mirova
Investing in sustainability

Resources: Water & Waste

Sustainable Development Sector Analysis Framework

May 2021

This is a methodological document aimed at clarifying how Mirova takes into account sustainable development issues in the framework of the environmental, social and governance analysis of each sub-sector of activity.

An affiliate of: NATIXIS INVESTMENT MANAGERS

The Water & Waste sector is key to the development of a sustainable management of natural resources, both at environmental and social levels. On the environmental dimension, how can we achieve the transition to a truly circular economy ensuring a regenerative growth model that gives back to the planet more than it takes? How can we ensure the sustainable use of water and other natural resources fostering the sustainability of ecosystems and resilience to climate change? On the social side, with over half of humanity without access to sanitation, how can we fight pandemics and improve women and children's condition? Beyond the critical issue of access to clean water, the challenge is also achieving appropriate water management to preserve its availability especially in areas prone to drought and limiting the damage suffered by the inhabitants of flood-prone areas. With respect to wastes, facing the detrimental environmental impact induced by the growth outlook and reaching sufficient treatment capacity for plastics and electronics wastes will require harnessing innovative collection and treatment schemes: circular economy is still underdeveloped, and represents opportunities to expand for the private sector.

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

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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

Regarding water, first: ensuring access to clean water and sanitation for all and securing access to this resource in a context of increasing water scarcity 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 water leaks risks. 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, microplastics in industrial rejects, etc.).

At the same time, population growth by 4 billion since the 60’s and economic development are driving a sharp increase in water demand contributing to 600% growth in municipal water use, while climate change is exacerbating the problem of water availability (WRI, 2020). The +1% per year water use trend is expected to continue up to 2050 making water stress an increasingly difficult challenge to face. As groundwater provides almost 50% of all drinking water worldwide and 43% of agriculture water supplies, over-exploitation of groundwater and contamination threatens drinking water supply for hundreds of millions of people (IUCN, 2016).

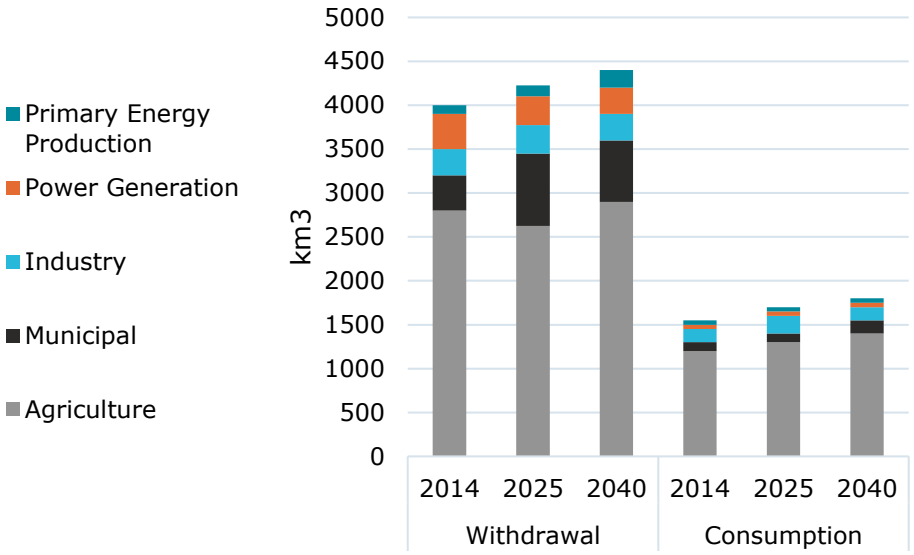


Figure 1 - Global water demand by sector to 2040 (IEA, 2016)

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 growth of complex waste (toxic or electronic waste in particular).

However, the subject of waste is not limited to its management. Circular economy offers opportunities for better growth through an economic model that is resilient, localized, diverse and inclusive. It tackles the root causes of global challenges such as climate change, biodiversity loss and pollution creating an economy in which nothing becomes waste and which is regenerative by design (Ellen MacArthur Foundation, 2021).

To illustrate this, circular economy can contribute towards tackling the remaining 45% of greenhouse gases emissions that cannot be resolved by transitioning to renewable energy alone, as evidenced below.

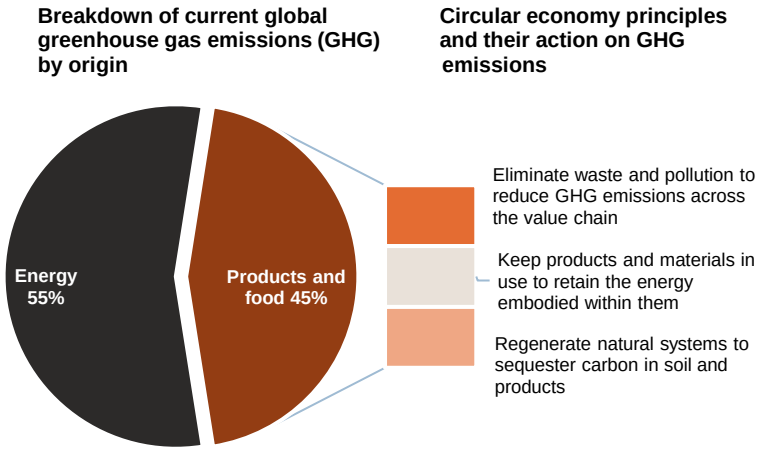


Figure 2 - How the circular economy contributes to tackling climate change (Ellen MacArthur Foundation, 2021)

As a result, all stakeholders in the water and waste sectors are positioned on key environmental themes, and all can 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.

Sustainability Opportunities

Access to Water and Sanitation Services

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 and declaration of the “right to water” as a fundamental human right in 2010, over 2 billion people live in countries experiencing high water stress and about 4 billion experience severe scarcity at least a month a year. As of now three out of ten people do not have access to safe drinking water and six out of ten do not have access to safely managed sanitation services (UNESCO, 2019).

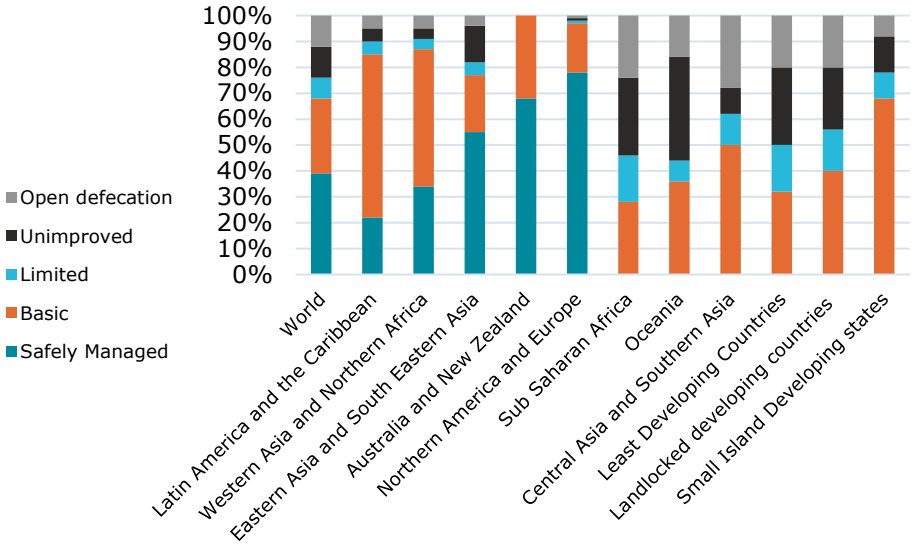


Figure 3 – Global and regional sanitation coverage (%), 2015, (UNESCO, 2019)

Hence, despite 2.1 billion people gaining access to improved toilets or latrines since 1990, there are still 4.5 billion people lacking access to safely managed sanitation and there is a long way to go to meet the new SDG target of safely managed sanitation for all (World Bank, 2020). Besides, although an efficient way of fighting pandemics, coverage of basic handwashing facilities with soap and water varied from as low as 15% in subsaharan Africa to 76% in Western Asia.

Water quality remains an issue in many developing countries, due to the rise in emerging pollutants, change in hydro-morphology and rise of invasive species. In urban environments, a lack of proper sanitation causes diarrhea and related diseases leading to countless negative impacts, including the stunting of children – with 58% of diarrhea death of children under 5 years old due to inadequate sanitation and hygiene. Therefore, achieving the sustainable development goals by 2030 requires expanding development project initiatives in those areas where health structures are still lacking. In developed countries where water networks are

already in place, public sector accounts for a substantial share of water supply, illustrated by 87% of the total US population covered by public water supply (USGS, 2015).

Water availability also needs to be viewed in terms of its contribution to food security as a co-benefit. Considering that 80% of all farms in the world are small family farms and 60% of world's food is produced on rainfed land, ensuring equal access to water to small scale irrigators, possibly enabling a tripling of crop yield can be a decisive contribution to sustainability (UNESCO, 2019).

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 limited access to water and sanitation services
- Budget for actions to increase access to water and sanitation services in developing countries in a sustainable way

Circular Economy

As of 2020, the earth is at a crossover point; the anthropogenic mass, which has recently doubled roughly every 20 years, will surpass all global living biomass, equaling 1.1 teratonnes (Nature, 2020). Global consumption of materials such as biomass, fossil fuels, metals and minerals is expected to double in the next forty years, while annual waste generation is projected to increase by 70% by 2050. (European Commission, 2020). Transitioning from a take-make-dispose paradigm towards a regenerative growth model that gives back to the planet more than it takes and advancing towards keeping resource consumption within planetary boundaries generates tremendous opportunities for businesses.

While up to 80% of products environmental impacts are determined at the design phase, innovation will play a central role. For instance, reusable plastic packaging alone represents a USD 10bn innovation opportunity that can deliver user and business benefits. A circular economy for fashion can address the USD 500+bn lost annually due to clothing underutilization and lack of effective collection and recycling infrastructure (Ellen MacArthur Foundation, 2021). A circular economy approach to food could generate annual benefits worth USD 2.7tn by 2050 thanks to greenhouse gases reductions, water savings and avoided land degradation.

Among materials, demand for plastics has outpaced all other bulk materials. Advanced economies use up to 20 times more plastic than emerging economies which illustrates the – detrimental – growth potential (IEA, 2018). Though immediate impact of the COVID-19 crisis on plastics use is still unclear, the flow of plastic into the ocean is expected to nearly triple by 2040, amounting to nearly 29 million tons per year. (Systemiq, 2020).

Lack of capacity of developed countries to retire safely plastics has generated a plastics waste trade amounting to an annual 9 million tons in 2018 (ITC, 2020) with the EU still exporting 150 000 tons of plastic as of 2019. This induces risks as there is limited transparency on the social and environmental impact of plastics exported outside the EU (EEA, 2019). In the context of new restrictions on waste exports to developing countries induced by EU regulation, China import ban, and recent update of Basel Convention on waste plastics trade, and given the lack of existing treatment capacity, waste management companies can play an essential role particularly on waste collection, recycling schemes, and safe landfilling.

Credible path to significantly reduce plastic leakage to the ocean exist but only if solutions are implemented concurrently, ambitiously and launched as soon as possible. They include (i) reducing the quantities through reuse (dispenser, return schemes) (ii) expanding substitution

by paper and compostable, (iii) improving closed loop recycling through mechanical and chemical technologies, (iv) disposing safely through chemical conversion, incineration with energy recovery and safe landfilling (Systemiq, 2020).

Plastic recycling opportunities

Out of 220 million tons of plastics wastes generated every year, just 21% of plastics wastes are economically recyclable – with rigid resins such as high/low density polyethylene (LD/HDPE) and polyethylene terephthalate (PET) being recyclable, while multilayer and flexible plastics induce recycling challenges. Besides, only 15% of the total is recycled due to insufficient collection rates (Systemiq, 2020).

Increasing the share of recycled plastic requires improvement of collection and sorting, which generates opportunities for waste management companies, considering that most of plastic picking is currently carried by an estimated 11 million individual plastic pickers worldwide covering 60% of plastic collection. Integrating these informal workers in the plastics collection schemes generates positive health and livelihood benefits for society. (Systemiq, 2020)

Recycling technology concentrates on mechanical recycling processes with closed loop or open-loop collection, as well as emerging technologies such as plastic-to-plastic chemical recycling (Systemiq, 2020). Plastic recycling generates significant benefits compared to virgin plastic use as it induces GHG emission reduction of 3,000 kg eq CO2 per ton produced, but also energy savings, water savings, air acidity reduction, water eutrophication reduction (ADEME, 2020).

In Europe, plastics demand amounts to 50.7m tons, which generates strong opportunities for waste management companies as just 57% is collected and 32.5% recycled (42% for plastic packaging), an increase by one fifth since 2006 (PlasticsEurope, 2020). Largest plastic demand comes from the packaging and building/construction segments followed by agriculture, generating strong business opportunities for waste management companies. Policy targets include increasing the level of preparation for reuse and recycling of municipal waste to 55 % and increasing deposit return scheme for PET bottles collection rate to 77% by 2025 both of which should improve plastic purity. This should improve performance of bottle-to-bottle processing scheme as the EU is targeting 25% recycled plastics in bottles by 2025, with significant opportunities for improvement considering current recycled content in PET bottles is only 11%.

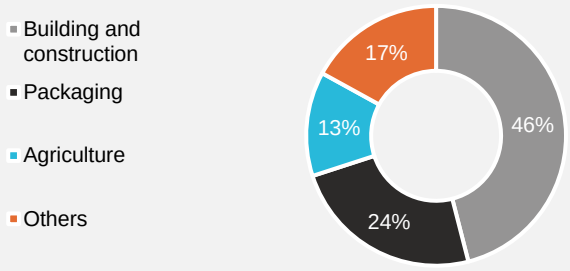


Figure 4 – Plastics recyclates : where they are used (Source: Mirova / (PlasticsEurope, 2020))

Due to rapid population growth and urbanization, generation of municipal waste is expected to increase by 70% to 3.4 billion tons in 2050 (World Bank, 2018). Given 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 offering beneficial solutions and favorably exposed to the market opportunities associated with the transition towards a circular economy.

Circular economy principles also apply to water management, in particular water reuse can be a valuable tool to enhance the sustainability and effective use of water resources (US Environmental Protection Agency, 2020). Considering 80% of world wastewater volumes is currently released in the environment without treatment (UNESCO, 2017) causing water pollution, eutrophication and maritime dead zones, there is significant room for opportunities. In Europe, water reuse could cover 44% of agricultural irrigation demand by 2025 and avoid 13% of abstraction from natural resources (Defra, 2011). Besides, water reuse offers co-benefits when associated with collection of organic wastes in wastewater and sludge used to generate biogas and organic fertilizers.

In the waste and wastewater treatment sector, companies that focus on the most advantageous solutions in terms of resource conservation, ie. reuse, recycling and valuing sludge for energy and agriculture, will be considered as providing solutions and favorably exposed to the market opportunities associated with the transition towards a circular economy.

KEY INDICATORS

- Waste collection rates in area covered
- Share of collected waste that has been sorted and recycled (or valued in energy generation as last resort)
- Share of R&D investment and sustainable production of new materials from waste
- Share of turnover on recovery of bio-waste and sludge (including through anaerobic digestion) for biogas, food, feed nutrients and fertilisers
- Share of revenue from water reuse products and services

Innovative Technology

The waste and water sector is facing the emergence of social and environmental issues requiring advanced technological solutions: water scarcity which requires resource efficient drinking water production technologies, new types of water pollution (such as micropollutants in drinking water or from cosmetics, medicines, etc.), development of complex waste (Waste from Electrical and Electronic Equipment, known as WEEE), toxic and dangerous waste (e.g. radioactive, substance of very high concern (SVHC)), 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.

Specifically, the plastic recycling industry is meeting challenges with the quality and usability of output which deter attractiveness of recycled raw materials. Challenges in waste sorting include insufficient optical detection capacity of sorting infrastructure and induce limits on packaging colors. Regarding bottle recycling, lack of food grade eligibility of recycled PET plastic prevents bottles to be recycled more than once. Technologies enabling infinite recycling loops based on chemical recycling, or bioprocesses based on enzymatic treatment are promising solutions.

Electrical and electronic equipment continues to be one of the fastest growing waste streams in the EU, with current annual growth rates of 2%. It is estimated that less than 40% of electronic waste is recycled in the EU. (European Commission, 2020). Batteries will require additional sorting and recycling capacity. Considering technical challenges of recycling complex waste, we encourage waste management companies to partner with manufacturers where extended producer responsibility schemes exist.

The private sector can also bring solutions on the water theme. Faced with quick rise of domestic water use which have been multiplied by 6 over the last decades and rising climate hazards linked with climate warming, water utilities find themselves challenged to ensure sufficient water supply, but also water productivity quality and resilience.

Digital solutions, sensors and cloud-based platforms can support them on better managing their activity over the whole water value chain including remote watershed integrity, predictive maintenance and improved customer engagement. Besides switching to energy and resource efficient drinking and wastewater treatment processes can decrease reliance on climate harming fossil fuels and reduce their environmental footprint.

Besides, technologies that enable synergies with nature-based solutions (NBS), hence providing water management services that can replace, augment or work in parallel with those delivered by traditional infrastructure, are of particular interest – this includes management of constructed watershed for wastewater treatment. Technologies such as advanced membrane filtration technologies enable direct filtration of surface water thereby preserving groundwater table. Besides they offer alternatives to chemically intensive processes for drinking water pretreatment. Similarly, technologies improving rainwater collection 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 INDICATORS

- Proportion of turnover generated by innovative technologies
- Share of energy-efficient water and waste treatment products and services
- Share of products contributing to utilities wastes reduction

Exposure to Opportunities

	Indicators considered	
High Exposure	> 50% of turnover generated by water and waste activities And: -Either > 10 % of exposure to developing countries -Or > 30 % of turnover generated by recycling treatment or decontamination activities of hazardous waste -Or > 30 % of turnover generated by innovative technologies	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 And: -Either > 5 % of exposure to developing countries -Or > 15 % of turnover generated by recycling treatment or decontamination activities of hazardous waste -Or > 15 % of turnover generated by innovative technologies	
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	

Environmental and Social Risk

Climate resilience and Water Stress

The number of global natural catastrophes has been increasing steadily over the past 40 years. While the number of global natural catastrophes amounted to 250 events in the 1980's, this number has risen to around 800 annual events in 2018, excluding geophysical events. Most catastrophe are related to water and could be better anticipated through mapping of physical risks and increased investment in resilient infrastructure (Systemiq, 2020).

In particular 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, 4 billion people are already facing scarcity of water resources at least one month a year. (UNESCO, 2019). The year 2020 has been has been one of the warmest years on record and over 50 million people have been recorded as directly affected by floods, drought or storms (UNEP, 2020);

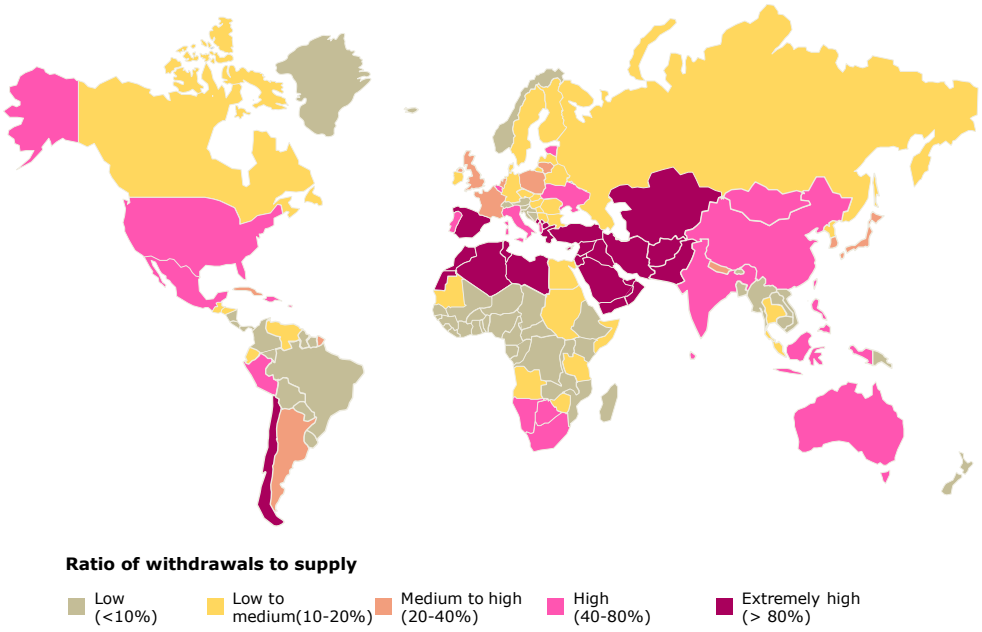


Figure 5 - Water Stress by region in 2040 (WRI, 2019)

Worldwide, the World Resources Institute (WRI) estimates that 17 countries, home to one quarter of the world's population face extremely high levels of baseline water stress where irrigated agriculture, industries and municipalities withdraw more than 80% of their available supply on average every year. (WRI, 2019). In Asia, groundwater accounts for 30% of total water abstraction essentially for agriculture purpose inducing a decline of water table and water quality (IUCN, 2016).

In this context, water sector operators are required to guarantee that their management of water intake is sustainable and resilient. 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. Recent climate adaptation policies suggest promoting residential water saving, or additional supply and

storage infrastructure (European Commission, 2021). 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 physical risks
- Implementing risk management plans to reduce exposure
- Adopting practices to address water stress

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) or a biogas generating facility. 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.

Microplastics are an emerging source of pollution with tyres, textiles and plastic pellets being the main sources. Wastewater management companies can play a leading role in reducing leaks by extending industrial wastewater treatment, as 50% of leaks happen at industrial manufacturing stage, but also connecting households to sewage, as insufficient rate of sewage connection being another critical cause of microplastics leaks.

Waste collection requires fleets of vehicles to carry out collection in areas under coverage, inducing significant risks of greenhouse gases emissions, traffic congestion and air pollution. Mitigating such risks induces recourse to low carbon heavy duty vehicles such as renewable gas fueled vehicles, hydrogen or biogas propelled.

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

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 Europe distribution network leakage rates range from 20% in France to 38% in Italy (BiPE, 2019). The global estimate of physical water loss over the world is 32 billion cubic meters, half of which occurs in developing countries (PPIAF, 2016). This equates to France's total water consumption over a year.

For businesses, the topic of physical water losses induces losses due to non-revenue water and directly relates 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 IoT detectors and cloud based monitoring platforms, which allow 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, digital equipment, 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

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 and wastewater treatment 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

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 assessing 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

Business Ethics

Waste and water management services are commonly subject to public procurement from local governments. Corruption practices in public procurement are a recurrent risk.

Corruption in water management is a major obstacle to achieving SDGs, endangering health outcomes, food security and people's livelihoods, which in turn undermine economic

development, environmental sustainability and socio-political stability. Corruption in water management has a devastating impact on environmental integrity, which is of particular concern in the face of climate change. Corruption facilitates activities like illegal logging or illegal mining that lead to water overuse, pollution and the degradation of fragile water-based ecosystems, with a long-term impact on environmental sustainability. (Transparency International, 2017)

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 Water Integrity Network has developed a core set of principles to support companies in adopting a constructive approach to business ethics in water activities. This requires focusing on transparency, accountability, participation and anti-corruption practices.

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
- Water integrity commitments

Sustainable Development Governance

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 pay attention 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

Risk 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 water resilience management plan
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

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 water reuse, organic wastes recycling, treatment of hazardous waste, enabling transition to a circular economy or offering technological innovations that responding to new environmental issues facing the sector.

In terms of the most material risks, operationally, the water sector is directly exposed to climate calamities, 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.

Our Approach to sustainability assessment

Acting as a responsible investor requires interpreting the economic world within its social and environmental context. This approach calls for understanding the interactions between different private-public players, small-medium-large companies, developed and developing economies to ensure that each player's growth is consistent with the balance of the rest of the system. It is a long-term approach that guarantees that today's choices will not lead to negative consequences for future generations. Understanding these complex relationships demands:

- Clear understanding of sustainable development issues facing our societies,
- Assessing the possible interactions between the assets of our investment strategies and these sustainability issues.

The SDGs as a Guide

Following the Millennium Development Goals created in 2000, the United Nations set out a new framework for sustainable development in 2015. It contains 17 Sustainable Development Goals (SDGs), broken down into 169 specific targets designed to address the main social and environmental issues between 2015 and 2030. In addition to having been adopted by all members of the United Nations, the SGDs offer several advantages.

First, they establish a comprehensive framework concerning environmental and social issues, applicable to all economies regardless of their level of development. Thus, while some issues such as ending hunger or ensuring access to water for all are often more relevant for low- and middle-income countries, other objectives such as fighting climate change or making cities safe, resilient and sustainable, are applicable at all levels of development.

Moreover, the SDGs can be considered as a frame of reference for sustainable development issues for a variety of actors, from governments to companies and investors. The private sphere is increasingly considering environmental and social issues, illustrating new forms of governance where subjects of general interest are no longer solely the prerogative of the public sphere. Considering the SDGs can help companies to think on how they create environmental, economic, and social value.

Finally, the SDGs help investors to question the long-term resilience of their assets and portfolios to the ongoing transformations. Then, investors can go even further by looking at their exposure to new solutions and economic models that will respond to long-term economic transformations. For example, the targets associated with the SDGs to significantly increase the share of renewable energy and to double energy efficiency by 2030 imply a profound transformation within the energy sector.

We consider the SDGs squarely in line with our mission. As a result, in 2016, Mirova decided to use this framework to define its responsible investment approach.

Figure 6: The 17 Sustainable Development Goals

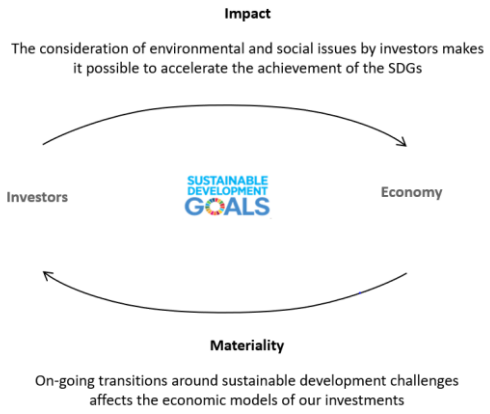
	End poverty in all its forms everywhere		Reduce inequalities within and among countries
	End hunger, achieve food security and improved nutrition and promote sustainable agriculture		Make cities and human settlements inclusive, safe, resilient and sustainable
	Ensure healthy lives and promote well-being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

Source: United Nations

Assessing Environmental and Social Quality by the SDGs

We believe that the SDGs will transform the economy as we know it. Acting as a responsible investor starts with taking a broader view of the way investors think about the environmental and social profile of the assets they finance. These interactions can be grouped into two categories:

- **Materiality**: how the current transitions are likely to affect the economic models of the assets financed either positively or negatively.
- **Impact:** how investors can play a role in the emergence of a more sustainable economy



We believe that these two approaches are closely linked. Our evaluation methodology thus seeks to capture the extent to which each asset contributes to the SDGs. From our perspective, this approach provides a relevant vision on both the “Materiality” and “Impact” aspects.

A Five-level Qualitative Analysis

Mirova has based its environmental and social evaluation method on four principles:

A RISK/OPPORTUNITY APPROACH

Achieving the SDGs requires taking two different dimensions into account that often go together.

- Capturing opportunities: when companies center their strategies on innovative business models and technologies focused on technological and societal transformation, they can often capture opportunities related to the SDGs.
- Managing risks: by proactively managing risks related to these transitions, companies can reduce and re-internalize their social and environmental externalities, which often takes the form of general management of sustainability issues.

This analysis structure gives equal importance to opportunities and risks. It is the first prism through which we analyze sustainable development issues.

A LIFE-CYCLE VISION

To identify the issues that could impact an asset, the analysis of environmental and social issues must consider the entire life cycle of products and services, from raw material extraction to end-of-life phase.

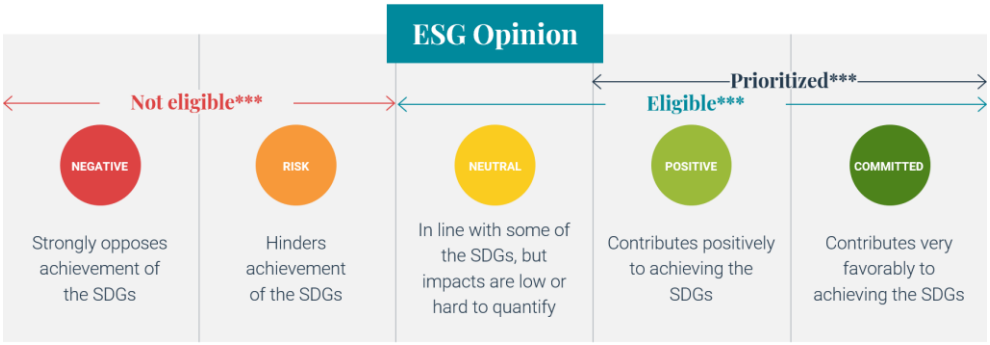
TARGETED AND DIFFERENTIATED ISSUES

Our risk/opportunity analysis focuses on the elements most likely to have a real impact on the assets studied and on society in general. Additionally, the issues that economic players face are very different depending on the sector, and can even vary within the same sector[1]. For example, it is important for us to focus on work conditions for suppliers in the textile industry, while for automobile manufacturers, the focus will be more on energy consumption during product use.

So, our analysis focuses on a limited number of issues adapted to the specificities of each asset.

A QUALITATIVE RATING SCALE

Our analyses are summarized through an overall qualitative opinion on five levels. This opinion assesses to what extent an asset contributes to the SDGs.



***[2]

This rating scale is based on the SDGs and their achievement. As a result, opinions are not assigned based on a distribution set in advance: we are not grading on a curve overall or by sector. Mirova does not exclude any industry on principle, and carries out a thorough analysis of the environmental and social impacts of any asset. For some sectors, this analysis may lead to the exclusion of all or some of its actors. For example, companies involved in fossil fuel extraction are considered “Risk” at best, while renewable energy companies are generally well rated.

An indicative grid provides some overall guidelines regarding the links between opportunities, risks and the overall sustainability opinion.

Sustainability Risks Review					
	Positive	Risk	Positive	Positive / Committed	Committed
	Neutral	Negative / Risk	Neutral	Neutral / Positive	Positive / Committed
	Risk	Negative	Negative / Risk	Risk	Risk
		Negative	Low or no	Significant	High
		Sustainability Opportunities Exposure			

1 For every sector, defining key issues is the subject of a specific study. This document is available on Mirova website. https://www.mirova.com/fr/recherche/comprendre#vision
*2 *** For Mirova’s investments*

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