

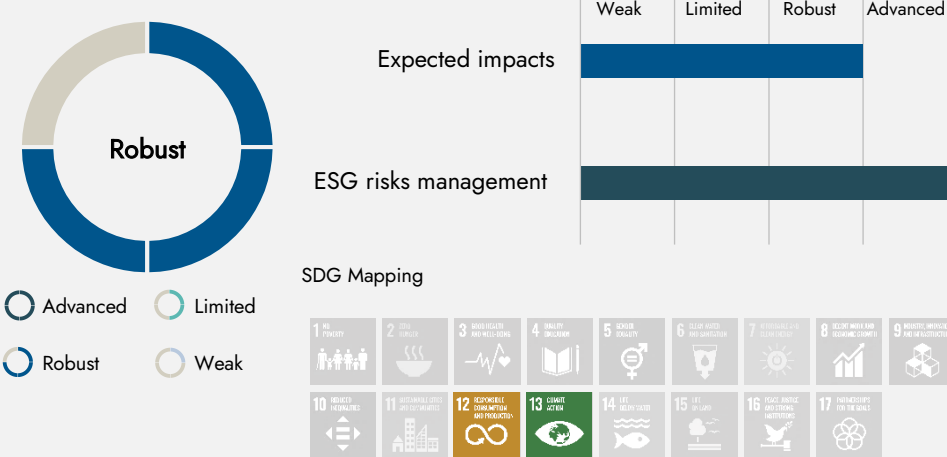
SECOND PARTY OPINION

on the sustainability of Arkema's Green Bond Framework

Vigeo Eiris is of the opinion that Arkema's Framework is **aligned** with the four core components the Green Bond Principles 2018 ("GBP") and is in line with some **best practices** taken into account in Vigeo Eiris' methodology. ✓

Framework

Contribution to Sustainability:

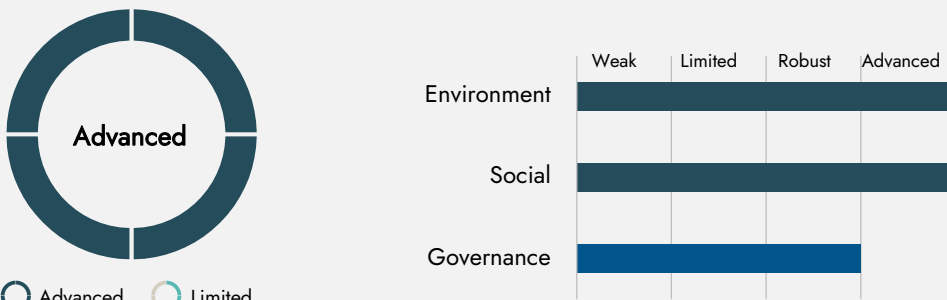


Characteristics

Green Project Category	⇒ Biosourced monomer and polymers production
Project locations	Singapore
Existence of framework	Yes
Share of refinancing	~23%
Look back period	24 months

Issuer

ESG Performance as of October 2019



Controversies

Number of controversies	6
Frequency	Frequent
Severity	Critical
Responsiveness	Reactive

Controversial Activities

The Issuer appears to be involved in 3 of the 17 controversial activities screened under our methodology:

- Alcohol
- Civilian firearms
- Genetic engineering
- Nuclear power
- Tobacco
- Animal welfare
- Fossil Fuels industry
- High interest rate lending
- Pornography
- Cannabisis
- Coal
- Human Embryonic Stem Cells
- Reproductive medicine
- Chemicals of concern
- Gambling
- Military
- Tar sands and oil shale

Coherence

Coherent
Partially coherent
Not coherent

We are of the opinion that the contemplated Bond is coherent with Arkema's strategic sustainability priorities and sector issues and contributes to achieving the Issuer's sustainability commitments.

Key findings

Use of Proceeds

- The **Eligible Project** is clearly defined and detailed.
- The **Environmental Objectives** are clearly defined.
- The Expected **Environmental Benefits** are clear and precise.
- The Issuer has committed to communicate the estimated share of refinancing at issuance and has set a maximum look-back period of 24 months prior to the issuance.

Evaluation and Selection

- The process for **Evaluation and Selection process** has been clearly defined and detailed by the Issuer and includes relevant internal expertise.
- The **Eligibility Criteria** for the project selection are clearly defined and detailed.
- The Issuer's commitment and measures related to the **management of material E&S risks** combine monitoring, identification, corrective and preventive measures.

Management of Proceeds

- The **process for the allocation and management** of the proceeds is clearly defined and detailed.
- The maximum **allocation period** for the bond's proceeds is equal to 36 months.
- An amount equivalent to the net proceeds of the Bond will be **earmarked and tracked** by the Issuer in an appropriate manner and attested in a formal internal process.
- Information on the intended **types of temporary placement** for the balance of the unallocated net proceeds is publicly disclosed.
- The Issuer has committed that as long as the Bond is outstanding, the balance of the tracked net proceeds will be periodically **adjusted** to match allocations to the Eligible project made during that period.
- In case of **postponement**, the Issuer reports that cash would remain on the Company's central monetary placement supports until fully spent on the Eligible Project.

Reporting

- The Issuer has committed to **report on the allocation of** proceeds annually until full allocation and on **environmental impacts** at least once during the lifetime of the bond after full allocation.
- The **reporting process and responsibilities** are clearly defined and detailed.
- The **indicators selected** by the Issuer to report on the allocation of proceeds and on environmental benefits are clear and relevant although not exhaustive on the environmental benefits.
- Indicators used to report on the allocation of proceeds and on the environmental benefits of the Eligible Project will be **verified externally**.

Scope of External Reviews

<input checked="" type="checkbox"/>	Pre-issuance Second Party Opinion	<input checked="" type="checkbox"/>	Independent verification of impact reporting
<input checked="" type="checkbox"/>	Independent verification of funds allocation	<input type="checkbox"/>	Climate Bond Initiative Certification

Contact

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SCOPE

Vigeo Eiris was commissioned to provide an independent opinion (thereafter “Second Party Opinion” or “SPO”) on the sustainability credentials and management of the Green Bond¹ (“Bond”) to be issued by Arkema (the “Issuer”) in compliance with the Green Bond Framework (the “Framework”) created to govern their issuance.

Our opinion is established according to Vigeo Eiris’ Environmental, Social and Governance (“ESG”) exclusive assessment methodology and to the latest version of the ICMA’s Green Bond Principles (“GBP”) - edited in June 2018.

Our opinion is built on the review of the following components:

- 1) Issuance: we assessed the Framework, including the coherence between the Framework and the Issuer’s environmental commitments, the Bond’s potential contribution to sustainability and its alignment with the four core components of the GBP 2018.
- 2) Issuer: we assessed the Issuer’s ESG performance, its management of potential stakeholder-related ESG controversies and its involvement in controversial activities.

Our sources of information are multichannel, combining data (i) gathered from public sources, press content providers and stakeholders, (ii) from Vigeo Eiris’ exclusive ESG rating database, and (iii) information provided by the Issuer through documents and interviews conducted with the Issuer’s managers and stakeholders involved in the Bond’s issuance, held via teleconference.

We carried out our due diligence assessment from September 1st to October 2nd, 2020. We consider that we were provided with access to all the appropriate documents and interviewees we solicited. To this purpose, we used our reasonable efforts to verify such data accuracy.

¹ The “Green Bond” is to be considered as the bond to be potentially issued, subject to the discretion of the Issuer. The name “Green Bond” has been decided by the Issuer: it does not imply any opinion from Vigeo Eiris.

PART. 1: ISSUANCE

The Issuer has described the main characteristics of the Bond within a formalized Green Bond Framework which covers the four core components of the GBP 2018 (the last updated version was provided to Vigeo Eiris on October 1st, 2020). The Issuer has committed to make this document publicly accessible on its website² before the Bond's issuance date, in line with good market practices.

Alignment with the Green Bond Principles

Vigeo Eiris is of the opinion that Arkema's Framework is aligned with the four core components of the Green Bond Principles 2018.



- **Use of Proceeds:** Vigeo Eiris is of the opinion that Arkema's Framework is **aligned** with the Use of Proceeds component of the Green Bond Principles 2018 and is in line with the **best practices** taken into account in Vigeo Eiris' methodology.
- **Evaluation and Selection:** Vigeo Eiris is of the opinion that Arkema's Framework is **aligned** with the Evaluation and Selection component of the Green Bond Principles 2018 and is in line with the **best practices** taken into account in Vigeo Eiris' methodology.
- **Management of Proceeds:** Vigeo Eiris is of the opinion that Arkema's Framework is **aligned** with the Management of Proceeds component of the Green Bond Principles 2018.
- **Reporting:** Vigeo Eiris is of the opinion that Arkema's Framework is **aligned** with the Reporting component of the Green Bond Principles 2018.

Contribution to Sustainability

The potential contribution of the eligible project to environmental objectives is expected to be robust.

Expected Impacts

The potential positive impact of the eligible project on environmental and social objectives is robust.

ESG Risks Management

The identification and management of the environmental and social risks associated with the Eligible Project is considered advanced.

² <https://www.arkema.com/>

Alignment with the Green Bond Principles

Use of Proceeds



The net proceeds of the Bond will exclusively finance or refinance, in part or in full, one Eligible Project, as defined in Table 1.

- The **Eligible Project** is clearly defined. The Issuer has communicated the nature of expenditures and has provided a clear description, eligibility and exclusion criteria and the location at country level for the Eligible Project.
- The **Environmental Objectives** are clearly defined: they are relevant and set in coherence with sustainability objectives defined in international standards for the Eligible Project.
- The **Expected Environmental Benefits** of the Eligible Project are clear and precise: they are relevant, and measurable and will be quantified for the Eligible Project within the reporting.
- The Issuer has set a maximum **look-back period** of 24 months prior to the issuance. The Issuer has committed to communicate the estimated share of refinancing at Issuance. The preliminary estimated share of refinancing reaches 23%.



Table 1 – Vigeo Eiris’ analysis of the Eligible Project, Sustainability Objectives and Expected Benefits as presented in the Issuer’s Framework

ELIGIBLE PROJECT	DEFINITION AND ELIGIBILITY CRITERIA	SUSTAINABILITY OBJECTIVES AND BENEFITS	VIGEO EIRIS’ ANALYSIS
Biosourced monomer and polymer production	<p>Construction (CAPEX) of a plant based in Singapore to produce Amino 11 monomer and Rilsan® Polyamide 11 (PA11) from castor oil derived from castor beans.</p> <p>The manufactured products follow the following requirements:</p> <ul style="list-style-type: none"> - Renewable feedstock and non-edible crop. - The land used has not been subject to land conversion (including deforestation, food production farm and pasture) for 30 years. - The land used is not located in a protected area. - The carbon footprint of the output has been calculated in accordance with ISO 14067:2018 and will be validated by a third party. - Rilsan® PA11 is estimated to reduce CO₂ emissions by 40% compared to a panel of petro-based polymers that the project aims at replacing in targeted applications. If the 	<p>Climate Change Mitigation</p> <p>GHG emissions reduction</p>	<p>The Eligible Project is clearly defined, including a clear description, eligibility and exclusion criteria, the nature of expenditures and project location.</p> <p>The Environmental Objectives are clearly defined: they are relevant and set in coherence with sustainability objectives defined in international standards.</p> <p>The Expected Environmental Benefits are clear and precise: they are relevant and measurable and will be quantified within the reporting.</p>

	Rilsan® PA11 is produced with 30% of recycled content, preliminary estimations give an approximation of an additional 20% CO ₂ emissions saved.		
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SDG Contribution

The Eligible Project is likely to contribute to two of the United Nations' Sustainable Development Goals ("SDGs"), namely: Responsible Consumption and Production and Climate Action.

ELIGIBLE CATEGORY	SDG	SDG TARGETS
Biosourced monomer and polymer production		12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.
		The Assets are likely to contribute to SDG 13 which consists in adopting urgent measures to combat climate change and its effects.

BEST PRACTICES

- ⇒ Content, eligibility and exclusion criteria are clear and in line with international standards.
- ⇒ Relevant environmental benefits are identified and measurable.
- ⇒ The Issuer has provided information on the share of refinancing and it is less than 50%.

Evaluation and Selection of the Eligible Project



- The process for **Evaluation and Selection** of the Eligible Project has been clearly defined and publicly disclosed by the Issuer in its Framework. The roles and responsibilities for project evaluation, selection and monitoring are clearly defined and include relevant internal expertise.
- The **Eligibility Criteria** for the project selection are clearly defined and detailed.
- The Issuer reports that it will monitor **continued compliance** of the selected project with the eligibility criteria specified in the Framework throughout the life of the Bond. In addition, the Issuer will monitor potential **ESG controversies** associated with the project and has provided details on procedures adopted in case a controversy is found on the project.
- The **E&S risks** identification and mitigation process is publicly disclosed in the SPO and is considered advanced (see detailed analysis on pages 12-14).

Process for Project Evaluation and Selection

- The project has been selected by Arkema's Executive Committee after a coordinated evaluation process by the Financing & Treasury Department, Sustainable Development Department and High-Performance Polymers Business Line.
- For the purpose of the Bond, a Green Bond Committee ("the Committee") has been created. This Committee is composed of representatives of:
 - Financing & Treasury
 - Sustainable Development
 - Investor Relations
 - High Performance Polymers Business Line
- The Committee is responsible for:
 - Ensuring that the Eligible Project is always compliant with the Eligibility Criteria described in the section "Use of Proceeds". In case of major change, the Green Bond Committee could meet exceptionally and nominate a dedicated task force of experts to analyse and remediate the situation if appropriate. This task force would directly report to the Green Bond Committee.
 - Drafting, verifying and validating the annual reporting.
 - Monitoring potential ESG controversies. In case of controversies concerning the Eligible Project, the Committee will deliberate on the course of action and will take appropriate measures depending on the nature of the controversies, such as open dialogue with stakeholders, preventive actions, mitigation and remediation.

The traceability and verification of the selection and evaluation of the projects is ensured throughout the process:

- The Committee will meet at least once a year throughout the lifetime of the Bond, and in case of a controversy.
- The traceability of the decisions appears to be ensured throughout the process, through meeting minutes that will be compiled for each meeting of the Green Bond Committee.

Eligibility Criteria Selection

The process relies on explicit eligibility criteria, relevant to the environmental objectives defined for the Eligible Categories.

- The selection is based on the Eligible Categories defined in the Use of Proceeds section of the Framework.

BEST PRACTICES

- ⇒ Eligibility and exclusion criteria for project selection are clearly defined and detailed.
- ⇒ The Issuer reports that it will monitor compliance of selected project with eligibility and exclusion criteria specified in the Framework throughout the life of the instrument and has provided details on content/ frequency/duration and on procedure adopted in case of non-compliance.
- ⇒ The Issuer reports that it will monitor potential ESG controversies associated with the project throughout the life of the Bond and has provided details on the procedures in case a controversy is found on the project.

Management of Proceeds



The rules for the management of proceeds are clearly defined and will be verified. We consider that they would enable a documented and transparent allocation process.

- The **Process for the allocation and management of proceeds** is clearly defined and publicly available.
- The maximum **allocation period** for the bond's proceeds is equal to 36 months.
- An amount equivalent to the net proceeds of the Bond will be **earmarked and tracked** by the Issuer in an appropriate manner and attested in a formal internal process.
- Information on the intended **types of temporary placement** for the balance of the unallocated net proceeds is publicly disclosed.
- The Issuer has committed that as long as the Bond is outstanding, the balance of the tracked net proceeds will be periodically **adjusted to match allocations** to the Eligible project made during that period.
- In case of **postponement**, the Issuer reports that cash would remain on the Company's central monetary placement supports until fully spent on the Eligible Project.

Management Process

- An amount equivalent to the net proceeds of the Bond will be deposited in Arkema's general account and an amount equal to the net proceeds will be allocated to capital expenditures for the Eligible Project.
- Arkema has defined a maximum period for the allocation of proceeds, which is equal to 36 months following the issuance of the Green Bond.
- The unallocated funds would be invested, at Arkema's own discretion, in cash or cash equivalent or in other liquid marketable instruments as per the company's liquidity management policy.
- In case of project postponement, the Issuer has committed to keep the cash on the Company's central monetary placement supports until fully spent. If the project is postponed for a period exceeding 36 months, the Issuer will inform the investors in the allocation report.

An area for improvement is to commit that the temporary placements and instruments for unallocated proceeds do not finance GHG intensive activities, controversial activities, or activities facing material ESG issues.

Traceability and Verification

Traceability and verification of both the tracking method and allocation of the proceeds are ensured throughout the process:

- Arkema's project control team in Singapore is responsible for the tracking of all expenses made related to the Eligible Project.
- Arkema's Finance & Treasury Department is responsible for verifying that the amount of the net proceeds does not exceed the total eligible investments related to the Eligible Project, until the Bond's maturity date.
- The proceeds will be appropriately managed and tracked by Arkema's accounting systems. The net proceeds of the Bond and the investments towards the Eligible Project will be monitored and kept in Arkema's accounting systems. The team provides a dedicated internal reporting on a monthly basis to the Central Control Department and periodically to the Executive Committee.

Monitoring & Reporting

Not Aligned

Partially Aligned

Aligned

Best Practices

- The Issuer **has committed to report** on the allocation of proceeds annually until full allocation, on the advancement of the project until its completion and on environmental impacts at least once during the lifetime of the bond after full allocation. The report will be publicly available and will cover all relevant information related to the allocation of proceeds, while information on the expected environmental benefits of the project seems to be limited.
- The **reporting process and responsibilities** are clearly defined and detailed and will be publicly available in the hereby SPO. The Issuer has committed to report on the allocation of proceeds and on environmental benefits at bond and at Eligible Project level. The indicators selected by the Issuer to report on **the allocation of proceeds and on environmental benefits** are clear and relevant although not exhaustive.
- **The reporting methodology and assumptions** used to report on environmental benefits of the Eligible Project will be disclosed in the impact reporting.
- Indicators used to report on the allocation of proceeds and on the environmental benefits of the Eligible Project **will be verified externally**.

Reporting Process

The processes for monitoring, data collection, consolidation, validation and reporting are clearly defined by the Issuer in the Framework.

- The project control team of the company in Singapore tracks all spending related to the Eligible Project and provides a dedicated internal reporting on a monthly basis to the Central Control Department and periodically to the Executive Committee. This will enable Arkema's Treasury team to monitor the allocation of an amount equal to the net proceeds to the Eligible Project.
- Environmental data will be collected, analysed and treated by Arkema's High-Performance Polymers Business Line supply chain and Arkema's LCA expert team. The results and calculations will be validated by the Green Bond Committee.
- Information on the methodology and assumptions used to evaluate the environmental benefit of the Eligible Project will be detailed in the Impact report.

An area for improvement is to commit that the temporary placements and instruments for unallocated proceeds do not finance GHG intensive activities, controversial activities, or activities facing material ESG issues.

Indicators

The Issuer has committed to transparently communicate at Project level, on:

- Allocation of proceeds: the selected reporting indicators are clear and relevant.

REPORTING INDICATORS

- ⇒ The aggregated amount of (re)allocated net proceeds to Eligible Projects
- ⇒ The proportion of financing vs refinancing (%)
- ⇒ The balance of the unallocated proceeds

- ⇒ The types of temporary placements
- ⇒ Project progress status (e.g % of advancement)

- Environmental benefits: the selected reporting indicators are clear and relevant although not exhaustive.

ELIGIBLE CATEGORIES	ENVIRONMENTAL BENEFITS INDICATORS	
	OUTPUTS AND OUTCOMES	IMPACT INDICATORS
Biosourced monomer and polymer production		Expected GHG emissions avoided in tons of CO2e avoided

Process for controlling monitoring & reporting

The Issuer has committed to mandate an external auditor to verify the report for both allocation and environmental indicators.

BEST PRACTICES

- ⇒ The Issuer report will be publicly available.
- ⇒ The Issuer will report on allocation of proceeds and on environmental benefits at project level.
- ⇒ The reporting methodology and assumptions used to report on environmental benefits of the Eligible project will be disclosed publicly.
- ⇒ External verification of E&S benefits & impacts.

Contribution to sustainability

Expected Impacts

The potential positive impact of the Eligible Project on environmental objectives is considered to be robust.

ELIGIBLE PROJECT	LEVEL OF EXPECTED IMPACT	ANALYSIS
Biosourced monomer and polymer production	ROBUST	Due to the nature of their activities and products, chemicals companies have a high potential impact on the environment including through preventing accidental pollution and reducing atmospheric emissions. According to the International Energy Agency, the direct CO ₂ emissions from the chemical production sector reaches around 880 MtCO ₂ in 2018 ³ , while the IPCC estimates Global total emissions (GtCO ₂ eq) for chemicals production processes to reach 2,4 GtCO ₂ in 2010. ⁴ The intended project aims at contributing to the GHG emissions reduction of the company's activity by producing plastics from renewable feedstock intrinsically less emitting than petro-based chemicals processes (around 40% less emitting with an additional 20% if polymer is sourced with 30% recycled content) and can be recycled several times. The renewable feedstock – castor beans – is a non-edible crop, and the land has not been subject to land conversion in the past 30 years and does not compete with food production, as required by the TEG report ⁵ . The Issuer has committed that the land has not been subject to land use change from forest in the past 30 years.

Relevance of ESG Risks Identification and Management systems in place at project level

ESG risks Materiality of and management

The identification and management of the environmental and social risks associated with the Eligible Projects are considered advanced.

	BIOSOURCED MONOMER AND POLYMER PRODUCTION
Environmental strategy	X
Environmental Impact Assessment and Eco-design	X
Environmental/Industrial accidents and pollution	X
Biodiversity	X
Respect of Fundamental Human and Labour Rights	X
Health & Safety	X
Integration of social and environmental factors in the procurement	X
Community Involvement	X
Business Ethics	X
Overall Assessment	Advanced

³ <https://www.iea.org/reports/chemicals>

⁴ https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_annex-iii.pdf

⁵ See 21.9 Manufacture of plastics in primary forms, Taxonomy Technical Report June 2019.

ENVIRONMENTAL RISKS

Environmental strategy

Arkema reports on environmental commitments at group level. A Group Safety and Environment department is responsible for the company's Health, Safety, Environment and Quality Policy which is managed by the operating teams in each region where Arkema is present. In 2018, 54% of the company's site were managed under an ISO 14001 certified Environmental Management System – or Responsible Care® Management System (RCMS) in the United States. In line with this, Arkema has committed that, once completed, the Singapore plant will be managed under an ISO 14001 certified Environmental Management System.

Environmental Impact Assessment and Eco-design

Arkema has set up a corporate project management process that includes an evaluation of the environmental and safety impact of the plant, to lead if necessary, to a modification of the plant's design. Several assessments have been conducted, namely: an Environmental Impact Assessment and a Quantitative Risk Assessment to map the industrial risks facing the construction, an Energy Efficiency Opportunity Assessment (EEOA) to quantify the energy consumption of the new plant benchmarked against other available technologies and a Pollution Control Study to meet the local environmental requirements and to minimise the residual impacts of the plant (including quantified air emissions, water effluents, noise emissions, and waste generation). In addition, an internal annual environmental assessment will be conducted. The Group applies the HAZard IDentification (HAZID) method to take account of the impact of external events, like natural disasters and climate change (including sea level rise), on the mechanical strength of the construction.

Concerning the plants' outputs, a Life Cycle Assessment (LCA) has been conducted for Rilsan® Polyamide 11 (PA11), attesting to a 40% carbon footprint improvement compared with a competitors' panel of petro-based polymers that it aims at replacing in targeted applications, the LCA will be validated by a third party. A recycling programme, called Virtucycle™, has been created by Arkema to match 'source suppliers' who want their final product and/or recovered material to be recycled with 'target consumers' who have a desire to use recycled materials. Virtucycle™ is at its pilot phase and is expected to be available worldwide in the coming years. The Issuer has estimated the water footprint of its products. According to Arkema, due to lack of sufficient data, the comparison with the panel of petro-based polymers could not be conducted. An area for improvement consists in providing the same calculations (conducted for the energy consumption comparison) for the water footprint.

Biodiversity

As the site will be developed on already urbanized land, there is no competition with potential arable land and potential endangered species. Concerning the feedstock use, the Issuer has stated that – based on official statistics on India and Gujarat – the land used has not been subject of land use change from forest, food, pasture or protected areas since at least 1990. A screening has been conducted by Arkema and no protected areas appear to be affected by the selected farms. A part of the selected farms has been awarded a Sustainable Castor Caring for Environmental & Social Standards Success code compliance certificate by the Sustainable Castor Association and related auditors (Indocert, SGS and Control Union) ensuring a sustainable production of castor beans covering soil, pesticides use and water management practices. The Company intend to reach many more farms for training and certification. Areas for improvement consist in formally excluding protected areas (high conservation value land, or high carbon stock land, and that burning is not used for preparing land) and mandating a third party to assess the respect of these criteria for past and future land selection.

Environmental/Industrial accident and pollution

An Environmental Baseline Study of the plant has been conducted to determine the impact of the project on the soil and allowing the decommissioning and rehabilitation of the land at the end-of-life of the project. The Engineering, Procurement and Construction Management (EPCm) has established a management procedure to identify the risks concerning soil, water, air pollutants and waste control and related mitigation measures. Arkema's management system is OHSAS 18001 certified and the plant will be included within its scope of application. Concerning accidental pollution, Arkema has confirmed that an Emergency Response plan is being designed and should be available in Q4 2021 before the plant's start-up.

SOCIAL RISKS

The Issuer has set up a whistleblowing system available to all Arkema employees, business partners and third parties to report any malfunctions in connection with the Arkema group. A Whistleblowing Committee is in charge of processing the concerns raised via the whistleblowing mechanism and may be supported by third parties when necessary.

Respect of Fundamental Human and Labour Rights

The Issuer has set up an internal system to ensure the respect and promotion of human and labour rights. The topics covered are detailed in the Code of Conduct for Arkema suppliers, which applies to subcontractors and suppliers and covers compliance with laws and regulations matters on topics including collective bargaining, child labour and forced labour, non-discrimination, health and safety etc. Arkema reserves the right to audit its Suppliers and apply corrective measures in case of non-conformity with the Code of Conduct.

Health and Safety

For the construction phase, the Issuer has established an integrated Health, Safety, Security and Environment (HSSE) plan jointly with its EPCm (Engineering, Procurement and Construction Management) contractor. The HSSE plan covers risk management, safety training, incident investigation, safety rules, safety promotion, selection of contractors, audits and inspections, emergency procedures, and health protection. The EPCm is responsible for the legal safety responsibility record (in accordance with Singapore laws). In addition to EPCm company, Arkema has also deployed its own dedicated safety field supervision team and has incentivised the EPCm company on the safety results. All incidents and accidents will be recorded, and a safety monthly review is held between Arkema and the EPCm company.

For the operation phase, the Issuer reports to have an integrated systemic approach on Safety, Environment, Health and Quality, consistent with the requirements of Singapore. This includes OHSAS 18001 for occupational health and safety management, and a behaviour-based safety programme. A systematic occupational workplace Health and Safety risk assessment is performed prior to start-up with an annual update.

Integration of social and environmental factors in the procurement

In 2014, Arkema has joined Together for Sustainability (TfS), an initiative for a responsible supply chain. The goal of TfS is to develop and implement a global assessment and audit programme to evaluate and improve sustainability practices in chemical industry supply chain verified by Ecovadis. The Ecovadis assessment results determine the course of action for companies which may include an exclusion from Arkema's supplier panel or improvement plans. In addition, Arkema's suppliers and subcontractors are required to follow the Issuer's procedures (for instance regarding safety, waste and foreign workers). In case of breach of these procedures, an action plan has to be put in place and in case of persistent breaches, sanctions would be applied, including through the replacement of the supplier.

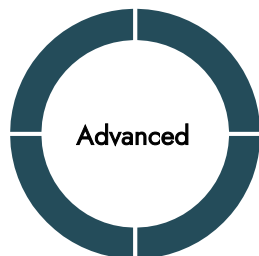
Community Involvement

The Issuer reports that due to the location of the plant (on an island dedicated to industrial activities), the risks on the local communities are low, as the potentially impacted populations are on the mainland at 4.3km distance from the plant. However, the Project is expected to have a positive impact on the local economy through the increased opportunities on the local job market. This will range from both construction job opportunities and plant operations job opportunities.

Business Ethics

Arkema discloses several documents on its website to ensure the existence of good business ethics and integrity: a Code of Conduct for Arkema suppliers, the Arkema Group Business Conduct & Ethics Code and the Arkema Group Anti-Corruption Policy. These documents cover issues including corruption, bribery, influence peddling, conflicts of interest, export and import regulations. Arkema has established a map of corruption-related risks, as part of the general risk map exercise performed by the Group and has implemented a business compliance and ethics programme. Several measures have been put in place to prevent non-compliance with applicable laws and regulations linked to business ethics: guides, regular e-learning and training for Arkema's employees and a compliance statement signed by all employees potentially exposed to these risks, verification of business intermediaries prior to their appointment, and systematic approval required prior to any export to countries subject to commercial or financial restrictions.

PART 2: ISSUER



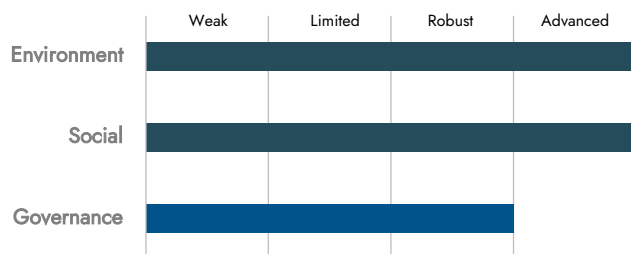
Arkema S.A. manufactures and sells specialty chemicals and advanced materials worldwide. Its materials solutions are used in various sectors, such as transport, oil extraction, renewable energies, consumer goods, electronics, construction, coatings and water treatment. Arkema was established following the spin-off of Total SA’s chemical branch, formerly Elf Atochem. Arkema is present in 55 countries, has 15 R&D centres worldwide, and a total of 136 production sites.

Level of ESG performance

The Issuer’s ESG performance was assessed through a complete process of rating and benchmark.

As of October 2019, Arkema displays an overall advanced ESG performance. Arkema’s performance is advanced in the Environment and Social pillars, and robust in the Governance pillar. (for more details see Appendix 1)

ESG PERFORMANCE AS OF OCTOBER 2019



Management of ESG Controversies

As of September 2020, Arkema faces six stakeholder-related ESG controversies, linked to four of the six domains we analyse:

- Environment, in the criteria of “Accidental pollution”, “Water” and “Atmospheric emissions”
- Human Rights, in the criterion of “Non-discrimination”
- Community Involvement, in the criterion of “Social and economic development”
- Business Behaviour, in the criterion of “Product safety”.

Frequency: The controversies faced are considered “frequent”.⁶

Severity: The severity of the case, based on the analysis of its impact on both the company and its stakeholders, is considered “critical”.⁷

Responsiveness: Arkema is considered overall “reactive”.⁸

⁶ VE scale of assessment: Isolated / Occasional / Frequent / Persistent.

⁷ VE scale of assessment: Minor / Significant / High / Critical.

⁸ VE scale of assessment: Non-communicative / Reactive / Remediative / Proactive.

Involvement in Controversial Activities

As of September 2020, the Issuer appears to be involved in three of the 17 controversial activities screened under our methodology, namely:

Major involvement in Animal welfare: Arkema has an estimated turnover from the production of cosmetic and non-cosmetic products tested on animals which is below 5% of total turnover.

The Company manufactures specialty chemicals for paints, coatings, adhesives, animal feeds, agrochemicals and the oil and gas industry. The Company manufactures cosmetic intermediates such as Orgasol fine powders used in colour cosmetics and ingredients used in shampoo, conditioner and face wash.

Arkema has issued an animal testing statement and states in its Universal Registration Document 2019: "Arkema neither conducts triage trials on substances derived from its research nor participates in toxicology research projects that could involve the use of laboratory animals.[...] The Group does not conduct toxicology studies on vertebrate animals other than those required by the authorities and only after an in-depth analysis and application of up-to-date existing public information on the substances in question. The necessary studies are contracted to outside laboratories which are subject to oversight by the relevant ethics committees."

Major involvement in Chemicals of concern: Arkema produces or supplies restricted chemicals (OSPAR Priority list) and pesticides. Arkema has an estimated turnover from these products which is below 10%.

- Production of restricted chemicals: It includes nonylphenol ethoxylates, Surfaline products line, produced by CECA group company.
- Production of pesticides: Arkema supplies Paladin® and Accolade® used to protect vegetable and fruit crops. Additionally, the Company's Triazole products are mainly used as intermediates for the synthesis of active ingredients in agrochemicals (fungicides, herbicides).

Minor involvement in Nuclear Power: Arkema has an estimated turnover from involvement in nuclear power which is below 5% of total turnover.

This turnover is derived from minor nuclear parts and services such as:

- Supply of Kynar resin that can be used in a variety of industries and applications, including nuclear waste processing;
- Supply of hydrazine hydrate, which provides anti-corrosion protection for steam generators etc. in nuclear power plants.

The Issuer appears to be not involved in any of the other 14 controversial activities screened under our methodology, namely: Alcohol, Cannabis, Civilian firearms, Coal, Fossil Fuels industry, Unconventional oil and gas, Gambling, Genetic engineering, Human embryonic stem cells, High interest rate lending, Military, Pornography, Reproductive Medicine and Tobacco.

The controversial activities research provides screening of companies to identify involvement in business activities that are subject to philosophical or moral beliefs. The information does not suggest any approval or disapproval on their content from Vigeo Eiris.

PART 3: COHERENCE

Coherent
Partially coherent
Not coherent

We are of the opinion that the contemplated Bond is coherent with Arkema's strategic sustainability priorities and sector issues and contributes to achieving the Issuer's sustainability commitments.

Due to the nature of their activities and products, chemicals companies have a high potential impact on the environment. Some material environmental challenges in this sector notably relate to environmental impacts from energy use and atmospheric emissions, accidental pollution and the development of green products and services. Energy costs can represent up to 60% of production costs. Therefore, improving energy efficiency and reducing CO₂ emissions is of key interest for companies in the sector.

We are of the opinion that the Green Bond Framework is coherent with Arkema's main sector sustainability issues, with its publicly disclosed strategic sustainable development priorities, and that it contributes to achieve its sustainable development commitments and targets.

Arkema reports to be working to reduce the consumption of resources such as energy and water, to decrease the emissions stemming from its activity, to develop the use of renewable resources, and to foster the circular economy.

In April 2020, Arkema presented its ambition to become a pure player and world leader in Specialty Materials by 2024, offering the most innovative and sustainable solutions to address its customers' current and future challenges. The Group will notably leverage on its innovation and investments in major projects linked to new energies, lightweight, recycling, urbanization and mobility. Arkema's solutions aim to allowing customers to reduce their GHG emissions with the "Lightweight materials and design", the "New energies" and the "Home efficiency and insulation" platforms.

At the end of 2018, Arkema launched a *Portfolio Sustainability Assessment*, which is a systematic process to evaluate its solutions portfolio (taking into account a product's different applications and regions), in line with a *methodological guide issued by the World Business Council for Sustainable Development (WBCSD)*.⁹ To the extent permitted by the information available, the assessment takes into account the entire value chain, including manufacturing processes, from raw materials to the product's end of life.

In May 2020, Arkema became a member of the World Business Council for Sustainable Development (WBCSD). As Arkema had met its GHG reduction target ahead of time, a new target has been set in 2020. The Issuer aims to reduce its absolute emissions by more than 1.7 million metric tons of CO₂ equivalent compared to 2015 to reach less than 3 million metric tons in 2030, regardless of the increase of its production volumes. This represents a decrease in GHG emissions of 38% by 2030. This new long-term Science-Based Target (SBT) is deemed consistent with the goal of keeping the rise in global temperatures to well below 2°C above pre-industrial levels by the end of the century, in accordance with the Paris Agreement and recent reports from the Intergovernmental Panel on Climate Change (IPCC).

⁹ World Business Council for Sustainable Development - Chemical Industry Methodology for Portfolio Sustainability Assessments – October 2018 - <https://www.wbcsd.org/Programs/Circular-Economy/Factor-10/Sector-Deep-Dives/Resources/Chemical-Industry-Methodology-for-Portfolio-Sustainability-Assessments>

APPENDIX 1 – ISSUER ESG PERFORMANCE

DOMAIN	COMMENTS	OPINION
Environment	<p>Arkema's performance in the Environment pillar is advanced. The Issuer's formalised commitment to environmental protection covers all of its responsibilities and it has set targets regarding greenhouse gases emissions, VOC emissions, emissions to water and net energy purchases to be achieved by 2025 (2012 baseline). Most KPIs are on decreasing trends over the last five years, although not continuously, and are externally verified by Arkema's external auditor. The Company continues to implement an ISO14001 certified EMS at a majority of its production sites and works on optimising its processes to reduce its environmental footprint. Arkema also implements innovative measures to treat its water discharges. The Company displays a strong commitment to prevent accidental pollution, supported by extensive means. Arkema continues to report on efforts to develop bio-sourced chemicals, and this is part of the Issuer's Innovation policy. Comprehensive means are allocated to Product safety, notably for its most toxic substances for which it studies substitution solutions. Progresses are confirmed in the way the Issuer works to integrate environmental standards in its supply chain, in particular through its membership in 'Together for Sustainability', a sectorial initiative enabling pooling with other chemical companies to conduct supplier assessments and audits.</p>	Advanced
		Robust
		Limited
		Weak
Social	<p>Arkema's performance in the Social pillar is advanced. Relevant means are reported to ensure Labour rights are promoted and guaranteed across the company, and quantitative targets have been set to increase gender and national diversities at management level by 2025. In this regard, extensive measures are also in place to prevent discrimination and promote diversity, producing positive results in terms of gender diversity in particular. The Issuer's commitment to promote the social and economic development of the territories where it operates is formalised in its Human Rights Policy and its Social Commitment Charter. Besides, extensive means are developed: the company provides financial support for company creation or takeovers and prospects for the set-up of new activities to mitigate site closures, it also engages in social development programs and supports the creation and development of local businesses. Its Common Ground® approach forms the basis of its community engagement actions. Arkema appears to have a solid culture of social dialogue. It continued its significant efforts in career management and training, showing that a great majority of employees benefit from training courses. The Company also sets specific targets to reduce injuries and means allocated in this view include a certified Health & Safety system. Various initiatives are also in place to deal with stress at work. Reported KPIs show positive results.</p>	Advanced
		Robust
		Limited
		Weak
Governance	<p>Arkema's performance in the Governance pillar is robust. Relevant internal controls are in place to address the Prevention of corruption and Anti-competitive practices, including due diligence on business partners and intermediaries. Arkema is registered on the EU Transparency Register and reports its overall lobbying budget and activities to EU Institutions. 54% of Directors serving on Arkema's Board and its Committees are considered independent and 45% of Directors are women. In addition, two employee representatives are sitting on Board. However, the roles of CEO and Chairman remain combined and Arkema is still only partially transparent on its Executive remuneration. Major voting rights restrictions also remain in the form of a voting rights ceiling. On the other hand, Arkema still generally demonstrates good corporate governance practices. Board members' performance is regularly evaluated by a third party, with disclosure of the results. CSR issues also seem to be well integrated at top management level, with for example relevant processes dedicated to the management of CSR risks. The Group's safety record is one of the points considered in the qualitative criteria entering in the CEO's annual variable compensation and some Board members demonstrate CSR expertise.</p>	Advanced
		Robust
		Limited
		Weak

METHODOLOGY

In Vigeo Eiris' view, Environmental, Social and Governance (ESG) factors are intertwined and complementary. As such they cannot be separated in the assessment of ESG management in any organisation, activity or transaction. In this sense, Vigeo Eiris provides an opinion on the Issuer's ESG performance as an organisation, and on the processes and commitments applicable to the intended issuance.

Our Second Party Opinions (SPOs) are subject to internal quality control at three levels (Project Manager, Quality Reviewer and final review and validation by a Senior Supervisor). A right of complaint and recourse is guaranteed to all companies under our review, following three levels: first, the team in contact with the company; then the Executive Director in charge of Methods, Innovation & Quality; and finally Vigeo Eiris' Scientific Council. All employees are signatories of Vigeo Eiris' Code of Conduct, and all consultants have also signed its add-on covering financial rules of confidentiality.

PART 1. ISSUANCE

Alignment with the Green and/or Social Bond Principles

Scale of assessment: Not aligned, Partially aligned, Aligned, Best Practices

The Framework has been evaluated by Vigeo Eiris according to the ICMA's Green Bond Principles - June 2018 ("GBP") and on our methodology based on international standards and sector guidelines applicable in terms of ESG management and assessment.

Use of proceeds

The definition of the Eligible Projects and their sustainable objectives and benefits are a core element of Green/Social/Sustainable Bonds and Loans standards. Vigeo Eiris evaluates the clarity of the definition of the Eligible Categories, as well as the definition and the relevance of the primary sustainability objectives. We evaluate the descriptions of the expected benefits in terms of relevance, measurability and quantification. In addition, we map the potential contribution of Eligible Projects to the United Nations Sustainable Development Goals' targets.

Process for evaluation and selection

The evaluation and selection process is assessed by Vigeo Eiris on its transparency, governance and relevance. The eligibility criteria are assessed on their clarity, relevance and coverage vs. the intended objectives of the Eligible Projects.

Management of proceeds

The process and rules for the management and the allocation of proceeds are assessed by Vigeo Eiris on their transparency, traceability and verification.

Reporting

The monitoring and reporting process and commitments defined by the Issuer are assessed by Vigeo Eiris on their transparency, exhaustiveness and relevance, covering the reporting of both proceeds' allocation and sustainable benefits (output, impact indicators).

Contribution to sustainability

Scale of assessment: Weak, Limited, Robust, Advanced

Vigeo Eiris' assessment of activities' contribution to sustainability encompasses both the evaluation of their expected positive impacts on environmental and/or social objectives, as well the management of the associated potential negative impacts and externalities.

Expected positive impact of the activities on environmental and/or social objectives

The expected positive impact of activities on environmental and/or social objectives to be financed by the Issuer or Borrower is assessed on the basis of:

- i) the relevance of the activity to respond to an important environmental objective for the sector of the activity; or to respond to an important social need at country level;¹⁰
- ii) the scope of the impact: the extent to which the expected impacts are reaching relevant stakeholders (i.e. the issuer, its value chain, local and global stakeholders); or targeting those populations most in need;
- iii) the magnitude and durability of the potential impact of the proposed activity on the environmental and/or social objectives (capacity to not just reduce, but to prevent/avoid negative impact; or to provide a structural/long-term improvement);
- iv) only for environmental objectives, the extent to which the activity is adopting the best available option.

Activities' ESG risk management

The identification and management of the potential ESG risks associated with the eligible projects/activities are analysed on the basis of Vigeo Eiris' ESG assessment methodology, international standards and sector guidelines applicable in terms of ESG management and assessment.

PART 2. ISSUER

Issuer's ESG performance

Scale of assessment of ESG performance: Weak, Limited, Robust, Advanced

NB: The Issuer's level of ESG performance (i.e. commitments, processes, results of the Issuer related to ESG issues), has been assessed through a complete process of rating and benchmarking developed by Vigeo Eiris.

The Issuers ESG performance has been assessed by Vigeo Eiris on the basis of its:

- **Leadership**: relevance of the commitments (content, visibility and ownership).
- **Implementation**: coherence of the implementation (process, means, control/reporting).
- **Results**: indicators, stakeholders' feedbacks and controversies.

Management of stakeholder-related ESG controversies

A controversy is an information, a flow of information, or a contradictory opinion that is public, documented and traceable, allegation against an Issuer on corporate responsibility issues. Such allegations can relate to tangible facts, be an interpretation of these facts, or constitute an allegation based on unproven facts.

Vigeo Eiris reviewed information provided by the Issuer, press content providers and stakeholders (partnership with Factiva Dow Jones: access to the content of 28,500 publications worldwide from reference financial newspapers to sector-focused magazines, local publications or Non-Government Organizations). Information gathered from these sources is considered as long as it is public, documented and traceable.

Vigeo Eiris provides an opinion on companies' controversies risks mitigation based on the analysis of 3 factors:

- **Frequency**: reflects for each ESG challenge the number of controversies that the Issuer has faced. At corporate level, this factor reflects on the overall number of controversies that the Issuer has faced and the scope of ESG issues impacted (scale: Isolated, Occasional, Frequent, Persistent).
- **Severity**: the more a controversy is related to stakeholders' fundamental interests, proves actual corporate responsibility in its occurrence, and have caused adverse impacts for stakeholders and the company, the higher its severity is. Severity assigned at the corporate level will reflect the highest severity of all cases faced by the company (scale: Minor, Significant, High, Critical).
- **Responsiveness**: ability demonstrated by an Issuer to dialogue with its stakeholders in a risk management perspective and based on explanatory, preventative, remediating or corrective measures. At corporate level,

¹⁰ The importance of a specific social need at country level is assessed on the basis of the country performance on the priority SDG that the project is targeting using data from Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G., Woelm, F. 2020. The Sustainable Development Goals and COVID-19. Sustainable Development Report 2020. Cambridge: Cambridge University Press.

this factor will reflect the overall responsiveness of the company for all cases faced (scale: Proactive, Remediate, Reactive, Non- Communicative).

The impact of a controversy on a company's reputation reduces with time, depending on the severity of the event and the company's responsiveness to this event. Conventionally, Vigeo Eiris' controversy database covers any controversy with Minor or Significant severity during 24 months after the last event registered and during 48 months for High and Critical controversies.

Involvement in controversial activities

17 controversial activities have been analysed following 30 parameters to screen the company's involvement in any of them. The company's level of involvement (Major, Minor, No) in a controversial activity is based on:

- An estimation of the revenues derived from controversial products or services.
- The specific nature of the controversial products or services provided by the company.

PART 3. COHERENCE

Scale of assessment: not coherent, partially coherent, coherent

This section analyses whether the activity to be financed through the selected instrument is coherent with the Issuer's sustainability priorities and strategy, and whether it responds to the main sustainability issues of the sector where the Issuer operates.

VIGEO EIRIS' ASSESSMENT SCALES

Scale of assessment of Issuer's ESG performance or strategy and financial instrument's Contribution to sustainability		Scale of assessment of financial instrument's alignment with Green and/or Social Bond and Loan Principles	
Advanced	Advanced commitment; strong evidence of command over the issues dedicated to achieving the sustainability objective. Reasonable level of risk management & using innovative methods to anticipate new risks.	Best Practices	The Instrument's practices go beyond the core practices of the ICMA's Green and/or Social Bond Principles and/or of the Loan Market Association's Green Loan Principles by adopting recommended and best practices.
Robust	Convincing commitment; significant and consistent evidence of command over the issues. Reasonable level of risk management.	Aligned	The Instrument has adopted all the core practices of the ICMA's Green and/or Social Bond Principles and/or of the Loan Market Association's Green Loan Principles.
Limited	Commitment to the objective of sustainability has been initiated or partially achieved; fragmentary evidence of command over the issues. Limited to weak level of risk management.	Partially Aligned	The Instrument has adopted a majority of the core practices of the ICMA's Green and/or Social Bond Principles and/or of the Loan Market Association's Green Loan Principles, but not all of them.
Weak	Commitment to social responsibility is non-tangible; no evidence of command over the issues. Level of assurance of risk management is weak to very weak.	Not Aligned	The Instrument has adopted only a minority of the core practices of the ICMA's Green and/or Social Bond Principles and/or of the Loan Market Association's Green Loan Principles.

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This opinion aims at providing an independent opinion on the sustainability credentials and management of the Bond, based on the information which has been made available to Vigeo Eiris. Vigeo Eiris has neither interviewed stakeholders out of the Issuer's employees, nor performed an on-site audit nor other test to check the accuracy of the information provided by the Issuer. The accuracy, comprehensiveness and trustworthiness of the information collected are a responsibility of the Issuer. The Issuer is fully responsible for attesting the compliance with its commitments defined in its policies, for their implementation and their monitoring. The opinion delivered by Vigeo Eiris neither focuses on the financial performance of the Bond, nor on the effective allocation of its proceeds. Vigeo Eiris is not liable for the induced consequences when third parties use this opinion either to make investments decisions or to make any kind of business transaction.

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