



## Verification of the Sustainability Quality of the Green Bond Asset Pool for the BNP Paribas SA Green Bond Programme

01 February 2018

### Aim and Scope of this Second Party Opinion

BNP Paribas commissioned oekom research to assist with its Green Bond Programme by assessing the sustainable added value of an asset pool, from which assets for Green Bonds will be chosen. The assessment of the asset pool was conducted using the criteria and indicators of a Green Bond Analysis Framework developed by oekom research.

oekom research's mandate included the following services:

- Definition of a Green Bond Analysis Framework ("oekom Green Bond Analysis Framework") containing a clear description of eligible asset categories and the social and environmental criteria attributed to each category for evaluating the sustainability-related performance of the assets (re-) financed through the proceeds of the bonds.
- Evaluation of compliance of the asset pool with the oekom Green Bond Analysis Framework criteria.
- Analysis of the alignment of BNP Paribas' Green Bond Framework procedures and the description of Eligible Sectors with ICMA's Green Bond Principles.
- Review and classification of BNP Paribas' sustainability performance on the basis of the oekom Corporate Rating

### Overall Evaluation of the Green Bond Eligible Green Assets

oekom's overall evaluation of the Green Bond issued by BNP Paribas is positive:

- BNP Paribas has defined a formal concept for its Green Bonds regarding use of proceeds, processes for project evaluation and selection, management of proceeds and reporting. This concept is in line with the Green Bond Principles (Part I of this Second Party Opinion).
- The overall sustainability quality of the asset pool in terms of sustainability benefits and risk avoidance and minimisation is good (Part II of this Second Party Opinion).
- All assets of the asset pool are located in highly regulated and developed countries. Legislative frameworks in those countries set minimum standards, which reduce environmental and social risks.
- The issuer itself shows a good sustainability performance and has been classified as 'Prime' by oekom research (Part III of this Second Party Opinion).

Certain aspects could still add to the overall quality of the asset pool: more specific selection or performance criteria would be recommended for solar power assets, in particular regarding comprehensive environmental impact assessments (i.e. going beyond legal requirements).

As described in the BNP Paribas Green Bond Framework, all the assets of this Green Bond Programme will be managed within a common single pool encompassing assets related to BNP Paribas inaugural Green Bond issuance and the new assets pool reviewed within this Second Party Opinion. However, the issuer also reserves the right to replace with projects from the additional projects categories described in Annex 3. According to the BNP Green Bond Framework, any replacement with projects from additional project categories would require a prior additional Second Party Opinion and audit.

The process for potentially replacing assets in the asset pool is very transparently described. However at the time of issuance, oekom cannot confirm that alternative eligible sectors as described in BNP Paribas Framework (other than wind, photovoltaic, CSP and transport) will actually replace the assets that have been reviewed as part of this Second Party Opinion.

## Part I – Green Bond Principles

### 1) Use of Proceeds

BNP Paribas has defined a Green Bond Framework in which the different use of proceeds categories are defined.

The second Green Bond by BNP Paribas shall amount up to 500 m€ and has a planned tenure of 6 years. The asset pool as of end of December 2017 amounts to 820 m€ (drawn amounts) and the average residual maturity is 10.5 years. oekom has performed a review based on the committed amounts of the asset pool which amounts to 1,055 m€.

The size of the asset pool is significantly bigger compared to the amount of the second Green Bond issuance planned by BNP Paribas and might therefore serve as a basis to future Green Bond issuances under BNP Paribas SA Green Bond Programme.

At issuance, the proceeds of the second Green Bond will be exclusively used to refinance wind power, photovoltaic, concentrated solar power and transport assets as defined by the BNP Paribas' Green Bond Framework. The sustainability added value of the underlying Green Bond asset pool has been reviewed according to the oekom Green Bond Analysis Framework by oekom research (Part II of the SPO). All selected assets are located in developed countries.

The table below details the shares of each category of the selected asset pool based on committed limits of loans as at 31.12.2017.

Asset Category	Number of Assets	Number of Parks	Share of Asset Pool
Wind Power (on- and offshore)	13	13	38%
Photovoltaic	6	171	20%
Concentrated Solar Power	2	2	7%
Public Transportation	3	-	36%

The table below details the shares of each category of the asset pool for BNP Paribas' inaugural Green Bond based on committed limits of loans as at 15.11.2016.<sup>1</sup>

Asset Category	Number of Assets	Number of Parks	Share of Asset Pool
Wind Power (on- and offshore)	15	68	90%
Photovoltaic and Concentrated Solar Power	3	3	10%

<sup>1</sup> The analysis of the asset pool of BNP Paribas's inaugural Green Bond can be found in Annex 4.

As the BNP Paribas Green Bond Framework indicates, during the tenure of Green Bonds, individual loans might be replaced by other eligible assets that have not been subject to the assessment of assets in the scope of this Second Party Opinion.

Apart from the above asset categories, BNP Paribas' Green Bond Framework also contains Energy Efficiency, Sustainable Water Management & Water Treatment and Recycling as additional asset categories for future Green Bond issuances or for reallocation of proceeds within one emission. The additional categories are among those broad categories of eligibility recognised by the Green Bond Principles.

In order to provide investors with information on the eligibility of potential future assets, oekom has carried out an evaluation of the potential sustainability risks and benefits that could serve as basis for sustainability criteria of a framework for the assessment of assets in these additional categories. This information is provided in Annex 3 at the end of this document as no assets from these additional categories have yet been selected and thus could not be analysed in the scope of this Second Party Opinion.

Yet, the BNP Paribas Green Bond Framework requires an additional Second Party Opinion and an audit to be carried out before any new assets from the additional asset categories will be admitted to the pool.

## **2) Process for Project Evaluation and Selection**

BNP Paribas selected assets based on internal guidelines and internal CSR reviews, the sector and geographical location of the assets and narrowed the selection down by applying criteria such as financial performance.

All assets within BNP Paribas' asset pool and therefore all assets that Green Bonds upon issuance will initially refinance underwent a controversy screening by oekom research.

If necessary, additional eligible transactions will be included in the asset pool. To this end, BNP Paribas will maintain a Green Bond status in its loan database. To be marked "selected" for inclusion in the Green Bond programme, loans should meet sustainability requirements as defined in the BNP Paribas Green Bond Framework. The internal Green Bond Committee, formed by various departments including Corporate Social Responsibility, will review the status twice a year.

## **3) Management of Proceeds**

BNP Paribas has established an internal information system to earmark net proceeds from Green Bond issuances and to track their use. Proceeds will not be managed at bond level but as a single pool for all issuances under the BNP Paribas Green Bond Programme. Regarding unallocated proceeds, BNP Paribas will invest the balance of the net proceeds, at its own discretion, in cash and/or cash equivalent and/or other liquid marketable instruments.

## **4) Reporting**

BNP Paribas intends to report at least annually on the assets refinanced by the Green Bond programme in line with the comprehensive and progressive recommendations of the Harmonized Framework for Impact Reporting<sup>2</sup> and to make it publicly available on the BNP Paribas investors' website. BNP Paribas will report on the use of proceeds and on impact indicators as described in the BNP

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<sup>2</sup> <http://treasury.worldbank.org/cmd/pdf/InformationonImpactReporting.pdf>

Paribas Green Bond Framework on a consolidated basis by eligible sectors (i.e capacity installed, energy generation and CO<sub>2</sub> avoidance for Renewable Energies; and traffic, distance travelled and CO<sub>2</sub> avoidance for Mass and Public Transportation).

## Part II – Sustainability Quality of the Green Bond Asset Pool

### 1) oekom Green Bond Analysis Framework

The oekom Green Bond Analysis Framework serves as a structure for evaluating the sustainability quality – i.e. the social and environmental added value – of the use of proceeds of BNP Paribas' Green Bond Programme. It comprises firstly the definition of the use of proceeds category offering added social and/or environmental value and secondly the specific sustainability criteria by means of which this added value and therefore the sustainability performance of the assets can be clearly identified and described. The sustainability criteria are complemented by specific indicators, which enable quantitative measurement of the sustainability performance of the assets and which can also be used for reporting. Details on the individual criteria and indicators for the categories can be found in Annex 1 "oekom Green Bond Analysis Framework".

### 2) Evaluation of the assets

#### Method

oekom research has evaluated whether the assets included in the asset pool match the eligible project category and criteria listed in the Green Bond Analysis Framework. The evaluation was carried out using information and documents provided to oekom research on a confidential basis by BNP Paribas (e.g. Due Diligence Reports). Further, national legislation and standards, depending on the asset location, were drawn on to complement the information provided by BNP Paribas. Committed limits were used to calculate the share of underlying assets which fulfil an indicator requirement. All percentages refer to the amount of assets within one category (e.g. wind power). Additionally, the assessment "no or limited information is available" either indicates that no information was made available to oekom research or that the information provided did not fulfil the requirements of the oekom Green Bond Analysis Framework.

## Findings

### A. Wind Power (on- and offshore)

#### Sustainability Risks and Benefits of the Asset Category

The environmental benefits of wind power comprise climate protection and the transition towards a low-carbon economy. Further benefits are less environmental intervention (e.g. resource extraction, releases of waste streams to water or soil) in comparison to fossil fuel or nuclear power plants.

The construction and operation of wind power plants can result in negative environmental impacts (e.g. biodiversity, noise) and impacts on local communities. Further risks include potentially poor working conditions during construction and maintenance of power plants as well as in the production processes of wind power equipment. As the construction of these plants requires large amounts of raw materials and equipment, life cycle aspects are an important factor when assessing the overall environmental footprint of related projects.

All wind power assets selected for the Green Bond are located in highly-regulated and developed countries.

*All percentages refer to the amount of assets within the category wind power.*

#### A.1. Consideration of environmental aspects during planning and operation

- ✓ 11 assets, accounting for 98% of the asset pool, underwent environmental impact assessments at the planning stage (i.e. assessments taking into consideration all relevant natural goods). The remaining 2 assets, accounting for 2% of the asset pool, underwent basic environmental screenings.
- ✓ None of the windparks are located in key biodiversity areas such as Ramsar sites, UNESCO Natural World Heritage Sites or IUCN protected areas I-IV.
- ✓ For 9 assets, accounting for 64% of the asset pool, the cable corridor of the windpark is not located in a key biodiversity area. For 2 assets, accounting for 36% of the asset pool, the cable corridor of the windpark is located in a Ramsar site.
- ✓ 12 assets, accounting for 97% of the asset pool, provide for good environmental standards during the construction phase (e.g. specific construction periods, piling mitigation strategies). No or limited information is available for 1 asset, accounting for 3% of the asset pool.
- ✓ For 10 assets, accounting for 90% of the asset pool, measures are in place to protect habitat and wildlife during operation of the plants (e.g. continuous monitoring of birds and bats). No or limited information is available on the remaining 3 assets, accounting for 10% of the asset pool.

A.2. Environmental aspects of wind power plants

- ✓ For 10 assets, accounting for 91% of the asset pool, the manufacturer carried out life-cycle assessments of the wind turbines. No or limited information is available on the remaining 3 assets, accounting for 9% of the asset pool.

A.3. Community dialogue (onshore wind power assets only)

- ✓ For all onshore assets, community dialogue was conducted at the planning stage (e.g. information provided to communities, stakeholder management).

A.4. Working conditions during construction and maintenance work

- ✓ All assets are located in countries where high labour and health and safety standards are in place for construction and maintenance work conducted by own employees and contractors (e.g. ILO core conventions).

A.5. Social standards in the supply chain

- ✓ For 10 assets, accounting for 91% of the asset pool, the equipment is manufactured by companies which primarily produce (i.e. have more than 50% of production sites) in countries with high labour standards (e.g. European Union), are a signatory of the United Nations Global Compact, or adhere to the ILO core conventions. For 3 assets, accounting for 9% of the asset pool, the companies show poor performance or no such information is available.
- ✓ For 7 assets, accounting for 87% of the asset pool, wind power plant manufacturers require high social standards from their suppliers (e.g. regarding the prohibition of forced labour, wages, working time, health and safety). For 6 assets, accounting for 13% of the asset pool, the manufacturers do not require high social standards from their suppliers or no such information is available.

Controversies

- A controversy assessment on the underlying assets did not reveal any controversial activities or practices that could be attributed to BNP Paribas (as at 12/2017).



## B. Photovoltaic (PV)

### Sustainability Risks and Benefits of the Asset Category

The environmental benefits of PV power generation projects comprise the contribution to climate protection and to the transition towards a low-carbon economy. Further benefits are less environmental degradation and pollution (e.g. resource extraction, releases of waste streams to water or soil) in comparison to fossil fuel or nuclear power plants. From a social perspective, the transition from fossil fuels to PV power reduces negative human rights impacts of oil, gas and coal production (e.g. land-use conflicts, resettlement). In addition – different from fossil fuels combustion - PV power does not negatively impact air quality.

With respect to potential risks, the manufacturing of PV panels in developing countries such as China can have negative social and environmental impacts. As the production of PV panels requires scarce raw materials and as the panels contain hazardous substances, aspects such as recyclability, management of hazardous substances and conversion efficiency are relevant to evaluate the overall environmental performance of related projects. However, in comparison with other renewable energy sources, social and environmental risks related to PV power are deemed to be low.

All PV assets selected for the Green Bond are located in highly-regulated and developed countries.

*All percentages refer to the amount of assets within the category photovoltaic.*

#### B.1. Consideration of environmental aspects during planning and construction (not applicable for PV roof systems)

- 2 assets, accounting for 45% of the asset pool, underwent environmental impact assessments at the planning stage. No or limited information is available for the remaining 4 assets, accounting for 55% of the asset pool.
- ✓ None of the assets are located in key biodiversity areas such as Ramsar sites, UNESCO Natural World Heritage Sites or IUCN protected areas I-IV.
- 3 assets, accounting for 41% of the asset pool, provide for good environmental standards during the construction phase (e.g. monitoring, rehabilitation). No or limited information is available for the remaining 3 assets, accounting for 59% of the asset pool.

#### B.2. Environmental aspects of PV power plants

- For 4 assets, accounting for 49% of the asset pool, the conversion efficiency of solar panels is at least 15%. For the remaining 2 assets, accounting for 51% of the asset pool, no or limited information is available.
- ✓ For all assets, take-back options for used solar panels are available (in accordance with European WEEE-legislation).

- No or limited information is available on the restriction of certain hazardous substances in electrical and electronic equipment, i.e. the voluntary fulfilment of the requirements of the European Directive on the restriction of (RoHS Directive).<sup>3</sup>

#### B.3. Community dialogue

- ✓ For 3 assets, accounting for 62% of the asset pool, community dialogue was conducted at the planning stage (e.g. on the basis of national law). For the remaining 3 assets, accounting for 38% of the asset pool, no or limited information is available.

#### B.4. Working conditions during construction and maintenance work

- ✓ All assets are located in countries where high labour and health and safety standards are in place for construction and maintenance work conducted by own employees and contractors (e.g. ILO core conventions).

#### B.5. Social standards in the supply chain of solar modules

- For none of the assets, solar modules are manufactured by companies that primarily produce (i.e. have more than 50% of production sites) in countries with high labour standards (e.g. European Union), are a signatory of the United Nations Global Compact, or adhere to the ILO core conventions.
- For 2 assets, accounting for 31% of the asset pool, solar module manufacturers require high social standards from their suppliers (e.g. regarding the prohibition of forced labour, wages, working time, health and safety). For the remaining 4 assets, accounting for 69% of the asset pool, manufacturers do not require high social standards from their suppliers or no such information is available.
- ✓ For all assets, solar inverters are manufactured by companies that primarily produce (i.e. have more than 50% of production sites) in countries with high labour standards (e.g. European Union), are a signatory of the United Nations Global Compact, or adhere to the ILO core conventions.
- ✓ For all assets, solar inverter manufacturers require high social standards from their suppliers (e.g. regarding the prohibition of forced labour, wages, working time, health and safety).

#### Controversies

- A controversy assessment on the underlying assets did not reveal any controversial activities or practices that could be attributed to BNP Paribas (as at 12/2017).

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<sup>3</sup> Compliance with the RoHS Directive is not a legal requirement for PV systems.

### C. Concentrated Solar Power (CSP) (parabolic trough technology)

#### Sustainability Risks and Benefits of the Asset Category

The environmental benefits of CSP generation comprise the contribution to climate protection and to the transition towards a low carbon economy. Since CSP plants generate electricity from thermal energy, energy can be stored with comparatively little loss to better match production with consumption. In addition, this flexibility supports the integration of PV and wind power into the energy mix. Further – different from fossil fuels combustion – CSP does not negatively impact air quality.

However, the construction and operation of CSP plants can result in negative environmental impacts (e.g. noise, heat transfer fluid leakage) and impacts on local communities. The large need for cooling water constitutes another risk and may negatively impact on ecosystems and on local communities' access to water. A thorough assessment of water impact is therefore necessary. Further risks include potentially poor working conditions during construction and maintenance of power plants as well as in the production processes of equipment.

All CSP assets selected for the Green Bond are located in highly-regulated and developed countries.

*All percentages refer to the amount of assets within the category concentrated solar power.*

#### C.1. Consideration of environmental aspects during planning and construction

- ✓ All assets underwent environmental impact assessments.
- ✓ For all assets, the environmental impact assessment covers the impact of water withdrawal.
- ✓ None of the assets are located in key biodiversity areas such as Ramsar sites, UNESCO Natural World Heritage Sites or IUCN protected areas I-IV.
- ✓ All assets apply good environmental standards during the construction phase (e.g. minimisation of environmental impact during construction work, monitoring).

#### C.2. Environmental aspects of CSP power plants

- None of the assets achieved a capacity factor of 25%, but a capacity factor of 20%.
- For all assets, no or limited information is available on whether the conversion efficiency of power plant is at least 15%.
- ✓ All assets generate at least 85% of electricity using solar energy.
- ✓ None of the assets has a thermal energy storage system for at least 6 hours in place.
- ✓ All assets have reasonable heat transfer fluid management in place (e.g. overflow containers, responsible disposal procedures).

#### C.3. Community dialogue

- ✓ For all assets community dialogue was conducted at the planning stage (e.g. grievance mechanism in place).

#### C.4. Working conditions during construction and maintenance work

- ✓ All assets are located in countries where high labour and health and safety standards are in place for construction and maintenance work conducted by own employees and contractors (e.g. ILO core conventions).

#### C.5. Social standards in the supply chain

- ✓ For all assets, the equipment is manufactured by companies which primarily produce (i.e. have more than 50% of production sites) in countries with high labour standards (e.g. European Union), are a signatory of the United Nations Global Compact, or adhere to the ILO core conventions.
- ✓ For all assets, the manufacturers require high social standards from their suppliers (e.g. regarding the prohibition of forced labour, wages, working time, health and safety).

#### Controversies

- A controversy assessment on the underlying assets did not reveal any controversial activities or practices that could be attributed to BNP Paribas (as at 12/2017).

## D. Public transportation

### Sustainability Benefits and Risks of Projects in the Eligible Use of Proceeds Category

The construction of public rail transport infrastructure is positive from an environmental point of view as it helps to foster climate protection through lower carbon emissions and optimised transport efficiency when compared to individual mobility, in particular individual road transport as well as when compared to air transport. From a social point of view, construction of additional rail transport infrastructure may contribute to enhanced mobility of the population of remote or rural areas and for those not owning or not able to drive cars. Rail infrastructure maintenance activities are important to improve and/or maintain safety of rail operations.

At the same time, when evaluating public transport projects, certain risks have to be taken into account. Major risks from an environmental point of view stem from the potential negligence of environmental impacts during construction and operation. Social risks concern the health and safety of workers at construction sites, transport safety as well as stakeholder involvement during planning and construction phases.

All projects selected for the Green Bond are located in highly-regulated and developed countries.

*All percentages refer to the amount of assets within the category public transportation.*

#### D.1. Consideration of environmental aspects during planning and construction

- ✓ 2 assets, accounting for 86% of the asset pool, underwent environmental impact assessments at the planning stage (i.e. assessments taking into consideration all relevant natural goods). The remaining 1 asset, accounting for 14% of the asset pool, underwent a basic environmental screening.
- ✓ None of the assets are located in key biodiversity areas such as Ramsar sites, UNESCO Natural World Heritage Sites or IUCN protected areas I-IV.
- ✓ All assets provide for good environmental standards during the construction phase (e.g. mitigation strategies).

#### D.2. Community dialogue

- ✓ For all assets community dialogue was conducted at the planning stage (e.g. public meetings).

#### D.3. Working conditions during construction and maintenance work

- ✓ All assets are located in countries where high labour and health and safety standards are in place for construction and maintenance work conducted by own employees and contractors (e.g. ILO core conventions).

#### D.4 Transport Safety

- ✓ 100% of assets have a comprehensive safety management system in place (including e.g. risk assessments, training, audits).

#### D.5 Social aspects of public transport infrastructure

- 2 assets, accounting for 22% of the asset pool, provide for accessibility for all customer groups (e.g. through barrier-free access to trains). For 1 asset, accounting for 78% of the asset pool, no or limited information is available on accessibility.

#### D.6 Environmental aspects of public transport infrastructure

- ✓ All assets run electric train services.
- ✓ All assets operate energy efficient vehicles (e.g. ensured by lightweight design, energy recovery systems).
- ✓ All assets provide for measures to optimise energy efficiency of train operation (e.g. through computer aided traffic control and driving of trains).
- ✓ All assets provide for measures to reduce transport-related noise emissions (e.g. acoustic protection).
- ✓ For 1 asset, accounting for 78% of the asset pool, the environmentally friendly disposal of the fleet is guaranteed by the operator. For 2 assets, accounting for 22% of the asset pool, no or limited information is available.

#### D.7 Social standards in the supply chain

- ✓ For all assets, the equipment is manufactured by companies which primarily produce (i.e. have more than 50% of production sites) in countries with high labour standards (e.g. European Union), are a signatory of the United Nations Global Compact, or adhere to the ILO core conventions.
- ✓ For 1 asset, accounting for 78% of the asset pool, the manufacturer requires high social standards from its suppliers (e.g. regarding the prohibition of forced labour, wages, working time, health and safety). For the remaining 2 assets, accounting for 22% of the asset pool, manufacturers do not require high social standards from their suppliers or no such information is available.

#### Controversies

- A controversy assessment on the underlying assets did not reveal any controversial activities or practices that could be attributed to BNP Paribas (as at 12/2017).

## Part III – Assessment of BNP Paribas' Sustainability Performance

In the oekom Corporate Rating with a rating scale from A+ (excellent) to D- (poor), BNP Paribas SA was awarded a score of C and classified as "Prime". This means that the company performed well in terms of sustainability, both compared against others in the industry and in terms of the industry-specific requirements defined by oekom research. In oekom research's view, the securities issued by the company thus all meet the basic requirements for sustainable investments.



As at 01.02.2018, this rating puts BNP Paribas SA in place 8 out of 251 companies rated by oekom research in the Commercial Banks & Capital Markets sector.

In this sector, oekom research has identified the following issues as the key challenges facing companies in term of sustainability management:

- Sustainability impacts of lending and other financial services/products
- Customer and product responsibility
- Sustainable investment criteria
- Employee relations and work environment
- Business ethics

In four out of five of these key issues, BNP Paribas achieved a rating that was above the average for the sector. A very significant outperformance was achieved in "Sustainable investment criteria", whereas in the area "Business ethics", the company lags behind the industry's average performance.

The company has a significant controversy level. Severe and very severe controversies relating to weaknesses in anti-money laundering controls, allegations on anti-competitive behaviour and aiding tax evasion in the US have been revealed. However, in comparison to the sector, BNP Paribas' controversy level is comparatively low.

Details on the rating of the issuer can be found in Annex 2 "Issuer rating results".

A handwritten signature in blue ink, appearing to read "A. Geyer", is written over a faint, circular official stamp.

oekom research AG

Munich, 01 February 2018

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#### Disclaimer

1. oekom research AG uses a scientifically based rating concept to analyse and evaluate the environmental and social performance of companies and countries. In doing so, we adhere to the highest quality standards which are customary in responsibility research worldwide. In addition we create a Second Party Opinion (SPO) on bonds based on data from the issuer.
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As part of our Green Bond Services, we provide support for companies and institutions issuing sustainable bonds, advise them on the selection of categories of projects to be financed and help them to define ambitious criteria. We verify the compliance with the criteria in the selection of projects and draw up an independent second party opinion so that investors are as well informed as possible about the quality of the loan from a sustainability point of view.

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## Annexes

- Annex 1: oekom Green Bond Analysis Framework
- Annex 2: oekom Corporate Rating of BNP Paribas SA
- Annex 3: Information on Additional Project Categories
- Annex 4: Analysis of projects included in BNP Paribas' first Green Bond

## Annex 1: oekom Green Bond Analysis Framework

### oekom Green Bond Analysis Framework

The oekom Green Bond Analysis Framework serves as a structure for evaluating the sustainability quality – i.e. the social and environmental added value – of the use of proceeds of BNP Paribas' Green Bond Programme. It comprises firstly the definition of the use of proceeds category offering added social and/or environmental value and secondly the specific sustainability criteria by means of which this added value and therefore the sustainability performance of the assets can be clearly identified and described. The sustainability criteria are complemented by specific indicators, which enable quantitative measurement of the sustainability performance of the assets and which can also be used for reporting.

### Use of Proceeds

- A. Wind Power (on- and offshore)
- B. Photovoltaic (PV)
- C. Concentrated Solar Power (CSP)
- D. Public Transportation

### Sustainability Criteria and Quantitative Indicators for Use of Proceeds

#### A. Wind power (on- and offshore)

##### 1. Consideration of environmental aspects during planning and operation

Quantitative indicators:

- Percentage of assets that underwent environmental impact assessments at the planning stage.
- Percentage of assets for which the location in key biodiversity areas can be excluded (e.g. exclusion of Ramsar sites, UNESCO Natural World Heritage, IUCN protected areas I-IV).
- Percentage of assets that meet high environmental standards and requirements during the construction phase (e.g. noise mitigation, minimisation of environmental impact during construction work).
- Percentage of assets for which measures to protect habitat and wildlife are in place (e.g. measures to protect birds and bats during operation of the power plant, environmentally friendly anti-rust protection).

## 2. Environmental aspects of wind power plants

Quantitative indicator:

- Percentage of assets for which life-cycle assessments of the wind power plants have been carried out.

## 3. Community dialogue

Quantitative indicator:

- Percentage of assets that feature community dialogue as an integral part of the planning process (e.g. sound information of communities, community advisory panels and committees, surveys and dialogue platforms, grievance mechanisms and compensation schemes).

## 4. Working conditions during construction and maintenance work

Quantitative indicator:

- Percentage of assets with high labour and health and safety standards for construction and maintenance work conducted by own employees and contractors (e.g. ILO core conventions).

## 5. Social standards in the supply chain

Quantitative indicator:

- Percentage of assets for which high labour and health and safety standards are applied in the supply chain (e.g. ILO core conventions).

## Controversies

- Description of controversial assets (e.g. due to labour rights violations, environmental incidents, adverse biodiversity impacts).

Impact indicators: Energy production and avoidance of CO<sub>2</sub> emissions

- Total annual energy production by the wind power assets (in GWh).
- Total annual avoidance of CO<sub>2</sub> emissions through the wind power assets (in t), based on the carbon intensity of the relevant country's / region's energy mix.

## **B. Photovoltaic**

### 1. Consideration of environmental aspects during planning and construction

Quantitative indicators (not applicable for PV roof systems):

- Percentage of assets that underwent environmental impact assessments at the planning stage.
- Percentage of assets for which the location in key biodiversity areas can be excluded (e.g. exclusion of Ramsar sites, UNESCO Natural World Heritage, IUCN protected areas I-IV).
- Percentage of assets that meet high environmental standards and requirements during the construction phase (e.g. noise mitigation, minimisation of environmental impact during construction work).

### 2. Environmental aspects of PV plants

Quantitative indicators:

- Percentage of assets for which conversion efficiency is at least 15%.
- Percentage of assets that meet high environmental standards regarding take-back and recycling of PV modules at end-of-life stage.
- Percentage of assets for which the thresholds defined by the European Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive) are voluntarily fulfilled.

### 3. Community dialogue (not applicable for PV roof systems)

Quantitative indicator:

- Percentage of assets that feature community dialogue as an integral part of the planning process and construction phase (e.g. sound information of communities, community advisory panels and committees, surveys and dialogue platforms, grievance mechanisms and compensation schemes).

### 4. Working conditions during construction and maintenance work

Quantitative indicator:

- Percentage of assets with high labour and health and safety standards for construction and maintenance work conducted by own employees and contractors (e.g. ILO core conventions).

### 5. Social standards in the supply chain

Quantitative indicator:

- Percentage of assets for which high labour and health and safety standards are applied in the supply chain (e.g. ILO core conventions).

## Controversies

- Description of controversial assets (e.g. due to labour rights violations, environmental incidents, adverse biodiversity impacts).

## Impact indicators: Energy production and avoidance of CO<sub>2</sub> emissions

- Total annual energy production by the PV assets (in GWh).
- Total annual avoidance of CO<sub>2</sub> emissions through the PV assets (in t); based on the carbon intensity of the relevant country's / region's energy mix.

## **C. Concentrated solar power (parabolic trough technology)**

### 1. Consideration of environmental aspects during planning and construction

#### Quantitative indicators:

- Percentage of assets that underwent environmental impact assessments (e.g. covering water, avifauna and other wildlife) at the planning stage.
- Percentage of assets for which the location in key biodiversity areas can be excluded (e.g. exclusion of Ramsar sites, UNESCO Natural World Heritage, IUCN protected areas I-IV).
- Percentage of assets that meet high environmental standards and requirements during the construction phase (e.g. noise mitigation, minimisation of environmental impact during construction work).

### 2. Environmental aspects of CSP power plants

#### Quantitative indicators:

- Percentage of assets for which the capacity factor of CSP plants is at least 25%
- Percentage of assets for which conversion efficiency is at least 15%.
- Percentage of assets that generate at least 85% of electricity using solar energy.
- Percentage of assets with a thermal energy storage system for at least 6 hours in place.
- Percentage of assets with adequate management of heat transfer fluids (i.e. leakage prevention, end of life treatment).

### 3. Community dialogue

#### Quantitative indicator:

- Percentage of assets that feature community dialogue as an integral part of the planning process and construction phase (e.g. sound information of communities, community advisory panels and committees, surveys and dialogue platforms, grievance mechanisms and compensation schemes).

### 4. Working conditions during construction and maintenance work

#### Quantitative indicator:

- Percentage of assets with high labour and health and safety standards for construction and maintenance work conducted by own employees and contractors (e.g. ILO core conventions).

## 5. Social standards in the supply chain

Quantitative indicator:

- Percentage of assets for which high labour and health and safety standards are applied in the supply chain (e.g. ILO core conventions).

Controversies

- Description of controversial assets (e.g. due to labour rights violations, environmental incidents, adverse biodiversity impacts).

Impact indicators: Energy production and avoidance of CO<sub>2</sub> emissions

- Total annual energy production by the CSP assets (in GWh).
- Total annual avoidance of CO<sub>2</sub> emissions through the CSP assets (in t); based on the carbon intensity of the relevant country's / region's energy mix.

## D. Public Transportation

### 1. Consideration of environmental impacts during planning

Quantitative indicators:

- Percentage of assets that underwent environmental impact assessments at the planning stage.
- Percentage of assets for which the location in key biodiversity areas can be excluded (e.g. exclusion of Ramsar sites, UNESCO Natural World Heritage, IUCN protected areas IIV).
- Percentage of assets that meet high environmental standards and requirements during the construction phase (e.g. minimisation of environmental impact during construction work).

### 2. Community dialogue

Quantitative indicator:

- Percentage of assets that feature community dialogue as an integral part of the planning process and construction phase (e.g. sound information of communities, community advisory panels and committees, surveys and dialogue platforms, grievance mechanisms and compensation schemes).

### 3. Working conditions during operation and maintenance

Quantitative indicator:

- Percentage assets with high labour and health and safety standards for operation and maintenance conducted by own employees and contractors (e.g. ILO core conventions).

### 4. Transport safety

Quantitative indicator:

- Percentage of assets that have a safety management system in place (i.e. policies, responsibilities, risk assessments and monitoring, training, emergency management).

## 5. Social aspects of train services

Quantitative indicator:

- Percentage of assets for which the accessibility for all customer groups is ensured (e.g. through assistance services, barrier-free access to trains and platforms).

## 6. Environmental aspects of train services

Quantitative indicators:

- Percentage of assets that operate energy efficient locomotives and waggons (e.g. trains equipped with energy recovery systems, lightweight design).
- Percentage of assets for which measures to optimise energy efficiency are in place for both train and network operation (e.g. computer aided train operation, passenger load factor monitoring, energy efficient lighting at train stations).
- Percentage of assets for which measures to reduce transport-related noise emissions are in place (e.g. low-noise tracks).
- Percentage of assets for which the environmentally friendly disposal of the fleet is guaranteed by the operator.

Controversies

- Description of controversial assets (e.g. due to labour rights violations, environmental incidents, adverse biodiversity impacts).

## Annex 3: Information on Additional Project Categories

BNP Paribas has developed a Green Bond Framework defining eligible sectors from which assets can be chosen for Green Bond issuances. BNP Paribas has commissioned oekom research to evaluate the sustainability benefits and risks of these additional categories to be addressed in the verification of future Green Bonds or of reallocations of proceeds.

At issuance, the second Green Bond of BNP Paribas does not refinance any projects from the additional categories. oekom research has performed a review of the additional project categories (called 'Eligible Sectors' in the BNP Green Bond Framework) and has identified the following general and potential benefits and risks of sectors.

According to the BNP Paribas Green Bond Framework, specific projects from these sectors will be evaluated externally if any assets from the categories are chosen for future Green Bonds or if proceeds are to be reallocated.

The environmental benefits of **Renewable Energy** sources other than solar (photovoltaic and concentrated solar power) and wind, e.g. hydropower, bioenergy, and geothermal energy as well as development and production of renewable energy equipment, comprise the contribution to climate protection and to the transition towards a low-carbon economy. Further benefits are less environmental degradation and pollution (e.g. through resource extraction, releases of waste streams to water or soil) in comparison to fossil fuel or nuclear power plants. In addition, hydropower and geothermal power do not negatively impact air quality.

However, there are also considerable sustainability risks linked to the value chain of these additional renewable energy sources. The construction and operation of renewable power plants, especially of large-scale hydropower projects, can result in negative environmental impacts at construction sites (e.g. on the hydrological regime, biodiversity or even climate change through methane emissions) and impacts on human rights of local communities (e.g. through land use conflicts and involuntary resettlement).<sup>4</sup> Geothermal power generation can potentially lead to unintended vibrations, gaseous emissions and/or ground water contamination. Biocrop and biofuel production carries the risk of conventional agriculture (pesticide use, degradation of soils, loss of biodiversity, elevated water and energy consumption and labor rights issues). In addition, the use of agricultural goods for energy production can contribute to food shortages and rises in food prices. Finally, hazardous substances used in manufacturing of renewable energy equipment such as solar panels pose a risk of environmental pollution during the production and disposal phases of these products.

**Energy Efficiency** measures, which the issuer in its framework limits to the construction of green buildings, retrofit buildings, improved infrastructure, and smart grids are environmentally beneficial as they contribute to climate protection through reduced energy use and enable a transition towards a low carbon economy. Green and retrofit buildings help to conserve natural resources as well as air quality.

Environmental risks stem from inadequate improvements in energy use and resource efficiency but also from possible environmental impacts (e.g. on biodiversity at construction sites or from hazardous substances in electronics) during construction and retrofitting of buildings and the upgrading of

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<sup>4</sup> BNP Paribas limits the financing of hydropower plants to run-of-river and small hydroelectric power stations ("small project" threshold defined by the "Clean Development Mechanism"- CDM – established by the Kyoto protocol).



the existing electrical grid. Social risks of smart grids arise from privacy and security issues for consumers.

**Water Management and Water Treatment**, according to the issuer's definition include water treatment plants, water use minimisation and recycling, leakage prevention as well as irrigation and wastewater. Wastewater treatment and recycling help to provide water for human use, optimise resource recovery and, as water use minimisation and leakage prevention, help to provide a solution to water shortages as well as to decrease diversion of water from sensitive ecosystems. Furthermore, wastewater treatment can safeguard water sources and the ground from contamination through wastewater. Flood prevention is beneficial as floods can endanger humans and other species; cause soil erosion and contaminate habitats. By remodelling water bodies (e.g rivers) to their natural states, consequences of floods are prevented without restricting the water body, natural habitats are restored and biodiversity strengthened. Sensible irrigation helps increase food production and decrease food shortages as well as water use for production.

Environmental risks of wastewater treatment and recycling stem from environmental impacts of wastewater treatment processes, e.g. leakage of sewage or inappropriate sewage sludge disposal. Also, quality standards for treated or recycled water need to be considered when evaluating wastewater treatment projects or (agricultural) irrigation. Irrigation can not only lead to contamination but also increase water shortage. Risks of construction works due to leakage and conventional flood prevention can negatively impact wildlife and natural water flows.

**Recycling** may, according to the issuer's definition, include projects for urban solid waste recycling or energy generation from waste. Recycling conserves natural resources, reduces negative effects of resource extraction and the amount of waste sent to landfills. Waste to energy reduces the number of landfills, the emission of greenhouse gases, and the extraction of fossil fuels for energy production.

Environmental risks stem from possible environmental impacts of energy to waste plants (i.e. air pollution and misuse of recyclable resources) and of inadequate recycling standards (i.e. handling of hazardous substances) but also from negligence of environmental impacts during planning and construction.

There are **social risks** concerning all project categories above. Social risks are mainly posed by working conditions, especially regarding workers' health and safety, from nuisance of local residents, and a lack of community dialogue, which omits to inform affected communities and/or to incorporate feedback mechanisms for public consultation.

## Annex 4: Analysis of projects included in BNP Paribas' inaugural Green Bond

### Findings of the first Second Party Opinion (11/2016)

#### A. Wind Power (on- and offshore)

##### A.1. Consideration of environmental aspects during planning and operation

- ✓ For 100% of projects, environmental impact assessments have been conducted (i.e. assessments taking into consideration all relevant natural goods).
- ✓ None of the projects are located in key biodiversity areas such as Ramsar sites, UNESCO Natural World Heritage Sites or IUCN protected areas I-IV.
- For (parts of<sup>5</sup>) 9 newly built projects, accounting for 66% of the respective Eligible Green Assets' volume, good environmental standards are applied during the construction phase (e.g. specific construction periods, soft-start). No information is available for (parts of) 6 projects, accounting for 34% of the respective Eligible Green Assets' volume.
- ✓ For (parts of) 13 projects, accounting for 75% of the Eligible Green Assets' volume, measures are in place to protect habitat and wildlife during operation of the plants (e.g. continuous monitoring of birds and bats, turbine turn-off times). No information is available on the remaining (parts of) 7 projects, accounting for 25% of the Eligible Green Assets' volume.

##### A.2. Environmental aspects of wind power plants

- ✓ For (parts of) 10 projects, accounting for 50% of the Eligible Green Assets' volume, the manufacturer carried out life-cycle assessments of the wind turbines. No information is available on the remaining (parts of) 10 projects, accounting for 50% of the Eligible Green Assets' volume.

##### A.3. Community dialogue (onshore wind power projects only)

- ✓ "For (parts of) 5 newly built onshore projects, accounting for 56% of the respective Eligible Green Assets' volume, community dialogue was conducted at the planning stage (e.g. information provided to households) or was required by national law. No information is available on the remaining (parts of) 4 newly built onshore projects, accounting for 44% of the respective Eligible Green Assets' volume."
- ✓ For 5 onshore projects, accounting for 54% of the respective Eligible Green Assets' volume, national law requires a grievance mechanism during the operational phase. No information is available on the remaining 5 projects, accounting for 46% for the respective Eligible Green Assets' volume.

##### A.4. Working conditions during construction and maintenance work

- ✓ For 100% projects, high labour standards regarding e.g. freedom of association and collective bargaining, non-discrimination and occupational health and safety are in place (in accordance with national legislation).

<sup>5</sup> Since several projects comprise multiple windfarms, it can be the case that some farms of one project fulfil the requirements while for others the information was either not made available or they did not fulfil the requirements. This is indicated by the phrase "parts of".

#### A.5. Social standards in the supply chain

- For (parts of) 10 projects, accounting for 44% of the Eligible Green Assets' volume, wind power plants are manufactured by companies that demonstrate good performance regarding working conditions of own employees and contractors (according to respective grades in the companies' oekom Corporate Rating or according to an analysis based on the location of manufacturing sites). For at least 3 projects accounting for 32% of the Eligible Green Assets' volume, the manufacturers show at least a medium performance regarding own employees and contractors. For (parts of) 5 projects, accounting for 23% of the Eligible Green Assets' volume, the manufacturers demonstrate an insufficient performance.
- ✓ For (parts of) 12 projects, accounting for 68% of the Eligible Green Assets' volume, wind power plant manufacturers require high social standards from their suppliers (e.g. regarding the prohibition of forced and child labour, freedom of association and collective bargaining, non-discrimination, occupational health and safety). No information is available for the remaining (parts of) 7 projects, accounting for 32% of the Eligible Green Assets' volume.

#### Controversies

- During construction, occupational accidents occurred at 3 wind power plants, accounting for 4% of the Eligible Green Assets' volume. At least one worker and several unrelated persons have been hurt; however, there has been no indication of severe injuries.
- At 3 windfarms, accounting for 3% of the Eligible Green Assets' volume, parts of single turbines came off and were projected into the area. No harm was reported and, notably, no person was reported to be hurt.
- At 2 windfarms, accounting for 1% of the Eligible Green Assets' volume, there are indications that noise levels exceed the usual level. However, only single cases of noise disturbances have been reported in each case.

#### Impact indicator 1: Energy production

The selected wind power plants feature a total predicted annual energy production of 10,975 GWh/year. The share of energy production attributable to BNP Paribas is 1,071 GWh/year

#### Impact indicator 2: Avoidance of CO<sub>2</sub> emissions

Based on the Eligible Green Assets' energy generation and the carbon intensity of the relevant countries' energy mix, the selected wind power plants feature a total predicted annual CO<sub>2</sub> avoidance of 5,908,554 t at project level. The share of CO<sub>2</sub> avoidance attributable to BNP Paribas is 604,428 t.

## **B. Photovoltaic (PV)**

### **B.1. Consideration of environmental aspects during planning and construction (not applicable for PV roof systems)**

- ✓ 100% of loans are allocated to projects that underwent environmental impact assessments at the planning stage.
- ✓ None of the projects are located in key biodiversity areas such as Ramsar sites, UNESCO Natural World Heritage Sites or IUCN protected areas I-IV.
- ✓ 100% of loans are allocated to projects that meet high environmental standards and requirements during the construction phase (e.g. noise mitigation, avoidance of breeding period).

### **B.2. Environmental aspects of PV power plants**

- ✓ 100% of loans are allocated to projects that have a performance ratio of at least 80%.
- No information is available whether the conversion efficiency of solar panels is at least 15%.
- ✓ For 100% of the projects, take-back options for used solar panels are available (in accordance with European WEEE-legislation).
- No information is available on the percentage of loans allocated to projects that voluntarily fulfil the requirements of the European Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive).<sup>6</sup>

### **B.3. Community dialogue**

- ✓ 100% of loans are allocated to projects for which national law requires community dialogue as a part of the planning process and during the operational phase (e.g. information of affected communities, surveys and dialogue platforms, grievance mechanisms).

### **B.4. Working conditions during construction and maintenance work**

- ✓ For 100% projects, high labour standards regarding e.g. freedom of association and collective bargaining, non-discrimination and occupational health and safety are in place (in accordance with national legislation).

### **B.5. Social standards in the supply chain of solar modules**

- Like the majority of solar panel manufacturers, the suppliers selected for the projects do not show a good performance regarding working conditions (according to their oekom Corporate Rating) or do not report on their labour standards at all (e.g. regarding health and safety, freedom of association, working hours, minimum wages).
- It remains unclear whether the projects' solar module manufacturers require high social standards from their suppliers (e.g. regarding the prohibition of forced and child labour, minimum wages, working hours, health and safety).

Impact Indicators: Please refer to the impact indicator of section C. Concentrated Solar Power.

## **C. Concentrated Solar Power (CSP) (parabolic trough technology)**

### **C.1. Consideration of environmental aspects during planning and construction**

- ✓ 100% of projects underwent environmental impact assessments.
- For none of the projects, the environmental impact assessment assesses the impact of project-related water withdrawal.
- ✓ None of the projects are located in key biodiversity areas such as Ramsar sites, UNESCO Natural World Heritage Sites or IUCN protected areas I-IV.

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<sup>6</sup> Compliance with the RoHS Directive is not a legal requirement for PV systems.

- ✓ 100% of projects apply good environmental standards during the construction phase (e.g. minimisation of environmental impact during construction work, monitoring).

#### C.2. Environmental aspects of CSP power plants

- In 2015, 1 project, accounting for 46% of the Eligible Green Assets' volume, achieved a capacity factor of more than 25%. The remaining project, accounting for 54% of the Eligible Green Assets' volume, achieved a capacity factor of 20% in 2015.
- No information is available on whether the conversion efficiency of projects is at least 15%.
- ✓ 100% of projects generate at least 85% of electricity using solar energy.
- 1 project, accounting for 46% of the Eligible Green Assets' volume, has a thermal energy storage system for at least 6 hours in place. The remaining project, accounting for 54% of the Eligible Green Assets' volume, does not have a thermal energy storage system.
- ✓ 100% of projects have reasonable heat transfer fluid management in place (e.g. overflow containers, responsible disposal procedures).

#### C.3. Community dialogue

- ✓ 1 project, accounting for 46% of the Eligible Green Assets' volume, has a grievance mechanism for stakeholders in place. No information is available on the remaining project, accounting for 54% of the Eligible Green Assets' volume.

#### C.4. Working conditions during construction and maintenance work

- ✓ For 100% projects, high labour standards regarding e.g. freedom of association and collective bargaining, non-discrimination and occupational health and safety are in place (in accordance with national legislation).

#### C.5. Social standards in the supply chain

- The suppliers selected for the projects do not show a good performance regarding working conditions (according to their oekom Corporate Rating or according to an analysis based on the location of manufacturing sites) or do not report on their labour standards at all (e.g. regarding health and safety, freedom of association, working hours, minimum wages).
- ✓ For parts of 2 projects, accounting for 50% of the Eligible Green Assets' volume, the manufacturer requires good standards of its suppliers regarding freedom of association and collective bargaining, non-discrimination and prohibition of forced and child labour and high standards regarding occupational health and safety. No information is available on supplier standards of further manufacturers.

Impact indicator 1: Energy production The selected PV and CSP plants feature a total predicted annual energy production of 270 GWh/year. The share of energy production attributable to BNP Paribas is 28 GWh/year.

Impact indicator 2: Avoidance of CO<sub>2</sub> emissions Based on the Eligible Green Assets' energy generation and the carbon intensity of the relevant countries' energy mix, the selected PV and CSP plants feature a total predicted annual CO<sub>2</sub> avoidance of 119,629 t at project level. The share of CO<sub>2</sub> avoidance attributable to BNP Paribas is 13,043 t.