

‘Second Opinion’ on NWB’s Green Bond Framework

September 21st 2018

Summary

Overall, NWB's green bond framework and the governing laws of the regional Water Boards provide a holistic and sound framework for climate-friendly investments. In the Netherlands, water management is a matter of survival. More than fifty percent of the country would be under water if the infrastructure, knowledge and institutional structure was not up to standard. Water resources and flood protection are managed by 23 autonomous, publicly owned, regional water authorities, also called water boards.

The Water Boards integrate a range of environmental impacts in their project plans, and perform environmental impact assessments on all large projects. The green bond framework lists eligible projects that are generally supportive of the dual objective of promoting a transition to low-carbon and climate-resilient growth, and improving biodiversity. NWB provides regular and transparent reports to investors and the public. The regional Water Boards take an integrated approach to climate change and biodiversity projects, and the bond framework does not include any biodiversity projects that would have a negative impact on the climate. The Water Boards are public entities subject to regular and comprehensive reporting at the national and EU level. NWB reports on environmental impacts and carbon footprint of its activities, including activities financed by the green bond, according to the GRI Global Reporting Framework.

Proceeds from NWB Green Bonds can also be used for re-financing purposes. The amount of new loans will be reported by NWB in the annual investor letter.

Based on an overall assessment of the project types that will be financed by the green bonds and governance and transparency considerations, NWB's Green Bond Framework gets a Dark Green shading. The framework includes elements that are not dark green such as roads, pumping stations running on fossil fuel and fossil fuel transportation related to waste water treatment and water management. We recommend that NWB supplements their emission reports with additional reporting on methane emissions (from waste water treatment), and also that NWB in their investor letter makes impact information easier accessible for investors.



°CICERO
Dark Green

Contents

Summary	2
1 Introduction and background	4
Expressing concerns with ‘shades of green’	4
2 Brief Description of NWB ’s Green Bond Framework and rules and procedures for climate-related activities	6
Use of proceeds:	6
Selection:	7
Management of proceeds:	7
Transparency and Accountability:	7
3 Assessment of NWB Green Bond framework and environmental policies	9
Overall shading	9
Eligible projects under the Green Bond Framework	9
Strengths	10
Weaknesses	12
Pitfalls	12
<i>Impacts beyond the project boundary</i>	12
<i>Rebound effects</i>	12
Appendix: About CICERO	13

1 Introduction and background

As an independent, not-for-profit, research institute, CICERO (Center for International Climate and Environmental Research - Oslo) provides Second Opinions on institutions' framework and guidance for assessing and selecting eligible projects for green bond investments, and assesses the framework's robustness in meeting the institutions' environmental objectives. The Second Opinion is based on documentation of rules and frameworks provided by the institutions themselves (the client) and information gathered during meetings, teleconferences and e-mail correspondence with the client.

CICERO is independent of the entity issuing the bond, its directors, senior management and advisers, and is remunerated in a way that prevents any conflicts of interests arising as a result of the fee structure. CICERO has established the global Expert Network on Second Opinions (ENSO), a network of independent non-profit research institutions on climate change and other environmental issues, to broaden the technical expertise and regional experience for Second Opinions. CICERO works confidentially with other members in the network to enhance the links to climate and environmental science, building upon the CICERO model for Second Opinions. In addition to CICERO, ENSO members currently include Basque Center for Climate Change (BC3), International Institute for Sustainable Development (IISD), Stockholm Environment Institute (SEI), and Tsinghua University's Institute of Energy, Environment and Economy. A more detailed description of CICERO can be found at the end of this report. ENSO encourages the client to make this Second Opinion publically available. If any part of the Second Opinion is quoted, the full report must be made available.

CICERO's Second Opinions are normally restricted to an evaluation of the mechanisms or framework for selecting eligible projects at a general level. CICERO does not validate or certify the climate effects of single projects, and thus, has no conflict of interest in regard to single projects. CICERO is neither responsible for how the framework or mechanisms are implemented and followed up by the institutions, nor the outcome of investments in eligible projects.

This note provides a Second Opinion of NWB Green Bonds Framework and policies for considering the environmental impacts of their projects. The aim is to assess the NWB Green Bonds Framework as to its ability to support NWB's stated objective of promoting the transition to low-carbon and climate resilient growth.

This Second Opinion is based on the green bond framework presented to CICERO by the issuer. Any amendments or updates to the framework require that CICERO undertake a new assessment. CICERO takes a long-term view on activities that support a low-carbon climate resilient society. In some cases, activities or technologies that reduce near-term emissions result in net emissions or prolonged use of high-emitting infrastructure in the long-run. CICERO strives to avoid locking-in of emissions through careful infrastructure investments, and moving towards low- or zero-emitting infrastructure in the long run. Proceeds from green bonds may be used for financing, including refinancing, new or existing green projects as defined under the mechanisms or framework. CICERO assesses in this Second Opinion the likeliness that the issuer's categories of projects will meet expectations for a low carbon and climate resilient future.

Expressing concerns with 'shades of green'

CICERO/ENSO Second Opinions are graded dark green, medium green or light green, reflecting the climate and environmental ambitions of the bonds and the robustness of the governance structure of the Green Bond Framework. The grading is based on a broad qualitative assessment of each project type, according to what

extent it contributes to building a low-carbon and climate resilient society. The shading methodology also aims at providing transparency to investors when comparing green bond frameworks exposure to climate risks. A dark green project is less exposed to climate risks than a lighter green investment..

This Second Opinion will allocate a ‘shade of green’ to the green bond framework of NWB:

- **Dark green** for projects and solutions that are realizations today of the long-term vision of a low carbon and climate resilient future. Typically, this will entail zero emission solutions and governance structures that integrate environmental concerns into all activities.
- **Medium green** for projects and solutions that represent steps towards the long-term vision, but are not quite there yet.
- **Light green** for projects and solutions that are environmentally friendly but do not by themselves represent or is part of the long-term vision (e.g. energy efficiency in fossil-based processes).
- **Brown** for projects that are irrelevant or in opposition to the long-term vision of a low carbon and climate resilient future.

The project types that will be financed by the green bond primarily define the overall grading. However, governance and transparency considerations are also important because they give an indication whether the institution that issues the green bond will be able to fulfil the climate and environmental ambitions of the investment framework. Investments in all shades of green projects are necessary in order to successfully implement the ambition of the Paris agreement. The overall shading reflects an ambition of having the majority of the project types well represented in the future portfolio, unless otherwise expressed by the issuer.

2 Brief Description of NWB 's Green Bond Framework and rules and procedures for climate-related activities

The Nederlandse Waterschapsbank (NWB Bank) is a Dutch specialist financial institution that provides funding to regional water authorities and local government organisations in the Netherlands. It is a Local Government Funding Agency owned by the Dutch Water boards and provinces. It only lends to Dutch government entities and does not provide any services to individuals or companies. NWB issued its first green bonds (so-called water bonds) in 2014.

In the Netherlands, water management is a matter of survival. More than fifty percent of the country would be under water if the infrastructure, knowledge and institutional structure was not up to standard. Water resources and flood protection are managed by 23 autonomous, publicly owned, regional water authorities, also called water boards. The water authorities deal with flooding protection, the quantity and quality of surface water and wastewater treatment. Financed through their own taxes, the water authorities are largely financially independent of national politics and economic fluctuations. They can seek loans from the NWB Bank to fund investments.

Climate change in the Netherlands increases the risk for flooding, water shortages, heat stress, sinking of the land and salinization. The potential damage is estimated at €71 billion by 2050. The water authorities are currently calculating the impacts of a more rapidly changing climate, than assumed just a few years ago, has on their water systems. According to the issuer, new measures would need to be implemented to prevent damage resulting from flooding, but only from after 2020.

The Water Authorities have signed a Memorandum with other regional and local authorities in 2017, in which they pledge to make their infrastructure climate-resilient by 2040 and to increase public knowledge about adaptation to climate change.

Under EU and national laws, the Dutch Water authorities are required to develop a water management plan and report on the progress of implementation. Water management reports regarding the water quality and biodiversity impacts of the plans are sent to the European Commission as a requirement under the European Water Framework Directive. Flood protection schemes are reported on a national level, but also subject to the European Flood Directive. Waste water treatment plans are reported under the European Urban Waste Water Directive. Under Dutch law, the Water Boards are required to acquire an environmental permit for all initiatives, and perform an environmental impact assessment for large projects.

Use of proceeds:

Projects financed by the Water Authorities will be according to the mandate given to the Water Authorities and managed by the Water Authorities and defined through the Dutch Water Act.

In accordance with the Water Act, proceeds will be used to fund eligible projects that target (a) mitigation of climate change such as energy recovery from waste water and extraction of phosphorus, (b) adaptation to climate change, meaning investments in climate-resilient growth (flood protection, other flood defenses and pumping stations) or (c) biodiversity projects which are related to water related biodiversity projects rather than directly

climate related (i.e. sanitation and dredging of waterbeds, water treatment, transport and cleaning of wastewater and disposal of sewage sludge).

Proceeds from NWB Green Bonds can be used to re-finance as well as pre-finance. The amount of new loans will be reported by NWB in the annual investor letter.

Selection:

The Eligible Projects are selected by the Lending Department of NWB and represent loans provided to the Water Authority in accordance with the Water Authorities mandate. To allow The Water Authorities to use some of the loans to supporting functions (like administration and infrastructure), NWB will not qualify more than 90 percent of their lending to the Water Authorities as eligible assets. According to the issuer this 10 percent cut ensures that green bond proceeds are not allocated to supporting functions such as administration.

Management of proceeds:

According to the issuer, NWB Treasury has established an internal management system to track and monitor individual eligible loans and the aggregated lending to eligible loans at all times. An annual internal audit of the earmarked account will confirm lending done during the calendar year. According to the issuer, all proceeds will be allocated up-front, in other words there will be no unallocated proceeds. Intended types of temporary investment instruments are thus not relevant.

Transparency and Accountability:

To enable investors to follow the development and provide insight into the priority areas, the NWB will provide an annual investor letter on its website, including 1) a list of eligible Loans 2) a selection of project examples and 3) % project allocation of the investments done by the water authorities on a portfolio basis and a summary of the NWB Green Bond development.

The table below lists the documents that formed the basis for this Second Opinion:

Document Number	Document Name	Description
1	Green bond framework (February 2018)	
2	Reporting on Green Bond, the Water Bond (January 2017)	Annual investor letter
3	KLIMAATMONITOR WATERSCHAPPEN Verslagjaar 2016	Annual review of the Water Authorities' climate policies by Arcadis
4	Water and Water Management	Brief outline of the Water Board mandate

5	Water Governance (2011)	Description of the Dutch regional water authority model
6	GRI Report 2016	NWB report on social responsibility
7	Water Act of the Netherlands	Description of legal basis for water management in the Netherlands
8	Green Deal Duurzaam GWW 2.0	Memorandum on sustainable infrastructure works
9	Maatschappelijk Verantwoord Inkopen	Overview of the Water Authorities' policies on sustainable purchases
10	Naar een duurzaam Nederland. Investeringsagenda voor Kabinetsformatie 2017	Memorandum by the Water Authorities and other local authorities on their mitigation and adaptation policies.
11	Klimaatakkoord Unie-Rijk 2010-2020	Agreement between the Dutch state and the Water Authorities on their climate targets

Table 1. Documents reviewed

3 Assessment of NWB Green Bond framework and environmental policies

Overall, the NWB green bond framework provides a detailed and sound framework for climate-friendly investments.

The framework and procedures for NWB's green bond investments are assessed and their strengths and weaknesses are discussed in this section. The strengths of an investment framework with respect to environmental impact are areas where it clearly supports low-carbon projects, whereas the weaknesses are typically areas that are unclear or too general. Pitfalls are also raised in this section to note areas where issuers should be aware of potential macro-level impacts of investment projects.

Overall shading

Based on the project category shadings detailed below, and consideration of the issuer's systematic sustainability work and governance structure of NWB in terms of management and use of proceeds, we rate the framework CICERO Dark Green. This Green finance framework includes a broad range of project categories. The framework allows for the possibility of medium to dark green project types, all of which are necessary to meet the climate change challenge.

Eligible projects under the Green Bond Framework

At the basic level, the selection of eligible project categories is the primary mechanism to ensure that projects deliver environmental benefits. Through selection of project categories with clear environmental benefits, green bonds aim to provide certainty to investors that their investments deliver environmental returns as well as financial returns. The Green Bonds Principles (GBP) state that the "overall environmental profile" of a project should be assessed and that the selection process should be "well defined".

Category	Eligible project types	Green Shading and some concerns
Mitigation	Energy recovery from waste water and extraction of Phosphor	Dark to Medium green
Adaptation	1 Flood protection 2. Other Flood defenses	Dark to Medium Green ✓ Roads, pumping stations running on fossil fuel and fossil fuel transportation for

	3. Waterway Management	adaptation activities could qualify for funding.
	4. Pumping stations	✓ The Water Authorities aim to be energy neutral by 2025 and decrease emissions from transportation, without having set specific targets
<hr/>		
Biodiversity	1. Sanitation and dredging of waterbeds	Dark to Medium green
	2. Water treatment	✓ Our main concern of how biodiversity and climate change goals can potentially counteract each other is addressed through the environmental impact assessments of large Water Board projects and the comprehensive reporting at both the national and EU level across a range of environmental issues.
	3. Transport and cleaning of wastewater	
	4. Disposal of sewage sludge	✓ CH ₄ and N ₂ O emissions are currently not monitored, but a first assessment will be made in next year's climate report

Table 2. Eligible project categories

Strengths

In the Green Deal Energy agreement (2016) with the central government, the water authorities pledged to reduce their emissions by 200.000 tonnes CO₂eq by 2020, representing a 30% reduction compared with 1990. Only CO₂ emissions are currently measured and reported; CH₄ og N₂O emissions are not monitored. According to the 2016 climate report by Arcadis, the CO₂ mitigation target was already met in 2016, mainly through reductions in emissions from energy used for wastewater treatment: between 2005 and 2016, the Water Authorities cut 48.000 tonnes CO₂eq by producing their own biogas and 170.000 tonnes CO₂eq by purchasing green energy. Total emissions of the Water Authorities in 2016 were 381.000 tonnes CO₂eq. The majority of these emissions are indirect emissions from purchased electricity used in wastewater treatment and water management (more than 50 percent). Less than 10 percent are direct emissions. Their joint carbon footprint decreased by 2% in the period 2011 – 2013 and by 4% in the years 2013 – 2015. The Water Authorities also aim to decrease emissions from transportation, without having set specific targets. Between 2013 and 2016, emissions from heavy goods traffic have decreased by 10%, however, emissions from personal transportation have increased.

The Water Authorities have pledged to produce 40 percent of their own energy use by 2020, including bio-energy and energy recovery from wastewater treatment, water pumps and other infrastructure. This target is within reach, with sustainable energy production in 2016 by the Water Authorities covering 32.6% of their energy use, according to the 2016 climate report by Arcadis. By 2025, they aim to be energy neutral by 2025. All energy used by the Water Authorities in 2017, including both self-produced and purchased energy, was sustainable.

Moreover, the Water Authorities aim to increase energy efficiency by 30% by 2020, compared to 2005, i.e. a 2% improvement per annum, by cutting energy use and increasing their own production of renewable energy. Energy efficiency performance in wastewater treatment has improved by 36.1% between 2009 and 2016, i.e. 4.5% per annum (of which 2.9% in energy savings and 1.6% increase in own energy production).

The Water Authorities pledged that by 2015, all purchases of energy, sludge, infrastructure, services and goods should be sustainable. This target was almost met in 2016 (98%), according to the 2016 climate report by Arcadis. Purchases are monitored through a Manifest for Social Responsible Purchasing and the Green Deal Sustainable GWW 2.0, which covers infrastructure works specifically. The Water Authorities are looking into finding more climate-friendly alternatives for the polymers and metal salts used in water treatment.

Eligible projects for the NWB green bond only include biodiversity projects that do not have negative climate impacts. Climate change and biodiversity objectives are not always mutually reinforcing, thus NWB's framework that views biodiversity projects through a climate lens reinforces the aim of the bond to support low-carbon and climate resilient growth.

In general, adaptation to the impacts of climate change can have both positive and negative consequences for biodiversity and ecosystems. Measures such as increasing the diversity of landscapes, such as manage natural floodplains, forests, and other ecosystems can give positive consequences for both climate resilience and biodiversity. However, hard infrastructure in coastal areas such as sea walls and dykes can often give negative impacts on natural ecosystems such as destroying or altering wetlands, altering tidal currents flow, disrupting, disconnecting and fragmenting marine ecosystems, and disturbing sediment or nutrition flows.

However, successful adaption of ecosystems can also contribute to climate change adaption and climate change mitigation, by conserving carbon stocks or reducing emissions caused by destruction of ecosystems. Ecosystems can be used as coastal defense, such as planting marsh vegetation on the intertidal zone and wetland restoration. Such adaptation measurements can reduce the strength of the wave energy, reduce erosion, and increase the accumulation of sediments as a way to increase the land surface.

The Dutch regional Water Boards are subject to a variety of EU and national laws governing their environmental footprint and reporting. This comprehensive legal coverage provides a solid foundation for Water Board projects that consider both climate change and biodiversity impacts.

In general, the Water Boards take an integrated approach since they are responsible for flood protection, water management and water quality. Both water retention and ecological potential are considered in combination (personal communication with UVW).

In addition, urban planning and water management interact during the planning phase in the Netherlands. Under the Water Act, municipal and urban planning in the Netherlands must consider the consequences on water management.

NWB and the governing environmental laws at the EU and state level support comprehensive, regular and transparent updates to investors and the public. Annual reports will be made available to investors including a list of project groups financed, a selection of project examples, and a summary of NWB's Green Bond development. NWB reports on its carbon footprint and other environmental impacts, including impacts from Water Board projects financed by the green bond, according to the GRI Global Reporting Framework. The Water Boards are public entities, so their financial plans and annual reports are publically available.

The GRI Global Reporting Framework includes a carbon footprint, but does not appear to include reporting on other greenhouse gasses. We would recommend additional reporting on methane emissions from waste.

Weaknesses

The way the proceeds are allocated to the Water Authorities without a screening, elements such as roads, pumping stations running on fossil fuel and fossil fuel transportation related to waste water treatment and water management would not be excluded from green bond proceeds. Careful consideration could have been taken to exclude all fossil fuel elements to avoid locking-in GHG emissions. The Water Authorities have however a high focus on reducing emissions which reduces the risk of negative lock-in effects. The Authorities aim to be energy neutral by 2025 and decrease emissions from transportation, without having set specific targets

Pitfalls

Beyond the consideration of specific project types, it is important to evaluate the potential for macro-level impacts of climate activities, including impacts beyond the project boundary.

Due to the complexity of how socio-economic activities impact the climate a specific project is likely to have interactions with the broader community beyond the project borders. These interactions may or may not be climate-friendly, and thus need to be considered with regards to the net impact of climate-related investments.

The Water Boards take a holistic approach to environmental sustainability in their water management and security mandates, governed both by Dutch and EU environmental law. This integrated approach implies consideration of cross-boundary environmental impacts.

Impacts beyond the project boundary

Due to the complexity of how socio-economic activities impact the climate, a specific project is likely to have interactions with the broader community beyond the project borders. These interactions may or may not be climate-friendly, and thus need to be considered with regards to the net impact of climate-related investments.

Rebound effects

Efficiency improvements may lead to rebound effects. When the cost of an activity is reduced there will be incentives to do more of the same activity. NWB should be aware of such effects and possibly avoid Green Bond funding of projects where the risk of rebound effects is particularly high.

Appendix: About CICERO

CICERO Center for International Climate Research is Norway's foremost institute for interdisciplinary climate research. We deliver new insight that helps solve the climate challenge and strengthen international climate cooperation. We collaborate with top researchers from around the world and publish in recognized international journals, reports, books and periodicals. CICERO has garnered particular attention for its work on the effects of manmade emissions on the climate and the formulation of international agreements and has played an active role in the UN's IPCC since 1995.

CICERO is internationally recognized as a leading provider of independent reviews of green bonds, since the market's inception in 2008. CICERO received a Green Bond Award from Climate Bonds Initiative for being the biggest second opinion provider in 2016 and from Environmental Finance for being the best external review provider (2017).

CICERO Second Opinions are graded dark green, medium green and light green to offer investors better insight in the environmental quality of green bonds. The shading, introduced in spring 2015, reflects the climate and environmental ambitions of the bonds in the light of the transition to a low-carbon society.

CICERO works with both international and domestic issuers, drawing on the global expertise of the Expert Network on Second Opinions. Led by CICERO, ENSO is comprised of trusted research institutions and reputable experts on climate change and other environmental issues, including the Basque Center for Climate Change (BC3), the Stockholm Environment Institute, the Institute of Energy, Environment and Economy at Tsinghua University and the International Institute for Sustainable Development (IISD). ENSO operates independently from the financial sector and other stakeholders to preserve the unbiased nature and high quality of second opinions.

cicero.oslo.no/Greenbonds

