



G R E S B[®]

2020

Resilience Reference Guide

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Disclaimer: 2020 GRESB Resilience Module Reference Guide

The 2020 GRESB Real Estate and Infrastructure Resilience Module Reference Guide (“Reference Guide”) accompanies the 2020 GRESB Real Estate Resilience Module and is published both as a standalone document and in the GRESB Portal alongside each Module indicator. The Reference Guide reflects the opinions of GRESB and not of our members. The information in the Reference Guide has been provided in good faith and is provided on an “as is” basis. We take reasonable care to check the accuracy and completeness of the Reference Guide prior to its publication. While we do not anticipate major changes, we reserve the right to make modifications to the Reference Guide. We will publicly announce any such modifications. The Reference Guide is not provided as the basis for any professional advice or for transactional use. GRESB and its advisors, consultants and sub-contractors shall not be responsible or liable for any advice given to third parties, any investment decisions or trading or any other actions taken by you or by third parties based on information contained in the Reference Guide. Except where stated otherwise, GRESB is the exclusive owner of all intellectual property rights in all the information contained in the Reference Guide.

Introduction

Worldwide, the frequency, size and cost of disasters is increasing, driven by climate change, population growth, rapid urbanization, and other factors. Sustainability efforts are critical in helping mitigate these factors, including action to reduce greenhouse gas emissions; increase the use of clean, renewable energy sources; conserve water resources; and plan safe, equitable communities. Such efforts are essential and must be continued and expanded. At the same time, businesses or communities must prepare for the changes that lie ahead. Organizations need to identify hazards, assess risks, and systematically adapt to a changing climate and changing world.

Long-term, global trends including population growth, urbanization, and climate change necessitate that efforts to manage property and infrastructure in the future cannot entirely rely on past experience. Scientific evidence points to significant change, along with great uncertainty about local and regional impacts. The challenges of this dynamic future are daunting, but they also provide significant business opportunities. Scientists can already make reliable predictions about many types of impacts, along with information needed to identify the most vulnerable places and people. In parallel, new technologies and strategies are emerging that can mitigate local hazards, reduce risks, and protect life and property. The availability of this understanding and opportunities for positive action create the need to understand how property and infrastructure companies are acting to use these tools to manage risk and, in some cases, seize business opportunities.

These circumstances have motivated the development of the GRESB Resilience Module (the Module). The Module has two primary goals:

1. Meet investor demand for information about the resilience of property and infrastructure companies and funds; *and*
2. Provide more information about the processes that property and infrastructure companies use to identify, assess, and manage climate-related risks.

Definitions

For the Module, resilience is defined as the ability of an entity (i.e., organization or fund) to plan for, respond to, and rebound from short-term shocks and long-term stressors. This encompasses the Module's original working definition, "The ability to survive and thrive when subjected to shocks and stressors..."

The Resilience Module addresses two fundamental categories of climate-related risk identified by the Financial Stability Board's [Task Force on Climate-related Financial Disclosures](#) (TCFD): transition risk and physical risk.

Transition risks refer to those posed by market, policy, legal, reputational, technological, and other risk factors that arise from the ongoing shift to a low-carbon economy necessary to achieve the goals of the United Nations [Paris Agreement](#). This transition may create new liabilities for companies, particularly those reliant on inefficient or carbon-intensive technologies. Such companies may not only be at risk from the increased cost of complying with current and future regulation (e.g., U.K. Minimum Energy Efficiency Standards for leased property), but may also exhibit competitive disadvantages. However, the transition will also create new opportunities for companies capable of providing low-carbon solutions such as energy efficiency programs or buildings powered by renewable energy.

Physical risks are those associated with a myriad of acute shocks (e.g., wildfires, flood events, tropical and extratropical storms) and chronic stresses (e.g., changing heating and cooling degree days, precipitation levels) caused or exacerbated by climate change.

While the Resilience Module aligns with the TCFD in addressing both transition and physical risks, it takes a broader perspective than the TCFD by evaluating and scoring other resilience-related measures beyond these two major categories. Notably, the Module provides indicators related to social risks. Social risks in the 2020 Module are constrained to those caused or exacerbated by transition or physical climate-related risk factors – i.e., those that are climate-related. Social risk factors include social shocks and stressors such as labor market disruption, building inaccessibility, inequity, loss of life during catastrophic events, and others, many of which are described by the global 100 Resilient Cities program. Other social risks unrelated to climate change are addressed in the core assessment.

For the purpose of 2020 reporting, the Resilience Module provides relevant, actionable information related

to transition, physical, and social risks and opportunities facing real estate and infrastructure companies around the world.

Scope and Purpose

The Resilience Module provides investors with information needed to understand how real estate and infrastructure companies and funds are identifying and assessing long-term trends, preparing for potentially disruptive events and changing conditions, and ultimately becoming more resilient over time. The Module provides companies and funds with the opportunity to communicate their governance, risk assessment, business strategy, and performance measurement for climate-related risks and opportunities.

The Resilience Module was designed to align with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). While it is not meant to, by itself, constitute a complete climate-related risk disclosure in accordance with the TCFD, it nonetheless provides a strong basis for one in the context of real estate and infrastructure fund management.

The Resilience Module does not attempt to assess or communicate specific risks to *individual assets*, such as homes or buildings. Rather, the Resilience Module provides an entity-level framework to report on the processes used to conduct such risk assessments and use those results to manage risk and create value. Stakeholders interested in asset-level risk assessment and management are referred to a growing number of tools such as those identified in the [GRESB \(2018\) Special Report on Real Assets and Resilience](#).

Timeline

The GRESB Resilience Module is a three-year effort to improve reporting and benchmarking of climate risk and resilience management by property and infrastructure companies. The stages of development of the Module are as follows:

- 2018: The 2018 Resilience Module was an initial high-level screen intended to raise awareness, motivate internal discussion, and provide a basic level of transparency for investors. Results from 2018 Real Estate and Infrastructure Assessments are available in the [GRESB \(2018\) Special Report: Real Assets & Resilience](#).
- 2019: The 2019 Resilience Module built upon the high-level criteria, with more rigour with respect to the contents and quality of evidence. It also sought to increase the Module's alignment with the recommendations of the TCFD. The 2019 Resilience Module was opened to participation by Infrastructure Funds.
- 2020: The 2020 Resilience Module makes improvements in reporting indicators based on two-years of experience, with continued emphasis on increasing alignment with the recommendations of the TCFD. The 2020 Resilience Module also attempts to provide more practical and nuanced answer choices related to scenario analysis, as well as the identification, assessment, and management of specific risks. This is the last year that a distinct Resilience Module is planned to be offered.

In 2021, select climate risk and resilience indicators are expected to be incorporated, scored, and reported as part of the core Real Estate and Infrastructure Assessments.

Structure

The 2020 Resilience Module has four sections:

1. Leadership & Governance
2. Risk Assessment
3. Business Strategy & Financial Planning
4. Performance Metrics & Targets

The Resilience Module is available for the Real Estate, Developer, Infrastructure Asset and Infrastructure Fund Assessment.

The Resilience Module contains indicator structures familiar to users of the GRESB Real Estate or Infrastructure Assessments. Each item consists of a "Yes or No" question. Either choice provides the option of providing additional text comments. Selecting "Yes" provides a set of sub-options to refine the response and the option to provide supporting evidence in the form of an uploaded document or hyperlink.

Data Access

Participants in the Resilience Module can control access to Module results via the GRESB Portal by checking a box to confirm whether they wish to share their Module results with their investors. If a participant elects to share its Module results, the results will appear as a separate section in the participant's GRESB Benchmark Report. If a participant chooses not to share its results, Resilience Module results will not appear in the Benchmark Report. This selection can be changed upon request [here](#). Aggregated information from all Resilience Module participants will be used as the basis for a market report and related research.

GRESB Resilience Indicators

RS1 Has the organization assigned responsibility for the climate risk and resilience of the entity to an employee and/or a team?

Yes

The entity has assigned responsibility to (select all that apply):

An employee with primary responsibility for the management of climate risk and resilience is:

The same individual as the senior decision-maker responsible for sustainability (identified in the Management Aspect of the main GRESB Assessment).

Scope of responsibility for this individual includes:

Climate-related transition risks

Physical risks

Social risks

A different individual(s) from the senior decision-maker responsible for sustainability.

Provide the details for the most senior of these employees

Name: _____

Job title: _____

E-mail: _____

Scope of responsibility for this individual includes:

Climate-related transition risks

Physical risks

Social risks

A team, group, or committee with responsibility for the management of climate risk and resilience

List the functional groups or departments represented on the team, group, or committee

Scope of responsibility for this team, group, or committee includes:

Climate-related transition risks

Physical risks

Social risks

No

Provide additional context for the answer provided (maximum 250 words)

1 point

Intent

Assess entity's leadership and governance for transition, physical, and social risks and opportunities. Qualified, empowered senior leadership is a necessary prerequisite for effective and coordinated action to

mitigate risk and create value. This indicator is broadly aligned with the TCFD's Governance recommendation.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question; and
- Provision of relevant sub-option responses.

Evidence

Evidence should document the individual's resilience-related qualifications (e.g., relevant work experience, degrees, certifications, publications, etc.).

RS2 Does the organization have a systematic process for communication and review of resilience-related information by the most senior governance body with responsibility for the entity?

Yes

Climate-related transition risks

Does the process include periodically informing the highest-level decision maker or decision-making body with responsibility for the entity?

Yes

No

The process includes (select all that apply):

Written communications

Presentations or briefings

Briefing documents for review by the Board of Directors

Other: _____

The materials from the communication and review process are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Physical risks

Does the process include periodically informing the highest-level decision maker or decision-making body with responsibility for the entity?

Yes

No

The process includes (select all that apply)

Written communications

Presentations or briefings

Briefing documents for review by the Board of Directors

Other: _____

The materials from the communication and review process are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Other: _____

Social risks

Does the process include periodically informing the highest-level decision maker or decision-making body with responsibility for the entity?

Yes

No

The process includes (select all that apply)

Written communications

Presentations or briefings

Briefing documents for review by the Board of Directors

Other: _____

The materials from the communication and review process are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Can the entity provide evidence as an UPLOAD or URL?

Yes

UPLOAD or URL _____

Indicate where in the evidence the relevant information can be found _____

No

No

Provide additional context for the answer provided (maximum 250 words)

2 points

Intent

Assess the internal communication of resilience-related risks and opportunities to senior decision makers. This indicator is broadly aligned with the TCFD's Governance recommendation.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question; and
- Provision of relevant sub-option responses for each of the three major sub-options (transition, physical, and social risks).

Evidence

Information will be evaluated for evidence of operational processes related to transition, physical, and social risks. Information will be used to support claims related to regularity of communication, communication mechanisms, and disclosure practices.

RS3

Does the organization have a systematic process to incorporate climate risk and resilience into planning, budgeting, evaluation, and/or similar activities?

Yes

Transition risk

Risks and opportunities are explicitly included in entity-level planning

Budgeting

Performance review

Work plans

Other: _____

Physical risk

Risks and opportunities are explicitly included in entity-level planning

Budgeting

Performance review

Work plans

Other: _____

Social risk

Risks and opportunities are explicitly included in entity-level planning

Budgeting

Performance review

Work plans

Other: _____

Can the entity provide evidence as an UPLOAD or URL?

Yes

UPLOAD or URL _____

Indicate where in the evidence the relevant information can be found _____

No

No

1.5 points

Intent

Assess the integration of climate-risk and resilience considerations into entity-level planning. This indicator is broadly aligned with the TCFD's Risk Management recommendation.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question; and
- Provision of relevant sub-option responses for each of the three major sub-options (transition, physical, and social risk).

Evidence

Information will be evaluated for evidence of operational processes related to the integration of transition, physical, and social risk and resilience into entity-level work plans, budgeting, performance reviews, or other planning functions.

RS4 Does the organization have a systematic process to assess the entity's exposure to climate-related transition risk?

Yes

The process is documented

The nature of the process is disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

The process considers forward-looking scenarios

Select all that apply:

Representative Concentration Pathway 2.6

Representative Concentration Pathway 4.5

Representative Concentration Pathway 6.0

Representative Concentration Pathway 8.5

IEA Current Policies Scenario

IEA Stated Policies Scenario

IEA Sustainable Development Scenario

IEA 2DS

IEA B2DS

PRI Inevitable Policy Response "Forecast Policy Scenario"

Rockström et al. (2017) 1.5°C Scenario

Custom scenarios developed for the entity

Other: _____

The process identifies material climate-related transition risk factors

Name the material risk factor(s) identified:

Transition risk factor 1: _____

Transition risk factor 2: _____

Transition risk factor 3: _____

Material risk(s) identified for the entity are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Can the entity provide evidence as an UPLOAD or URL?

Yes

UPLOAD or URL_____

Indicate where in the evidence the relevant information can be found_____

No

No

Provide additional context for the answer provided (maximum 250 words)

2 points

Intent

Assess the entity's approach to assessing, analyzing, and communicating transition risk. This indicator is broadly aligned with the TCFD's Strategy and Risk Management recommendations.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question;
- A response to each of the major sub-options (process documentation, scenario usage, and identification of material risk factors); and
- Provision of relevant sub-option responses for each of the major sub-options.

The material risk factors identified in this indicator will be referenced again in RS7 and RS8. In order to receive full credit for those indicators, at least one material risk factor must be identified here.

An example of a transition risk factor would be the potential for national regulation that enforces decarbonization pathways aligned with Paris Agreement goals, or the drop in residency demand due to higher consumer energy costs.

Evidence

Evidence will be evaluated to understand the scope of transition risk assessment at the entity level.

Evidence should reflect that the assessment of transition risk follows best practice with regard to the appropriate usage and disclosure of scenarios (e.g., analysis should make use of several scenarios, including at least one that aligns with the Paris Agreement target of at most 2C temperature rise; the consideration and communication of key scenario parameters such as timeframe, assumptions of carbon pricing, and technological development).

References

The Representative Concentration Pathways (RCPs) are profiles of atmospheric concentrations of GHGs that have been associated with particular global temperature outcomes. As a result, they have been used by the scientific community (not limited to the IPCC) to frame a wide variety of climate policy, energy transition, and decarbonization scenarios, as well as some climate and weather event projections.

<https://link.springer.com/article/10.1007/s10584-011-0148-z>

The International Energy Agency's (IEA's) World Energy Model produces three primary scenarios for its annual World Energy Outlook: the Stated Policy Scenario, the Sustainable Development Scenario, and the Current Policy Scenario. These scenarios are not forecasts of what will happen, but are rather simulated futures of what might happen under specified conditions.

<https://www.iea.org/reports/world-energy-model>

The IEA also created the 2 Degrees Scenario (2DS) and Beyond 2 Degrees Scenario (B2DS) for its Energy Technologies Perspectives reports. These scenarios were meant to portray what might be possible given particular technological developments.

<https://www.iea.org/topics/energy-technology-perspectives>

The Rockström et al. (2017) 1.5°C Scenario refers to the 1.5°C scenario from A Roadmap for Rapid Decarbonization.

<https://science.sciencemag.org/content/355/6331/1269>

The Forecast Policy Scenario lays out “the implemented policies and their impact from 2025 to 2050 based on IPR [Inevitable Policy Response] policy announcements 2023-2025” as constructed by Vivid Economics.

<https://www.unpri.org/inevitable-policy-response/the-inevitable-policy-response-policy-forecasts/4849.article>

The Carbon Risk Real Estate Monitor provides a tool for benchmarking the carbon and energy intensities of commercial real estate portfolios in Europe against calibrated decarbonization pathways using a science-backed target setting methodology.

<https://www.crrem.eu/>

Aligned with Green Star, Asset Resilience Innovation Challenge

<https://new.gbca.org.au/innovation-challenges/>

Does the organization have a systematic process to assess the entity's exposure to physical climate risks? Yes The process is documented

The nature of the process is disclosed to (if disclosed):

 The public Investors upon request Other stakeholders upon request Other: _____ The process considers forward-looking scenarios

Select all that apply:

 Representative Concentration Pathway 2.6 Representative Concentration Pathway 4.5 Representative Concentration Pathway 6.0 Representative Concentration Pathway 8.5 IEA Current Policies Scenario IEA Stated Policies Scenario IEA Sustainable Development Scenario IEA 2DS IEA B2DS PRI Inevitable Policy Response "Forecast Policy Scenario" Rockström et al. (2017) 1.5°C Scenario Custom scenarios developed for the entity Other: _____ The process identifies material climate-related physical risk factors

Name the material risk factor(s) identified:

 Physical risk factor 1: _____ Physical risk factor 2: _____ Physical risk factor 3: _____

Material risk(s) identified for the entity are disclosed to (if disclosed):

 The public

- Investors upon request
- Other stakeholders upon request
- Other: _____

Can the entity provide evidence as an UPLOAD or URL?

Yes

UPLOAD or URL _____

Indicate where in the evidence the relevant information can be found _____

No

No

Provide additional context for the answer provided (maximum 250 words)

2 points

Intent

Assess the entity's approach to assessing, analyzing, and communicating physical climate- risk. This indicator is broadly aligned with the TCFD's Strategy and Risk Management recommendations.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question;
- A response to each of the major sub-options (process documentation, scenario usage, and identification of material risk factors); and
- Provision of relevant sub-option responses for each of the major sub-options.

The material risk factors identified in this indicator will be referenced again in RS7 and RS8. In order to receive full credit for those indicators, at least one material risk factor must be identified here.

An example of a physical climate risk factor would be the exposure of a portion of the entity's assets to coastal flooding, or exposure to wildfire.

Evidence

Evidence will be evaluated to understand the scope of physical risk assessment at the entity level.

Assessments of physical risk should not only make use of statistical models built from historical data, but also forward-looking physical risk exposure projections. Attention should be paid to the construction of physical risk scores or indices, the uncertainty inherent in the climate and hazard event models used, and how this uncertainty affects the risk profile of the entity.

References

The Representative Concentration Pathways (RCPs) are profiles of atmospheric concentrations of GHGs that have been associated with particular global temperature outcomes. As a result, they have been used by the scientific community (not limited to the IPCC) to frame a wide variety of climate policy, energy transition, and decarbonization scenarios, as well as some climate and weather event projections.

<https://link.springer.com/article/10.1007/s10584-011-0148-z>

The International Energy Agency's (IEA's) World Energy Model produces three primary scenarios for its annual World Energy Outlook: the Stated Policy Scenario, the Sustainable Development Scenario, and the Current Policy Scenario. These scenarios are not forecasts of what will happen, but are rather simulated futures of what might happen under specified conditions.

<https://www.iea.org/reports/world-energy-model>

The IEA also created the 2 Degrees Scenario (2DS) and Beyond 2 Degrees Scenario (B2DS) for its Energy Technologies Perspectives reports. These scenarios were meant to portray what might be possible given particular technological developments.

<https://www.iea.org/topics/energy-technology-perspectives>

The Rockström et al. (2017) 1.5°C Scenario refers to the 1.5°C scenario from A Roadmap for Rapid Decarbonization.

<https://science.sciencemag.org/content/355/6331/1269>

The Forecast Policy Scenario lays out “the implemented policies and their impact from 2025 to 2050 based on IPR [Inevitable Policy Response] policy announcements 2023-2025” as constructed by Vivid Economics.

<https://www.unpri.org/inevitable-policy-response/the-inevitable-policy-response-policy-forecasts/4849.article>

Green Star, Asset Resilience Innovation Challenge

<https://new.gbca.org.au/innovation-challenges/>

United Nations Office of Disaster Risk Reduction PreventionWeb “Components of Risk”

<https://www.preventionweb.net/risk/vulnerability>

International Disaster Database

<http://www.emdat.be/database>

Global Adaptation & Resilience Investment Working Group <https://garigroup.com/> “Bridging the Adaptation Gap: Approaches to Measurement of Physical Climate Risk and Examples of Investment in Climate Adaptation and Resilience”

<http://427mt.com/wp-content/uploads/2016/11/GARI-2016-Bridging-the-Adaptation-Gap.pdf>

RS6 Does the organization have a systematic process to assess the entity's exposure to social risks?

Yes

The process is documented

The nature of the process is disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

The process considers forward-looking scenarios

Select all that apply:

Representative Concentration Pathway 2.6

Representative Concentration Pathway 4.5

Representative Concentration Pathway 6.0

Representative Concentration Pathway 8.5

IEA Current Policies Scenario

IEA Stated Policies Scenario

IEA Sustainable Development Scenario

IEA 2DS

IEA B2DS

PRI Inevitable Policy Response "Forecast Policy Scenario"

Rockström et al. (2017) 1.5°C Scenario

Custom scenarios developed for the entity

Other: _____

The process identifies material climate-related social risk factors

Name the material risk factor(s) identified:

Social risk factor 1: _____

Social risk factor 2: _____

Social risk factor 3: _____

Material risk(s) identified for the entity are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Can the entity provide evidence as an UPLOAD or URL?

Yes

UPLOAD or URL_____

Indicate where in the evidence the relevant information can be found_____

No

No

Provide additional context for the answer provided (maximum 250 words)

2 points

Intent

Assess the entity's approach to assessing, analyzing, and communicating social risk. This indicator is broadly aligned with the TCFD's Strategy and Risk Management recommendations.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question;
- A response to each of the major sub-options (process documentation, scenario usage, and identification of material risk factors); and
- Provision of relevant sub-option responses for each of the major sub-options.

The material risk factors identified in this indicator will be referenced again in RS7 and RS8. In order to receive full credit for those indicators, at least one material risk factor must be identified here.

An example of a social risk factor would be protests in response to price increases of commodities with priced-in carbon emissions.

Evidence

Evidence will be evaluated to understand the scope of social risk assessment at the entity level.

Evidence should draw upon reputable research connecting social risk with either asset-level performance or overall entity exposure.

References

The Representative Concentration Pathways (RCPs) are profiles of atmospheric concentrations of GHGs that have been associated with particular global temperature outcomes. As a result, they have been used by the scientific community (not limited to the IPCC) to frame a wide variety of climate policy, energy transition, and decarbonization scenarios, as well as some climate and weather event projections.

<https://link.springer.com/article/10.1007/s10584-011-0148-z>

The International Energy Agency's (IEA's) World Energy Model produces three primary scenarios for its annual World Energy Outlook: the Stated Policy Scenario, the Sustainable Development Scenario, and the Current Policy Scenario. These scenarios are not forecasts of what will happen, but are rather simulated futures of what might happen under specified conditions.

<https://www.iea.org/reports/world-energy-model>

The IEA also created the 2 Degrees Scenario (2DS) and Beyond 2 Degrees Scenario (B2DS) for its Energy Technologies Perspectives reports. These scenarios were meant to portray what might be possible given particular technological developments.

<https://www.iea.org/topics/energy-technology-perspectives>

The Rockström et al. (2017) 1.5°C Scenario refers to the 1.5°C scenario from A Roadmap for Rapid Decarbonization.

<https://science.sciencemag.org/content/355/6331/1269>

The Forecast Policy Scenario lays out “the implemented policies and their impact from 2025 to 2050 based on IPR [Inevitable Policy Response] policy announcements 2023-2025” as constructed by Vivid Economics.

<https://www.unpri.org/inevitable-policy-response/the-inevitable-policy-response-policy-forecasts/4849.article>

Green Star, Asset Resilience Innovation Challenge

<https://new.gbca.org.au/innovation-challenges/>

<http://www.100resilientcities.org/>

United Nations Office of Disaster Risk Reduction PreventionWeb Components of Risk

<https://www.preventionweb.net/risk/vulnerability>

Intergovernmental Panel on Climate Change (2018) Special Report: Global Warming of 1.5°C - Summary for Policymakers

<https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/>

International Disaster Database

<http://www.emdat.be/database>

RS7 Has the organization assessed the potential financial impacts of climate-related risks on the entity?

Yes

Please describe the potential impacts that each of the risk factors identified in RS4, RS5, and RS6 have on the entity (select all that apply):

Transition risks

Transition risk 1

Please describe the potential financial impact of the transition risk factor 1 (identified in RS4) on the entity:

On what timeframe is this risk expected to impact the entity?

- It is already impacting the entity.
- Within the timeframe of the investment horizon of the entity.
- After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Transition risk 2

Please describe the potential financial impact of the transition risk factor 2 (identified in RS4) on the entity:

On what timeframe is this risk expected to impact the entity?

- It is already impacting the entity.
- Within the timeframe of the investment horizon of the entity.
- After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Transition risk 3

Please describe the potential financial impact of the transition risk factor 3 (identified in RS4) on the entity:

On what timeframe is this risk expected to impact the entity?

- It is already impacting the entity.
- Within the timeframe of the investment horizon of the entity.
- After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Physical risks

Physical risk 1

Please describe the potential financial impact of the physical risk factor 1 (identified in RS5) on the entity:

On what timeframe is this risk expected to impact the entity?

- It is already impacting the entity.

It is already impacting the entity.

Within the timeframe of the investment horizon of the entity.

After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Physical risk 2

Please describe the potential financial impact of the physical risk factor 2 (identified in RS5) on the entity:

On what timeframe is this risk expected to impact the entity?

It is already impacting the entity.

Within the timeframe of the investment horizon of the entity.

After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Physical risk 3

Please describe the potential financial impact of the physical risk factor 3 (identified in RS5) on the entity:

On what timeframe is this risk expected to impact the entity?

It is already impacting the entity.

Within the timeframe of the investment horizon of the entity.

After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Social risks

Social risk 1

Please describe the potential financial impact of the social risk factor 1 (identified in RS6) on the entity:

On what timeframe is this risk expected to impact the entity?

It is already impacting the entity.

Within the timeframe of the investment horizon of the entity.

After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Social risk 2

Please describe the potential financial impact of the social risk factor 2 (identified in RS6) on the entity:

On what timeframe is this risk expected to impact the entity?

It is already impacting the entity.

Within the timeframe of the investment horizon of the entity.

- After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Social risk 3

Please describe the potential financial impact of the social risk factor 3 (identified in RS6) on the entity:

On what timeframe is this risk expected to impact the entity?

- It is already impacting the entity.
- Within the timeframe of the investment horizon of the entity.
- After the timeframe of the investment horizon of the entity but within the lifetime of the real assets included in the entity.

Can the entity provide evidence as an UPLOAD or URL?

- Yes

UPLOAD or URL _____

Indicate where in the evidence the relevant information can be found _____

- No

- No

Provide additional context for the answer provided (maximum 250 words)

2 points

Intent

Assess the entity's stage of assessing the potential financial impacts of climate-related risks on their revenues and expenses. This indicator is broadly aligned with the TCFD's Strategy and Risk Management recommendations.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question;
- A response to each of the major sub-options (transition, physical, and social risk); and
- Provision of relevant sub-option responses for each of the major sub-options.

Please note that this indicator refers to the material risk factors identified in RS4, RS5, and RS6.

An example of potential financial impact would be how much it would cost the entity to retrofit the assets that have greater CO₂e intensities than required to be compliant with a "2C scenario" decarbonization pathway.

Evidence

Evidence will be evaluated to find support for financial impact assessments with regard to the identified transition, physical, and social risks.

The assessments of financial impact should build upon the exposure assessments described in RS4, RS5, and RS6. As such, they should abide by the same principles of technical analysis (e.g., appropriate treatment and transparency in scenarios used, sensitivity, and uncertainty).

RS8 Has the organization implemented resilience-related business strategies associated with the entity during the reporting year?

Yes

Please select and describe asset type-specific strategies used to create value and/or manage the (potential) risk impacts described in RS7 (select all that apply):

New construction projects

Transition risk management and value creation strategies: _____

Physical risk management and value creation strategies: _____

Social risk and management value creation strategies: _____

Standing investments

Transition risk management and value creation strategies: _____

Physical risk management and value creation strategies: _____

Social risk management and value creation strategies: _____

New acquisitions

Transition risk management and value creation strategies: _____

Physical risk management and value creation strategies: _____

Social risk management and value creation strategies: _____

Can the entity provide evidence as an UPLOAD or URL?

Yes

UPLOAD or URL _____

Indicate where in the evidence the relevant information can be found _____

No

No

Provide additional context for the answer provided (maximum 250 words)

2 points

Intent

Assess the entity's approach to managing climate risk and building resilience for new construction projects, standing investments, and/or new acquisitions. This indicator is broadly aligned with the TCFD's Strategy and Risk Management recommendations.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question;
- A response, as appropriate, to at least one of the major sub-options (new construction projects, standing investments, and new acquisitions); and
- Provision of relevant sub-option responses for each of the selected major sub-options.

Please note that this indicator refers to the material risk factors identified in RS4, RS5, and RS6, the potential financial impact of which should have been described in RS7.

Business strategies used by the entity to manage material risk may be referred to as *risk mitigation strategies*. (Please see *mitigation* in the Terminology section for more detail.) An example of risk mitigation strategy, specifically of the transition risk of regulation enforced decarbonization pathways for new construction projects, would be the integration of behind-the-meter renewable energy power systems to minimize or completely eliminate the use of grid-sourced power for all new construction projects with sufficient solar resources. An example for standing investments would be the phased implementation of energy efficiency programs for those assets whose carbon intensities have been flagged as being above the stated intensities of a given decarbonization pathway in the next 5 years.

Business strategies used by the entity to create value may be referred to as *opportunity strategies*. An example of such a strategy in the context of climate-related transition for new construction would be the construction of net-zero or even net-negative emissions buildings such that potential carbon or energy credit regulations and/or markets might be taken advantage of. Such a tactic might also increase demand for such a property.

Risk mitigation strategies and opportunity strategies are not mutually exclusive and often overlap significantly. The mitigation of risk may well be an opportunity for systemic risks.

Evidence

Evidence will be evaluated upon their support for the described strategies.

RS9 Did the organization have specific climate risk and/or resilience-related targets or goals associated with the entity during the reporting year?

Yes

Please describe climate-related risk management and/or resilience-related targets:

Transition risk management and value creation

Targets or goals: _____

Target year: _____

Transition risk management and value creation targets and goals are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Physical risk management and value creation

Targets or goals: _____

Target year: _____

Physical risk management and value creation targets and goals are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other

Social risk management and value creation

Targets or goals: _____

Target year: _____

Social risk management and value creation targets and goals are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Can the entity provide evidence as an UPLOAD or URL?

Yes

UPLOAD or URL _____

Indicate where in the evidence the relevant information can be found _____

No

No

Provide additional context for the answer provided (maximum 250 words)

1.5 points

Intent

Assess the entity's approach to establishing resilience-related targets and goals. This indicator is broadly aligned with the TCFD's Metrics and Targets recommendation.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question;
- Provision of relevant sub-option responses for each of the three major sub-options (transition, physical, and social risk).

For transition risk, targets and goals may refer to the reduction in vulnerability to policies and economic factors associated with decarbonization. An example would be the goal to reduce the fraction of properties with E or F energy labels (the energy efficiency scoring system used in the Netherlands) by 50% by 2025. For physical and social risk, targets and goals may refer to the reduction in vulnerability to physical climate risk factors and social risk factors, respectively. They may also include value creation goals, such as increasing tenancy or rental income from high-performance properties.

For physical risk, targets and goals may refer to the increase in adaptive capacity across individual assets in a portfolio, such that the overall level of vulnerability to climate risk drops below a certain level. Minimum allowable vulnerability levels may be specified per physical climate risk factor.

For social risk, targets and goals may refer to the monitoring of supply chains and the risk of losing the social license to operate. An example would be verification that 100% of assets in a portfolio adhere to a minimum standard of publicly disclosed social and tenant health and wellness practice with regard to heat stress.

Evidence

Evidence supporting the description of the entity's climate risk or resilience-related goals and/or targets will be accepted.

References

Setting a GHG Emissions Target Backed by Science-Driven Data

<https://gresb.com/setting-ghg-emissions-target-backed-science-driven-data/>

The Carbon Risk Real Estate Monitor provides a tool for benchmarking the carbon and energy intensities of commercial real estate portfolios in Europe against calibrated decarbonization pathways using a science-based target setting methodology.

<https://www.crrem.eu/>

RS10 Did the organization track specific climate risk and/or resilience-related performance metrics associated with the entity during the reporting year?

Yes

Please describe the metrics used to track outcomes:

Transition risk management and resilience performance metrics

List the metrics related to the most material issues facing the entity:

Tracking of performance metrics:

Continuous

Monthly

Quarterly

Annual

Other

These performance metrics are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Physical risk management and resilience performance metrics

List the metrics related to the most material issues facing the entity:

Tracking of performance metrics:

Continuous

Monthly

Quarterly

Annual

Other

These performance metrics are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

- Social risk management and resilience performance metrics

List the metrics related to the most material issues facing the entity:

Tracking of performance metrics:

Continuous

Monthly

Quarterly

Annual

Other

These performance metrics are disclosed to (if disclosed):

The public

Investors upon request

Other stakeholders upon request

Other: _____

Can the entity provide evidence as an UPLOAD or URL?

Yes

UPLOAD or URL _____

Indicate where in the evidence the relevant information can be found _____

No

No

Provide additional context for the answer provided (maximum 250 words)

1.5 points

Intent

Assess the entity's approach to tracking progress toward resilience-related targets and goals. This indicator is broadly aligned with the TCFD's Metrics and Targets recommendation.

Requirements

Full credit for this indicator requires:

- A "Yes" response to the main indicator question;
- Provision of relevant sub-option responses for each of the three major sub-options (transition, physical, and social risk).

[TCFD guidance](#) provides a partial reference for the creation of metrics. (Note: This guidance does not address physical risk or social resilience issues.) Full credit will be given for responses that describe at least one metric in each of the three categories.

Evidence

Relevant evidence (e.g., illustration of data collection, analysis, or communication to decision makers) supporting the metrics tracked by the entity will be accepted.

Supporting Indicators

The following indicators from the core assessments also provide valuable information about resilience. Responses to these indicators complement information provided for the Resilience Module indicators.

GRESB Real Estate Assessment indicators including:

LE4/5	Leadership and responsibility
PO1	ESG policy, including resilience
EN1 & GH1	Performance indicators for carbon, energy, renewables, etc.
RM4	Risk assessments for new acquisitions
RA1	Risk assessments for standing investments
BC1	Building certifications

GRESB Infrastructure Fund Assessment indicators including:

LE3/4	Leadership and responsibility
RM1.1	ESG due diligence for new acquisitions
RM1.2	ESG risks and opportunities in investment monitoring processes/asset management

GRESB Infrastructure Asset Assessment indicators including:

LE4/5	Leadership and responsibility
PO1	Environmental policy
RM2.1	Environmental risk assessments
RM2.2	Social risk assessments
EN1 & GH1	Performance indicators for carbon, energy, renewables, etc.
CA1	Asset-level certification
CA2	Awards for ESG-related actions

Alignment with TCFD

The Resilience Module is not designed to, by itself, constitute a complete climate-related risk disclosure in accordance with the TCFD. However, it provides a strong basis for one in the context of real estate and infrastructure fund management. As illustrated in the table below, there is significant overlap between the TCFD recommended disclosures and GRESB Resilience Module indicators. As described in the Supporting Indicators appendix above, there are a number of indicators within the core Real Estate and Infrastructure Assessments that already cover specific recommended disclosures from the TCFD. For instance, indicators EN1 & GH 1 from the Real Estate and Infrastructure Assessments align with the TCFD's Metrics and Targets recommended disclosure (b): Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.

TCFD Recommendation	TCFD Recommended Disclosure	GRESB 2020 Resilience Module Indicator
Governance: Disclose the organization's governance around climate-related risks and opportunities.	(a) Describe the board's oversight of climate-related risks and opportunities.	RS2
	(b) Describe management's role in assessing and managing climate-related risks and opportunities.	RS1, RS2
Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	(a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	RS4, RS5, RS6
	(b) Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	RS7, RS8
	(c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	RS4, RS5, RS6, RS8
Risk Management: Disclose how the organization identifies, assesses, and manages climate-related risks.	(a) Describe the organization's processes for identifying and assessing climate-related risks.	RS4, RS5, RS6, RS7
	(b) Describe the organization's processes for managing climate-related risks.	RS8
	(c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	RS3
Metrics and Targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	(a) Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	RS10
	(b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	
	(c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	RS9

Definitions

Climate Change Adaptation: The process of changing business models and/or operations in order to prepare for and function within a different climatic environment, including different patterns of climate-related events. Examples of climate change adaptation measures may include, but are not limited to, building flood defenses, xeriscaping and using tree species resistant to storms and fires, and adapting building codes to extreme weather events.

Adaptive Capacity: The capability of an organization to proactively and positively manage change. In the context of resilience, adaptive capacity is a function of an organization's leadership, its ability to assess and understand threats and opportunities, its ability to plan and implement adaptive measures, and its ability to continually improve. Adaptive capacity can be expanded in the context of an organization's physical, social and economic systems.

Community: Community means persons or groups of people economically, socially or environmentally impacted (positively or negatively) by the organization's operations. Communities are defined by association and connection, not geography. Resilience can be strengthened by supporting the bonds within and between communities.

Entity: The investable portfolio for which the Resilience Module is being completed.

Hazard: Potentially dangerous or harmful occurrence that may cause loss of life, injury, destruction of property, loss of livelihood, disruption of business, damage to the environment, etc.

Mitigation: Actions that can be taken to lessen the likelihood or harmfulness of a potential hazard. Note that the word is used differently in the fields of climate change and risk management. In the climate change arena, mitigation generally refers to the reduction of greenhouse gas emissions and similar actions to reduce the causes of climate change, while actions taken to address the impacts of climate change (such as sea level rise or storm surge) are called adaptation. In the fields of risk management, mitigation refers to actions to reduce the likelihood or severity of risks on the ground, including hazards that are driven by climate change as well as those resulting from other causes (e.g. earthquakes). In the GRESB Resilience Module, the word is used in the latter context, referring to actions to lessen hazards from an operational standpoint.

New Acquisition: As used in the GRESB Real Estate Assessment.

New Construction: Includes all activities to obtain or change building or land-use permissions and financing. Includes construction work for the project with the intention of enhancing the property or asset's value. Development of new buildings and additions to existing buildings that affect usable space can be treated as new construction. New Construction projects refer to buildings or infrastructure assets that were under construction at any time during the reporting period.

Preparedness: The level of readiness of an organization or community to disruptions and disasters. Preparedness can be increased via strategic planning, emergency planning, training, drills, and communication protocols.

Prevention: The stopping or avoidance of hazards. For example preventing flood damage by not building in a floodplain or by locating critical system components above potential flood levels.

Recovery: Efforts to restore (and ideally improve) full functionality of a business or community following a disaster.

Response: The ability of an organization to react to a disruption or disaster and provide in emergency efforts. Response activities typically include accounting and ensuring the safety of people, supporting those in need of rescue or assistance, protecting property and processes, communicating with emergency responders, etc.

Resilience: The ability of a system (e.g., organization, entity, fund) to plan for, respond to, and rebound from short-term shocks and long-term stressors. This encompasses the Module's original working definition, "The ability to survive and thrive when subjected to shocks and stressors..."

Risk: The combination of the likelihood that a hazard will occur, the potential severity of its consequences, and the level of vulnerability of people, assets or systems that are exposed. For example, the frequency and

severity of heat waves in many places is increasing, leading to increased risk. This risk is higher for the elderly because they are more vulnerable to the impacts of heat and more likely to be socially isolated.

Standing Investment: As used in the GRESB Real Estate Assessment.

Stressor: Underlying stress factors within communities, organizations, or places that reduce the capacity of the system to plan for, adapt to, cope with or recover from disasters. They can also be thought of as slow-moving disasters on their own. Examples include poverty, unemployment, racial inequality, public health concerns, environmental pollution, crumbling or poorly planned infrastructure, water stress, changing climate, etc. Addressing stressors is a fundamental component of resilience. See Shock.

Shock: Sudden, sharp, disruptive events that threaten a community, organization, or place. Examples include hurricanes, fires, floods, earthquakes, violence, terrorism, economic collapse (see Hazard). There is some fluidity between shocks and stresses. For example, rising temperatures associated with climate change can be seen as a stressor (the long term trend undermines the ability of communities to cope with a variety of challenges) and a shock (sudden heat waves can cause direct health problems and deaths).

Stakeholder: A person or group that can be directly or indirectly affected by the operations of the organization, and that may require or be able to provide assistance during disasters.

Strategy: A set of coordinated actions and planned courses of potential actions taken to achieve an objective.

Vulnerable population: Disadvantaged sub-sections of a community, such as the economically disadvantaged, racial and ethnic minorities, the uninsured, low-income children, the elderly, the homeless, people with disabilities or chronic illness, etc.

Resources

- [100 Resilient Cities](#)
- [B-Ready Building Resilience Assessment Tool](#)
- [Building Resilience-LA](#)
- [The Carbon Risk Real Estate Monitor](#)
- [City Resilience Index](#)
- [Global Adaptation & Resilience Investment Working Group](#)
 - [“Bridging the Adaptation Gap: Approaches to Measurement of Physical Climate Risk and Examples of Investment in Climate Adaptation and Resilience”](#)
- [Enterprise Green Communities Ready to Respond Toolkit](#)
- [Green Star, Asset Resilience Innovation Challenge innovation-challenges/](#)
- [Insurance Council of Australia Building Resilience Rating Tool](#)
- International Energy Agency
 - [World Energy Model](#)
 - [Energy Technology Perspectives](#)
- [International Disaster Database](#)
- LEED Pilot Credits
 - [Resilient Design](#)
 - [Social Equity](#)
- [National Institute of Building Sciences “Natural Hazard Mitigation Saves: 2017 Interim Report”](#)
- [PEER](#)
- RAND CORPORATION
 - [Climate Change, Communities and Resilience](#)
 - [Resilience Dividend Valuation Model](#)
- [Resilience Action List and Credit Catalogue \(RELi\)](#)
- [Resilient Design Institute](#)
- [Rockström, J., Gaffney, O., Rogelj, J., et al. \(2017\) A Roadmap for Rapid Decarbonization. Science.](#)
- [Task Force for Climate-Related Financial Disclosure](#)
- [US Chamber of Commerce, Building Resilience 101 Workbook](#)
- [U.S Federal Emergency Management Administration. Threat and Hazard Identification and Risk Assessment](#)
- [United Nations Office of Disaster Risk Reduction](#)
 - [PreventionWeb](#)
 - [Private Sector Alliance for Disaster Resilient Societies \(ARISE\). Disaster Resilience Scorecard for Industrial and Commercial Buildings](#)
- [UN PRI Inevitable Policy Response](#)
- [van Vuuren, D.P., Edmonds, J., Kainuma, M. et al. The representative concentration pathways: an overview. Climatic Change 109, 5 \(2011\).](#)