TCFD reporting for the power utilities sector in Russia

Carbon Trust and EthnoExpert

25/01/2021

Welcome and opening remarks

Natalia Loginova, Director of Issuers Department – *Opening remarks*

Introduction and speakers

Tom Cumberlege, Associate Director – *Speaker and panel*

Gregorio Giorgi, Senior Associate – *Speaker and panel*

Francesca Messeri, Senior Analyst – *Panel and Q&A moderation*

Maxim Titov, Director – *Speaker and panel*

Vasily Andreev, Head of Sustainability – *Speaker and panel*

Agenda

1. Introduction to TCFD and context
2. Climate change risks and opportunities in the power utilities sector
3. TCFD practical how-tos
4. Case study from Inter RAO
5. Panel discussion and Q&A

‘Increasing transparency makes markets more efficient and economies more stable and resilient’

Michael R. Bloomberg

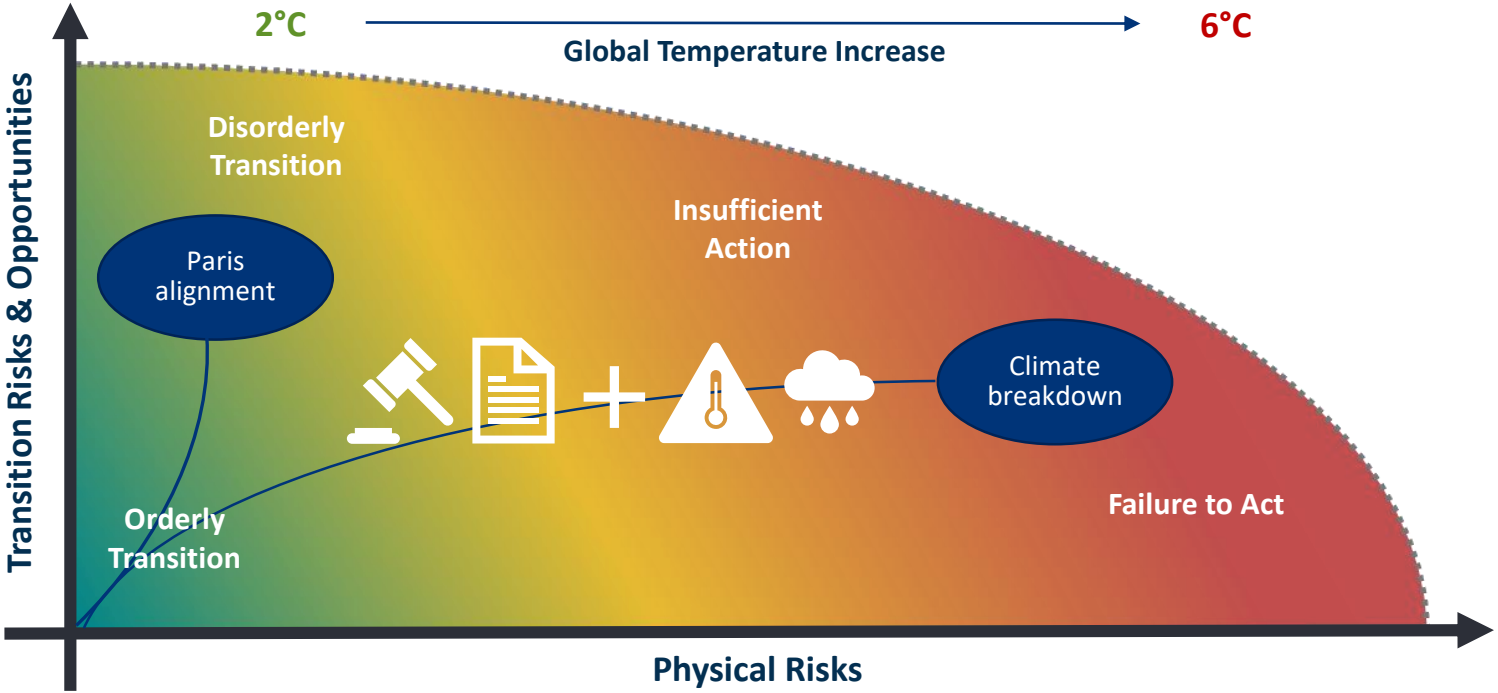
To be part of the solution and not the problem…

…you need to be able to convincingly answer the question:

‘How will climate-related impacts affect your current and future potential for growth?’

How will climate change affect your business?

TCFD encourages organisations to explore the likelihood and magnitude of financial impacts from potential climate-related risks & opportunities now and in the future



How will climate change affect your business?

TCFD is a disclosure framework of 11 questions across 4 categories

Governance

a) **Board oversight** of climate-related risks and opportunities
b) **Management role** in risk assessment and management

Strategy

a) **Risks and opportunities** identified
b) **Impact** on business, strategy, and planning
c) **Resilience of strategy** to different scenarios

Risk Management

a) Process for **identifying and assessing** climate-related risks
b) Process for **managing** climate-related risks
c) **Integration** with overall risk management

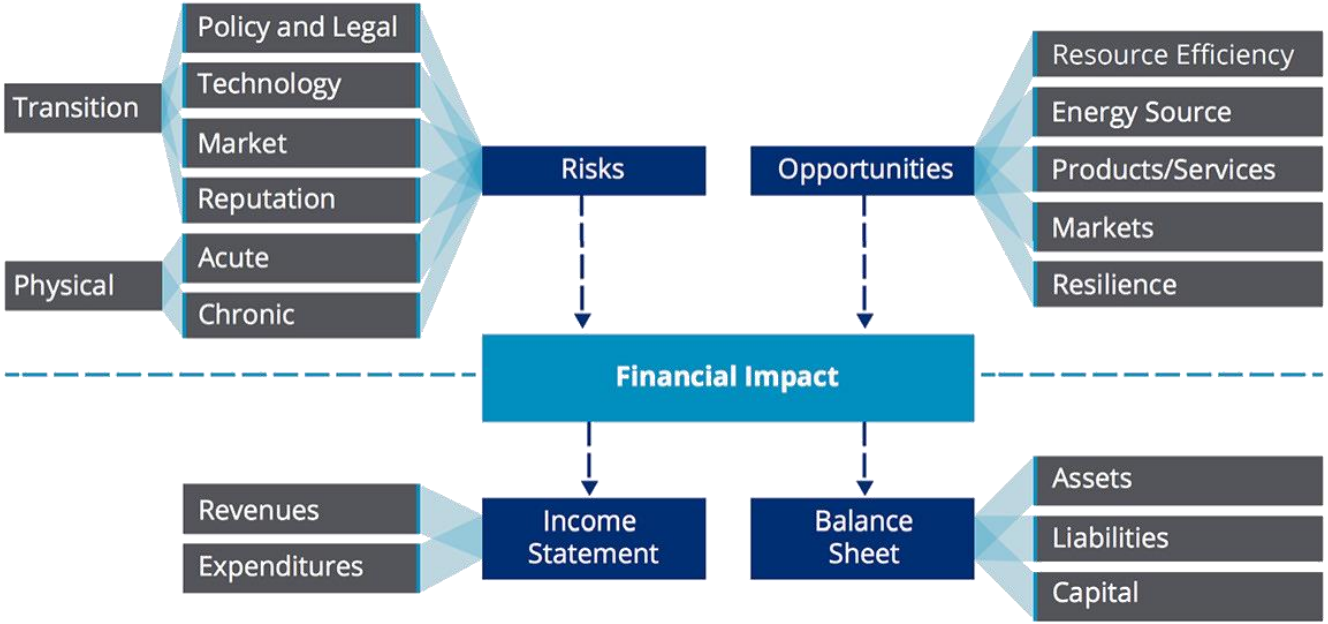
Metrics and Targets

a) **Metrics** for climate-related risk assessment
b) **Scope 1, 2, and** (if needed) **3** emissions and related risks
c) **Targets** for risks and opportunities and related performance

Source: TCFD 2017 Report

Types of climate-related risks and opportunities

TCFD identifies 11 categories of risks and opportunities



Source: TCFD 2017 Report

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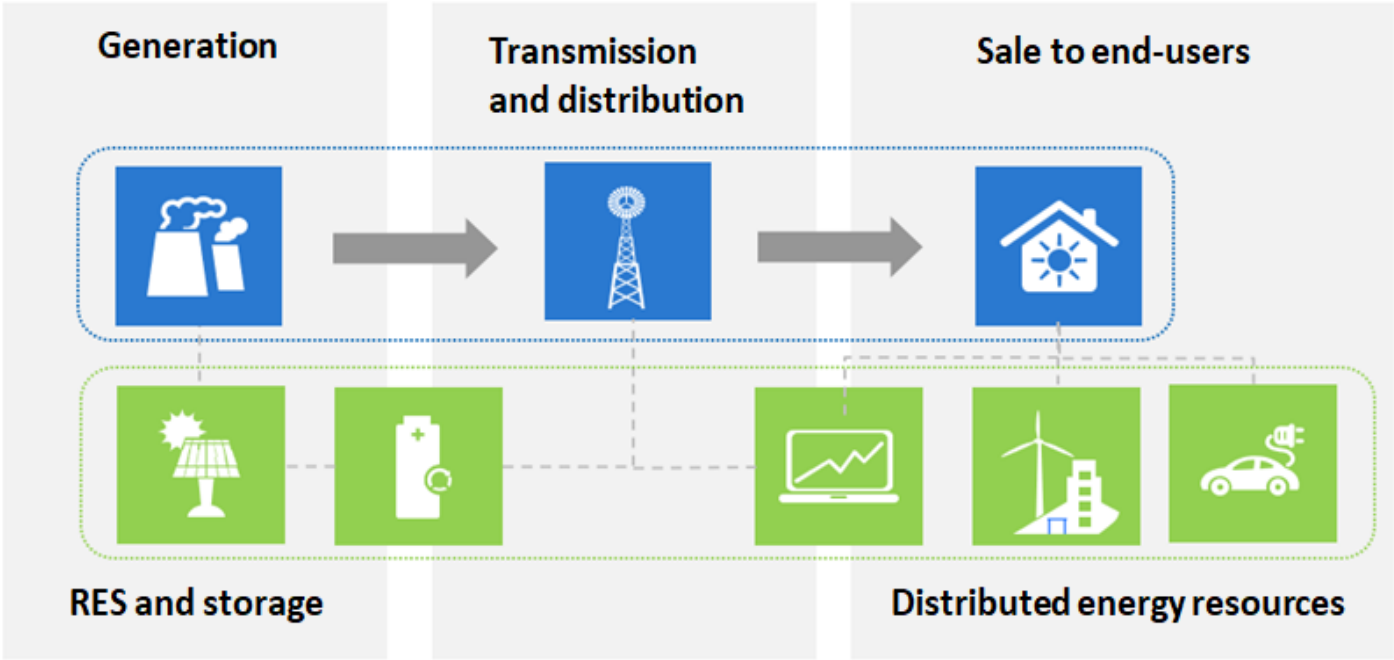
An evolving value chain



Source: Titov/Teplova Introduction to sustainable energy, ENERPO lectures 2020

Transition risks for the power utilities sector

Generation	**Policy and Legal**: ▪ Increased cost of compliance (reporting; carbon border adjustment mechanisms) ▪ Stranded assets caused by national or state carbon mitigation policy ▪ Removal of renewable energy supporting programs	**Market:** ▪ Changes in supply and demand for generation (Energy efficiency options) ▪ Shift from fossil-based generation to renewables reduces revenue to fossil-based generators	**Technology:** ▪ Shift from large-scale power generation to distributed power technologies ▪ New sources of energy - hydrogen ▪ Falling costs of wind, battery technology ▪ Delayed commercialization of CCUS
Transmission and distribution	**Technology:** ▪ Grid management challenges related to integration of RES ▪ Electrification rate might overwhelm the distribution network		
Sale to end-users	**Reputation**: ▪ Tainted corporate reputation due to increased CO2 emissions		

Source: EthnoExpert Research based on TCFD supporter's list (24.12.2020)

Physical risks for the power utilities sector

Generation	**Chronic**: ▪ Precipitation Hydro: Changing annual or seasonal patterns can affect river flows and water levels behind dams, either reducing or increasing power output; Nuclear & Thermal: Insufficient cooling water (drought, temperature, competing uses) particularly for inland plants ▪ Higher air temperature, wind speeds, and humidity (Nuclear & Thermal: Lowered generation efficiency or Decreased IGCC system efficiency (converting coal to gas)) ▪ Higher temperature results in less demand for heating	**Acute:** ▪ Extreme events such as melting, floods (Hydro: Floods and glacial lake outburst floods can damage or destroy infrastructure)
Transmission and distribution	**Chronic/Acute:** ▪ Precipitation: reduced cable capacity or potential total loss of supply locally (overhead lines, underground cables) ▪ Chronic: Sea level rise and storm surges could damage coastal infrastructure	
Sale to end-users	**Chronic**: ▪ Higher air temperature (drought) increases the risk of wildfires that damage distribution networks, leading end consumers to opt for Distributed Energy Resources	

Source: ADB (2012) Climate risk and adaptation in the electric power sector; https://energypolicy.ru/p-m-bobylev-m-m-dygan-adaptacziya-k-izmen/energetika/2020/18/16/

Opportunities for the power utilities sector

Generation	**Markets**: ▪ Investments in technical development efforts: develop battery storage capacity and prediction technology for renewables ▪ Capture the market opportunity of the shift to renewables	**Resilience:** ▪ Improve operational efficiency of thermal power plants
Transmission and distribution	**Resilience:** ▪ Investment in grid modernization and hardening; partnering with industry to assist with restorations	
Sale to end-users	**Products/Services**: ▪ Providing services that might meet the changing needs of customers and end-users ▪ Electrification of other sectors affected by carbon policies (transportation) ▪ Shift from oil to gas	

Source: EthnoExpert Research based on TCFD supporter's list (24.12.2020)

Market risks drive a change in investment strategies

			CGF RobecoSAM Sustainable European Equities		MSCI Europe	
Exclusion criteria	**Sub area for exclusion**	**Company revenue threshold**	**Number of securities**	**Portfolio exposure**	**Number of securities**	**Benchmark exposure**
Firearms	Production	0%	0	0.0%	1	0.5%
Military contracting	Weapon systems, tailor-made components	5%	0	0.0%	6	1.7%
Controversial weapons	Anti-personnel mines, cluster munitions, chemical-, biological-, depleted uranium- & nuclear weapons	0%	0	0.0%	6	1.7%
Global compact breaches	Own operations, supply chain	0%	0	0.0%	0	0.0%
Tobacco	Production, key parts	0%	0	0.0%	3	1.7%
Thermal coal	Coal mining	10%	0	0.0%	1	0.3%
Thermal coal	Coal-based energy production	20%	0	0.0%	1	0.1%
Alcohol	Production, sales	5%	0	0.0%	10	3.9%
Gambling	Production	5%	0	0.0%	3	0.3%
Adult entertainment	Production, services, print	5%	0	0.0%	1	0.1%
Total*			**0**	**0.0%**	**26**	**8.6%**

Source: Sustainalytics, RobecoSAM

* Double counting of securities corrected at total level only

Polling

- *What do you consider as the main risks for the power utilities sector in Russia?*
- *What do you consider as the main opportunities for the power utilities sector in Russia?*

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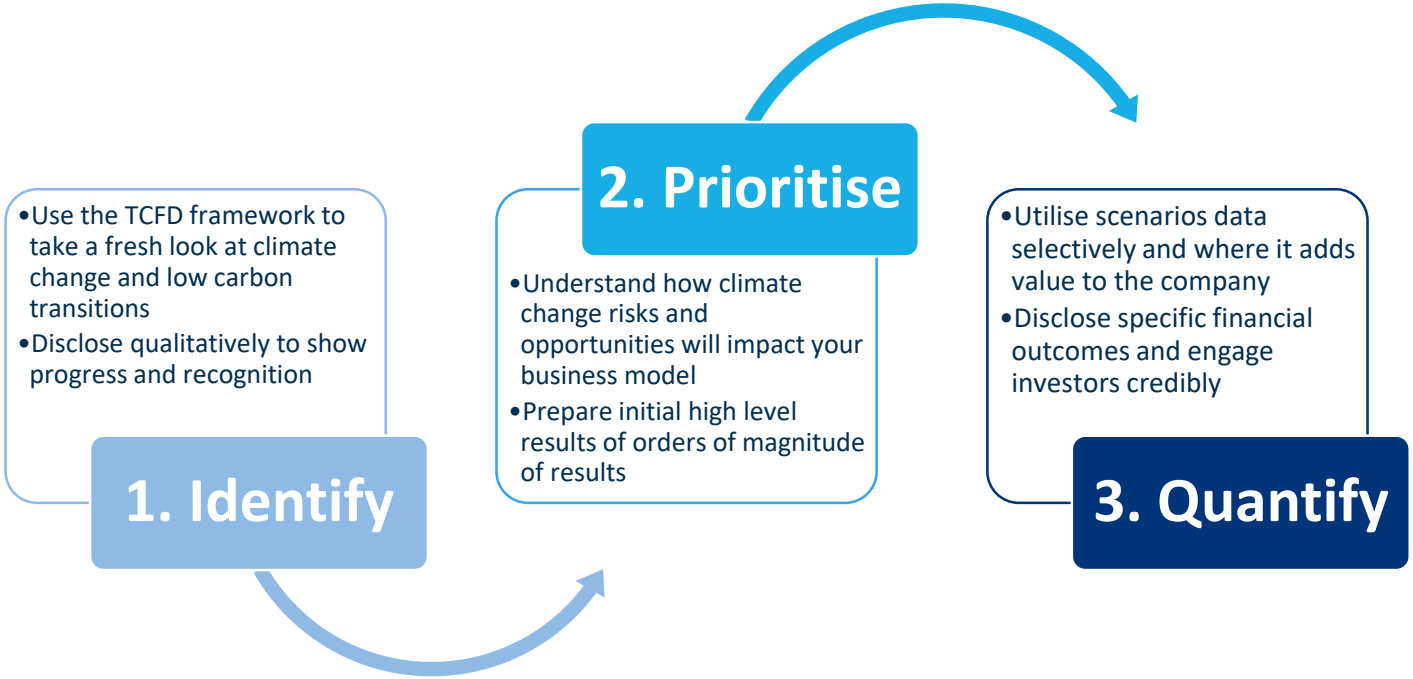
The process for TCFD implementation

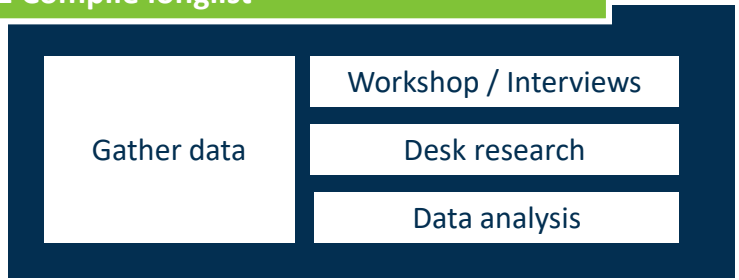
Disclosing aligned to TCFD is an iterative process with three fundamental steps.



1. Identification and categorisation

Identify and categorise relevant risks and opportunities

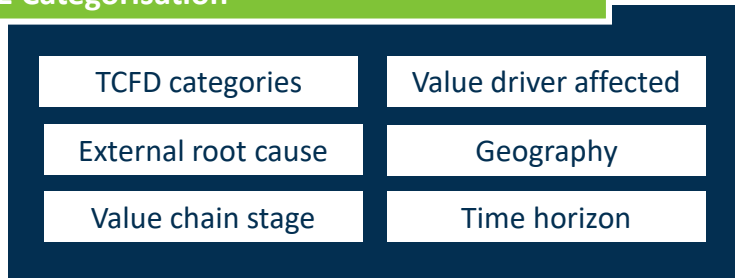
1.1 Compile longlist



Aim:

- Identify risks and opportunities based on the organisation's specific characteristics and value creation model, as well as the industry context in which it operates
- Identify both internal and external drivers of risks

1.2 Categorisation



Aim:

- Group risks and opportunities by pre-defined categories to start identifying trends and hotspots

1. Identification and categorisation

Identify and categorise relevant risks and opportunities

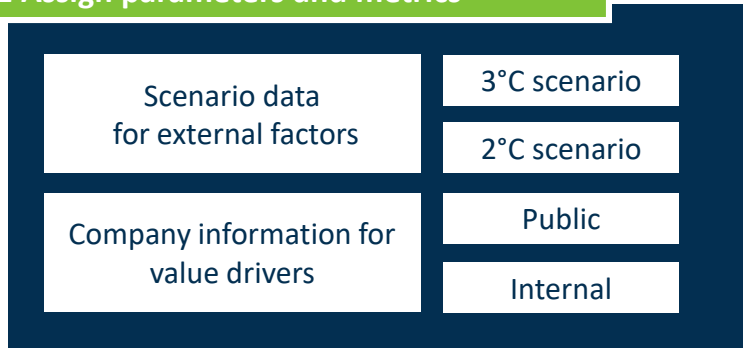
Risk or opportunity	TCFD category	External root cause	Value chain stage	Value driver affected	Geography	Time horizon
Carbon pricing	Policy & legal risk	Introduction of direct carbon tax	Energy	Cost	Europe	Short
Higher temperatures reduce demand for heating	Physical risk (chronic)	Increase in average temperature	Sales	Revenue	Russia	Long
Investment in battery storage	Resilience opportunity	Commercialisation of low-carbon energy technology	Energy generation and distribution	Cost	Russia	Medium

Illustrative purposes only

2. Prioritisation

Assign quantitative metrics and score against set criteria

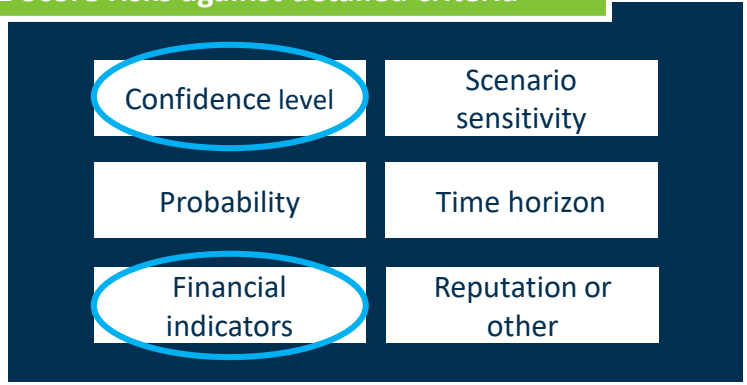
2.1 Assign parameters and metrics



Aim:

- Assign a parameter to the risks and source relevant scenario data
- Assign financial metrics to the risks based on the elements of the business model that may be affected

2.2 Score risks against detailed criteria

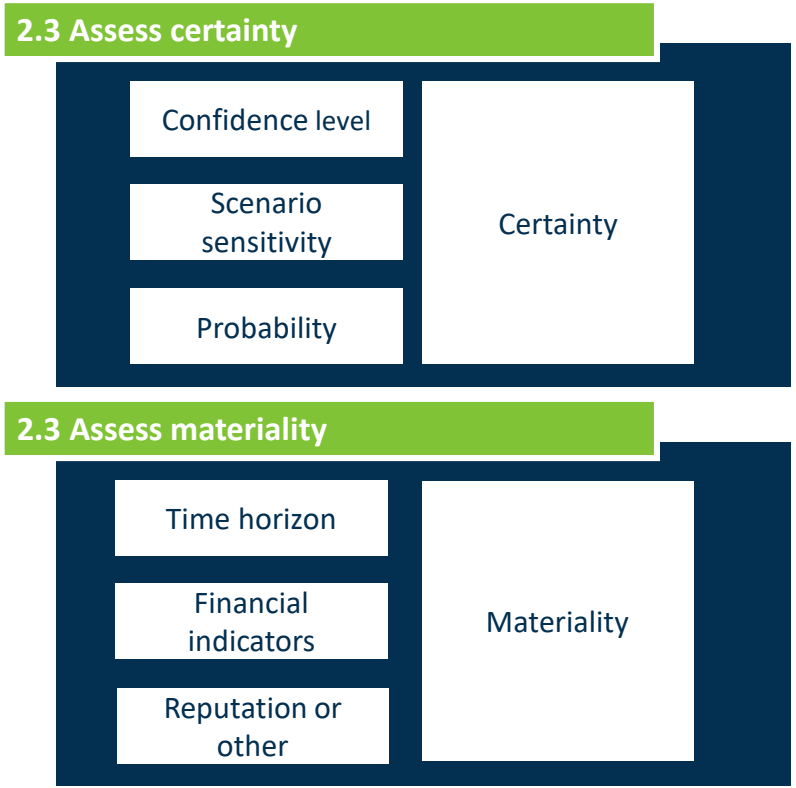


Aim:

- Translate evidence base into comparable outputs
- Score risks and opportunities following a systematic, data-driven and coherent approach based on set criteria

2. Prioritisation

Develop prioritisation criteria

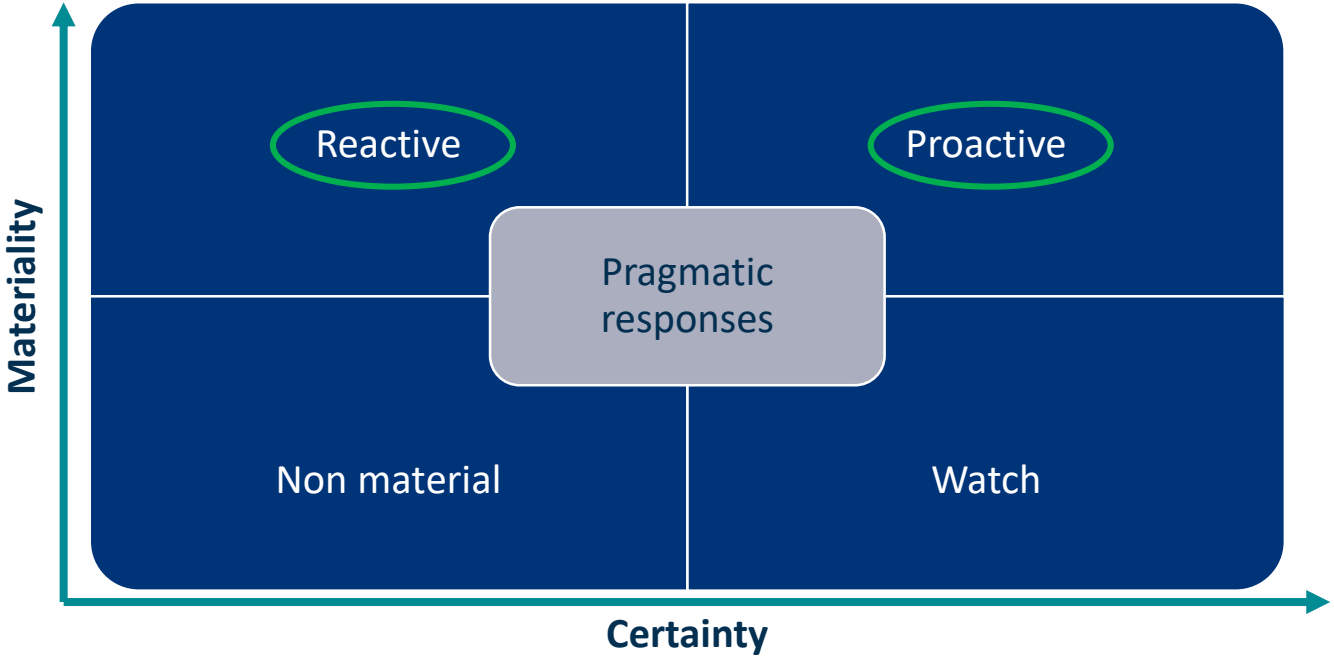


Aim:

- Determine the certainty and materiality of risks and opportunities using the set of six assessment criteria
- Prioritise risks and opportunities effectively by comparing developing two overarching prioritisation criteria: certainty and materiality

2. Prioritisation

Categorise risks and opportunities based on prioritisation criteria

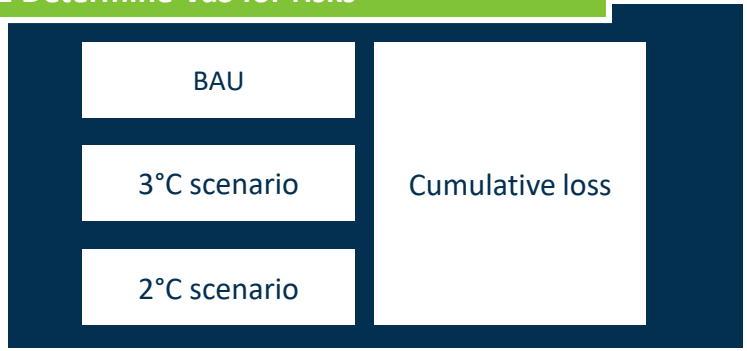


3. Quantification

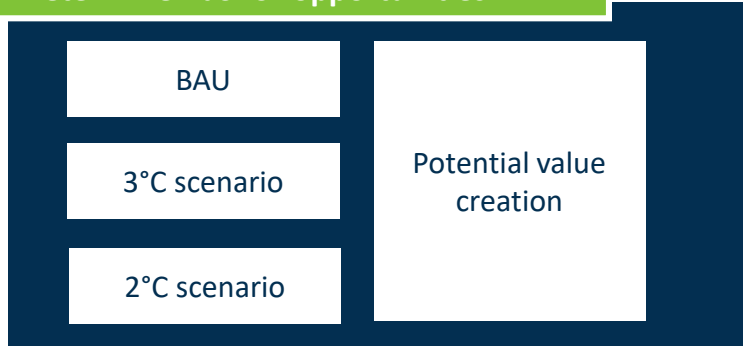
Determine the value-at-stake (VaS)

Identify | Prioritise | Quantify

3.1 Determine VaS for risks



3.2 Determine VaS for opportunities



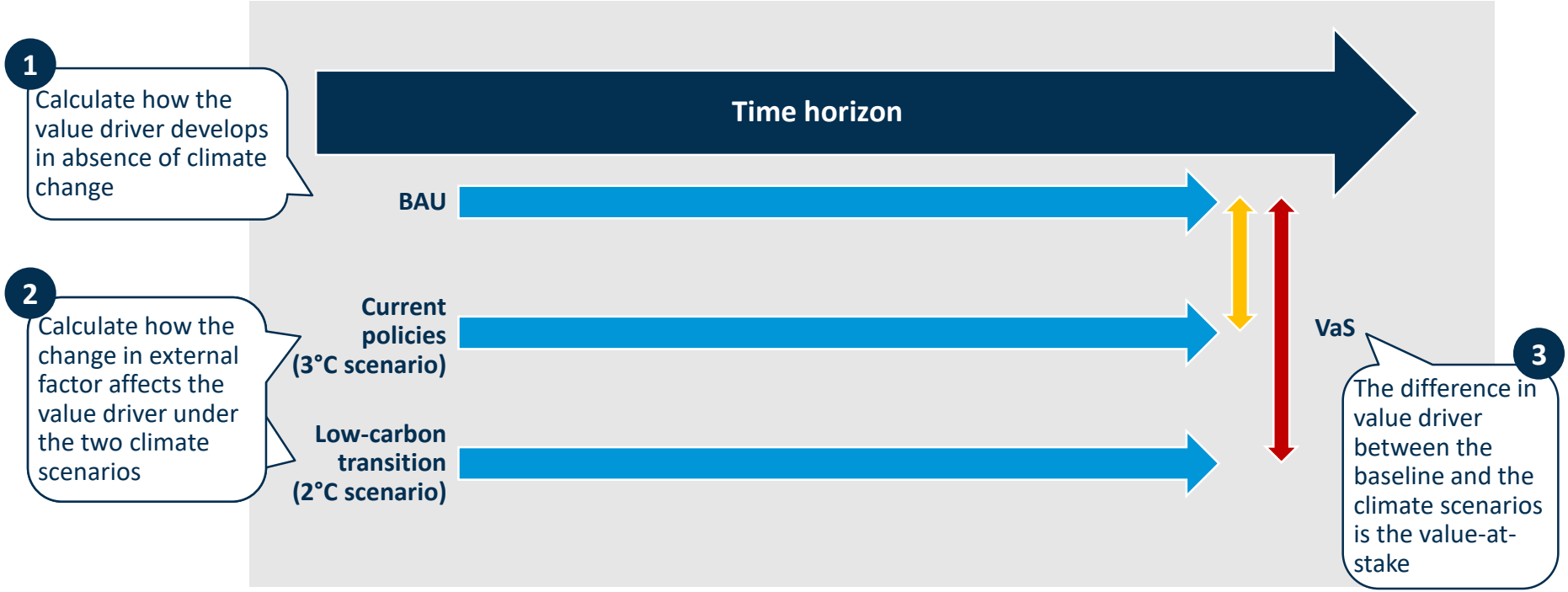
Aim:

- Quantify long-term financial impact of prioritised risks and opportunities
- Determine the cumulative loss (for risk) or potential value creation (for opportunities) between the “Business-as-Usual” baseline and two pathways developed aligned to climate scenarios

Identify | Prioritise | Quantify

3. Quantification

Assess financial impact (value-at-stake) using a coherent scenario approach



Focus area – scenario analysis

Overview of scenario analysis

What is scenario analysis?

- 'What-if' analyses of how different risks and opportunities could materialise under different climate pathways
- This is an integral part of the "prioritisation" and "quantification" stages of a TCFD analysis

What scenarios should be considered?

- TCFD recommends for at least two scenarios to be considered:
  - One consistent with the Paris Agreement goal (2°C global temperature increase), representing an orderly transition to a low-carbon economy
  - One aligned to current policies and pledges (c. 3°C global temperature increase), representing a lack of transition and consequent temperature increase

How should scenarios be selected?

- Companies should consider how the selected scenarios are relevant to:
  - The **purpose** of the analysis
  - The **sector and geography** in which the company operates

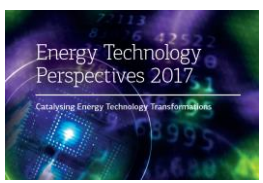
Focus area – scenario analysis

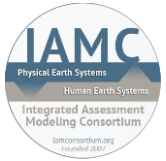
Different types of scenarios exist, each providing appropriate underlying data for relevant risks and opportunities. These are examples of data sources

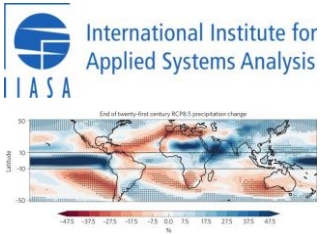
Transition scenarios | **Physical scenarios**

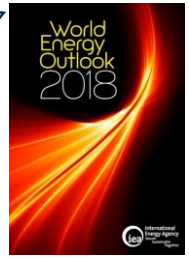
Sector-specific models | **Integrated Assessment Models (IAMs)** | **Climate models**

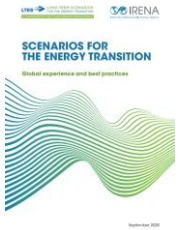
Data on electricity consumption by industry can show electricity demand projections across sectors

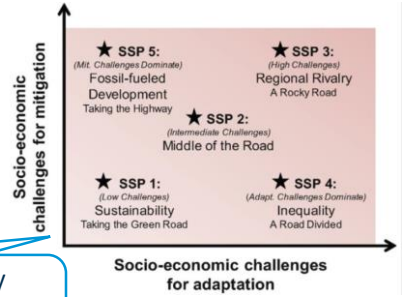












Data on the composition of the energy mix can show projected regulation and technological improvements within grids

Data on water availability in nearby basins can show availability of water for cooling

Focus area – financial quantification

Overview of financial quantification

What is financial quantification?

- This process consists of quantifying the financial impacts that each risk and opportunity will have on different financial indicators
- This exercise is done for each risk and opportunity separately, once the relevant scenario data has been gathered
- This is part of the “quantification” stage of a TCFD analysis

How does it work?

- The first step was identifying the **relevant scenarios**, and which data points best represent the risk and opportunity (previous slides)
- The next step is to understand which **financial indicators** within the company are affected by each risk and opportunity
- Next, companies should model how **projected changes** in the scenario data result in changes in the financial indicators

Focus area – financial quantification

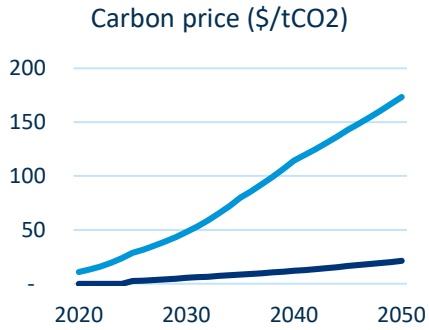
The financial impact is spread across different business areas, depending on the risks and opportunities considered. TCFD recommends considering four financial categories

	Revenues	Expenditures	Assets and liabilities	Capital and financing
Value driver exposed to climate change	▪ Demand ▪ Product mix and production capacity ▪ Market positioning and competition ▪ Operational continuity	▪ Production costs ▪ Energy and other operating costs ▪ Fines and regulatory compliance ▪ R&D ▪ Resilience to supply chain disruption	▪ Fixed asset values and re-pricing ▪ Asset valuation and lifetimes ▪ R&D and innovation costs ▪ CAPEX requirements ▪ Return on investments	▪ Access to finance ▪ Trustworthiness and creditability ▪ Relations with workforce, investors and other stakeholders ▪ Legal environment
Example financial metrics	▪ Revenue ▪ EBITDA	▪ COGS ▪ Fixed costs ▪ Operating and other margins	▪ Asset valuations and write-offs ▪ Inventory loss ▪ RoE and RoI	▪ Cost of capital ▪ Interest rates ▪ Long term debt ▪ Minority interest and retained equity

Focus area – financial quantification

Example approach to modelling financial impacts under different climate scenarios

Assessed risk: higher tax payable due to increased carbon tax rate

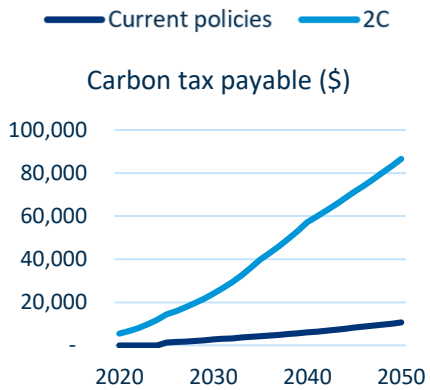


Projected carbon price

1. Extract Russian carbon price projections from climate scenario database

Source: IIASA, SSP database

- Baseline: SSP2-45, R5.2REF
- Transition: SSP1-26, R5.2REF



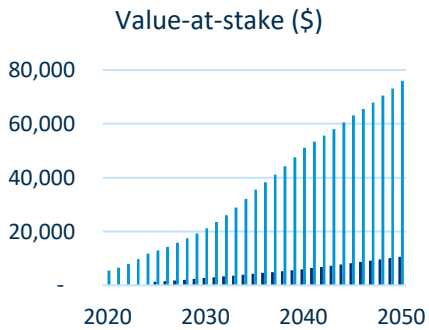
Resulting impact on value driver (tax payable)

2. Develop calculation for carbon tax impact:

Scope 1 emissions * carbon price

Source:

- Calculation: UK Government 2020 consultation on carbon tax report
- Scope 1 emissions: Company reports (assumed 500 tCO2)



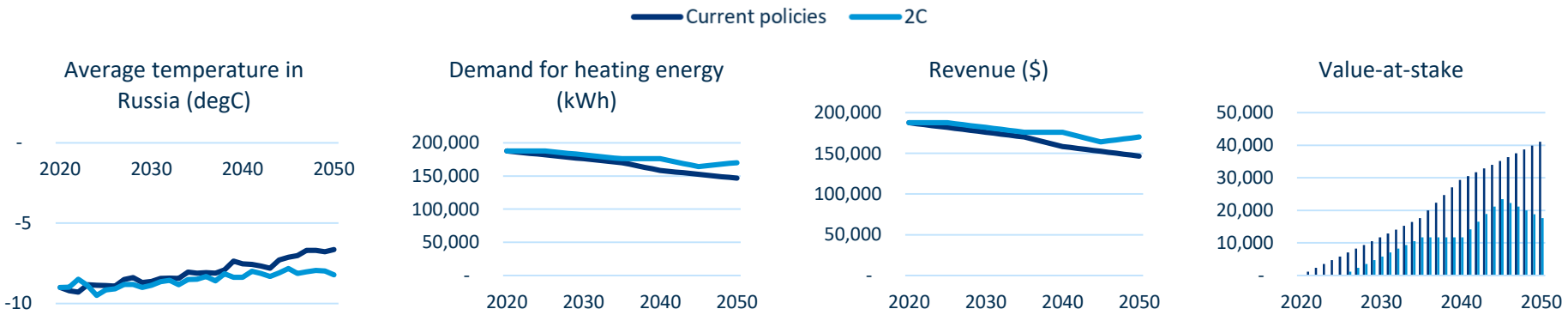
Value-at-stake

3. Calculate difference in impact on tax payable between BAU scenario (no carbon tax) and the two climate scenarios

Focus area – financial quantification

Example approach to modelling financial impacts under different climate scenarios

Assessed risk: lower demand for heating and foregone revenue due to temperature increase



Projected temperature

1. Extract Russian average temperature projections

Source: KNMI database

- Baseline: RCP8.5
- Transition: RCP2.6

Resulting impact on parameter

2. Understand implication to power sector:
   - temperature changes are proportional to changes in heating degree days (HDD)
   - Convert HDD to energy demand

Source: Carbon Trust internal modelling based on Belova et al., 2018

Resulting impact on value driver

3. Develop calculation for foregone revenue due to reduced demand for heating:
   kWh price * kWh sold

Source:

- Price of kWh (company data, assumed $1/kW)

Value-at-stake

4. Calculate difference in impact on revenue between BAU scenario (no temperature increase) and the two climate scenarios

Polling

- *What part of a TCFD disclosure project do you think is the easiest?*
- *What part of a TCFD disclosure project do you think is the most difficult?*
- *What team(s) within your organisation is responsible for TCFD?*
- *Have you already disclosed aligned to TCFD?*
- *If YES, is there an area you plan to expand on in your next iteration of TCFD disclosure?*
- *If NO, what do you see as the main barriers for starting a TCFD project?*
- *If NO, when do you think TCFD will be important for your business?*

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About Inter RAO

Inter RAO Group is a diversified energy holding managing assets across Russia, Europe, and the CIS.

31.0 GW
Installed capacity as of today

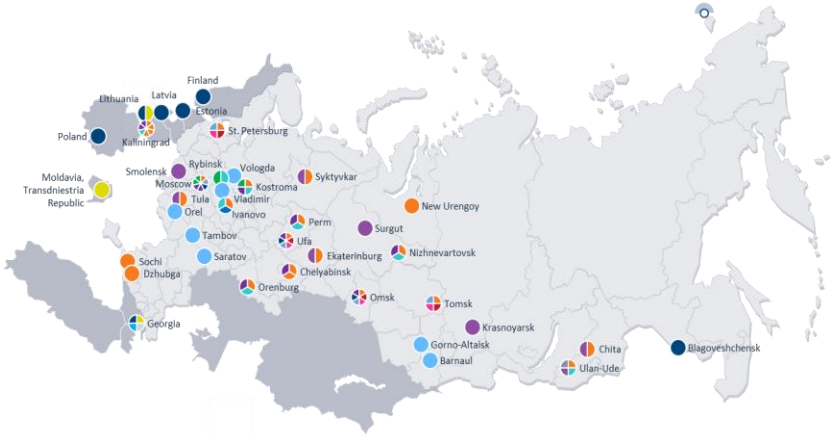
130 TWh
Electricity production in 2019

RUB 1.03 trl
Revenue in 2019

21 TWh
Trading volumes in 2019

49 ths
Employees in 2019

RUB 566 bn
Market cap as of 22.01.2021



1 GENERATION (28 246 MW in Russia)

- 37 thermal power plants and 5 small-scale units
- 9 hydropower plants
- 1 wind farm

2 SUPPLY in Russia

- 16.9 million customers
- 3 independent supply companies
- 10 guaranteeing suppliers
- 62 regions of Russia

FOREIGN ASSETS (2 777 MW)

- 1 thermal power plant
- 2 hydropower plants
- 1 wind farm
- 3 countries:

4 TRADING in Russia and Europe

- Major export/import operator
- 15 countries

5 ENGINEERING and other

- Quartz Group
- Power Efficiency Center
- RUS Gas Turbines Holding - GE (50%) & INTER RAO (50%)
- INTER RAO Export
- Energy without Borders Fund

**Installed Capacity includes Kaliningrad generation units that are operated by IRAO EG*

Sustainability at Inter RAO

UN Global Compact

In 2019, Inter RAO joined the United Nations Global Compact. Our goal is to achieve the advanced status in 2021

The Company is committed to all 17 SDGs and has identified four priority SDGs:

Latest ESG achievements

- ✓ The Board of Directors has established the Audit and Sustainable Development Committee
- ✓ The 2019 Annual Report was written in accordance with the methodology of GRI Standards and was verified
- ✓ 4Q2020 Inter RAO updated its strategy until 2030 with ESG being one of the focus areas
- ✓ Received A- (Leadership) rating in CDP Climate Change 2020

Key reasons to adopt and implement TCFD in the first place

Inter RAO considers this to be an important milestone in its Climate Change journey

1)Non – implementation may eventually lead to:

- Lower ESG ratings due to an increased weight of TCFD-related questions within our power and utilities industry
- Possible exclusion criteria from passive ESG funds
- A lag behind our International peers who are increasingly disclosing TCFD

2) Key benefit of implementation:

The TCFD Framework helps us to improve our disclosure in a way that significantly enhances investor understanding of climate related business risks and opportunities. TCFD recommendations may also be used for forward looking information that can be included in mainstream financial filings.

Inter RAO Experience with TCFD disclosure

Process from decision to publishing of TCFD report at Inter RAO:

- The Audit and Sustainability Committee (directly reporting to the BoD) ensures that we establish a specific sustainability Road map. While presenting the 2020 Sustainability roadmap, we highlighted the importance of implementing TCFD.
- Risk management: Continuous quarterly presentations from our Risk management also highlighted Climate related risks and opportunities.
- Metrics and Targets: In 2019 we carried out Direct Greenhouse Gas Verification and calculated our Indirect (location-based Scope 2) emissions. In 2020 - we updated our Group's strategy until 2030 with ESG being a focus area. This includes a Reduction of our Carbon Intensity (g/Co2 KWh per unit of energy produced)
- After understanding that we had some of these components – we began to analyze and understand where we are exactly with TCFD and what was missing for full alignment (we also analyzed our CDP and GRI indicators) We currently disclose 6 of the 11 TCFD questions fully with the rest being partial
- We are now striving towards achieving full disclosure on the remaining 5.

Main challenges faced

- Understanding of the process internally and preparing resources (establishment of an internal working group with different departments helped us to achieve this)
- Justifying the importance of TCFD reporting internally is not straightforward!
- Identification of Risks and Opportunities (Example using the Carbon Border Mechanism Tax)
- Understanding Scenario Analysis – we are currently using the 2DS model and updating our model inputs

Takeaways and Plans

- **Understand** TCFD by breaking it down into 4 categories
- **Analyze** what stage you are at for each of the 4 categories
- **Keep** the Board Interested
- **Integrate to the Business Model**

- **Integration** - To include our TCFD report into our annual report in 2021
- **Scenario analysis** to be completed later this year

Now is the best time to act !

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Polling

- *Did you find the content of the webinar useful?*
- *Have you received new information during this webinar?*
- *What was your reason for attending the event?*
- *What additional resources would be necessary or useful for you to start systematically assessing your climate related risks and opportunities?*

Upcoming webinars

When	Webinar title	In collaboration with
24th February 2021	TCFD reporting for the **oil and gas** sector in Russia	RAEX EXPERT RA EUROPE
1st March 2021	TCFD reporting for the **agriculture and pulp & paper** sectors in Russia	MOSCOW EXCHANGE
10th March 2021	TCFD reporting for the **ferrous metals** sector in Russia	RAEX EXPERT RA EUROPE
17 March 2021	TCFD reporting for the **banking sector** in Russia	RAEX EXPERT RA EUROPE

Panel discussion and Q&A

Tom Cumberlege, Associate Director – *Speaker and panel*

Gregorio Giorgi, Senior Associate – *Speaker and panel*

Francesca Messeri, Senior Analyst – *Panel and Q&A moderation*

Maxim Titov, Director – *Speaker and panel*

Vasily Andreev, Head of Sustainability – *Speaker and panel*

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