assessed by comparing water withdrawals (domestic, industrial, agricultural) and total blue water resources (surface fresh water). To date, nearly 1.2 billion people are already facing scarcity of water resources (PNUD, 2006).

According to the IPCC (Intergovernmental Panel on Climate Change), an intensification of water stress in Central and Southern Europe is highly possible. In this region, the number of people affected could increase from 28 to 44 million by 2070.

Figure 4: Water stress by country in 2040

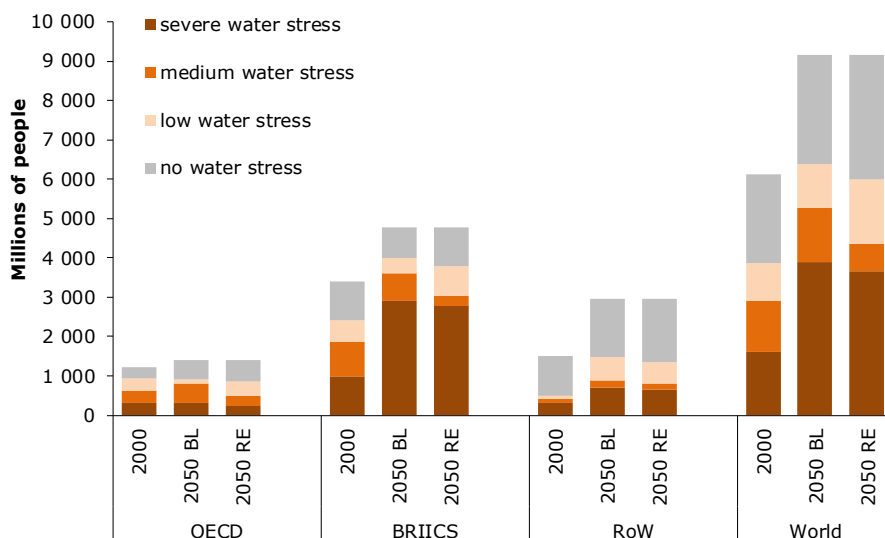


Source: Mirova / (World Resources Institute, 2015)

Worldwide, the World Resources Institute (WRI) estimates that about 30 countries (out of 167 evaluated) will be facing extremely high water stress by 2040. Nearly half of these countries are in the Middle East, an area already prone to freshwater shortages. Major economies are also affected, since the United States, China and India will also be exposed to a high water stress ratio, which could increase in some of regions by 40% to 70% by 2040.

The OECD confirms these worrying forecasts, projecting a worldwide increase of more than 50% between 2000 and 2050 of the number of people living in water-stressed areas.

Figure 5: People living in basins subject to water stress



Scenarios
 BL: Baseline
 R.E.: Resources' efficiency

Source: OECD Environmental Outlook to 2050: The Consequences of Inaction

In this context, water sector operators are required to guarantee that their management of water intake is sustainable. In some countries the legislation requires companies to conduct a risk assessment to evaluate the potential impact of their activities on sampling basins. This type of action seems essential and highly recommended for all actors operating in high-risk water stress areas. In addition, operators also have the ability to take action to limit the impacts of water stress, in collaboration with their stakeholders. Some examples of initiatives that will help to combat water stress include intelligent management of water catchment areas, defined in consultation with other local stakeholders (e.g. those with seasonal water use), actions to raise people's awareness about water saving, and discussion on potential water recycling programs (for industrial clients in particular).

We encourage companies to demonstrate that they have mapped their water stress risk and have defined a sampling management plan to reduce the potential impact of identified risks. While these practices are sometimes imposed by regulation, it is not the norm in every country. To complement this approach, we also support the implementation of good practices that help to address water stress at the local level.

Key indicators

- ▶ Regulatory compliance
- ▶ Mapping risks
- ▶ Implementing risk management plans to reduce exposure
- ▶ Adopting practices to address water stress

E Management of environmental impacts

The Water & Waste sector is largely industrial and has significant environmental impacts. Greenhouse gas emissions and other atmospheric pollution, water quality, etc., are all material issues for the sector. Because

these issues are important, they have been an integral part of operations management for years. Nevertheless, there are still differences between stakeholders who are advanced in this field and others who may be experiencing weaknesses in their management systems.

A specific focus will be given to waste treatment activities. The impacts of a waste treatment site depend largely on the type of operation: a sorting site does not deal with the same issues as a waste incineration plant (WIP). A waste treatment site - e.g. an open air discharge - is likely to have significant negative impacts on the environment: rainfall is loaded with waste residues before draining into the ground and flowing into groundwater. As a result, they are polluted with heavy metals or toxic materials. Another example is the treatment of sewage sludge: this sludge is the product of wastewater treatment plants (WWTPs), and is loaded with chemical contaminants, as well as pathogens (bacteria, etc.). Their treatment and elimination are also an important issue, although there are significant disparities in the sector's practices.

The environmental performance of each company will be assessed taking into account its infrastructure and the following criteria: formalization of an environmental management system (EMS), including monitoring and objectives (to reduce pollution and greenhouse gas emissions, etc.) and the environmental performance will be analyzed on a case-by-case basis. Particular attention will be given to the practices implemented by waste treatment facilities.

Key indicators

- ▶ Monitoring of environmental impact indicators: air and water emissions and the type of pollution
- ▶ Definition of objectives
- ▶ Level and evolution of performances

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Infrastructures' efficiency

In relation to the criticality of water resources, one of the key issues for the water distribution sector is to optimize its performance, in particular by reducing network leakage rates. Indeed, these rates now vary widely from region to region and depend on the age of local infrastructure and its maintenance: many industrialized countries have relatively old distribution networks, dating back to the first half of the twentieth century. In some cases, they have reached their full operating life, but have not always had the necessary maintenance work to guarantee consistent performance. In some regions in France and Spain, up to 30% of water is wasted before being delivered to the consumer. In the United States, the United States Geological Survey (USGS) estimates that nearly 23 million cubic meters of water are lost each day due to leaks, a volume equivalent to the total water consumption of the ten largest American cities.

For businesses, this topic is directly related to their operational performance. Companies are relatively dependent on the state of local infrastructure, which varies greatly from one region to another. However, they have a role to play in optimizing infrastructure's performance by making relevant investments to reduce leakage.

Standard maintenance operations (repairs, replacement) are therefore preferred, but other means now exist to optimize the operational

performance of the networks. These solutions include smart-metering, which allows rapid identification of failures or leaks, or the use of drones to monitor the status of certain parts of networks, which is also sometimes relevant.

For the companies involved, we evaluate the performance of the distribution networks on the basis of the following criteria: monitoring of leakage rate, definition of objectives and action plans to optimize performance.

Key indicators

- ▶ Monitoring of leakage rates, definition of performance objectives
- ▶ Evolution of leakage rates
- ▶ Investments in operations or equipment to optimize infrastructure performance

S Health and safety of employees and subcontractors

Waste collection and treatment activities are particularly exposed to serious accident risks and are frequently painful for employees.

Waste collection is thus marked by a high number of accidents related to the trips of pickup trucks (road accidents, waste weight, etc.). As for waste treatment, it is still very manual even though robotization is on the rise. These manual activities are often repetitive (musculoskeletal risks), and expose employees to potentially hazardous waste (contaminated waste, sharp edges, etc.). Some water distribution jobs are also very difficult and/or dangerous.

On the other hand, the sector often outsources operations. Still, subcontractors do not always benefit from the same protection regarding occupational safety, since companies often concentrate their efforts on their own employees (training, accident follow-up). However, it is essential to guarantee that all workers, even subcontractors, benefit from the most advanced procedures in reducing the risk of accidents.

Satisfactory management of health and safety issues requires the implementation of performance monitoring and action plans adapted to the main improvement areas. A good performance or a clear improvement in accidentology (frequency, severity) is also a positive indicator that this issue is taken into account. As outsourcing is a common practice in the industry, we also analyze security risk management for both subcontractors and outsourced providers. We expect the level of management and monitoring to be consistent with what is being done for the company's employees.

Key indicators

- ▶ Formalization: implementation of a policy, monitoring indicators and quantified objectives for workplace accidents, for both employees and subcontractors
- ▶ Performance: performance evolution over the last few years

S Human resources

Arduous working conditions can make it challenging to attract and keep employees. Therefore, it seems important to pay specific attention to this issue.

In addition, with many technical professions in the Water and Waste sector, developing and strengthening skills is essential. Talent management and succession planning are therefore essential elements of human resources management in the industry.

Finally, the current economic context forces many stakeholders in the sector to initiate drastic cost reduction plans, sometimes including significant restructuring of the workforce.

When analysing the human resources practices of a company in the sector, we will be particularly vigilant regarding skills management, specific plans for employees in arduous positions and, where applicable, the responsible management of restructuring.

Key indicators

- ▶ Restructuring: Implementation of plans; percentage of workforce reduction; implementation of a responsible management process
- ▶ Level of formalization of plans for skills management and strenuous positions management

G Business Ethics

Corruption practices in public markets are a recurrent risk. Companies in the water and waste sector are therefore facing this issue, which can be sensitive to varying degrees based on their level of exposure to public markets and according to geographical areas.

The analysis of business ethics practices also takes into account controversies, including responsible marketing (in particular water pricing policies in favor of low-income populations), compliance with competition rules, etc.

The review of business ethics risks is mainly based on a comprehensive analysis of the controversies related to the company and the company's reactions.

Key indicators

- ▶ Establishment in countries with high corruption risk
- ▶ Significant ethical controversies and company responses
- ▶ Current litigations and fines paid

G Governance of sustainability

The integration of sustainability at the core of a company’s governance seems to be critical for this industry, which is well positioned to support a sustainable development of our societies, but is also significantly exposed to ESG risks. Therefore:

We encourage companies to establish governance mechanisms for corporate responsibility. We also support the establishment of mechanisms to include the interests of all stakeholders, and to align the interests of executives with the long-term development of the company.

We are also attentive to the company's approach to value distribution, which should be fair between all company's stakeholders.

Key indicators

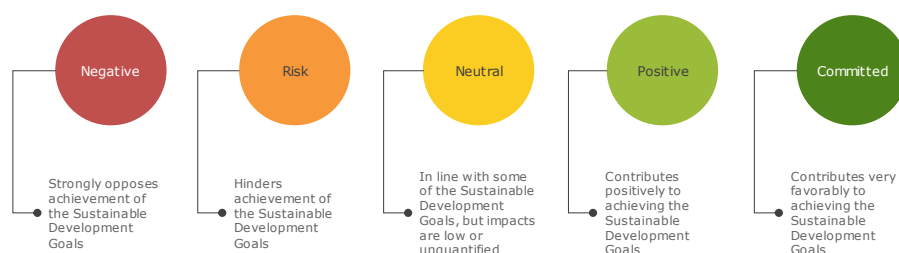
- ▶ Quality of the sustainable development approach
- ▶ A director or a board committee dedicated to CSR issues.
- ▶ Inclusion of extra-financial criteria in the executives' variable remuneration
- ▶ Equitable distribution of value and tax rate

Risks assessment

	Criteria
Positive	Must not meet the criteria to qualify as "Risk" And advanced environmental management combined with high performance And proper human resources management And where appropriate, adequate management of water stress risk
Neutral	All other cases
Risk	Inadequate management of environmental issues Or significant ethical controversies (e.g. corruption) without a proper action plan to reduce risk Or significant human resources issues that are not sufficiently managed

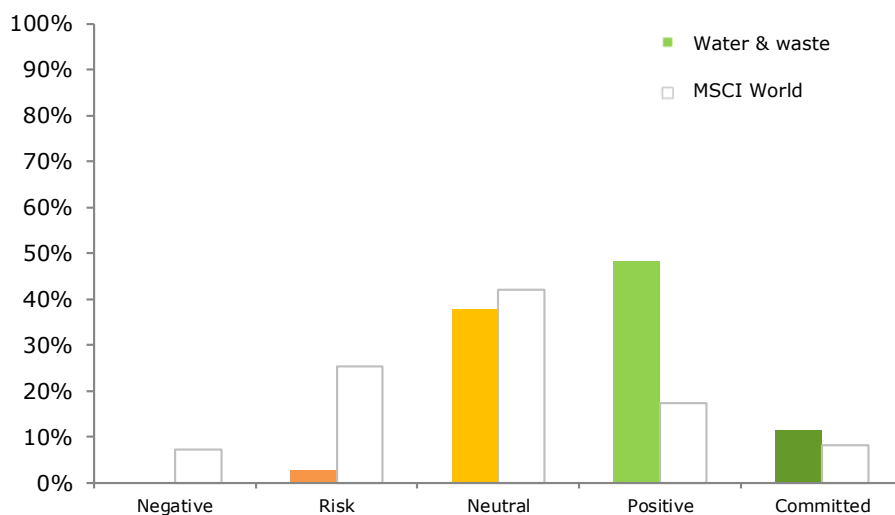
Distribution of opinions

A sustainable development opinion is established for each entity on a five-level scale.



The following chart shows the distribution of sustainable development opinions for companies in the sector included in the MSCI World Index.

Figure 3 : Sustainable Development Opinions of the Water and Waste sub-sector vs. MSCI World Index



Source: Mirova, 2017

The majority of companies on this theme naturally stand out as "positive" or "committed", since most have an interesting positioning on the offer of environmental and social solutions that favors, on the whole, a good evaluation.

However, a significant portion of the sector is currently evaluated as "neutral", which includes two scenarios:

- Stakeholders indirectly exposed to the water and waste theme, whose exposure to sustainable development opportunities is considered as low or non-existent (e.g. portfolio too diversified)
- Businesses operating in the distribution or treatment of water or waste, but which do not demonstrate appropriate management of sustainability risks.

Occasionally, actors with a product portfolio that is too diversified to be considered to be exposed to environmental opportunities, and who do not seem to have the appropriate management of certain environmental or social risks, are identified as "Risk", but these cases remain rare.

Conclusion

Water & Waste companies are favorably positioned to meet the long-term challenges of natural resource management. Some companies are particularly active in providing solutions: companies operating in emerging countries where access to water and sanitation services are not yet fully developed, those positioned on a more environmentally-friendly waste management (circular economy recycling, treatment of hazardous waste), or offering technological innovations that respond to new environmental issues facing the sector.

In terms of the most material risks, operationally, the water sector is directly exposed to water stress risks; in addition, some aspects of economic performance are totally linked to the company's environmental performance, the most representative example being the issue of leaks in water distribution. From a social perspective, employees and many subcontractors in the industry are particularly exposed to occupational safety issues. Because of exposure to public markets, the risks of corruption can also be significant.

A company with deficient risk management may see its opinion significantly downgraded. In this case, we engage in a dialogue with the company to share our expectations and encourage the development of more sustainable practices.

Sustainable development goals

- | | |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 1. End poverty in all its forms everywhere |
|  | 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture |
|  | 3. Ensure healthy lives and promote well-being for all at all ages |
|  | 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all |
|  | 5. Achieve gender equality and empower all women and girls |
|  | 6. Ensure availability and sustainable management of water and sanitation for all |
|  | 7. Ensure access to affordable, reliable, sustainable and modern energy for all |
|  | 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all |
|  | 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation |
|  | 10. Reduce inequality within and among countries |
|  | 11. Make cities and human settlements inclusive, safe, resilient and sustainable |
|  | 12. Ensure sustainable consumption and production patterns |
|  | 13. Take urgent action to combat climate change and its impacts |
|  | 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development |
|  | 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss |
|  | 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels |
|  | 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development |

<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

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