



Second-Party Opinion

Hanwha Solutions Green Financing Framework

Evaluation Summary

Sustainalytics is of the opinion that the Hanwha Solutions Green Financing Framework is credible and impactful and aligns with the four core components of the Green Bond Principles 2018 the Green Loan Principles 2020 and the ASEAN Green Bond Standards. This assessment is based on the following:



USE OF PROCEEDS The eligible category for the use of proceeds, Renewable Energy, is aligned with those recognized by the Green Bond Principles 2018, Green Loan Principles 2020 and the ASEAN Green Bond Standards. Sustainalytics considers that the eligible category is expected to facilitate renewable energy generation in countries where the Company operates and advance the UN Sustainable Development Goals, specifically SDG 7.



PROJECT EVALUATION / SELECTION Hanwha Solutions' internal process in evaluating and selecting projects is overseen by the Green Financing Working Group ("GFWG") comprised of members from Hanwha Solutions' Accounting, Planning, Legal, Environment & Safety Teams and led by the International Finance or Finance Team. It will be the responsibility of the GFWG to ensure allocation is in line with the eligibility criteria, facilitate reporting and manage any future updates to the Framework. Sustainalytics considers the project selection process is in line with market practice.



MANAGEMENT OF PROCEEDS Proceeds of the green bond or loan will be tracked by the Company's GFWG using a dedicated ledger, which will include information on Green Bond or Loan details, eligible green project list, and amount of unallocated proceeds. Hanwha Solutions intends to reach full allocation 24 months after issuance. Pending allocation, unallocated proceeds will be held in cash or invested in short-term liquid money instruments. Sustainalytics views this process as in line with market practice.



REPORTING Hanwha Solutions intends to report on allocation and impact of proceeds on its website, as part of a dedicated green bond report, on an annual basis until full allocation. Allocation reporting will include the amount of proceeds allocated to the eligible green project category, the amount of unallocated proceeds, the share of financing vs refinancing, description of eligible projects, and project examples where possible. In addition, Hanwha Solutions is committed to reporting on relevant impact metrics. Sustainalytics views Hanwha Solutions' allocation and impact reporting as aligned with market practice.

Evaluation date	June 03, 2021
Issuer Location	Seoul, South Korea

Report Sections

Introduction.....	2
Sustainalytics' Opinion	3
Appendices	8

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Alignment with the ASEAN Green Bond Standards

The ASEAN Green Bond Standards provide guidance to issuers and communicate more specifically about what an issuer should do to issue credible green bonds within Southeast Asia. Sustainalytics is of the opinion that the Eligible Green Project Categories under the Hanwha Solutions Green Financing Framework align with the ASEAN Green Bond Standards. Sustainalytics notes that the alignment only applies to the bonds issued by Hanwha Q Cells Malaysia, which is a wholly owned subsidiary of Hanwha Solutions.

Introduction

Hanwha Solutions (“Company”, or the “Issuer”) was formed in 2020 and headquartered in Seoul due to a merger of Hanwha Chemical, Hanwha Q CELLS and Hanwha Advanced Materials. The Company develops smart energy solutions for a global customer-base and aims to do so with eco-friendly technology and sustainable innovation. Hanwha Solutions operates globally.

Hanwha Solutions has developed the Hanwha Solutions Green Financing Framework (the “Framework”) under which it the Company and its subsidiaries including Hanwha Q Cells Malaysia intends to issue green bonds and loans and use the proceeds to finance and/or refinance, in whole or in part, existing and/or future projects that are expected to facilitate renewable energy generation in countries where the Company operates. The Framework defines eligibility criteria in one green area:

1. Renewable Energy

Hanwha Solutions engaged Sustainalytics to review the Hanwha Solutions Green Financing Framework, dated February 2021, and provide a Second-Party Opinion Update¹ on the Framework’s environmental credentials and its alignment with the Green Bond Principles 2018 (GBP)², the Green Loan Principles 2020 (GLP)³, and the ASEAN Green Bond Standards (AGBS)⁴. This Framework has been published in a separate document.⁵

Scope of work and limitations of Sustainalytics’ Second-Party Opinion

Sustainalytics’ Second-Party Opinion reflects Sustainalytics’ independent⁶ opinion on the alignment of the reviewed Framework with the current market standards and the extent to which the eligible project categories are credible and impactful.

As part of the Second-Party Opinion, Sustainalytics assessed the following:

- The Framework’s alignment with the Green Bond Principles 2018, as administered by ICMA, and the Green Loan Principles 2020, as administered by LMA, APLMA and LSTA⁷, and ASEAN Green Bond Standards as administered by ACMF;
- The credibility and anticipated positive impacts of the use of proceeds; and
- The alignment of the issuer’s sustainability strategy and performance and sustainability risk management in relation to the use of proceeds.

For the use of proceeds assessment, Sustainalytics relied on its internal taxonomy, version 1.7.1, which is informed by market practice and Sustainalytics’ expertise as an ESG research provider.

As part of this engagement, Sustainalytics held conversations with various members of Hanwha Solutions’ management team to understand the sustainability impact of their business processes and planned use of proceeds, as well as management of proceeds and reporting aspects of the Framework. Hanwha Solutions representatives have confirmed (1) they understand it is the sole responsibility of Hanwha Solutions to ensure that the information provided is complete, accurate or up to date; (2) that they have provided Sustainalytics with all relevant information and (3) that any provided material information has been duly disclosed in a timely manner. Sustainalytics also reviewed relevant public documents and non-public information.

¹ This SPO is a slightly revised version of a previous SPO (dated March 2021). It has been updated to incorporate new information provided by the issuer on the alignment of the Framework with ASEAN GBS for the bonds issued by Hanwha Q Cells Malaysia, which is a wholly owned subsidiary of Hanwha Solutions. Sustainalytics is of the opinion that the changes do not have a material effect on the impact of the intended use of bond proceeds or the Framework’s alignment with the GBP and GLP.

² The Green Bond Principles are administered by the International Capital Market Association and are available at <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>.

³ The Green Loan Principles are administered by the Loan Market Association, Asia Pacific Loan Market Association and Loan Syndications & Trading Association and are available at <https://www.lsta.org/content/green-loan-principles/>.

⁴ The ASEAN Green Bond Standards are administered by the ASEAN Capital Markets Forum and are available at: <https://www.theacmf.org/initiatives/sustainable-finance/asean-green-bond-standards>

⁵ The Hanwha Solutions Green Financing Framework is available on Hanwha Solutions’ website at: <https://www.hanwha.com/en/investors.html>

⁶ When operating multiple lines of business that serve a variety of client types, objective research is a cornerstone of Sustainalytics and ensuring analyst independence is paramount to producing objective, actionable research. Sustainalytics has therefore put in place a robust conflict management framework that specifically addresses the need for analyst independence, consistency of process, structural separation of commercial and research (and engagement) teams, data protection and systems separation. Last but not the least, analyst compensation is not directly tied to specific commercial outcomes. One of Sustainalytics’ hallmarks is integrity, another is transparency.

⁷ In addition to the Loan Market Association, the GLP are also administered by the Asia Pacific Loan Market Association and the Loan Syndications & Trading Association

This document contains Sustainalytics' opinion of the Framework and should be read in conjunction with that Framework.

Any update of the present Second-Party Opinion will be conducted according to the agreed engagement conditions between Sustainalytics and Hanwha Solutions.

Sustainalytics' Second-Party Opinion, while reflecting on the alignment of the Framework with market standards, is no guarantee of alignment nor warrants any alignment with future versions of relevant market standards. Furthermore, Sustainalytics' Second-Party Opinion addresses the anticipated impacts of eligible projects expected to be financed with bond and loan proceeds but does not measure the actual impact. The measurement and reporting of the impact achieved through projects financed under the Framework is the responsibility of the Framework owner.

In addition, the Second-Party Opinion opines on the potential allocation of proceeds but does not guarantee the realised allocation of the bond and loan proceeds towards eligible activities.

No information provided by Sustainalytics under the present Second-Party Opinion shall be considered as being a statement, representation, warrant or argument, either in favour or against, the truthfulness, reliability or completeness of any facts or statements and related surrounding circumstances that Hanwha Solutions has made available to Sustainalytics for the purpose of this Second-Party Opinion.

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Hanwha Solutions Green Financing Framework

Sustainalytics is of the opinion that the Hanwha Solutions Green Financing Framework is credible and impactful, and aligns with the four core components of the GBP, GLP and ASEAN GBS. Sustainalytics highlights the following elements of Hanwha Solutions' Green Bond Framework:

- Use of Proceeds:
 - The eligible category, Renewable Energy, is aligned with those recognized by the GBP and GLP. Sustainalytics notes that eligible projects are expected to facilitate renewable energy generation in countries where the Company operates.
 - Hanwha Solutions has defined a three-year lookback period for its refinancing activities, which Sustainalytics considers to be in line with market practice.
 - Hanwha Solutions intends to invest in the acquisition, research and development (R&D), downstream distribution, operation, and maintenance of renewable energy projects including solar photovoltaic, green hydrogen, energy storage, and distribution.
 - Hanwha Solutions has confirmed to Sustainalytics that all projects associated with hydrogen production, storage, and distribution will be dedicated to green hydrogen, where the process is by electrolysis powered by renewables.
 - Regarding R&D, Hanwha Solutions may allocate the proceeds towards the research and development of affordable large-scale green hydrogen, and the research and development of solar cell and modules. Hanwha Solutions has confirmed to Sustainalytics that R&D expenditures include mid-to-late-stage projects with defined future assets and are limited to a maximum of 10% of the bond issuance. Sustainalytics considers this as in line with market practice.
 - Hanwha Solutions has clarified to Sustainalytics that downstream distribution costs include development, construction and land acquisition costs of underlying solar energy assets.
 - Regarding acquisition investments, eligible expenditures may include acquisition of physical assets or pure-play companies for green hydrogen. In case a company is partially involved in eligible activities, the Issuer intends to use a pro-rata allocation of green proceeds based on the percentage of the book value of eligible green assets within the acquired company's balance sheet, which Sustainalytics considers to be in line with market practice.

- Hanwha Solutions has confirmed to Sustainalytics that operation and maintenance activities are limited to those that aim to extend the life-cycle value of the underlying renewable energy assets only.
- Project Evaluation and Selection:
 - Hanwha Solutions has established the Green Financing Working Group (“GFWG”) composed of members of the Company’s Accounting, Planning, Legal, Environment & Safety Teams, led by the Company’s International Finance or Finance Team, to oversee and select eligible projects under the Framework. It will be the GFWG’s responsibility to ratify and monitor eligible projects, facilitate reporting, and manage any future updates to the Framework.
 - Based on the establishment of a formal group, Sustainalytics considers this process to be in line with market practice.
- Management of Proceeds:
 - Hanwha Solutions’ GFWG will be responsible for tracking and managing proceeds of each issuance under the Green Finance Framework. An amount equivalent to the net proceeds will be tracked using a separately established ledger, according to the Company’s formal internal procedure. Hanwha Solutions intends to reach full allocation within 24 months of issuance. Should any proceeds remain unallocated, they will be held in accordance with the relevant internal investment guidelines, in short-term liquid money instruments such as cash or market securities.
 - Based on these elements, Sustainalytics considers this process to be in line with market practice.
- Reporting:
 - Hanwha Solutions intends to report on the allocation and impact of proceeds on its website as part of a dedicated green bond report on an annual basis until full allocation of the bond proceeds. The allocation reporting will include the total amount of proceeds allocated to eligible projects, the balance of unallocated proceeds, the share of financing vs refinancing, and description of eligible projects, and project example where possible.
 - In addition, Hanwha Solutions intends to publish an impact report reporting on relevant indicators such as number of Q.ANTUM cells/modules produced, annual renewable energy production (equivalent in GW), annual production capacity (GW), installed capacity of renewable energy (MW), annual CO₂ emissions reduced or avoided (tons), annual renewable energy production (MWh), information on progress in R&D, and storage capacity of hydrogen tanks (metric tonnes).
 - Based on these commitments to both impact and allocation reporting, Sustainalytics considers this process to be in line with market practice.

Alignment with Green Bond Principles 2018 and Green Loan Principles 2020

Sustainalytics has determined that the Hanwha Solutions Green Financing Framework aligns to the four core components of the GBP and GLP. For detailed information please refer to Appendix 3: Green Bond/Green Bond Programme External Review Form.

Alignment with ASEAN Green Bond Standards 2018

The ASEAN Green Bond Standards provide guidance to issuers and communicate more specifically what an issuer should do to issue a credible green bond within Southeast Asia. Sustainalytics is of the opinion that the Hanwha Solutions Green Financing Framework aligns with the ASEAN Green Bond Standards 2018 (ASEAN GBS). Sustainalytics notes that the alignment only applies to the bonds issued by Hanwha Q Cells Malaysia, which is a wholly owned subsidiary of Hanwha Solutions. See Appendix 1: Alignment to the ASEAN Green Bond Standards.

Section 2: Sustainability Strategy of Hanwha Solutions

Contribution of framework to Hanwha Solutions’ sustainability strategy

Hanwha Solutions demonstrates a commitment to sustainability through the development of energy technologies that support the adoption of renewable energy technology⁸ and the implementation of its “Sustainability Management System”, a tool to support Company strategy and processes. The key areas of

⁸ Hanwha, “Our Commitment”, at: <https://www.hanwha.com/en/sustainability/our-commitment.html>

the Sustainability Management System that reflect Hanwha Solutions' commitment is environmental management.⁹

Under the area of environmental management, Hanwha Solutions has been developing technologies to facilitate affordable access to solar energy and hydrogen.¹⁰ In addition to its development efforts, the Company has taken measures to reduce the environmental impact of its own operations by reducing its greenhouse gas emissions by 19% until 2020 from base year 2017.⁹ Moreover, as a key part of their sustainability strategy, Hanwha Solutions is focused on improving their own operations in all subsidiaries in regards to air pollution, water conservation, waste treatment, soil protection and chemical management.

Sustainalytics is of the opinion that the Hanwha Solutions Green Financing Framework is aligned with the company's overall sustainability strategy and initiatives and will further the Company's action on its key environmental priorities. While Sustainalytics' acknowledges the importance of above efforts, Sustainalytics encourages Hanwha Solutions to develop transparent quantitative time-bounds targets.

Well-positioned to address common environmental and social risks associated with the projects

While Sustainalytics recognizes that the net proceeds from the bonds and/or loans issued under the Framework will be directed towards eligible projects that are recognized by the GBP and GLP to have positive environmental impact, Sustainalytics is aware that such eligible projects could also lead to negative environmental and social outcomes. Some key environmental and social risks associated with the eligible projects, could include occupational health and safety, community relations/stakeholder participation, land use and biodiversity issues associated with large-scale infrastructure development, emissions, effluents, and waste generated in construction. Sustainalytics is of the opinion that Hanwha Solutions is able to manage and/or mitigate potential risks through implementation of the following:

- To manage occupational health and safety risks, all divisions of Hanwha Solutions have implemented and maintained the ISO 45001 Certification,¹¹ a globally recognized certification for health and safety management.⁹
- Since 2012, Hanwha Solutions is a signatory to the UN Global Compact's Ten Principles,¹² and collaborates with internal and external stakeholders to uphold human rights, eliminate unfair labor practices, support anti-corruption policies, and promote environmental sustainability.¹³ All divisions of Hanwha Solutions comply with the ISO 14001 Certification for Environmental Management to further address risks related to the preservation of environment and biodiversity.⁹
- In order to manage environmental and social conflicts that arise with its stakeholders or the broader community, Hanwha Solutions keeps various communication channels open such as general shareholder meetings, labor council meetings, safety council and partnership committee meetings.⁹
- To mitigate risks that arise from chemicals effluents, waste and emissions, Hanwha Solutions manages product quality by complying with the EU REACH,¹⁴ RoHS,¹⁵ and GHS.¹⁶ In addition to complying with internationally recognized standards, Hanwha Solutions provides trainings to employees and has developed responsive plans to manage accidents as they occur.⁹
- Furthermore, Hanwha Solutions is focused on Corporate Compliance to ensure transparency and ethics overseen by Hanwha Solutions Compliance Committee.⁸ The Compliance Committee is responsible for establishing and implementing Hanwha Solutions' global compliance policies. Its members are external experts that remain independent and objective while deliberating on issues related to compliance.⁸

⁹ Hanwha Solutions, "Communication on Progress", (2020), at: https://ungc-production.s3.us-west-2.amazonaws.com/attachments/cop_2021/491965/original/1231_Hanwha%20Solutions%20COP_ENG%20Final.pdf?1609908525

¹⁰ Hanwha, "Innovative Solutions", at: <https://www.hanwha.com/en/sustainability/innovative-solutions.html>

¹¹ ISO, "ISO 45001 Occupational Health and Safety", at: <https://www.iso.org/iso-45001-occupational-health-and-safety.html>

¹² United Nations Global Compact, "The 10 Principles", at: <https://www.unglobalcompact.org.uk/the-ten-principles/#:~:text=The%20Ten%20Principles%20-%20The%2010%20Principles%20The,make%20up%20the%20Ten%20Principles%20of%20the%20UNGC.>

¹³ Hanwha Solutions, "Communication on Progress", (2020), at: https://ungc-production.s3.us-west-2.amazonaws.com/attachments/cop_2021/491965/original/1231_Hanwha%20Solutions%20COP_ENG%20Final.pdf?1609908525

¹⁴ REACH is the European Union's chemical management program, which includes the registration, evaluation, authorization, and restriction of chemicals in terms of quantity and toxicity level. More information can be found here: https://ec.europa.eu/environment/chemicals/reach/reach_en.htm

¹⁵ RoHS (Restriction of Hazardous Substances), introduced by the EU Commission, regulates six hazardous materials such as lead, mercury and cadmium, used in the electronics material industry. More information can be found here: https://ec.europa.eu/environment/waste/rohs_eee/index_en.htm

¹⁶ GHS (Global Harmonized System) is a classification standard managed by the United Nations that was set up to standardize hazard testing, classification and labelling. Additional information can be found here: <https://unece.org/about-ghs>

Based on these policies, standards and assessments, Sustainalytics is of the opinion that Hanwha Solutions has implemented adequate measures and is well-positioned to manage and mitigate environmental and social risks commonly associated with the eligible categories.

Section 3: Impact of Use of Proceeds

The use of proceeds category of Renewable Energy is aligned with those recognized by the GBP and GLP. Sustainalytics has focused on the importance of increasing renewable energy share in the energy mix of China and Malaysia below where the impact is specifically relevant in the local context.

Importance of facilitating renewable energy and green hydrogen investments

Increasing the share of renewable energy in the global energy mix is critical in keeping global temperature rise below 1.5 Celsius degrees as dictated by the Paris Agreement.¹⁷ Accounting for 53% of global emissions, Asia is the largest emitter globally.¹⁸ Despite a decline in CO₂ emissions in Europe and the U.S., emissions continued to rise in 2019 which was largely driven by Asian economies, especially China.¹⁹ Due to population growth, energy demand continues to grow in the region, and to meet the demand, the countries continue to rely heavily on coal. Between 2006 and 2016, the annual coal consumption rate increased by 3.7% in the region.²⁰ According to IRENA, Asia is responsible for 50% of global energy consumption, with 85% of consumption coming from fossil fuels.²¹ Asia has an important role in achieving the goals of the Paris Agreement globally. It is therefore crucial for Asian countries and all industries to decrease their reliance on coal and increase renewable energy in their energy mix.

During the UN General Assembly, China announced that it targets to hit peak emissions before 2030 and climate neutrality by 2060.²² To be on track to meet the goal of carbon neutrality before 2060, the share of renewable energy in China's energy mix should expand thereby replacing the Chinese economy's heavy reliance on carbon-based energy sources. According to estimations, USD 145 billion investments per year could allow China to significantly increase the share of renewable energy in its energy mix reaching 26% before 2030.²³

Similar to the Chinese economy, Malaysia continues to rely heavily on carbon-based energy sources. The share of coal in Malaysia's energy mix significantly increased between 1996 and 2016, from 5% to 20%.²⁴ In 2019, the Malaysian Government announced that it aims to target 20% of renewable energy in its generation mix by 2025.²⁵ To reach the renewable energy target by 2025, it is estimated that Malaysia needs USD 8 billion investments in its renewable energy sector.²⁵

While electricity produced from hydrogen has no direct emissions, almost 95%²⁶ of all hydrogen is produced from fossil fuels, requiring 6% of global natural gas and 2% of global coal.²⁷ As a consequence, hydrogen is responsible for a significant amount of CO₂ emissions each year, more specifically 830 million tonnes of CO₂ which is approximately the equivalent of the combined emissions of Indonesia and the United Kingdom.²⁷ As demand for hydrogen will only increase in the future, due to industrial users, the transport sector, and buildings, producing hydrogen from renewables is essential.²⁸ Hydrogen produced from renewables via electrolysis could facilitate and increase the share of renewables in the global energy system.²⁹

¹⁷ UNFCCC, Sustainable Energy Critical For Paris Goals – UNGA President "", at: <https://unfccc.int/news/sustainable-energy-critical-for-paris-goals-unga-president>

¹⁸ UN ESCAP, "The Economics of Climate Change in the Asia-Pacific Region", (2016), at:

<https://www.unescap.org/sites/default/files/The%20Economics%20of%20Climate%20Change%20in%20the%20Asia-Pacific%20region.pdf>

¹⁹ Carbon Brief, "Global Emissions", at: <https://www.carbonbrief.org/analysis-global-fossil-fuel-emissions-up-zero-point-six-per-cent-in-2019-due-to-china>

²⁰ UN ESCAP, "Economic and Social Survey of Asia and the Pacific 2020", (2020), at: <https://www.unescap.org/publications/economic-and-social-survey-asia-and-pacific-2020>

²¹ IRENA, "Asia and Pacific", at: <https://www.irena.org/asiapacific>

²² UN News, "Enhance solidarity' to fight COVID-19, Chinese President urges, also pledges carbon neutrality by 2060", at:

<https://news.un.org/en/story/2020/09/1073052>

²³ IRENA, "Energy Prospects: China", at: <https://www.irena.org/publications/2014/Nov/Renewable-Energy-Prospects-China>

²⁴ Malaysia's Energy Policy Challenges, at: http://www.ideas.org.my/wp-content/uploads/2018/11/P155-Malaysia_Energy_Policy_v12.pdf

²⁵ Power Technology, "Malaysia needs US\$8 billion investment to achieve 20% renewable energy target by 2025", at: <https://www.power-technology.com/comment/malaysia-needs-us8-billion-investment-to-achieve-20-renewable-energy-target-by-2025/>

²⁶ The Korea Herald, "Hanwha sets eyes on green hydrogen", at: <http://www.koreaherald.com/view.php?ud=20210121000353>

²⁷ IEA, "The Future of Hydrogen", at: <https://www.iea.org/reports/the-future-of-hydrogen>

²⁸ IRENA, "Hydrogen from Renewable Power", at: <https://www.irena.org/publications/2018/Sep/Hydrogen-from-renewable-power>

²⁹ IRENA, "Hydrogen: a Renewable energy perspective", at: <https://www.irena.org/publications/2019/Sep/Hydrogen-A-renewable-energy-perspective>

Sustainalytics is of the opinion that by financing renewable energy projects and advancing the production of green hydrogen, Hanwha Solutions will help to increase the share of renewables in the region's energy mix and overall contribute to keeping global warming to 1.5 Celsius degrees.

Alignment with/contribution to SDGs

The Sustainable Development Goals (SDGs) were set in September 2015 by the United Nations General Assembly and form an agenda for achieving sustainable development by the year 2030. The bond(s) and loan(s) issued under the Hanwha Solutions Green Financing Framework advances the following SDG and target:

Use of Proceeds Category	SDG	SDG target
Renewable Energy	7. Affordable and Clean Energy	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix

Conclusion

Hanwha Solutions has developed the Hanwha Solutions Green Financing Framework under which it and its subsidiaries including Hanwha Q CELLS Malaysia will issue green bonds and loans and the use of proceeds to finance or refinance renewable energy projects. Sustainalytics considers that the projects funded by the green bond or loan proceeds are expected to facilitate renewable energy generation in countries where the Company operates.

The Hanwha Solutions Green Financing Framework outlines a process by which proceeds will be tracked, allocated, and managed, and commitments have been made for reporting on the allocation and impact of the use of proceeds. Furthermore, Sustainalytics believes that the Hanwha Solutions Green Financing Framework is aligned with the overall sustainability strategy of the company and that the green use of proceed category will contribute to the advancement of the UN Sustainable Development Goals 7. Additionally, Sustainalytics is of the opinion that Hanwha Solutions has adequate measures to identify, manage and mitigate environmental and social risks commonly associated with the eligible projects funded by the use of proceeds.

Based on the above, Sustainalytics is confident that Hanwha Solutions is well-positioned to issue green bonds and that the Hanwha Solutions Green Financing Framework is robust, transparent, and in alignment with the four core components of the Green Bond Principles 2018, Green Loan Principles 2020 and ASEAN Green Bond Standards.

Appendices

Appendix 1: Alignment to the ASEAN Green Bond Standards

Sustainalytics notes its assessment below on the alignment of the Framework with the ASEAN GBS for the bonds issued by Hanwha Q Cells Malaysia.

ASEAN GBS Criteria	Alignment with the ASEAN GBS	Sustainalytics' comments on alignment with the ASEAN GBS
Eligibility	Yes	The AGBS requires that issuers must be located in or that the proceeds be directed to assets in an ASEAN country. As Hanwha Q CELLS Malaysia is based in Malaysia, it qualifies.
Use of Proceeds	Yes	The AGBS offers specific clarification that fossil fuel power generation projects are excluded. Hanwha Solutions has confirmed to Sustainalytics that the net proceeds of any green bond and/or loan shall not be used towards financing and/or refinancing of fossil fuel related assets and activities.
Process for Project Evaluation and Selection	Yes	The AGBS specifies information that must be clearly communicated to investors before issuance regarding project selection. Hanwha Solutions has established the Green Financing Working Group ("GFWG") comprised of members from Hanwha Solutions' Accounting, Planning, Legal, Environment & Safety Teams and led by the International Finance or Finance Team. It will be the responsibility of the GFWG to ensure allocation is in line with the eligibility criteria, facilitate reporting and manage any future updates to the Framework.
Management of Proceeds	Yes	The AGBS mandates that proceeds must be appropriately tracked and that temporary investments be disclosed. Within its framework, Hanwha Solutions disclosed that an amount equivalent to the net proceeds will be tracked using a separately established ledger. Pending allocation, unallocated, they will be held in accordance with the relevant internal investment guidelines, in short-term liquid money instruments such as cash or market securities.
Reporting	Yes	The AGBS requires annual reporting on the allocation of funds and the expected impacts. Hanwha Solutions will provide an annual allocation report until full allocation and reports on the impact of the use of proceeds.
Annual Review	Yes	The AGBS encourages, but does not require, annual reviews. As of 2021, Hanwha Solutions does not intend to provide annual reviews.

Appendix 2: Green Bond / Green Bond Programme - External Review Form

Section 1. Basic Information

Issuer name:	Hanwha Solutions
Green Bond ISIN or Issuer Green Bond Framework Name, if applicable:	Hanwha Solutions Green Financing Framework
Review provider's name:	Sustainalytics

Completion date of this form:	June 03, 2021
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Publication date of review publication:	Updated version of a Second Party Opinion provided on March 2021
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Section 2. Review overview

SCOPE OF REVIEW

The following may be used or adapted, where appropriate, to summarise the scope of the review.

The review assessed the following elements and confirmed their alignment with the GBP:

- | | |
|--|--|
| <input checked="" type="checkbox"/> Use of Proceeds | <input checked="" type="checkbox"/> Process for Project Evaluation and Selection |
| <input checked="" type="checkbox"/> Management of Proceeds | <input checked="" type="checkbox"/> Reporting |

ROLE(S) OF REVIEW PROVIDER

- | | |
|---|--|
| <input checked="" type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Note: In case of multiple reviews / different providers, please provide separate forms for each review.

EXECUTIVE SUMMARY OF REVIEW and/or LINK TO FULL REVIEW (*if applicable*)

Please refer to Evaluation Summary above.

Section 3. Detailed review

Reviewers are encouraged to provide the information below to the extent possible and use the comment section to explain the scope of their review.

1. USE OF PROCEEDS

Overall comment on section (*if applicable*):

The eligible category for the use of proceeds – Renewable Energy – is aligned with those recognized by the Green Bond Principles 2018, the Green Loan Principles 2020 and the ASEAN Green Bond Standards. Sustainalytics considers that the eligible category is expected to facilitate renewable energy generation in countries where the Company operates and advance the UN Sustainable Development Goals, specifically SDG 7.

Use of proceeds categories as per GBP:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Renewable energy | <input type="checkbox"/> Energy efficiency |
| <input type="checkbox"/> Pollution prevention and control | <input type="checkbox"/> Environmentally sustainable management of living natural resources and land use |
| <input type="checkbox"/> Terrestrial and aquatic biodiversity conservation | <input type="checkbox"/> Clean transportation |
| <input type="checkbox"/> Sustainable water and wastewater management | <input type="checkbox"/> Climate change adaptation |
| <input type="checkbox"/> Eco-efficient and/or circular economy adapted products, production technologies and processes | <input type="checkbox"/> Green buildings |
| <input type="checkbox"/> Unknown at issuance but currently expected to conform with GBP categories, or other eligible areas not yet stated in GBP | <input type="checkbox"/> Other <i>(please specify)</i> : |

If applicable please specify the environmental taxonomy, if other than GBP:

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section (if applicable):

Hanwha Solutions’ internal process in evaluating and selecting projects is overseen by the Green Financing Working Group (“GFWG”) comprised of members from Hanwha Solutions’ Accounting, Planning, Legal, Environment & Safety Teams and led by the International Finance or Finance Team. It will be the responsibility of the GFWG to ensure allocation is in line with the eligibility criteria, facilitate reporting and manage any future updates to the Framework. Sustainalytics considers the project selection process is in line with market practice.

Evaluation and selection

- | | |
|--|--|
| <input checked="" type="checkbox"/> Credentials on the issuer’s environmental sustainability objectives | <input checked="" type="checkbox"/> Documented process to determine that projects fit within defined categories |
| <input checked="" type="checkbox"/> Defined and transparent criteria for projects eligible for Green Bond proceeds | <input type="checkbox"/> Documented process to identify and manage potential ESG risks associated with the project |
| <input checked="" type="checkbox"/> Summary criteria for project evaluation and selection publicly available | <input type="checkbox"/> Other <i>(please specify)</i> : |

Information on Responsibilities and Accountability

- | | |
|--|--|
| <input checked="" type="checkbox"/> Evaluation / Selection criteria subject to external advice or verification | <input type="checkbox"/> In-house assessment |
| <input type="checkbox"/> Other <i>(please specify)</i> : | |

3. MANAGEMENT OF PROCEEDS

Overall comment on section *(if applicable)*:

Proceeds of the green bond or loan will be tracked by the Company's GFWG using a dedicated ledger, which will include information on Green Bond or Loan details, eligible green project list, and amount of unallocated proceeds. Hanwha Solutions intends to reach full allocation 24 months after issuance. Pending allocation, unallocated proceeds will be held in cash or invested in short-term liquid money instruments. Sustainalytics views this process as in line with market practice.

Tracking of proceeds:

- Green Bond proceeds segregated or tracked by the issuer in an appropriate manner
- Disclosure of intended types of temporary investment instruments for unallocated proceeds
- Other *(please specify)*:

Additional disclosure:

- | | |
|---|---|
| <input type="checkbox"/> Allocations to future investments only | <input checked="" type="checkbox"/> Allocations to both existing and future investments |
| <input type="checkbox"/> Allocation to individual disbursements | <input checked="" type="checkbox"/> Allocation to a portfolio of disbursements |
| <input checked="" type="checkbox"/> Disclosure of portfolio balance of unallocated proceeds | <input type="checkbox"/> Other <i>(please specify)</i> : |

4. REPORTING

Overall comment on section *(if applicable)*:

Hanwha Solutions intends to report on allocation and impact of proceeds on its website, as part of a dedicated green bond report, on an annual basis until full allocation. Allocation reporting will include the amount of proceeds allocated to the eligible green project category, the amount of unallocated proceeds, the share of financing vs refinancing, description of eligible projects, and project examples where possible. In addition, Hanwha Solutions is committed to reporting on relevant impact metrics. Sustainalytics views Hanwha Solutions' allocation and impact reporting as aligned with market practice.

Use of proceeds reporting:

- | | |
|--|--|
| <input type="checkbox"/> Project-by-project | <input checked="" type="checkbox"/> On a project portfolio basis |
| <input type="checkbox"/> Linkage to individual bond(s) | <input type="checkbox"/> Other <i>(please specify)</i> : |

Information reported:

- Allocated amounts
- Green Bond financed share of total investment
- Other (*please specify*):
Description of projects, the share of financing vs refinancing and project examples

Frequency:

- Annual
- Semi-annual
- Other (please specify):

Impact reporting:

- Project-by-project
- On a project portfolio basis
- Linkage to individual bond(s)
- Other (please specify):

Information reported (expected or ex-post):

- GHG Emissions / Savings
- Energy Savings
- Decrease in water use
- Other ESG indicators (please specify):
Q.ANTUM cells/modules produced, annual renewable energy production (equivalent in GW), annual production capacity (GW), installed capacity of renewable energy (MW), annual renewable energy production (MWh), information on progress in R&D, and storage capacity of hydrogen tanks (metric tonnes).

Frequency

- Annual
- Semi-annual
- Other (please specify):

Means of Disclosure

- Information published in financial report
- Information published in sustainability report
- Information published in ad hoc documents
- Other (please specify):
- Reporting reviewed (if yes, please specify which parts of the reporting are subject to external review):

Where appropriate, please specify name and date of publication in the useful links section.

USEFUL LINKS (e.g. to review provider methodology or credentials, to issuer's documentation, etc.)

<https://www.hanwha.com/en/investors.html>

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Consultancy (incl. 2 nd opinion) | <input type="checkbox"/> Certification |
| <input type="checkbox"/> Verification / Audit | <input type="checkbox"/> Rating |
| <input type="checkbox"/> Other (<i>please specify</i>): | |

Review provider(s):

Date of publication:

ABOUT ROLE(S) OF INDEPENDENT REVIEW PROVIDERS AS DEFINED BY THE GBP

- i. **Second-Party Opinion:** An institution with environmental expertise, that is independent from the issuer may issue a Second-Party Opinion. The institution should be independent from the issuer's adviser for its Green Bond framework, or appropriate procedures, such as information barriers, will have been implemented within the institution to ensure the independence of the Second-Party Opinion. It normally entails an assessment of the alignment with the Green Bond Principles. In particular, it can include an assessment of the issuer's overarching objectives, strategy, policy and/or processes relating to environmental sustainability, and an evaluation of the environmental features of the type of projects intended for the Use of Proceeds.
- ii. **Verification:** An issuer can obtain independent verification against a designated set of criteria, typically pertaining to business processes and/or environmental criteria. Verification may focus on alignment with internal or external standards or claims made by the issuer. Also, evaluation of the environmentally sustainable features of underlying assets may be termed verification and may reference external criteria. Assurance or attestation regarding an issuer's internal tracking method for use of proceeds, allocation of funds from Green Bond proceeds, statement of environmental impact or alignment of reporting with the GBP, may also be termed verification.
- iii. **Certification:** An issuer can have its Green Bond or associated Green Bond framework or Use of Proceeds certified against a recognised external green standard or label. A standard or label defines specific criteria, and alignment with such criteria is normally tested by qualified, accredited third parties, which may verify consistency with the certification criteria.
- iv. **Green Bond Scoring/Rating:** An issuer can have its Green Bond, associated Green Bond framework or a key feature such as Use of Proceeds evaluated or assessed by qualified third parties, such as specialised research providers or rating agencies, according to an established scoring/rating methodology. The output may include a focus on environmental performance data, the process relative to the GBP, or another benchmark, such as a 2-degree climate change scenario. Such scoring/rating is distinct from credit ratings, which may nonetheless reflect material environmental risks.

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Sustainalytics, a Morningstar Company, is a leading ESG research, ratings and data firm that supports investors around the world with the development and implementation of responsible investment strategies. The firm works with hundreds of the world's leading asset managers and pension funds who incorporate ESG and corporate governance information and assessments into their investment processes. The world's foremost issuers, from multinational corporations to financial institutions to governments, also rely on Sustainalytics for credible second-party opinions on green, social and sustainable bond frameworks. In 2020, Climate Bonds Initiative named Sustainalytics the "Largest Approved Verifier for Certified Climate Bonds" for the third consecutive year. The firm was also recognized by Environmental Finance as the "Largest External Reviewer" in 2020 for the second consecutive year. For more information, visit www.sustainalytics.com.



Named
2015: Best SRI or Green Bond Research or Rating Firm
2017, 2018, 2019: Most Impressive Second Opinion Provider

