

Second-Party Opinion

Irish Sovereign Green Bond

Evaluation Summary

Sustainalytics is of the opinion that the Irish Sovereign Green Bond Framework is credible and impactful, and aligns with the four core components of the Green Bond Principles 2018. This assessment is based on the following:



USE OF PROCEEDS The eligible categories for the use of proceeds are aligned with those recognized by the Green Bond Principles. Sustainalytics considers that the use of proceeds for (i) Sustainable Water and Wastewater Management, (ii) Clean Transportation, (iii) Environmentally Sustainable Management of Living Natural Resources and Land Use, (iv) Renewable Energy, (v) Energy Efficiency and (vi) Climate Change Adaptation will lead to positive environmental impacts and advance the UN Sustainable Development Goals.



PROJECT EVALUATION / SELECTION Ireland's internal process in evaluating and selecting projects is aligned with market standards, including a dedicated green bond working group with representatives of the National Treasury Management Agency and the Departments of Public Expenditure and Reform, Communications, Climate Action and Environment, and Finance.



MANAGEMENT OF PROCEEDS Ireland's processes for management of proceeds is aligned with market practice. These include a system to track the allocation of an amount equal to the net proceeds of any green bond. Unallocated proceeds are managed according to the liquidity policies of the National Treasury Management Agency of Ireland as part of the Central Fund. Sufficient balances will be maintained to cover any proceeds of a Green Bond Issue that have not yet been allocated to green projects/programmes.



REPORTING Ireland intends to report allocation proceeds in an Annual Allocation Report, including allocation per project/programme and category and amount of unallocated proceeds. In addition, Ireland is committed to publish an Eligible Green Project Impact Report on a biennial basis. Impact indicators reported include, but are not limited to, water discharges with no treatment or preliminary treatment only, number of electric vehicle grants, greenhouse gas and ammonia emissions reductions (tonnes), hectares of forest planted, and number of flood defenses built. In Sustainalytics' view reporting on these metrics is in line with market practice.

Evaluation date	31 August 2018
------------------------	----------------

Issuer Location	Dublin, Ireland
------------------------	-----------------

Report Sections

Introduction	2
Sustainalytics' Opinion	3
Appendices	9

For inquiries, contact the Sustainable Finance Solutions project team:

Lili Hocke (Amsterdam)

Project Lead
lili.hocke@sustainalytics.com
(+31) 20 205 00 40

Joshua Zakkai (Amsterdam)

Project Manager
joshua.zakkai@sustainalytics.com
(+31) 20 205 00 79

Jean-Claude Berthelot (Amsterdam)

Associate Director
jean-claude.berthelot@sustainalytics.com
(+31) 20 205 00 15

Introduction

Ireland has developed the Irish Sovereign Green Bond Framework (the "framework") under which it intends to issue one or more green bonds and use the proceeds to finance and refinance, in whole or in part, existing and future projects that promote Ireland's transition to a low-carbon, climate-resilient and environmentally sustainable economy. The framework defines eligibility criteria in six areas:

1. Sustainable Water and Wastewater Management
2. Clean Transportation
3. Environmentally Sustainable Management of Living Natural Resources and Land Use
4. Renewable Energy
5. Energy Efficiency
6. Climate Change Adaptation

Ireland engaged Sustainalytics to review the Irish Sovereign Green Bond Framework and provide a second-party opinion on the alignment of the framework with the Green Bond Principles 2018 (the "GBP"), as administered by the International Capital Market Association (the "ICMA"),¹ and on the framework's environmental credentials. This framework has been published in a separate document.²

As part of this engagement, Sustainalytics held conversations with various members of Ireland's ISGB Working Group to understand the sustainability impact of the programmes and projects financed, as well as management of proceeds and reporting aspects of Ireland's framework. Sustainalytics also reviewed relevant public documents and non-public information.

This document contains Sustainalytics' opinion of the Irish Sovereign Green Bond Framework and should be read in conjunction with that framework.

¹ ICMA's Green Bond Principles 2018 <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

² <http://www.ntma.ie/wp-content/uploads/2018/09/Irish-Sovereign-Green-Bond-Framework.pdf>

Sustainalytics' Opinion

Section 1: Sustainalytics' Opinion on the Irish Sovereign Green Bond Framework

Summary

Sustainalytics is of the opinion that the Irish Sovereign Green Bond Framework is credible and impactful, and aligns with the four core components of the Green Bond Principles 2018 (GBP). Sustainalytics highlights the following elements of Ireland's green bond framework:

- Use of Proceeds:
 - The use of proceeds categories, (i) Sustainable Water and Wastewater Management, (ii) Clean Transportation, (iii) Environmentally Sustainable Management of Living Natural Resources and Land Use, (iv) Renewable Energy, (v) Energy Efficiency and (vi) Climate Change Adaptation, are recognized as impactful by GBP.
 - Refinancing is limited to projects for which the Exchequer Financial Support has been provided within the 24-month period preceding the issue date of the relevant Irish green bond. This is aligned with market preferences.
 - In addition to the green bond framework, Ireland developed internal guidelines that supplement the eligible categories and provide further detail regarding project eligibility. Sustainalytics reviewed the document and believes it sufficiently describes the types of activities to be financed by the issuance of Irish Sovereign Green Bonds, that they are aligned with the Irish Sovereign Green Bond Framework and that they are consistent with market standards.
- Project Selection Process:
 - A dedicated Irish Sovereign Green Bond Working Group (ISGB Working Group) is responsible for identification of suitable projects for inclusion in the bond. The ISGB is chaired by the Department of Finance and comprised of representatives of the National Treasury Management Agency, the Department of Public Expenditure and Reform, and the Department of Communications, Climate Action and Environment, which is aligned with market practice.
- Management of Proceeds:
 - The ISGB Working Group, established by a Government decision, is responsible for overseeing and reporting on the processes of the National Treasury Management Agency and the Department of Public Expenditure and Reform, which are respectively responsible for the management and allocation of proceeds, including tracking. The National Treasury Management Agency confirmed that a system for tracking allocation of proceeds is in place, which is aligned with market practice.
 - Unallocated proceeds will be managed according to the National Treasury Management Agency Liquidity Policy and as part of the cash balances of the Irish Government's Central Fund. Sufficient balances will be maintained to cover any proceeds of a Green Bond Issue which have not yet been allocated to green projects/programmes.
- Reporting:
 - Aligned with market practice, the Government of Ireland has committed to report on an annual basis on the total amount allocated per eligible green project and per eligible green category, as well as the total amount of unallocated proceeds.
 - In addition, impact reporting is conducted on at least a biennial basis but may be more frequent subject to the availability of relevant data. Reporting is dependent on data availability and includes indicators such as number of water discharges with no treatment or preliminary treatment only, number of electric vehicle charger grants, carbon dioxide and ammonia emissions reductions (tonnes), hectares of forest planted, and number of flood defenses built, amongst others. Sustainalytics considers the impact indicators to be aligned with market practice and encourages the Irish government to aim at annual impact reporting.

Inclusion of non-certified forest activities

Ireland intends to use part of the green bond proceeds to finance its Afforestation Grant and Premium Scheme 2014-2020,³ which aims to increase the forested area in Ireland.

Sustainalytics recognizes that the scheme does not require the certification of related forest activities according to FSC or PEFC standards. However, Sustainalytics does not regard this as a matter of concern. The Government of Ireland reports that the majority of applicants to the Afforestation Grant and Premium Scheme 2014-2020 are individual farmers⁴ who plant on average relatively small areas of land and for whom certification to the FSC or PEFC standards would likely be prohibitively costly. Furthermore, all afforestation projects are subject to an environmental screening process including appropriate assessments, and must be managed in accordance with sustainable forest management principles as outlined in the Code of Best Forest Practice⁵ and the National Forest Standard.⁶ While it should be noted that FSC and PEFC certifications include all elements of the Code of Best Forest Practice, FSC and PEFC certification schemes go beyond the code's requirement including further environmental and social aspects of forestry.⁷ However, the Government of Ireland does encourage farmers to pursue the standard, and has assisted in organizing groups that have been successful in achieving combined FSC certification for their forests.

Given the context noted above, Sustainalytics is of the opinion that the forestry use of proceeds is credible/impactful.

Alignment with Green Bond Principles 2018

Sustainalytics has determined that the Ireland's sovereign green bond framework aligns to the four core components of the Green Bond Principles 2018. For detailed information please refer to Appendix 2: Green Bond/Green Bond Programme External Review Form.

Section 2: Sustainability Strategy of Ireland

Contribution of framework to Ireland's sustainability strategy and targets

Sustainalytics is of the opinion that the projects and programmes financed by the Irish government through Irish sovereign green bonds will have a positive environmental impact and contribute to Ireland's environmental strategy and targets.

Ireland's National Policy Position on Climate Action and Low Carbon Development (2014) and Climate Action and Low Carbon Development Act, 2015 outline the country's objective to achieve the transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050. Ireland set targets to reduce CO₂ emissions from electricity, buildings and transport by at least 80% by 2050 compared to 1990 levels and to achieve carbon neutrality in the agricultural, forest and land sectors. Ireland's first National Mitigation Plan 2017⁸ outlines the country's strategy to meet the 2050 targets and set measures for 2020. While the country performs last of EU member states in the Climate Change Performance index (rank 49),⁹ it improved in renewable energy supply in recent years and started to implement first measures, including the implementation of a National Dialogue on Climate Action for an inclusive and consensus-oriented process and assigned Ministers with dedicated responsibility for focus areas. In addition, the

³ Ireland, Department of Agriculture, Food and the Marine, Afforestation Grant and Premium Scheme 2014-2020: <https://www.teagasc.ie/media/website/crops/forestry/grants/AfforestationSchemeEd2190315.pdf>

⁴ The Government of Ireland clarified in conversation with Sustainalytics that 35% of applicants to the scheme in 2017 were non-farmers.

⁵ Ireland, Department of Agriculture, Food and the Marine, Code of Best Forest Practice: <http://www.agriculture.gov.ie/forests-service/publications/code-of-best-forest-practice/>

⁶ Ireland, Department of Agriculture, Food and the Marine, National Forest Standard: <http://www.agriculture.gov.ie/forests-service/publications/>

⁷ Forest Focus, 2018: <https://www.forestryfocus.ie/governance/forest-certification/>

⁸ Ireland National Mitigation Plan 2017: <https://www.dccae.gov.ie/en-ie/climate-action/publications/Documents/7/National%20Mitigation%20Plan%202017.pdf>

⁹ Germanwatch, NewClimate Institute & Climate Action Network, Climate Change Performance Index 2018: <https://germanwatch.org/en/download/20503.pdf>

country identified projects to improve its carbon footprint, including sustainable public transport systems, such as MetroLink and BusConnects.¹⁰ Further detail is contained in Appendix 1.

Given Ireland's GHG emission targets and climate change strategy, Sustainalytics is of the opinion that sovereign green bonds can help Ireland to advance in its strategy towards a low-carbon, climate-resilient and environmentally sustainable economy, while also contributing to broader EU climate goals. Furthermore, Sustainalytics recognizes Ireland's contribution to the European Union's efforts to advance green finance by issuing Irish Sovereign Green Bonds. In doing so, the country is demonstrating its commitment to directing capital towards investments in sustainable growth while supporting the achievement of global commitments such as the United Nations Sustainable Development Goals.

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

Based on the use of proceeds, the main associated environmental and social risks are biodiversity and community relations risks related to large infrastructure projects for renewable energy, water and transportation, as well as risks related to land use changes. These risks are mitigated as follows:

- i. The Government of Ireland has implemented the Consultation Principles & Guidelines in 2005,¹¹ which provide non-binding guidelines on public engagement for policy development. While these guidelines are not binding for the public body, they suggest consultation of interested parties in all stages of the public process.
- ii. EU Directive 2011/92/EU requires comprehensive environmental impact assessments for projects likely to have significant effects on the environment prior to development consent being given,¹² which is incorporated into the Irish Planning & Development Acts 2001-2011, ensuring the mitigation of environmental risks for land use changes and infrastructure development. In addition, the Acts consider designated areas under the Irish Habitats Directive, Birds Directive, natural heritage areas¹³ and land established or recognized as a nature reserve.¹⁴
- iii. Ireland in its framework explicitly excludes large-scale hydropower projects with a generation capacity greater than 20MW, limiting environmental and social risks associated with large hydropower projects. Moreover, Ireland's internal guidelines, to which Sustainalytics had access, limit forest and agricultural activities to those that do not deplete carbon pools.
- iv. Ireland clarified that projects in the renewable energy categories will mainly relate to the country's support scheme for renewable heat. The proposed terms and conditions specify sustainability standards for biomass used for heat production, excluding biomass from land with "high biodiversity value, i.e. primary forests, specially protected areas, special areas of conservation and highly biodiverse grasslands; with high carbon stock, i.e. wetlands, continuously forested areas; or that was undrained peatland in January 2008." In addition, countries from which biomass is imported need to fulfill certain regulatory standards of biodiversity and sustainable land use. The heat produced must save a minimum of 70% GHG emissions, i.e. its lifecycle GHG emissions must be equal or lower to 24gCO₂eq/MJ.¹⁵
- v. In addition, Ireland has an extensive exclusion list, which excludes the use of proceeds for activities involving the burning of fossil fuel for power generation and transportation (except mass-transit and compressed natural gas / hybrid vehicles), rail transportation dedicated to fossil fuels, nuclear power generation, transmission infrastructure and systems with more than 25% electricity transmitted from fossil-fuel-based sources, as well as alcohol, weapons, gaming, tobacco and palm oil industries.

Given Irish regulations and guidelines on environmental risk mitigation and public engagement, Sustainalytics is of the opinion that Ireland is well positioned to mitigate environmental and social risks related to the use of proceeds.

¹⁰ A full list of projects can be found in the Ireland National Development Plan 2017-2018: <https://www.per.gov.ie/en/national-development-plan-2018-2027/>

¹¹ Ireland department of Public expenditure and Reform, Consultation Guidelines: <https://www.per.gov.ie/en/consultation-guidelines/>

¹² Environment, Community and Local Government, Environmental Impact Assessment, 2013: <https://www.housing.gov.ie/sites/default/files/migrated-files/en/Publications/DevelopmentandHousing/Planning/FileDownload%2C32720%2Cen.pdf>

¹³ Ireland National Parks & Wildlife Service: <https://www.npws.ie/protected-sitest>

¹⁴ Ireland Wildlife Acts 1976-2010

¹⁵ Support Scheme for Renewable Heat, Proposed terms and conditions: <https://www.seai.ie/resources/publications/Support-Scheme-Renewable-Heat-Draft-Terms-and-Conditions-.pdf>

Section 3: Impact of Use of Proceeds

All six use of proceeds categories are recognized as impactful by GBP.

The impacts of investments in sustainable water and wastewater treatment

The Irish water and waste water system needs significant upgrading to meet EU standards and avoid drinking water contamination, including treatments plants supplying 19.7% of the population. In 2015, the water system had up to 49% of water lost before reaching its target location and 180,000 properties were at risk of not meeting EU guidelines for lead levels in drinking water.¹⁶ Moreover, untreated sewage was discharged into rivers at 38 sites, indicating the need to improve the country's water and wastewater systems. The Irish Sovereign green bonds intend to finance projects and programmes that align with Ireland's Water Services Strategic plan aiming to improve the country's water delivery systems and wastewater management, including a target of zero-untreated discharges for 2021. Given the status of the country's water and wastewater system and the outlined focus of the governmental programme on improvements in the effectiveness and quality of water delivery and treatment through the bond's proceeds, Sustainalytics is of the opinion that the use of proceeds will have a positive environmental contribution.

Contribution of Clean Transportation, Renewable Energy and Energy Efficiency in buildings towards Ireland's climate change mitigation strategy and targets

In 2016 energy-related GHG emissions accounted for 61% of Ireland's total GHG emissions.¹⁷ These emissions may be sub-divided into transport (37%), residential (25%), industrial (22%), services (13%) and energy-related agricultural emissions (2%).¹⁸ In alignment with EU targets, Ireland set the goal to reduce GHG emissions by 80% by 2050. In addition, Ireland intends to increase the proportion of renewable energy used for transport, heat and electricity by 2020. This includes increases to 10% for transport from 5.7% in 2015, to 12% for heat from 6.5% in 2015 and to 40% for electricity from 25.3% in 2015.¹⁹ Given the high contribution of the energy, built and transportation sector to Ireland's GHG emission profile, Sustainalytics is of the opinion that fostering the use of clean transportation, energy efficiency in buildings and renewable energy will contribute to the country's GHG emission and renewable energy targets.

Contribution of Climate Adaptation to Ireland's resilience

Ireland anticipates that climate change will increase the likelihood of increased precipitation, heavy rainfall events, wind and storms amongst others.²⁰ Based on flood risk assessment conducted by the Irish government, the government expects a significant impact of climate change on flood risk²¹ and developed flood management planning for 29 river basins and 300 areas of significant flood risk across the country.^{22,23} Moreover, a National Adaptation Framework was released in January 2018 that directs the formulation of climate resilience plans at the local and sectoral level, indicating the urgency to implement climate change mitigation and adaptation measures. Sustainalytics believes Ireland's issuance of green bonds will provide financing for projects that will help to ensure the execution of climate change adaptation plans and bolster Ireland's climate change resilience. Sustainalytics welcomes the fact that Ireland's climate adaptation infrastructure requires comprehensive environmental impact assessments for projects likely to have significant effects on the environment prior to development.

¹⁶ Ervia, Irish Water Business Plan, Transforming Water Services in Ireland to 2021: <https://www.water.ie/docs/Irish-Water-Business-Plan.pdf>

¹⁷ Sustainable Energy Authority of Ireland, ENERGY-RELATED CO2 EMISSIONS IN IRELAND 2005-2016, Report 2018: <https://www.seai.ie/resources/publications/Energy-Emissions-2017-Final.pdf>

¹⁸ Sustainable Energy Authority of Ireland, ENERGY-RELATED CO2 EMISSIONS IN IRELAND 2005-2016, Report 2018: <https://www.seai.ie/resources/publications/Energy-Emissions-2017-Final.pdf>

¹⁹ Ireland National Mitigation Plan 2017: <https://www.dccae.gov.ie/en-ie/climate-action/publications/Documents/7/National%20Mitigation%20Plan%202017.pdf>

²⁰ Ireland National Adaptation Framework, January 2018: <https://www.dccae.gov.ie/documents/National%20Adaptation%20Framework.pdf>

²¹ Ireland Office of Public Works, Climate Change Adaptation Plan: <https://www.opw.ie/en/climatechange/>

²² Ireland Office of Public Works, Flood Risk Management Plan 2018: [http://s3-eu-west-](http://s3-eu-west-1.amazonaws.com/docs.floodinfo.opw/floodinfo_docs/Final_FRMPs_For_Publication/FRMP_Final2018_RiverBasin_20.pdf)

[1.amazonaws.com/docs.floodinfo.opw/floodinfo_docs/Final_FRMPs_For_Publication/FRMP_Final2018_RiverBasin_20.pdf](http://s3-eu-west-1.amazonaws.com/docs.floodinfo.opw/floodinfo_docs/Final_FRMPs_For_Publication/FRMP_Final2018_RiverBasin_20.pdf)

²³ Ireland Office of Public Works, Flood Info, <https://www.floodinfo.ie>

The impacts of environmentally sustainable management of living natural resources and land use

According to 2016 figures, the agricultural sector is the single largest contributor to Ireland's GHG emissions, accounting for 32.3%.²⁴ Ireland's policy efforts in the sector focus on achieving carbon neutrality for agriculture and land use, including the reduction of emissions, enhancing carbon uptake in soils and replacing fossil fuel and energy-intensive materials.²⁵ Ireland has implemented policy programmes to increase forestry planting and promote behavioural change towards resource efficiency measures on farms,^{26,27} and includes low-carbon measures in rural development schemes, promoting retention of carbon stocks in soil through margins, habitat preservation and practices such as minimum tillage.²⁸ Ireland's Afforestation Grant and Premium Scheme 2014-2020 aims to increase the country's forested area to 18% from 11% in order to contribute towards the EU's goal of "Restoring, preserving and enhancing ecosystems related to agriculture and forestry."²⁹ Please refer to section 1 above for a discussion of the inclusion of non-certified forest activities in the Irish Sovereign Green Bond Framework. Given the importance of agricultural sector in Ireland's GHG emission profile, Sustainalytics considers investments in the decarbonization of the agricultural sector in Ireland to be impactful and contributing to the country's carbon reduction targets.

Alignment with/contribution to SDGs

The Sustainable Development Goals (SDGs) were set in September 2015 and form an agenda for achieving sustainable development by the year 2030. This green bond advances the following SDG goals and targets:

Use of Proceeds Category	SDG	SDG target
Renewable Energy Energy Efficiency	7. Affordable and Clean Energy 9. Industry, innovation and infrastructure	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix 7.3 By 2030, double the global rate of improvement in energy efficiency 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
Clean Transportation,	11 Sustainable cities and communities	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons
Sustainable Water and Wastewater Management	3. Good health and well-health	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

²⁴ EPA Ireland's Final Greenhouse Gas Emissions 1990-2016, Report 2018:

http://www.epa.ie/pubs/reports/air/airemissions/ghgemissions2016/Report_GHG%201990-2016%20April_for%20Website-v3.pdf

²⁵ Ireland National Development Plan 2018-2027: <https://www.per.gov.ie/en/national-development-plan-2018-2027/>

²⁶ Ireland Environmental protection Agency, Ireland's Environment

Agriculture, November 2013: https://www.epa.ie/media/epa_agriculture_v2.pdf

²⁷ SmartFarming 2018: <https://smartfarming.ie/grassland/>

²⁸ Department of Agriculture, Food and the Marine, Green, Low-Carbon, Agri-Environment Scheme – GLAS:

<https://www.agriculture.gov.ie/farmerschemespayments/glas/>

²⁹ Ireland Forestry Programme 2014-2020 Midterm Review:

<https://www.agriculture.gov.ie/media/migration/forestry/forestservicgeneralinformation/2014-2020midtermreview/MidTermReview210218.pdf>

	6. Clean water and sanitation	<p>6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally</p> <p>6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity</p>
Environmentally sustainable management of living natural resources and land use	2. Zero hunger	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
Climate Change Adaptation	13. Climate action	13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

Conclusion

Ireland intends to issue green bonds to finance and refinance existing and future projects that promote Ireland's transition to a low-carbon, climate-resilient and environmentally sustainable economy including projects related to (i) Sustainable Water and Wastewater Management, (ii) Clean Transportation, (iii) Environmentally Sustainable Management of Living Natural Resources and Land Use, (iv) Renewable Energy, (v) Energy Efficiency and (vi) Climate Change Adaptation.

The eligible categories are aligned with those recognized by the Green Bond Principles 2018 and Sustainalytics considers them to contribute to Ireland's GHG emissions targets through the decarbonization of the transportation, energy and agricultural sectors. In addition to its sovereign green bond framework, Ireland developed internal guidelines that elaborate further on the eligibility criteria and serve as a decision tool for the green bond working group in project selection and evaluation. Sustainalytics considers these internal guidelines to be credible and aligned with market practice. Ireland's management of proceeds and reporting is also aligned with market practice.

Based on the above, Sustainalytics considers the Ireland Sovereign Green Bond Framework to be credible and robust and aligned with the Green Bond Principles 2018.

Appendices

Appendix 1: Sample Green Projects and Programmes

Ireland is committed to implementing ambitious policies that will have a significant impact on Ireland's climate change targets and the wider transition to a low carbon, climate resilient and environmentally sustainable economy. The publication in February 2018 of the National Development Plan ("NDP"), will lead to a step change in funding available for climate action over the next decade.

A sample list of key green projects and programmes that Government is actively driving forward include:

Sustainable Water and Waste Management (National Strategic Outcome 9 in National Development Plan)³⁰

- National Programme of Investment to tackle leakage through find and fix (active leakage control) and mains water rehabilitation.
- Water supply Schemes and Wastewater Treatment Projects designed to ensure a safe and sustainable water supply.
- Rural Water Programme / Lead Pipe Remediation / Waste Management and Resource Efficiency

Clean Transportation (National Strategic Outcome 4 in National Development Plan)³¹

- Sustainable Mobility – an environmentally sustainable public transport system will enable growth and change, meet the significant increase in travel demand and urban congestion while also contributing to our national policy vision of a low-carbon economy.
 - MetroLink - a light rail transportation system operating across Dublin. Estimated completion date 2027.
 - Delivery of the BusConnects programme for all of Ireland's cities including a network of 'next generation' bus corridors, a complete redesign of the bus network, and transitioning to low-emission vehicles.
 - DART (Dublin Area Rapid Transit) Expansion Programme – a series of rail projects that will create a full metropolitan area DART network for Dublin with all of the lines linked and connected.
- Sustainable travel measures, including park-and-ride programme, comprehensive Cycling and Walking Network for metropolitan areas of Ireland's cities, and expanded Greenways

Environmentally Sustainable Management of Living Natural Resources and Land Use

- National Raised Bog Special Areas of Conservation Management Plan³² - to support the management, revitalisation and restoration of Ireland's peatlands.
- Support operation of Ireland's National Parks and Wildlife Service
- Afforestation Grant and Premium Scheme 2014-2020³³

Renewable Energy (National Strategic Outcome 8 in National Development Plan)³⁴

- Support Scheme for Renewable Heat – a government funded scheme will support the adoption of renewable heating systems by commercial, industrial, agricultural, district heating, and other non-domestic heat users not covered by the emissions trading system.
- Energy research funding to accelerate diversification away from fossil fuels to green energy including wind, wave, solar, biomass, biofuels, biogas and hydrogen.

Energy Efficiency (National Strategic Outcome 8 in National Development Plan)³⁵

- Investment in energy efficiency, with upgrades to homes increasing from 30,000 to 45,000 per annum from 2021 to achieve a minimum BER Rating 'B'

³⁰ Ireland National Development Plan 2018-2027: <https://www.per.gov.ie/en/national-development-plan-2018-2027/>

³¹ Ireland National Development Plan 2018-2027: <https://www.per.gov.ie/en/national-development-plan-2018-2027/>

³² Ireland National Raised Bog SAC Management Plan 2017-2022: SEA Statement:

https://www.npws.ie/sites/default/files/publications/pdf/SEA%20Statement%20National%20Raised%20Bog%20SACs%20Management%20Plan%2017_2022.pdf

³³ Ireland, Department of Agriculture, Food and the Marine, Afforestation Grant and Premium Scheme 2014-2020:

<https://www.teagasc.ie/media/website/crops/forestry/grants/AfforestationSchemeEd2190315.pdf>

³⁴ Ireland National Development Plan 2018-2027: <https://www.per.gov.ie/en/national-development-plan-2018-2027/>

³⁵ Ireland National Development Plan 2018-2027: <https://www.per.gov.ie/en/national-development-plan-2018-2027/>

- Investments in energy efficiency of existing commercial and public building stock with a target of all public buildings and at least one-third of total commercial premises upgraded to BER Rating 'B'
- Supports for changing out oil-fired boilers to heat pumps, along with the provision of roof solar, in at least 170,000 homes

Climate Change Adaptation (National Strategic Outcome 8 in National Development Plan)³⁶

- Delivering further capital works/flood relief schemes to minimise the impacts of river and coastal flooding on society through the roll-out of the Flood Risk Management Plans

³⁶ Ireland National Development Plan 2018-2027: <https://www.per.gov.ie/en/national-development-plan-2018-2027/>

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

Section 1. Basic Information

Issuer name:	National Treasury Management Agency Ireland
Green Bond ISIN or Issuer Green Bond Framework Name, if applicable: <i>[specify as appropriate]</i>	Irish Sovereign Green Bond Framework
Review provider's name:	Sustainalytics
Completion date of this form:	31 August 2018
Publication date of review publication: <i>[where appropriate, specify if it is an update and add reference to earlier relevant review]</i>	

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 GBPs:

- | | |
|--|--|
| <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 Executive 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 use of proceeds categories, (i) Sustainable Water and Wastewater Management, (ii) Clean Transportation, (iii) Environmentally Sustainable Management of Living Natural Resources and Land Use, (iv) Renewable Energy, (v) Energy Efficiency and (vi) Climate Change Adaptation, are recognized as impactful by GBP.
 Refinancing is limited to projects for which the Exchequer Financial Support has been provided within the 24-month period preceding the issue date of the relevant Irish green bond issuance. This is aligned with market standards.

Use of proceeds categories as per GBP:

- | | |
|--|---|
| <input checked="" type="checkbox"/> Renewable energy | <input checked="" type="checkbox"/> Energy efficiency |
| <input type="checkbox"/> Pollution prevention and control | <input checked="" type="checkbox"/> Environmentally sustainable management of living natural resources and land use |
| <input type="checkbox"/> Terrestrial and aquatic biodiversity conservation | <input checked="" type="checkbox"/> Clean transportation |
| <input checked="" type="checkbox"/> Sustainable water and wastewater management | <input checked="" 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 GBPs | <input type="checkbox"/> Other <i>(please specify)</i> : |

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

2. PROCESS FOR PROJECT EVALUATION AND SELECTION

Overall comment on section *(if applicable)*:

A Green Bond working Group has been established, responsible for the identification of suitable projects for inclusion in the bond, comprised of representatives of the National Treasury Management Agency (NTMA) and the departments of Public Expenditure and Reform, Communications, Climate Action and Environment, and Finance, which is aligned 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*):

The ISGB Working Group is responsible for overseeing and reporting on the process of the National Treasury Management Agency and the Department of Public Expenditure and Reform, which are respectively responsible for the management and allocation of proceeds, including tracking. The National Treasury Management Agency confirmed that a system for tracking allocation of proceeds is in place, which is aligned with market practice.

Unallocated proceeds will be held in the Irish governments Central Fund, which is managed according to prudential liquidity policies of the National Treasury Management Agency.

Tracking of proceeds:

- | |
|---|
| <input checked="" type="checkbox"/> Green Bond proceeds segregated or tracked by the issuer in an appropriate manner |
| <input checked="" type="checkbox"/> Disclosure of intended types of temporary investment instruments for unallocated proceeds |
| <input type="checkbox"/> Other (<i>please specify</i>): |

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 type="checkbox"/> Allocation to a portfolio of disbursements |
| <input 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*):

Aligned with market practice, the government of Ireland committed to report on an annual basis on the total amount allocated per Eligible Green Projects and per Eligible Green Category as well as the total amount of unallocated proceeds.

In addition, impact reporting is conducted at least biennial. Reporting is dependent on data availability and include indicators, such as number of water discharges with no treatment or preliminary treatment only, number of electric vehicle charger grants, carbon dioxide and ammonia emissions reductions (tonnes), hectares of forest planted, and number of flood defenses built, amongst others. Sustainalytics considers the impact indicators to be aligned with market practice and encourages the Irish government to aim at annual impact reporting.

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 (please specify): <i>eligible category level</i> |

Information reported:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Allocated amounts | <input type="checkbox"/> Green Bond financed share of total investment |
| <input type="checkbox"/> Other (please specify): | |

Frequency:

- | | |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input type="checkbox"/> Other (please specify): | |

Impact 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 (please specify): <i>eligible category level</i> |

Frequency:

- | | |
|---|---|
| <input type="checkbox"/> Annual | <input type="checkbox"/> Semi-annual |
| <input checked="" type="checkbox"/> Other (please specify): | Biennial or more frequently subject to the availability of relevant data. |

Information reported (expected or ex-post):

- | | |
|---|---|
| <input checked="" type="checkbox"/> GHG Emissions / Savings | <input type="checkbox"/> Energy Savings |
| <input type="checkbox"/> Decrease in water use | <input checked="" type="checkbox"/> Other ESG indicators (please specify): Examples might include Water network leakage %; Number of discharges with no treatment or preliminary treatment only; Number of public transport passenger journeys; Number of electric vehicle purchase grants; Number of electric vehicle charger grants; Carbon |

dioxide and ammonia
emissions reductions
(tonnes); Number of
hectares of forest planted;
Percentage of renewable
heat from overall heating
demand; Number of flood
defenses built and location

Means of Disclosure

- | | |
|---|---|
| <input type="checkbox"/> Information published in financial report | <input type="checkbox"/> Information published in sustainability report |
| <input checked="" type="checkbox"/> Information published in ad hoc documents | <input type="checkbox"/> Other (please specify): |
| <input type="checkbox"/> 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.)

Government of Ireland, website: <https://www.gov.ie/en/category/environment/>
Ireland National Development Plan 2018-2027: <https://www.per.gov.ie/en/national-development-plan-2018-2027/>
National Mitigation Plan 2017: <https://www.dccae.gov.ie/en-ie/climate-action/publications/Documents/7/National%20Mitigation%20Plan%202017.pdf>

SPECIFY OTHER EXTERNAL REVIEWS AVAILABLE, IF APPROPRIATE

Type(s) of Review provided:

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

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.

Disclaimer

© Sustainalytics 2018. All rights reserved.

The intellectual property rights to this Second-Party Opinion (the "Opinion") are vested exclusively in Sustainalytics. Unless otherwise expressly agreed in writing by Sustainalytics, no part of this Opinion may be reproduced, disseminated, comingled, used to create derivative works, furnished in any manner, made available to third parties or published, parts hereof or the information contained herein in any form or in any manner, be it electronically, mechanically, through photocopies or recordings, nor publicly released without the "Green Bond Framework" in conjunction with which this Opinion has been developed.

The Opinion was drawn up with the aim to provide objective information on why the analyzed bond is considered sustainable and responsible, and is intended for investors in general, and not for a specific investor in particular. Consequently, this Opinion is for information purposes only and Sustainalytics will not accept any form of liability for the substance of the opinion and/or any liability for damage arising from the use of this Opinion and/or the information provided in it.

As the Opinion is based on information made available by the client, the information is provided "as is" and, therefore Sustainalytics does not warrant that the information presented in this Opinion is complete, accurate or up to date, nor assumes any responsibility for errors or omissions. Any reference to third party names is for appropriate acknowledgement of their ownership and does not constitute a sponsorship or endorsement by such owner.

Nothing contained in this Opinion shall be construed as to make a representation or warranty, express or implied, regarding the advisability to invest in or include companies in investable universes and/or portfolios. Furthermore, nothing contained in this Opinion shall be construed as an investment advice (as defined in the applicable jurisdiction), nor be interpreted and construed as an assessment of the economic performance and credit worthiness of the bond, nor to have focused on the effective allocation of the funds' use of proceeds.

The client is fully responsible for certifying and ensuring its commitments' compliance, implementation and monitoring.

In case of discrepancies between the English language and translated versions, the English language version shall prevail.

Sustainalytics

Sustainalytics is a leading independent ESG and corporate governance research, ratings and analytics firm that support investors around the world with the development and implementation of responsible investment strategies. With 13 offices globally, the firm partners with institutional investors who integrate ESG information and assessments into their investment processes. Spanning 30 countries, the world's leading issuers, from multinational corporations to financial institutions to governments, turn to Sustainalytics for second-party opinions on green and sustainable bond frameworks. Sustainalytics has been certified by the Climate Bonds Standard Board as a verifier organization, and supports various stakeholders in the development and verification of their frameworks. Global Capital named Sustainalytics the "Most Impressive Second Party Opinion Provider in 2017". In 2018, the firm was recognized as the "Largest External Reviewer" by the Climate Bonds Initiative as well as Environmental Finance. In addition, Sustainalytics received a Special Mention Sustainable Finance Award in 2018 from The Research Institute for Environmental Finance Japan for its contribution to the growth of the Japanese Green Bond Market.

For more information, visit www.sustainalytics.com

Or contact us info@sustainalytics.com

