

SUSTAINABLE IMPACT FRAMEWORK

Agriculture and Forest

Sectors:

- Materials
- Industrials

Last updated: May 2025

This document is not a promotional communication. This is a methodological document aimed at explaining how Mirova takes into account sustainable development issues in the framework of the environmental, social and governance analysis of each subsector of activity.



Table of contents

01

Executive summary

p. 3

02

Positive impact

p. 6

03

Residual ESG risks

p. 15

04

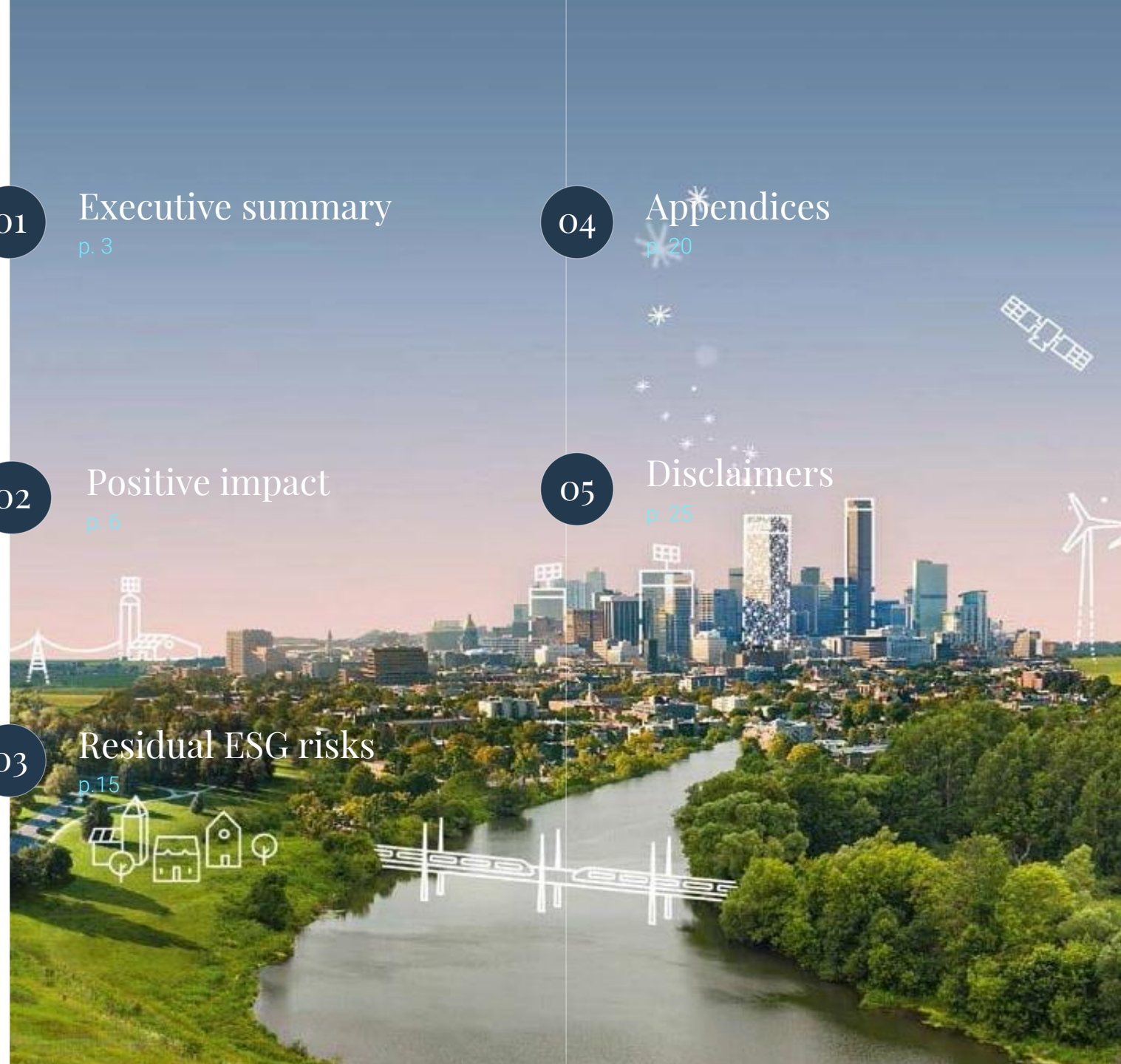
Appendices

p. 20

05

Disclaimers

p. 25



Executive summary



Agriculture and forestry

Cultivated land, rangeland and managed forests cover 71% of world's surface¹ and provide essential food and materials to humanity. These activities have been detrimental to nature, undermining the provision of the ecosystem services they depend on. Transitioning to practices that rely on increased cultivated biodiversity contributing to net-zero carbon and supporting resilience to climate change while regenerating nature is now required. These practices include land restoration through agroforestry, regenerative agriculture and sustainable forest management. They are supported by solutions that include inputs such as precision agriculture tools biotech substances and food safety monitoring tools or generate such solutions such as plant-based proteins, construction material and circular packaging.

Halting land-use change can contribute to **38%** of land-based emission mitigation⁴

Continuing destruction of tropical primary forests at a rate of 3.7 megahectares (Mha) in 2023² is particularly detrimental to biodiversity, as forests provide habitat to up to 80% of species⁴ and because of their soil carbon wealth, house irrecoverable carbon areas such as peatland. Current biomass production accounts for over 90% of land use-related biodiversity loss and water stress³. Intensive agriculture and smallholder farmers deprived from fertilizing input account for three-quarters of deforestation⁵. As land-intensive sectors, agriculture and forests can stimulate land participation in achieving a 1.5°C pathway. Already dietary change supported by agriculture's new focus on edible proteins can decrease the land needed for food by 5% by 2060³. Worldwide, two-thirds of opportunities stem from mitigating emissions, in particular, high global warming potential gases such as nitrogen oxide and methane, and one-third of opportunities stem from sequestration of carbon dioxide. Agroforestry practices mixing cash and staple crops may release the pressure on land⁴.

168,000 farmer casualties are caused by pesticides every year⁶



Industrial agriculture and forestry heavily rely on chemical fertilizers and pesticides, which have increased in intensity by 30% and 23%, respectively, over the past two decades⁶. This dependency not only threatens global food security for developing farmers because of market distortions but also poses health risks, with 168,000 farmers poisoned annually, exacerbating inequalities. The reliance on informal labor for fruit picking fuels these inequalities, while aging farmers' low digital literacy hampers technology adoption. Irrigation, which consumes 70% of the world's fresh water but yields only 40% of food⁷, suffers from inefficiencies and a focus on feed production, leading to nutrient loss. Solutions such as combined soil testing, digital mapping, circular farming, and biotechnologies can optimize nutrient absorption. Extended crop rotation and biopesticides enhance ecosystem services, providing additional income for farmers. Digital farming tools can improve farmer incomes while robots reduce arduousness. Hydroregenerative practices, such as key line design and precision agriculture, can alleviate water pressure and enhance climate adaptation.

47% of forests are used⁸

Current manufacturing processes are linear, inducing excess fossil resource extraction and generation of wastes. Yet ecosystems cannot cope with such a pace. Already about half of forests are exploited, inducing degraded livelihood for local communities⁸. Downstream the value chain, 68% of all municipal wastes are uncontrolled or landfilled⁹. Accelerating the transition from land management practices that erode nature toward land restoration storing carbon, providing habitat for biodiversity and decent jobs can also support the transition toward a circular bioeconomy, harnessing sustainable biomass to substitute carbon-intensive and polluting materials. Plantations on degraded land can support expanded production of biomass. Sustainable management of regenerative boreal forests for biodiversity and wood production benefits the transition toward bioeconomy, provided cascading biomass principles are applied, valuing all wood by-products where they generate the highest value added.



Drivers of contribution and obstruction to sustainability goals

	Activities	Practices
Positive Impact	<p>Sustainable Activities </p> <ul style="list-style-type: none"> Land management (forestry, agri) Products (construction and packaging) Inputs (biotech, tractors) Restoration and conservation Alternative proteins Healthy nutrition Food safety 	<p>Advanced Practices </p> <p>Human capital management:</p> <ul style="list-style-type: none"> Diversity and inclusion Job quality <p>Climate</p> <p>Biodiversity</p> <p><i>Advanced governance models</i></p>
Residual ESG Risks	<p>Harmful Activities* </p> <ul style="list-style-type: none"> Palm Oil Activities negatively affecting biodiversity sensitive areas PAI #7 Agrochemicals PAI #9 Chemicals Tobacco Genetic engineering Alcoholic beverages 	<p>Risk Mitigation </p> <p>Environmental-related risks, including:</p> <ul style="list-style-type: none"> Climate, water, deforestation and circularity Animal welfare, bioethics, product safety PAI #8 <p>Governance of sustainability</p> <ul style="list-style-type: none"> Business ethics Tax compliance Transparency <p>Social-related risks, including:</p> <ul style="list-style-type: none"> Working conditions Human rights Land grabbing



Positive impact



Sustainable activities



SOCIAL OPPORTUNITIES

CONTEXT

Cattle farming is responsible for about 12% of world’s methane emissions¹, and feed is the main cause of deforestation, responsible for two-thirds of agriculture-led deforestation. Plant-based proteins such as peas induce six times less land use and 33 times less greenhouse gas (GHG) emissions than dairy meat², itself generating less emissions than herd. Pets and farmed fish still rely on animal protein (22% of catches are targeted to feed production³), which could be partly substituted by agriculture-sector wastes. Biotechs enable cultured meat from low-impact feedstock and stem cells grown in bioreactors.

About one-third of food is wasted using the equivalent of 28% of the world’s land surface⁴, inducing the need for traceability improvement. Logistics dynamic inventory management through digital sensors, along with nonhazardous preservatives are required to reduce bacteria contamination. Increasing the use of hazardous chemicals, such as pesticide residues, additives in processed food, and plasticizers in packaging, induce expanding chronic diseases and allergies – with 8% of children exposed to food allergies now⁵. Quick response diagnosis, testing services and instruments are required.

Worldwide, 3.1 billion people cannot afford a healthy diet⁶. An unbalanced diet, sweetened beverages and processed meat are known to be directly detrimental to health. Packaged consumer goods can support the transition to lower sugar intake and a more flexitarian and vegetarian diet. Labeling is then required to show actual benefits and nudge people toward healthy products. Efforts are also required on price accessibility of these products. Micronutrient-encapsulated products can improve the health profile of people experiencing deficiencies, including children, pregnant and lactating women, the elderly and those with a specific illness.

SUSTAINABLE ACTIVITY

Alternative proteins

Companies/projects offering plant-based/alternative protein feed products (e.g., insects), equipment or ingredients for extraction of plant proteins, flavors, as an alternative to meat-based food/products.

Food safety

Companies/projects offering food and water safety products including meters and testing devices, hygiene products, decontamination devices, RFID chips, supply chain and logistics optimization software, contamination-checking services, phages against bacteria, microfilm removal, detergents, and animal-health monitoring systems.

Healthy nutrition

Companies/projects offering food products certified by credible sustainable agriculture label; distributing fresh vegetables, plant-based food products or frozen vegetarian food with low-toxicity ingredients, no sugar added, and high nutritional qualities; avoiding product substances (pesticide residues) and packaging plasticizers (PFAS, bisphenol, phthalates, etc.).

Impact indicators

- Contribution to 21st-century planetary diet
- Contribution to halving meat and sugar consumption
- Transparency on food processing level, allergen reduction

In this sector, the positive contribution is mainly analyzed through **revenues exposure** but not only. We complement this exposure with a **qualitative review** of the solution’s impact. Key performance indicators (KPIs) to assess the level of impact generated can include among others: **number of users of the products, the share of revenues in underserved areas, the number of jobs created, etc.**

LOW POSITIVE IMPACT

> 10% sustainable activities

MODERATE POSITIVE IMPACT

> 20% to 50% sustainable activities

HIGH POSITIVE IMPACT

> 50% sustainable activities

The information provided reflects Mirova’s opinion/the situation as of the date of this document and is subject to change without notice. Source: ¹Pathways toward lower emissions, FAO, 2023 ; ²Poore et al., 2018, Nature; ³The State of World Fisheries and Aquaculture 2024, FAO; ⁴Food Waste Index Report 2024 ; ⁵Allergy Statistics, AAAAI, 2021; ⁶State of food and agriculture, 2023, FAO.



Sustainable activities



CLIMATE/BIODIVERSITY	CONTEXT	SUSTAINABLE ACTIVITY	
	Manufacturing is dependent on fossil fuels, with petrochemicals set to become the first demand driver for oil by 2030, and downstream ¹ , the building sector is the third-largest contributor to GHG emissions worldwide, requiring energy-efficient equipment ² . The wood industry can offer substitutes by harnessing the 229–259 million cubic meters of roundwood available from the reduction of graphic-paper demand and make practical use of all by-products. ³ Wood products are particularly relevant as feedstock for biochemicals and a substitute to plastics packaging while participating in a circular economy.	Products Green materials: Companies/projects offering alternative construction materials that require fewer natural resources or induce lower emissions. Sustainable raw materials: Companies/projects manufacturing products containing high levels of post-consumer and contaminated waste recycled inputs in developed countries.	Impact criteria <ul style="list-style-type: none">• Deployment of biomass cascading principles prioritizing 1. Wood-based products 2. Extending their service life 3. Reuse 4. Recycling.• Digital integration of products to ensure compatibility• As-a-service availability and integration in existing equipment• Transparency on performance• End-of-life management of products
	Agriculture is currently dependent on artificial fertilizers and pesticides causing resource depletion and pollution, as only 17% of fertilizer is used by plants, with the remainder leaching into soils. ⁴ Transition to regenerative agriculture practices requires mapping soil needs with the help of drones; irrigation planning; and mitigating climate change with the help of IoT and software. Biotechs can help in fertilizer use, lower enteric methane, avail biopesticides, increase nutrient absorption thanks to microorganisms, improve digestibility and reduce food wastes.	Inputs Biotech and biowaste processing: Companies/projects offering the supply of microorganisms and enzymes. Technologies for sustainable agriculture: Companies/projects offering precision agriculture machinery, sensors, robots, drones, weather forecast apps, and vertical farming in dry regions.	
	One-third of deforestation is caused by smallholder farmers in search of fertile land ⁵ and rice paddies cause 8% of methane emissions ⁶ . Yet, solutions such as increased crop diversity, direct seeding, and regenerative practices can increase resilience, reduce GHG emissions, agrochemicals use while meeting food security and a vegetarian-diet requirement.	Sustainable agriculture Companies/projects supporting organic and restorative agriculture (e.g., no chemical inputs, etc.) and regenerative agriculture (e.g., no till, cover crops, precision tools, agroforestry, etc.).	
	While about half of world forests are already used ⁷ , transition to a bioeconomy and the need for carbon sinks will increase pressure on forests. Sustainable forestry enables long-term harvesting of a forest while enhancing carbon sink and improving soil and freshwater biodiversity by considering high-conservation value areas, ensuring tree retention, keeping a buffer on river flows, keeping high stumps, and keeping deadwood on soil.	Sustainable forestry Companies/projects owning forestry land and/or offering products from fiber and/or timber certified to sustainable forest management with biodiversity and landscape monitoring.	

In this sector, the positive contribution is mainly analyzed through **revenues exposure** but not only. We complement this exposure with **relevant impact KPIs** (e.g., tons of waste avoided, the kilowatt-hours (kWh) of energy saved, CO2 emissions avoided, etc.) to **assess the effectiveness of the solution in truly advancing environmental challenges**.

LOW POSITIVE IMPACT

> 10% sustainable activities

MODERATE POSITIVE IMPACT

> 20% to 50% sustainable activities

HIGH POSITIVE IMPACT

> 50% sustainable activities

The information provided reflects Mirova’s opinion/the situation as of the date of this document and is subject to change without notice. Source: ¹The future of petrochemicals, 2018, IEA; ²Emissions gap report, 2023, UN; ³Forest products in the global bioeconomy, 2021, FAO; ⁴Ammonia: zero-carbon fertilizer, fuel and energy store, 2020, Royal Society; ⁵The state of world’s forest, 2020, FAO and UNEP;

⁶Achieving SDG 2 (“zero hunger”) without breaching the 1.5°C global-warming threshold, 2023, FAO; ⁷Global Forest Resource assessment 2020, FAO.



Sustainable activities



CLIMATE/BIODIVERSITY	CONTEXT	SUSTAINABLE ACTIVITY	
	<p>It is estimated that around 40% of the world's land is degraded, affecting half of humanity and with dire consequences for climate, biodiversity and livelihoods¹. This degradation threatens ecosystems that provide essential services, such as carbon sequestration, water purification, and soil fertility. Furthermore, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services² warns that around 1 million species are at risk of extinction, underscoring the urgent need for proactive restoration efforts. Restoration activities across various biomes contribute to reviving ecosystems and enhance biodiversity but can also generate further social or environmental co-benefits, such as increased climate resilience. The convention on biological diversity targets 30% of degraded land surface to be restored by 2030.³</p>	<p>Restoration</p> <p>Companies/projects supporting rehabilitation of degraded ecosystems through several activities such as afforestation, reforestation or revegetation of several type of biomes (e.g., forests, wetlands, grasslands, coastal areas, etc.). Such projects differ from compliance activities, as they are not mandated by law and they generate carbon credits as the main source of funding (mainly removals).</p>	<p>Impact criteria</p> <ul style="list-style-type: none"> • Climate change mitigation, verified and accurate carbon or biodiversity units (sequestered or avoided). • Environmental co-benefits <ul style="list-style-type: none"> ➢ Increased climate resilience of ecosystems and/or climate-adaptation component ➢ Improved biodiversity and/or ecosystem services (e.g., habitat restoration, rehabilitation biodiversity corridors). • Socioeconomic co-benefits <ul style="list-style-type: none"> ➢ Benefit sharing with communities ➢ Alternative livelihood strategies ➢ Gender inclusion
	<p>Some 420 million hectares of forest, an area the size of the European Union (EU), were lost because of deforestation between 1990 and 2020, according to the UN Food and Agriculture Organization. With forests covering 31% of the global land surface, they are home to most of the Earth's terrestrial biodiversity⁴. They also act as carbon sinks, absorbing CO2 from the atmosphere, and provide a vital source of income for about 25% of the world's population, with a large part of the land traditionally inhabited by indigenous peoples.⁵ In a sustainability scenario for the deployment of nature-based solutions, conservation represents the bulk (80%) of additional land area to be financed by 2030 due to its cost-effectiveness.⁶</p>	<p>Conservation</p> <p>Companies/projects aiming to reduce or stop deforestation (legal or illegal). It can also include Improved Forest Management projects focused on improving how a primary forest is being exploited. Such projects generate carbon credits (mainly avoidance) as the main source of funding.</p>	

For these activities, the positive contribution is mainly analyzed through **the qualitative assessment of the underlying project generating carbon credits** but not only. We complement this assessment with **relevant impact KPIs** (e.g., restored ecosystem extent, endangered species restored, number of beneficiaries, etc.) to **assess the environmental and socioeconomic co-benefits of each project**.

LOW POSITIVE IMPACT

Projects with limited social and/or environmental co-benefits

MODERATE POSITIVE IMPACT

Projects with moderate social and/or environmental co-benefits

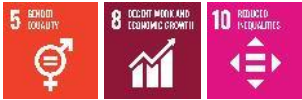
HIGH POSITIVE IMPACT

Projects with strong social and/or environmental co-benefits



POSITIVE IMPACT

Sustainable practices



CONTEXT

Job quality

Intensification of agriculture and forestry sectors over the past decades have induced significant societal changes, such as the eviction of 17% of the world’s workforce jobs away from agriculture over the past three decades¹; an aging of workers resulting in an increase in the average age to 58 years in the US²; challenging the digital transition to precision agriculture, a reduction of income that is 40% lower than similar occupations in the EU³; and an increased reliance on seasonal workers linked with low-skilled and low-wage workers feeding inequalities—there are 450M waged workers in the sector⁴. Besides unfair recruitment, practices include reliance on agencies that require a recruitment-fee payment in exchange for legal contracts.

Diversity and inclusion

Women are playing a key role in providing essential food for families worldwide and contribute to the rural economy, yet they are often denied ownership of land. The job gap reaches 24.9% in low-income countries. For each dollar of labor income men earn, women earned only 51 cents, and in developing countries they earn only 29 cents to 33 cents an hour⁵. Worldwide, women hold 43% of farms – which is even lower in developed countries⁶.

Autochthons and indigenous people comprise only 6% of the global population⁷, yet they hold 25% of land⁸ and their knowledge system (LINKS, or Local and Indigenous Knowledge Systems) plays an essential role in safeguarding biodiversity. Yet these populations are discriminated against, and agriculture and forest estates can infringe on their territories, preventing a collection of resources for craftsmanship. Training can support their participation in the labor market and/or integrate traditional craftsmanship in the local economy.

LOW POSITIVE IMPACT

- > Advanced practices – Medium Stake topic
- > Credible strategy to achieve advanced practices

ADVANCED PRACTICES

Practices/measures expected:

1. **Develop employees’ skills recognized on the labor market and anticipate shifts in skills.**
2. **Ensure fair remuneration and social benefits sufficient for good living conditions.**
3. **Ensure employee satisfaction and well-being.**
4. **Job creation for natural capital projects.**

Impact indicators examples:

- Training hours per employees, % of workforce trained.
- Qualitative analysis of the training offering, including upskilling programs, mentorships focused on young talents, leadership development, etc.).
- Creation of internal universities/academies targeting actionable skill sets and accessible to most employees.
- Analysis of employees’, executives’ and shareholders’ remunerations.
- Existing and effective employees’ association mechanisms.
- Workplace well-being measures: flexible work arrangements, mental health support, counseling, etc.

1. **Improve female and diverse representation, especially at the management/leadership level.**
2. **Ensure equal opportunities and increase awareness to overcome inequalities.**
3. **Ensure adapted and flexible career options.**

- Percentage of women in executive committees, difference between women representation in the workforce and executive committee, C-Suite female representation (CEO, CFO, CIO, CCO).
- Wage gap or credible target to reach pay equality & unadjusted pay gap.
- Succession planning including at least one woman as a possible candidate for every senior position.
- Road map to improve recruitment of minorities and ensure unbiased recruitment.
- Certification of commodities production for diversity by credible labels (fair trade, etc.).

MODERATE POSITIVE IMPACT

- > Advanced practices – High Stake issues



POSITIVE IMPACT

Sustainable practices



CONTEXT		ADVANCED PRACTICES	
CLIMATE	<p>As one-third of food sector emissions come from methane, livestock farming is particularly material. As 60% of livestock emissions stem from enteric fermentation and manure management¹, dairy cow meat production, alternative feed, and smart spread of manure stimulating local protein crops production help. Nitrogen oxide, which is mostly used in growing cereal, can be substituted with symbiotic nitrogen combined with cereal pulse rotation and circular mixed livestock cereal. There is up to a 4.1 gigaton (GT) CO₂/year potential reduction by changing agriculture.²</p> <p>In the forestry sector, companies can decrease emissions by substituting fossil fuel with biomass in heat production, optimizing logistics, but also increase soil carbon sequestration: Peatland and forest soils are the most carbon rich and hold 50% of forest carbon. Reforestation of degraded land but also sustainable forestry practices, such as deadwood biomass restitution, trees thinning, high stumps, are positive. In the tropics, there is a 3.3 GT CO₂/year opportunity.³</p>	<p>Practices/measures expected:</p> <ol style="list-style-type: none">1. Robust decarbonization strategy on all three scopes and set separate targets on land-use emissions2. Certify sequestration through audits of practices and/or credits3. Deploy support program for smallholder and engage with large suppliers on the Science Based Targets initiative (SBTi)/CDP disclosures	<p>Impact indicators examples:</p> <ul style="list-style-type: none">• GHG emissions reduction targets on all three scopes, preferably aligned with the SBTi, with separate land-based emissions targets and effective reduction in emissions.• Scope 3: suppliers' emissions, sustainable procurement practices, energy efficiency by sold products, client's sensitization initiatives to run more efficient operations.• SBTi-FLAG targets including zero deforestation aligned with EUDR⁵ threshold date, zero land-conversion targets, commodity GHG intensity reduction targets.• Decreasing trend of GHG emissions on Scope 1, Scope 2 and Scope 3 emissions.
	<p>Only 17% of the world surface is protected although a biodiversity restoration trajectory requires 30% of land to be protected by 2030⁴. Biodiversity-sensitive areas, particularly high conservation areas, are the main focus. Land restoration is also required. Sound practices include reforestation of degraded pastureland, rotational grazing, and peatland rewetting. Additionally, sustainable management of working land is needed, also enhancing fertility and reducing incentive for land conversion. Regenerative agriculture practices include cover crops, mixed farming, and no-till farming. Credibility of such practices requires transparency through clear definitions based on the EU's Common Agricultural Policy, One Planet Business for Biodiversity (OP2B), International Sustainability and Carbon Certification, and Regen10, etc., covering fertilization, water, pesticides, animal welfare and audits of practices, and biodiversity credits. In forestry activities, credible certifications are available and adequate, and include the Forest Stewardship Council (FSC), OP2B, and Programme for the Enforcement of Forest Certification (PEFC).</p>	<p>Practices/measures expected:</p> <ol style="list-style-type: none">1. Shared definition and scorecard of sustainable agriculture/forestry2. Conservation of biodiversity, sustainable management of water sources and pollutions reduction3. Support programs, certification, audit, and reporting on KPIs	<p>Impact indicators examples:</p> <ul style="list-style-type: none">• Net-positive water impact target on quality or quantity of access to water-stressed basins, possibly validated by CEO water mandate/Science Based Targets Network.• SBTN land-aligned targets, including land-restoration targets on >10% of corporate's land footprint or pilot projects with landscape approach including:<ul style="list-style-type: none">○ Zero land-conversion targets in supply chain for key commodities by a milestone consistent with EUDR⁵; zero deforestation target with threshold and scope consistent with EUDR⁵○ Regenerative and/or sustainable logging policy including a scorecard of practices addressing fertilization, water, biocontrol, animal welfare, carbon, and regular audit, certification or biodiversity credits.
LOW POSITIVE IMPACT		MODERATE POSITIVE IMPACT	
> Advanced practices – Medium Stake topic		> Advanced practices – High Stake issues	
> Credible strategy to achieve advanced practices			



Sustainable sourcing – Tropical commodities from smallholders



CONTEXT

A significant share of tropical agricultural commodities is sourced by large commodity trading companies inducing limited traceability and potential exposure to deforestation, forced labor and infringement of local deforestation laws upstream in the supply chain. While sourcing of oil crops relies on large agrifood corporation, coffee, cocoa and rubber are typically sourced from smallholder farmers – to illustrate this, 85% of rubber, 95% of coffee and 90% of cocoa are sourced from smallholder farmers^{1,2,3}. Whether or not they are united in cooperatives, farmers often rely on commodity traders to export, and these cooperatives have limited bargaining power to sustain sufficient income revenues for farmer members. Food security is also at stake, as cash crop plantations compete with staple crops. Sustainability requires traceability, yet even in the EU, only 36% of cocoa is sourced from direct supply chains.⁴ Traceability is further complexified by transformation processes leading to various products thereby reducing traceability. Although certification is welcome – now standing at 21% for coffee² and 27% for cocoa³, it can be associated with significant adoption costs. Best practices include deployment of comprehensive programs supporting fair trading terms up to the top tiers of the supply chain. Combined benefits include an adequate living income for farmers, improvement in number of children enrolled in school, female participation, and improved biodiversity.

ADVANCED PRACTICES

Practices/measures expected:

Fair sourcing practices

- **Certification**
- **Price transparency**
- **Access to finance of farmers**
- **Crop diversification program**
- **Rewards for adoption of sustainable farming/forestry practices**

Impact indicators examples:

- % price reward above market price
- Number of farmers engaged
- Number of children enrolled in school
- % women participants
- Number of financial instruments for farmer’s revenue smoothing
- Kiloton (kT) weight of commodity certified
- Number of farmers audited per year
- Number of cooperatives supported on back-office skills
- List of banned pesticides
- Number of staple crops distributed



Conservation and restoration practices – scope: Nature credit funds



CONTEXT

Conservation and restoration activities often rely on carbon (or biodiversity) credits as primary funding sources, particularly within the voluntary carbon market (VCM). Integrity is vital in these markets to maintain trust between operators and end users. Supply-side integrity ensures that carbon projects are credible and appealing to investors, while demand-side integrity guarantees that carbon credits contribute positively to climate action, rather than serving as a loophole for continued emissions.

Recent improvements in carbon standards, such as the Core Carbon Principles (CCPs) from the Integrity Council, aim to enhance trust and establish minimum requirements. However, standards alone are insufficient; stakeholders — including operators, developers, fund managers, and investors — must perform their own assessments of additionality, baseline crediting, leakage risks, and nonpermanence. While some projects may yield limited additional benefits than climate ones, or even negative impacts, others *can deliver* substantial gains. Conserving and sustainably managing forests can unlock significant emission reductions, with approximately 3.3 GT of CO2/year of cost-effective mitigation potential in the tropics alone.¹

Existing environmental and social safeguards, along with frameworks for assessing contributions to the Sustainable Development Goals (SDGs), are reinforced by certification standards such as Verra’s Climate, Community and Biodiversity (CCB) and the Gold Standard for Global Goals (GS4GG). Achieving these certifications, which involve third-party validation, monitoring, and verification, provides some level of assurance that project developers meet recognized international environmental, social, and governance (ESG) standards.

ADVANCED PRACTICES

Practices/measures expected

1. **Development of ambitious benefit-sharing plan based on robust stakeholder engagement process**
2. **Inclusion of all under-represented groups**
3. **Ensure positive impact on biodiversity**

Impact indicators examples

- Transparent and documented benefit-sharing plans through a significant share of carbon credits revenues, diversified income, capacity building, improved living conditions, and better access to basic needs, when appropriate.
- Development and implementation of a gender-lens approach in the stakeholder engagement process and project design.
- Implementation of a robust biodiversity monitoring plan with associated baseline, using appropriate methodologies to quantify, monitor and demonstrate positive impacts on biodiversity. Methodologies should reflect indicators on ecosystem extent, ecosystem conditions and species richness.



Advanced governance model

CONTEXT	ADVANCED GOVERNANCE MODEL DETAILS	
<p>Mirova aims to promote the development of a corporate vision focused on the creation of collective value over the long term. Corporate governance should be shaped to include the interests of its key stakeholders. We believe that the creation of wealth requires a long-term perspective that takes into account sustainability issues. Mirova encourages companies to include environmental and social issues in its purpose, and to adapt their articles of association accordingly. We feel that shareholders have a role to play in spreading this vision of what a company should be. Thus, we are promoting the development of a long-term shareholder base, the creation of governing bodies that serve all stakeholders and address CSR¹ issues, the introduction of a compensation policy that is not only fair to its stakeholders but also promotes sustainable growth, increased transparency, and a better quality of both financial and extra-financial information through annual audited reports covering all these issues. Advanced governance practices only foster sustainability but are not a stand-alone driver of impact.</p>	Practices/measures expected	Impact indicators examples
	<p>Commitment to long-term shared value creation</p>	<p>Disclose policy around shared value creation.</p> <p>Strive toward the model of a purpose-driven organization or/and a B Corp.</p>
	<p>Integrate stakeholders in the decision-making process</p>	<p>Create a Sustainable Development Committee or a board-level sustainability representative.</p> <p>Integrate sustainability criteria – assessed through predetermined, quantifiable metrics – into the variable compensation of top executives.</p> <p>Publish value-added sharing breakdown among stakeholders to demonstrate how value created is shared fairly among company stakeholders.</p>
	<p>Fair taxes and governance</p>	<p>Disclose breakdown of value creation among stakeholders, improving transparency around employee remuneration and payroll.</p> <p>Provide country-by-country reporting on tax payments.</p> <p>Provide disclosure that contemplates the company's approach to employee remuneration within the context of economic fluctuations, such as inflation and/or cost-of-living pressure.</p>



ESG risk



Climate, deforestation, water and circularity

CONTEXT

Industrial agriculture and forestry activities induce significant GHG emissions from livestock and fertilizers. They also depend on water, thereby potentially contributing to desertification and wildfires. Biorefineries sometimes co-process wood by-products with fossil fuels.

Biowastes are also a main cause of methane emission. In developing countries, wastes occur in the upstream value chain at the farm gate. Conventional measures to manage risk induce use of toxic post-harvest pesticides and fumigation techniques including ethylene oxide.

Fertilization is also responsible for emitting air pollutants such as nitrogen oxide that, when interacting with climate conditions, generates ozone-causing respiratory disease, further reducing agricultural yield.

Agriculture and forestry are a main cause of soil erosion and deforestation. Few commodities are responsible for the bulk of impacts including soy, beef, and palm oil. Risk mitigation includes no conversion commitments, traceability enhancement, engagement with high-risk suppliers, and 100% zero-deforestation certification (for palm oil particularly) short-term targets, etc.

Regarding the use of harmful chemicals and synthetic fertilizers, companies can mitigate risk by deploying integrated pest and fertilization management through adapted practices and committing to reduce, substitute, or ban the use of the most harmful chemicals in the supply chain.

Use of the most invasive techniques of genetic modification for intensive practices, such as pesticide-resistant crops, induces gene leakages and increased resistance; against this background risk mitigation requires independent assessment of risks and implementation of appropriate and effective mitigation measures.

MINIMUM STANDARDS

Type of ESG risk:

Climate footprint

Risk assessment indicators examples:

- Definition of a decarbonization strategy to reduce direct sources of emissions, such as process heat, livestock, and fertilization.
- Initiatives in place to reduce Scope 2 emissions, including energy efficiency, switching to renewable power and cogeneration.
- Calculation of GHG emissions on all 3 scopes or ongoing evaluation.
- Methane and nitrogen oxide KPIs.

PAI #1
PAI #2
PAI #5

Agricultural wastes and pollutants

- Targets and policy addressing wastes.
- Digital optimization of commodity logistics and storage KPIs at warehouse, including moisture, temperature
- Support to farmers on circular use of wastes.
- Monitoring of pressures on nature
- Policy intending to decrease use of hazardous pesticides, toxic food additives, toxic packaging coatings

Direct and downstream value chain biodiversity footprint

- Absence of detrimental activity in biodiversity- sensitive area (KBA, Natura 2000, UNESCO WH site)
- Assessment of water dependency and deployment of resilient plan for water-stressed basins; policy banning new large-scale irrigation projects; and monitoring of groundwater
- Palm Oil certification to RSPO (100% required for producers) and NDPE¹ commitment
- Global risk mitigation framework possibly ISO² certified or IFC³ Performance Standard
- Bioethics policy addressing genetic modification techniques

PAI #8
PAI #9



Working conditions, human rights, and land grabbing

CONTEXT	MINIMUM STANDARDS	
<p>Agriculture and forestry rely on seasonal labor for tasks such as planting and harvesting, increasing the risks of forced and child labor, and exacerbating inequalities. External HR recruiters often charge applicants fees for labor contracts, particularly affecting vulnerable groups such as migrants, women, and indigenous populations. Worker safety is compromised because of exposure to extreme weather and hazardous pesticides, with high turnover limiting safety training. Timber handling poses serious injury risks, while workers in heavy machinery and agrochemical sectors face industrial hazards, including chemical contamination and biohazards.</p>	Type of ESG risk Employees' labor rights and worker safety	Risk assessment indicators examples <ul style="list-style-type: none"> • Basic measures in place for employees impacted by restructuring (financial severance, retraining, job-search assistance, etc.). • Measures to promote fair working conditions and a sustained social dialogue in countries with less-stringent regulations. Independent labor audits and certifications. • Anonymous reporting channel to report nonethical behaviors in the workplace. • Monitoring the frequency and severity of health and safety incidents (direct workers and contractors) decreasing overtime. • Seasonal workers risk reduction policy.
<p>As industries located in the upstream value chain, forestry and agriculture are exposed to limited risks in the supply chain, as risks are concentrated in the direct operation and use phase of products and services. Nevertheless, companies sourcing from developing or emerging area and high-risk raw commodities should deploy specific risk-monitoring measures.</p>	Human rights in the supply chain	<ul style="list-style-type: none"> • Existence of a Code of Conduct for Suppliers that includes human rights and labor rights considerations. • Join a multistakeholder industry initiative (e.g., EcoVadis, amfori, Sedex, SMETA), and promote and deploy ambitious standards in the supply-chain SA 8000. • Implement a policy, audits and reports on remediation measures regarding suppliers not complying with forced labor standards. • Violation of UN Global Compact (UNGC) principles and Organization for Economic Cooperation and Development (OECD) guidelines for Multinational Enterprises and implementation of corrective measures. <div>PAI #10</div> <div>PAI #11</div> <div>PAI #16</div>
<p>Approximately half of the world's forests are used for wood harvesting or the collection of by-products. Large timber concessions often encroach upon indigenous territories, as noted in the ICCA database. Despite their vital role as custodians of biodiversity, indigenous peoples, who make up only 6% of the global population, are three times more likely to live in extreme poverty.¹ Their local knowledge and craftsmanship are closely tied to their ancestral lands, which are increasingly threatened by large-scale land estates.</p>	Land grabbing	<ul style="list-style-type: none"> • Commit and require suppliers to commit to the Free, Prior, and Informed Consent principle regarding the right of surrounding communities to give their consent to access to private land estates. • Deploy social impact assessment according to IFC standards before land acquisition and deployment of grievance resolution frameworks. • Maximize fiber certification according to labels integrating social clause, such as FSC/PPEFC.



Animal welfare, bioethics, products safety

CONTEXT

Today two-thirds of mammal weight on Earth is from domestic animals. Agriculture entails reliance on animals whether directly or through by-products (manure, fats, fertilizers, etc.). Livestock farming is a cause in transmission of zoonoses, with 70% of emerging diseases caused by zoonoses. Industrial livestock farming increases animal stress, thereby reducing animals' immune systems, while climate change increases the prevalence and transmissions of pathogens.¹ This has led to overuse of antibiotics, with one-quarter of all countries still using them for animal growth promotion, which induces antimicrobial resistance (AMR).² Adopting the One Health policy based on prevention and deploying credible certification helps mitigate related risks.

The development of biostimulants, biocontrol methods, water-efficient crops, and novel proteins aims to reduce environmental impact and enhance agricultural resilience but increases reliance on genetic engineering. Fermentation and meat culture carry risks, including gene leakage, pest resistance, animal welfare issues, biohazards for lab staff, and biopiracy from nature patents. Animal testing raises ethical concerns. The Cartagena Convention promotes risk reduction in genetic engineering, while the Nagoya Convention supports equitable sharing of benefits from genetic resources.

Increasing the variety of food sources and availability as packaged options induces intoxication due to traceability challenges caused by bacterial contamination in longer supply chains but also the use of hazardous chemicals, such as post-harvest residues and plasticizers in cardboard plastic coatings. Agriculture equipment products can be subject to defects, triggering serious injuries, and to the misuse of farmers' personal data. Risk mitigation requires food safety certification, along with certification for most hazardous chemicals, products quality and privacy data policy.

MINIMUM STANDARDS

Type of ESG risk

- **Antibiotics resistance**
- **Animal welfare issues**
- **Climate change risk**

- **Bioethics**
- **Animal testing**
- **GMOs**

- **Food contamination**
- **Products failure**
- **Carcinogenic, mutagenic, and reprotoxic chemicals**
- **Privacy**

Risk assessment indicators examples

- Disclosure on percentage of animal biomass treated by antibiotics.
- Percentage of third-party animal welfare certification.
- Antibiotic prophylaxis and metaphylaxis transparency.
- Level of certification achieved.
- One Health policy addressing metaphylaxis and prophylaxis.
- Climate change adaptation policy for animals (species, shade).
- Number of annual suppliers' audits.

- % GMOs in portfolio. Bioethics policies and regular committee meetings.
- Animal testing policies referring to Replacement, Reduction, Refinement principles and prioritizing in silico and in vitro research.
- Transparency on invasive genetically modified organism (GMO) techniques (transgenesis).
- Risk mitigation policy on pest resistance GM. Independent studies on GMOs.

- Certification for food safety.
- Certification for product quality.
- Audit of suppliers on food safety.
- Transparency on food additives and pesticides used.
- Percent of packaging without toxic plasticizers (such as bisphenol A and per- and polyfluoroalkyl substances PFAS).
- Data privacy policy for precision agriculture equipment.



CONTEXT	MINIMUM STANDARDS	
<p>The credibility and robustness of the company's sustainability strategy is supported by a comprehensive ESG governance structure and the integration of ESG criteria in the management remuneration. Moreover, business ethics is an important issue, and companies must be able to prevent the risk of detrimental practices (corruption, fraud, bribery, etc.). Agriculture and Forest companies are often exposed to claims related to land grabbing, lobbying for agricultural subsidies, and price collusion. As such, it is still important that companies be transparent with regard to their lobbying practices and anti-corruption, anticompetitive and bribery policies. The risk assessment on this subject is essentially based on a detailed analysis of companies' controversies and reactions. Because of its strong propensity to generate intellectual property-related revenue, the sector is also keen to aggressive tax-optimization strategies, which makes transparent tax communication essential.</p>	Type of ESG risk	Risk assessment indicators examples
	Governance of sustainability	<p>Existing governance structure enabling the mitigation of environmental and social risks</p> <p>Unadjusted gender pay gap</p> <p>Board gender diversity</p> <p>PAI #12</p> <p>PAI #13</p>
	Business ethics	<p>Robust business ethics policies covering lobbying practices, anti-corruption, anti-competitive and bribery policies</p> <p>Evidence of effective whistleblower channels and transparency around cases reported and actions implemented</p> <p>Systematic training on the company's and suppliers' code of conduct</p> <p>PAI #17</p>
	Tax practices	<p>Effective tax rate vs. equal statutory tax rate</p> <p>Absence of controversies or evidence of aggressive tax-optimization practices</p> <p>Estimated exposure to tax havens* or tax-noncooperative jurisdictions with no real activity in the country</p>

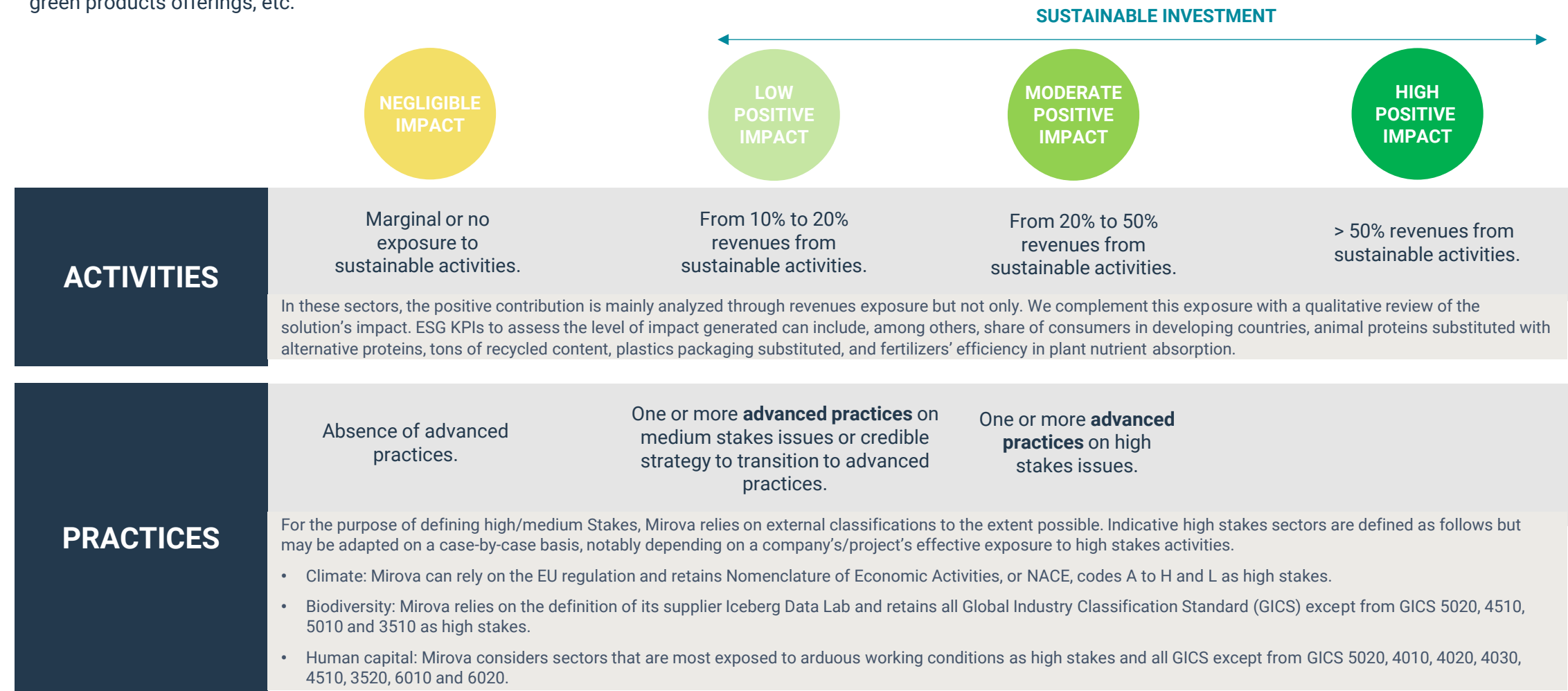
Appendices



Positive impact

According to Mirova’s internal methodology*, contribution to the SDGs can be grouped in two main categories, which are often complementary:

- The “**activities**,” i.e., the products and services they offer.
- The “**practices**,” i.e., the way in which operations can contribute to create sustainable and inclusive jobs, or by having strong commitments to net-zero targets beyond their green products offerings, etc.



ESG risk

SECTOR INHERENT RISK LEVEL: HIGH

In the agricultural tools and agrochemical supply sectors, most material risks relate to GHG emissions from livestock and fertilizers; water-resource depletion; land, air and water pollution caused by the most hazardous pesticides and excess spreading practices; and gene leakages and pest resistance caused by GMOs and prophylactic use of antibiotics. On the social dimension, risks relate to forced labor linked with reliance on informal workers, food-safety issues caused by post-harvest pesticides, and workers' injuries caused by machinery.

In forestry sectors, material risks relate to land degradation caused by intensive plantations and clear cuts, greenhouse gases released from degraded soil, pollution resulting from chemical pulp treatment processes, forest fires caused by maladaptation of forests to climate change, and the spread of invasive tree species. On the social dimension, material risks include workers' injuries caused by handling heavy logs, land grabbing on indigenous land, and water contamination by pesticides that impacts drinking water.

MAIN ESG RISKS FACTORS

Climate
Water
Circularity
Working conditions
Human rights
Land grabbing
Animal welfare
Bioethics
Products safety
Deforestation
Governance

COMPANY INHERENT RISK LEVEL

A company inherent risk level may differ from the sector's inherent risk level.

The definition of the company inherent risk level may also be determined by the specificities of the company's business model, the nature of the company's activities, and the company's locations as well as the locations of its suppliers (including country-specific risks).

RESIDUAL ESG RISK LEVEL

LOW RESIDUAL RISK

Satisfactory management of the company's or project's main sustainability risks on most material issues.

MEDIUM RESIDUAL RISK

The current management in place does not fully cover all ESG risks, but these are considered as moderate and current practices are deemed acceptable.

HIGH RESIDUAL RISK

Companies demonstrating significant mitigation efforts operating in sectors with industrywide complex and unaddressed challenges – systematically undertargeted engagement.

SIGNIFICANT HARM

Not eligible for investment.



Principal Adverse A indicators

ADVERSE SUSTAINABILITY INDICATOR		MOST RELEVANT	Thresholds/Criteria
CLIMATE AND OTHER ENVIRONMENT-RELATED INDICATORS			
Greenhouse gas emissions	1. GHG emissions	X	Systematic integration in qualitative internal analysis
	2. Carbon footprint	X	
	3. GHG intensity of investee companies	X	Systematic integration in qualitative internal analysis
	4. Exposure to companies active in the fossil-fuel sector	X	Systematic integration in qualitative internal analysis
	5. Share of nonrenewable energy consumption and production	X	Systematic integration in qualitative internal analysis
	6. Energy consumption intensity per high-impact climate sector	X	
Biodiversity	7. Activities negatively affecting biodiversity-sensitive areas	X	Exclusion of companies or projects significantly harming biodiversity-sensitive areas.
Water	8. Emissions to water	X	Systematic integration in qualitative internal analysis
Waste	9. Hazardous waste and radioactive waste ratio	X	Not material
INDICATORS FOR SOCIAL AND EMPLOYEE, RESPECT FOR HUMAN RIGHTS, ANTI-CORRUPTION AND ANTI-BRIBERY MATTERS			
Social and employee matters	10. Violations of UNGC principles and OECD Guidelines for Multinational Enterprises	X	Exclusion of companies violating UNGC and OECD principles
	11. Lack of processes and compliance mechanisms to monitor compliance with UNGC principles and OECD Guidelines for Multinational Enterprises	X	Systematic integration in qualitative internal analysis Part of controversy monitoring
	12. Unadjusted gender pay gap	X	Systematic integration in qualitative internal analysis
	13. Board gender diversity	X	Engagement plans/ESAP ¹ with investees
	14. Exposure to controversial weapons (anti-personnel mines, cluster munitions, chemical weapons and biological weapons)		Exclusion (any involvement)
INDICATORS FOR SOCIAL AND EMPLOYEE, RESPECT FOR HUMAN RIGHTS, ANTI-CORRUPTION AND ANTI-BRIBERY MATTERS			
Human rights	15. Number of identified cases of severe human rights issues and incidents	X	Systematic integration in qualitative internal analysis Part of controversy monitoring
Anti-corruption and anti-bribery	16. Number of convictions and number of fines for violation of anti-corruption and antibribery laws	X	Systematic integration in qualitative internal analysis Part of controversy monitoring



Useful resources

SFDR

- [Sustainable Finance Disclosure Regulation \(SFDR\): Positioning of Mirova Funds](#)
- [Description of the principal adverse impacts on sustainability factors](#)

POLICIES AND METHODOLOGIES

- [Our approach to impact](#)
- [Our approach to impact & ESG assessment](#)
- [Minimum standards](#)
- [Voting and Engagement policies](#)
- [Temperature alignment of listed investment portfolios](#)
- [Transparency codes](#)
- [Our Taxonomy for Sustainable Solutions](#)



Disclaimers



MAIN RISKS

ESG investing risk and methodological limits

By using ESG criteria in the investment policy, the relevant fund's objective would be, in particular, to better manage sustainability risk and generate sustainable, long-term returns. ESG criteria may be generated using Mirova's proprietary models or third-party models and data or a combination of both. The assessment criteria may change over time or vary depending on the sector or industry in which the relevant issuer operates. Applying ESG criteria to the investment process may lead Mirova to invest in or exclude securities for nonfinancial reasons, regardless of market opportunities available. ESG data received from third parties may be incomplete, inaccurate or unavailable from time to time. As a result, there is a risk that Mirova may incorrectly assess a security or issuer, resulting in the incorrect direct or indirect inclusion or exclusion of a security in a fund's portfolio.

Sustainability risks

The Sub-Funds are subject to sustainability risks as defined in the Regulation 2019/2088 (article 2[22]) "as an environmental, social or governance event or condition that, if it occurs, could cause an actual or a potential material negative impact on the value of the investment."

Sustainability risks are principally linked to climate-related events resulting from climate change (i.e., Physical Risks) or to the society's response to climate change (i.e., Transition Risks), which may result in unanticipated losses that could affect the Sub-Funds' investments and financial condition. Social events (e.g., inequality, inclusiveness, labor relations, investment in human capital, accident prevention, changing customer behavior, etc.) or governance shortcomings (e.g., recurrent significant breach of international agreements, bribery issues, products' quality and safety, selling practices, etc.) may also translate into Sustainability Risks. Sustainability factors consist in environmental, social and employee matters, respect for human rights, anti-corruption and anti-bribery matters (the "Sustainability Factors"). Portfolio investment process includes binding and material ESG approach to focus on well-rated securities from an ESG viewpoint in order to mitigate the potential impact of Sustainability Risks on portfolio return. More information on the framework related to the incorporation of Sustainability Risks can be found in the sustainability risk management policy of the Management Company on its website.



An affiliate of:

 **NATIXIS**
INVESTMENT MANAGERS



LEGAL NOTICE

This document is a noncontractual document for information purposes only.

This document does not constitute or form part of any offer, or solicitation, or recommendation to subscribe for, or buy, or concede any shares issued or to be issued by the funds managed by Mirova investment management company. The presented services do not take into account any investment objective, financial situation or specific need of a particular recipient. Mirova shall not be held liable for any financial loss or for any decision taken on the basis of the information contained in this document, and shall not provide any consulting service, notably in the area of investment services.

The information contained in this document is based on present circumstances, intentions and guidelines, and may require subsequent modifications. Although Mirova has taken all reasonable precautions to verify that the information contained in this document comes from reliable sources, a significant amount of this information comes from publicly available sources and/or has been provided or prepared by third parties. Mirova bears no responsibility for the descriptions and summaries contained in this document. No reliance may be placed for any purpose whatsoever on the validity, accuracy, durability or completeness of the information or opinion contained in this document or any other information provided in relation to the fund. Recipients should also note that this document contains forward-looking information, issued on the date of this presentation. Mirova makes no commitment to update or revise any forward-looking information, whether due to new information, future events or any other reason. Mirova reserves the right to modify or remove this information at any time without notice.

The information contained in this document is the property of Mirova. The distribution, possession or delivery of this document in some jurisdictions may be limited or prohibited by law. Persons receiving this document are asked to learn about the existence of such limitations or prohibitions and to comply with them.

Mirova voting and engagement policy as well as transparency code are available on its website: www.mirova.com.

Noncontractual document, issued in March 2024.



An affiliate of:





MIROVA

Portfolio Management Company - Anonymous Company RCS Paris No.394 648 216

AMF Accreditation No. GP 02-014

59, Avenue Pierre Mendes France 75013 Paris

Mirova is an affiliate of Natixis Investment Managers.

[Website](#) – [LinkedIn](#)

NATIXIS INVESTMENT MANAGERS

French Public Limited liability company RCS Paris n°453 952 681

Registered Office: 59, avenue Pierre Mendès - France 75013 Paris

Natixis Investment Managers is a subsidiary of Natixis.

MIROVA US

888 Boylston Street, Boston, MA 02199; Tel: 857-305-6333

Mirova U.S, LLC (Mirova US) is a U.S.-based investment advisor that is wholly owned by Mirova. Mirova is operating in the U.S. through Mirova US. Mirova US and Mirova entered into an agreement whereby Mirova provides Mirova US investment and research expertise, which Mirova US then combines with its own expertise and services when providing advice to clients.

MIROVA SUNFUNDER EAST AFRICA LIMITED

Mirova SunFunder East Africa Limited

A company incorporated with limited liability in the Republic of Kenya

Workify, 11th Floor, Wood Avenue Plaza, P.O. Box 59067 GPO, Nairobi

Mirova SunFunder East Africa Limited is a subsidiary of Mirova SunFunder Inc.

An affiliate of:

