Masterclass 4: How Finance Can Support Climate Adaptation and Resilience

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I. Core Concepts and Definitions

Adaptation

- In human systems, the process of *adjustment to actual or expected climate* and its effects, in order to *moderate harm* or *exploit beneficial opportunities* (IPCC glossary).
  - Adaptation planning in human systems generally entails a process of iterative risk management.
  - Different types of adaptation have been distinguished, including anticipatory versus reactive, autonomous versus planned and incremental versus transformational adaptation.
  - Adaptation is often seen as having five general stages: (a) awareness, (b) assessment, (c) planning, (d) implementation and (e) monitoring and evaluation.
- In natural systems, the process of *adjustment to actual climate* and its effects. Adaptation in natural systems includes autonomous adjustments through ecological and evolutionary processes. Human intervention may facilitate adjustment to expected climate and its effects.
- (in contrast) **Mitigation:** A human intervention to reduce emissions or enhance the sinks of greenhouse gases.

Resilience

- The capacity of interconnected social, economic and ecological systems *to cope with* a hazardous event, trend or disturbance, *responding or reorganizing* in ways that *maintain their essential function, identity and structure*. *Resilience is a positive attribute* when it maintains capacity for adaptation, learning and/or transformation (IPCC glossary).
- Resilience as a system trait overlaps with concepts of *vulnerability*, *adaptive capacity* and *risk.*
- Resilience as a strategy overlaps with risk management, adaptation and transformation.
- The term resilience is also evolving over time:
  - Early: resilience = stability & persistence
  - Current: resilience might also imply that shocks lead to transformation (general concept that transformation is easier after/in crises) → climate resilient development (shock-induced transformations).

Constraints for Human Adaptation (IPCC)

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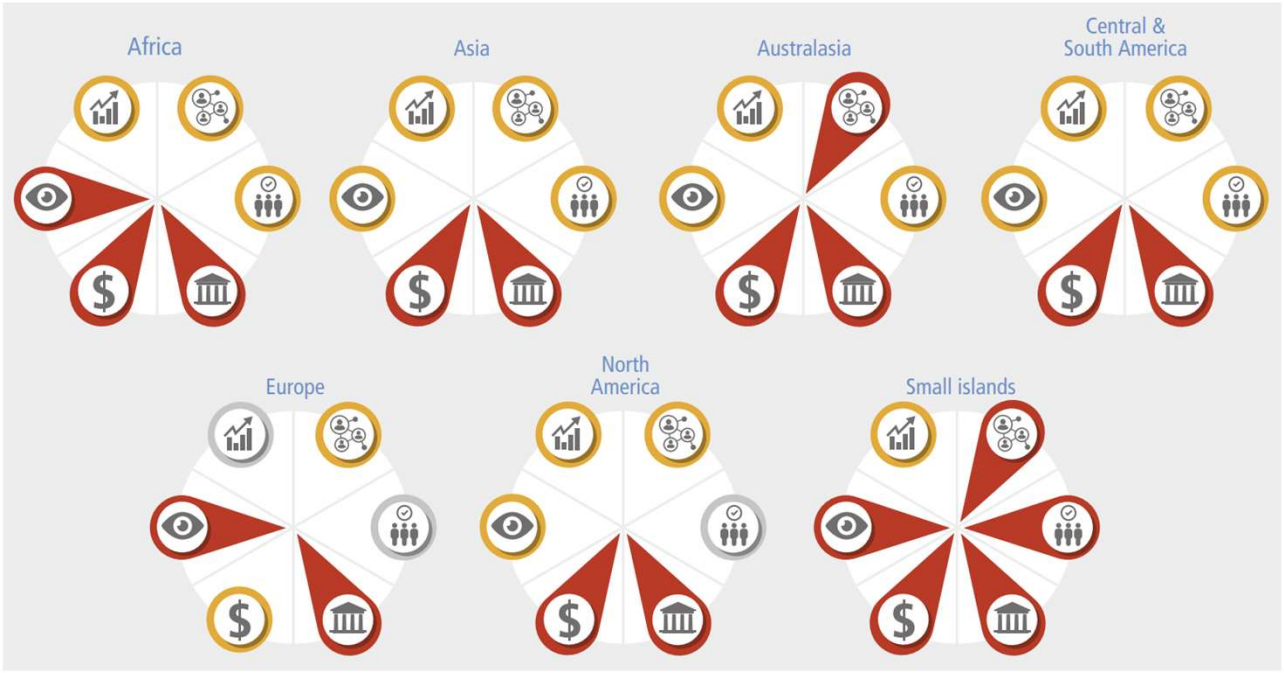
(d) Constraints that make it harder to plan and implement human adaptation



Monitoring & Evaluation

- No one-size-fits-all approach to M&E and no common reference metrics for adaptation (IPCC).
- Adaptation is a complex task --- adaptation can occur in multiple forms and target multiple temporal and spatial scales --- that might also go wrong → maladaptation!
  - **For example:** according to IPCC physical infrastructure along coasts (e.g., sea walls) has the highest risk for maladaptation over time through negative side effects on ecosystem functioning and coastal livelihood opportunities.

II. Climate Risk Management Paradigms

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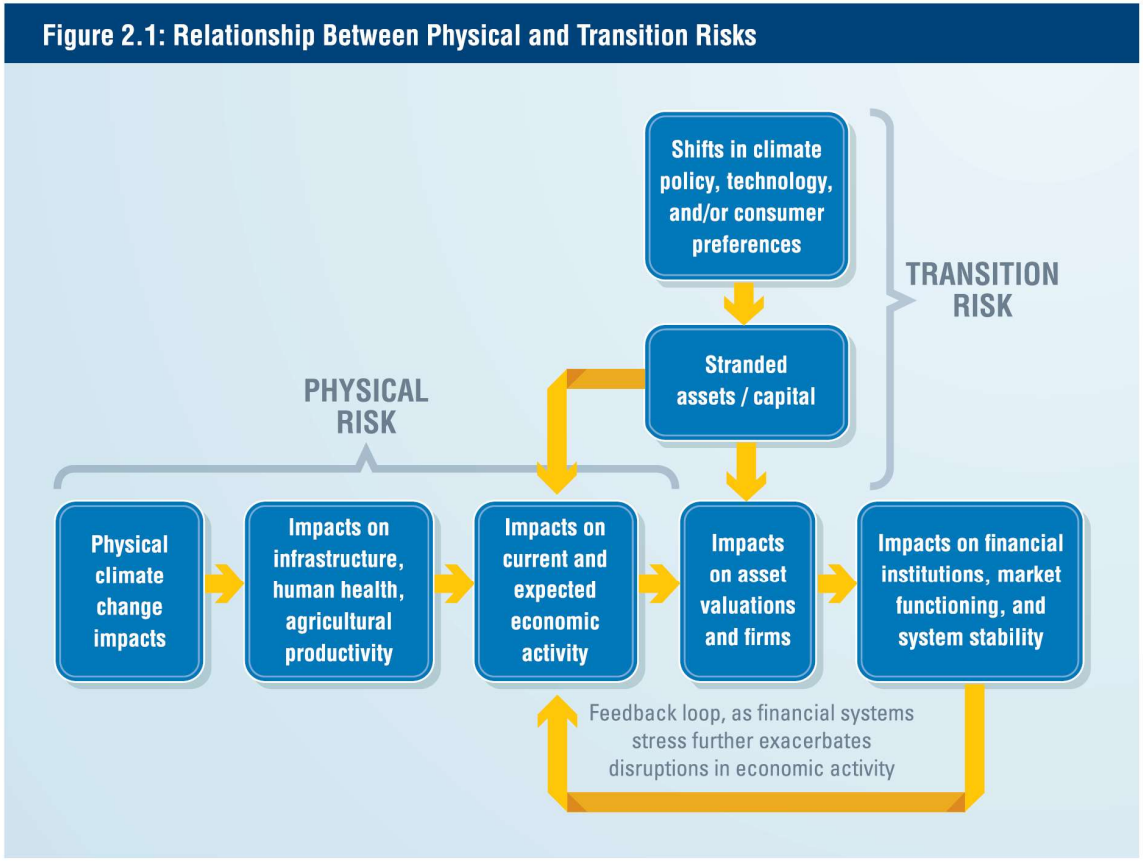
Risks Related to Climate Change (IPCC View)

Table TS.AII.1 | Climate-related representative key risks (RKRs). {16.5, Table 16.6}

Code	RKR	Scope	Sub-section assessment of RKR
RKR-A	Risk to low-lying coastal socioecological systems	Risks to ecosystem services, people, livelihoods and key infrastructure in low-lying coastal areas and associated with a wide range of hazards, including sea level change, ocean warming and acidification, weather extremes (storms, cyclones) and sea ice loss, for example	16.5.2.3.1
RKR-B	Risk to terrestrial and ocean ecosystems	Transformation of terrestrial and ocean/coastal ecosystems, including change in structure and/or functioning and/or loss of biodiversity	16.5.2.3.2
RKR-C	Risks associated with critical physical infrastructure, networks and services	Systemic risks due to extreme events leading to the breakdown of physical infrastructure and networks providing critical goods and services	16.5.2.3.3
RKR-D	Risk to living standards	Economic impacts across scales, including impacts on GDP, poverty and livelihoods, as well as the exacerbating effects of impacts on socioeconomic inequality between and within countries	16.5.2.3.4
RKR-E	Risk to human health	Human mortality and morbidity, including heat-related impacts and vector-borne and water-borne diseases	16.5.2.3.5
RKR-F	Risk to food security	Food insecurity and the breakdown of food systems due to climate change effects on land or ocean resources	16.5.2.3.6
RKR-G	Risk to water security	Risk from water-related hazards (floods and droughts) and water quality deterioration; focus on water scarcity, water-related disasters and risk to Indigenous and traditional cultures and ways of life	16.5.2.3.7
RKR-H	Risks to peace and to human mobility	Risks to peace within and among societies from armed conflict as well as risks to low-agency human mobility within and across state borders, including the potential for involuntarily immobile populations	16.5.2.3.8

Risks Related to Climate Change (Finance View)

Figure 2.1: Relationship Between Physical and Transition Risks



U.S. Commodity Futures Trading Commission (CFTC)

Physical Climate Risks

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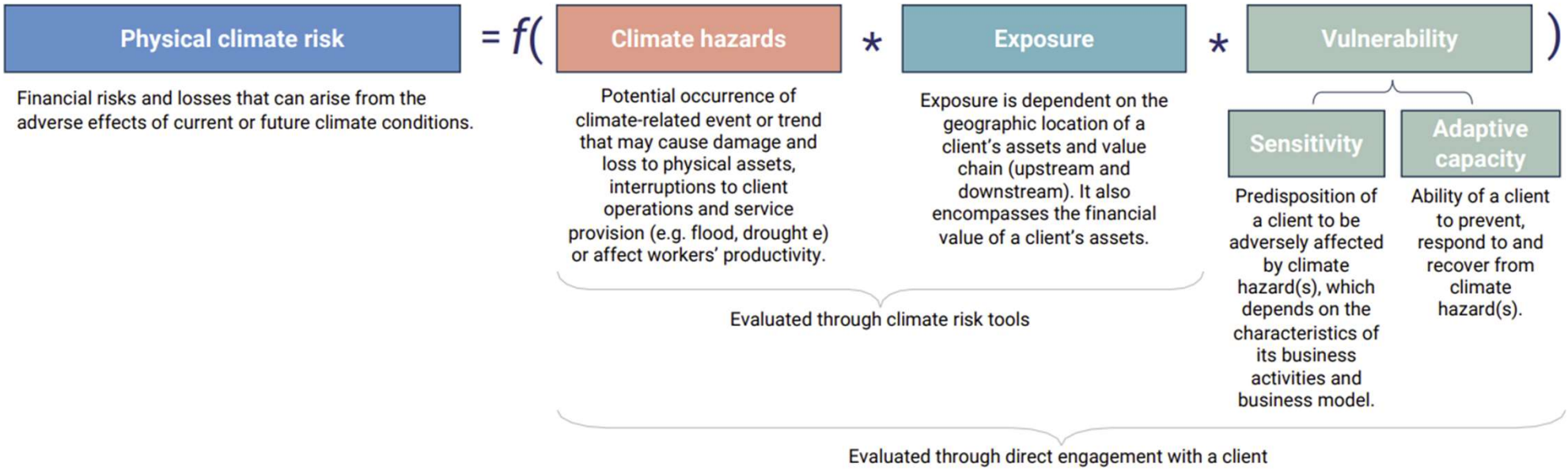
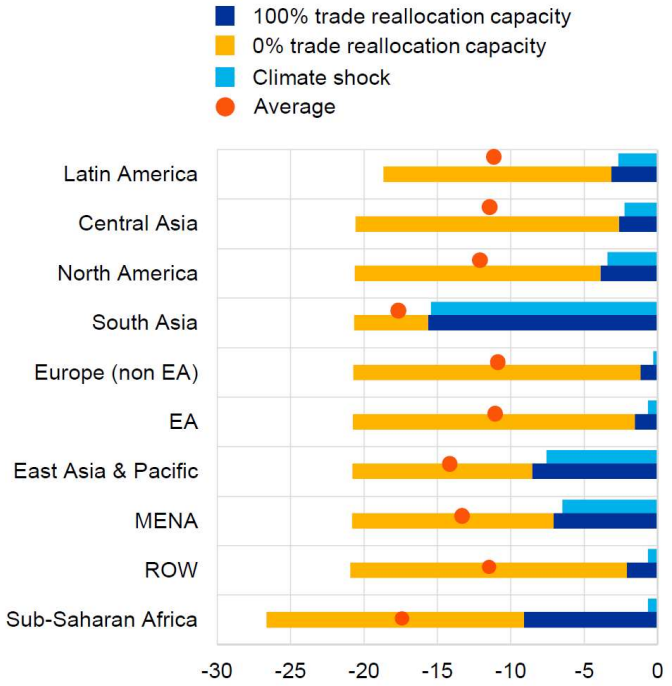


Adapted from IPCC AR5/AR6

Physical Climate Risks

- Economic consequences of physical risks are material.
  - E.g.: within the NGFS scenarios GDP losses up to 18% until 2050.
  - Large variation across regions.
- Physical climate risks can have direct and indirect effects (e.g., through supply chains).

a) Decline in GDP levels across world regions by 2050 due to direct physical risk and amplified through trade interconnections, in an adverse climate scenario (RCP 8.5) where all hazards materialise simultaneously (GDP decline in percentage points)



ECB and the European Systemic Risk Board, December 2023

III. The Role of Finance in Climate Change Adaptation

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The Role of Finance

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Financial markets provide…

- **Dedicated funding:**
  - At different levels global, regional & local.
  - Key question: attractiveness (risk-return tradeoff) of adaptation funding for investors.
  - Instruments: green bonds, sustainability-linked bonds, incentivized loans, risk transfer products (guarantees, insurance products, blended finance).

- **Incentives** to firms to invest in adaptation and resilience (irrespective of dedicated products).
  - Firms exposed to physical climate risks have higher cost-of-capital (e.g., increased bankruptcy costs).
  - Physical risk is reflected in equity markets (e.g., exposed firms have lower market values).
  - Regulation of financial institutions stresses importance of physical risks → asks FIs to engage with portfolio companies.

IV. Regulatory and Operational Frameworks

A. TCFD

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A. Task Force on Climate-Related Financial Disclosures

- Initiated by Financial Stability Board in 2015
- **Objective**: improve and increase reporting of climate-related information

- 2017: release of **final recommendations** on framework for companies and other organizations to develop more effective climate-related disclosures within existing reporting processes

- **Yearly status reports** reflecting TCFD supporters

- June 2023: work of TCFD has been completed with issuance of **ISSB Standards** that reflect the TCFD work

- As of October 2023: TCFD does no longer exist; IFRS Foundation takes over monitoring of the progress of companies' climate-related disclosures

A. Task Force on Climate-Related Financial Disclosures

- International Financial Reporting Standards (IFRS) Foundation has two standard-setting bodies:
  - International Accounting Standards Board (IASB)
  - International Sustainability Standards Board (ISSB)

- **ISSB Standards reflect TCFD recommendations**
  - Release of IFRS S1 *General Requirements for Disclosure of Sustainability-related Financial Information* and IFRS S2 *Climate-related Disclosures* **in June 2023**
  - Companies applying those standards meet TCFD recommendations
  - IFRS S1 + S2: effective for annual reporting periods beginning on or after 1 January 2024

  - April 2024: ISSB issued IFRS Sustainability Disclosure Taxonomy reflecting S1 and S2

A. Task Force on Climate-Related Financial Disclosures

- **IFRS S1 → general disclosures on sustainability-related risks and opportunities**
- **IFRS S2** applies to
  - **Climate-related risks to which the entity is exposed**
    - Physical risks
    - Transition risks
  - **Climate-related opportunities available to that entity**
- IFRS S1 and S2 provide **information to users of financial reports** about:
  - **Governance processes, controls and procedures** the entity uses to monitor, manage and oversee climate-related risks and opportunities
  - **Strategy** for managing climate-related risks and opportunities
  - **Processes** used to identify climate-related risks and opportunities
  - **Performance** in relation to climate-related risks and opportunities

A. Task Force on Climate-Related Financial Disclosures

- **Embedment in regulatory framework**:
  - **EU Sustainable Finance Disclosure Regulation (SFDR) and Corporate Sustainability Reporting Directive (CSRD)** require certain actors to report on their sustainability compliance → channeling money to sustainable business activities
  - Adoption of common EU standards: **European Sustainability Reporting Standards (ESRS)**
  - ESRS must be applied by companies subject to the Accounting Directive (as amended by Sustainability acts)
  - ESRS have been developed by the European Financial Reporting Advisory Group (EFRAG)
- **Differences between ESRS and IFRS** continue to exist, notably with respect to double materiality → e.g. IFRS S2 is included in ESRS, but ESRS go beyond this

V. Regulatory and Operational Frameworks

B. EU Taxonomy

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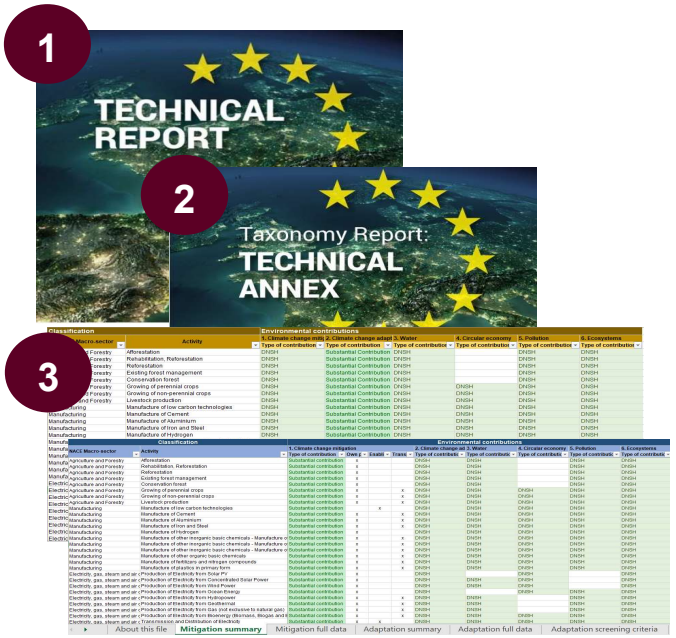
B. EU Taxonomy

1. Scope and Overview of the Taxonomy
2. Furthering environmental objectives, DNSH and Governance Criteria (art. 18 TR)
3. Climate Change Adaptation and Climate Change Mitigation in the EU Taxonomy
4. Changes (+ relief) as of 1 January 2026 (February 2025 omnibus package)

B. EU Taxonomy

1. Scope and Overview of the Taxonomy

- **Taxonomy** as "tool to help investors, companies, issuers, and project promoters navigate the transition to a low-carbon, resilient and resource-efficient economy" (Taxonomy - Final report of the Technical Expert Group on Sustainable Finance – March 2020)
- **Environmental** taxonomy
- **Components:**
  - Technical Report (1)
  - Technical Annex (2)
  - Taxonomy spreadsheet (3)
  - IT tool
  - Regulation



B. EU Taxonomy

1. Scope and Overview of the Taxonomy

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1. Scope and Overview of the Taxonomy

- **Subject:** criteria for environmentally sustainable economic activities
- **Scope:**

The Taxonomy Regulation sets out three groups of Taxo

Financial market participants financial products in the EU, occupational pension providers,

Objective: inform investors!

anies who are already to provide a non-financial tement under the Non-Financial Reporting Directive; and

The EU and Member States, when setting public measures, standards or labels for green financial products or green (corporate) bonds.

B. EU Taxonomy

2. Furthering environmental objectives, DNSH and Governance Criteria (art. 18 TR)

- Chapter II of the TR:

Article 3 - Criteria for environmentally sustainable economic activities

Article 4 - Use of the criteria for environmentally sustainable economic activities in public measures, in standards and in labels

Article 5 - Transparency of environmentally sustainable investments in pre-contractual disclosures and in periodic reports

Article 6 - Transparency of financial products that promote environmental characteristics in pre-contractual disclosures and in periodic reports

Article 7 - Transparency of other financial products in pre-contractual disclosures and in periodic reports

Article 8 - Transparency of undertakings in non-financial statements

Article 9 - Environmental objectives

Article 10 - Substantial contribution to climate change mitigation

Article 11 - Substantial contribution to climate change adaptation

Article 12 - Substantial contribution to the sustainable use and protection of water and marine resources

Article 13 - Substantial contribution to the transition to a circular economy

Article 14 - Substantial contribution to pollution prevention and control

Article 15 - Substantial contribution to the protection and restoration of biodiversity and ecosystems

Article 16 - Enabling activities

Article 17 - Significant harm to environmental objectives

Article 18 - Minimum safeguards

Article 19 - Requirements for technical screening criteria

Article 20 - Platform on Sustainable Finance

Article 21 - Competent authorities

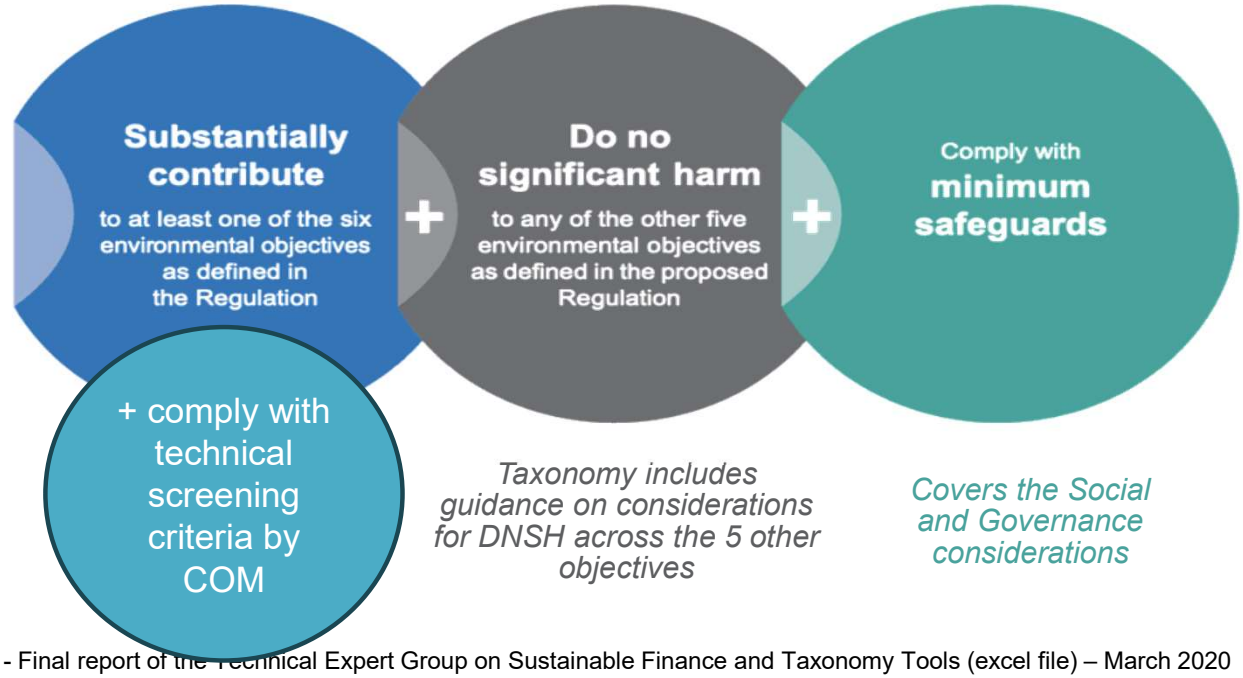
Article 22 - Measures and penalties

Article 23 - Exercise of the delegation

B. EU Taxonomy

2. Furthering environmental objectives, DNSH and Governance Criteria (art. 18 TR)

- Art. 3 TR:



Source: TEG Taxonomy - Final report of the Technical Expert Group on Sustainable Finance and Taxonomy Tools (excel file) – March 2020

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2. Furthering environmental objectives, DNSH and Governance Criteria (art. 18 TR)

- …or, put differently:

Substantial contribution to one environmental objective (e.g. carbon neutrality, biodiversity etc. - all defined by the Taxonomy Regulation)

+ *Economics*

Does not significant harm (DNSH) other environmental objectives

+ *Law*

Compliance with Minimum Legal Safeguards (Art. 18 Taxonomy Regulation)

OECD Guidelines for Multinational Enterprises (supply chain, liability etc.)

UN Principles for Business and Human Rights

UN&ILO Minimum Labour Laws, work safety, Social Insurance

B. EU Taxonomy

3. Climate Change Adaptation and Climate Change Mitigation in the EU Taxonomy

- What is a substantial contribution to climate change adaptation and mitigation?
  - **Art. 11 TR: Climate Change Adaptation**
  - …2 types of economic activity contribute substantially to **climate change adaptation**

Economic activities based **on their own performance** (art. 11 (1) TR)

Enabling activities (art. 16 TR)

B. EU Taxonomy

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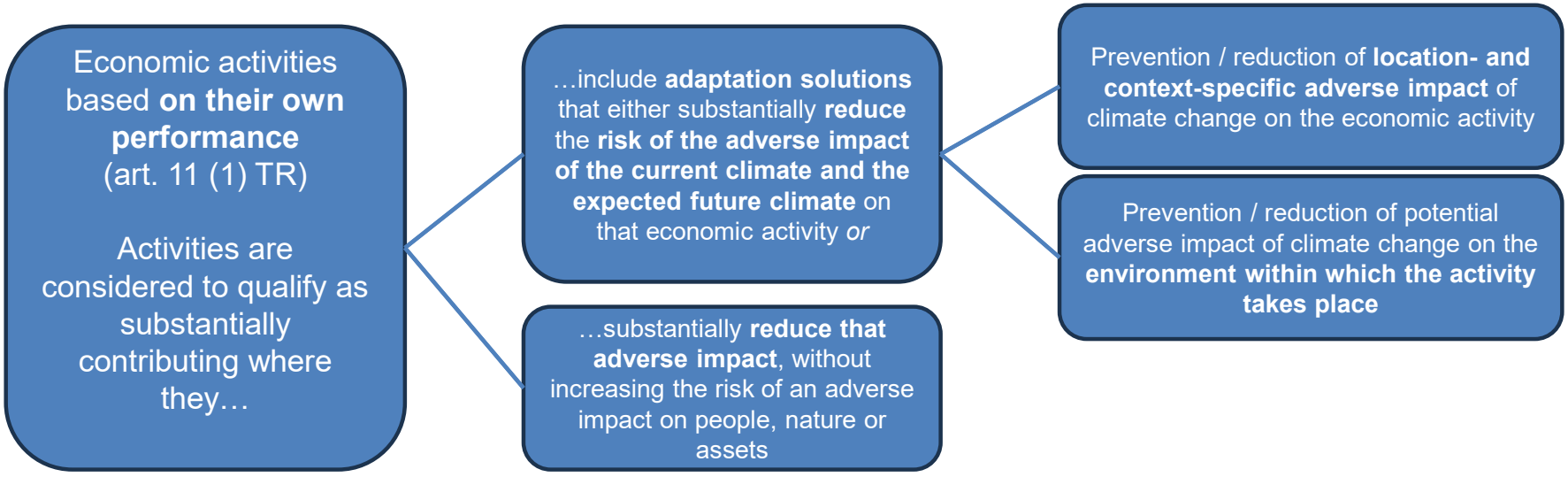

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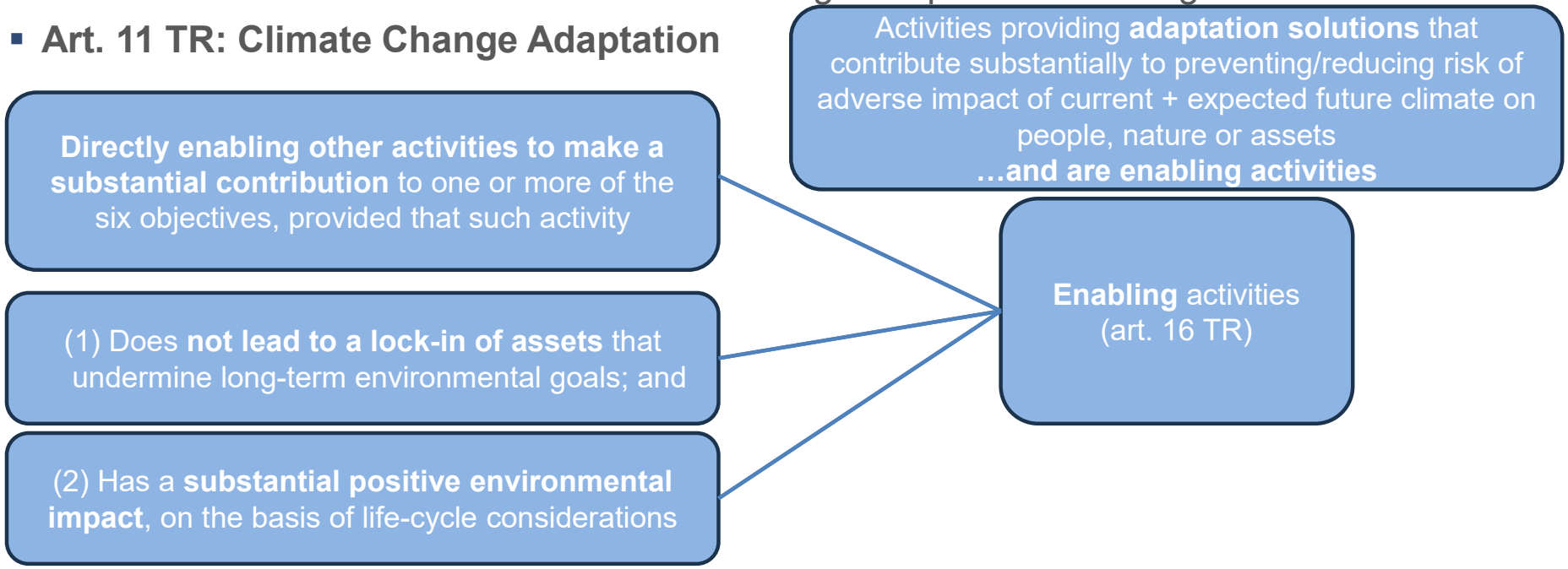

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3. Climate Change Adaptation and Climate Change Mitigation in the EU Taxonomy

- What is a substantial contribution to climate change mitigation and adaptation?
  - Art. 10 TR: Climate Change Mitigation
  - …3 types of economic activity contribute substantially to **climate change mitigation**

Economic activities based **on their own performance** (art. 10 (1) TR)	**Transitional** activities (art. 10 (2) TR)	**Enabling** activities (art. 16 TR)

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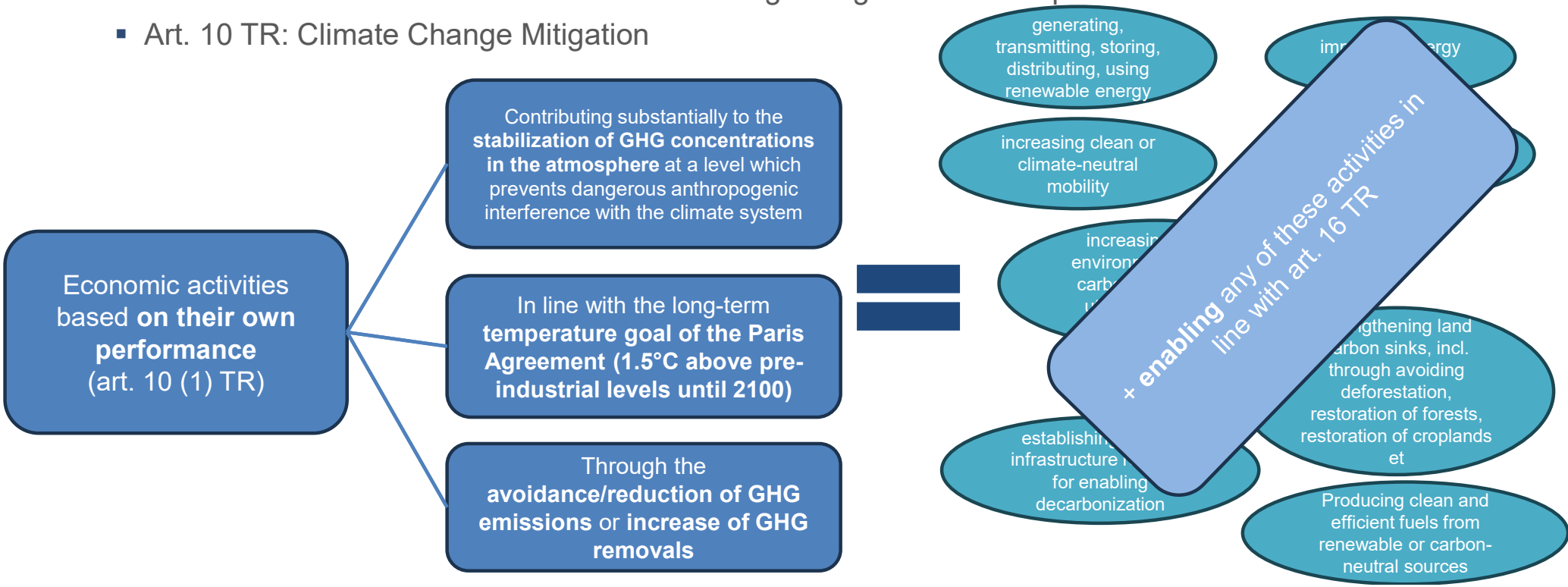

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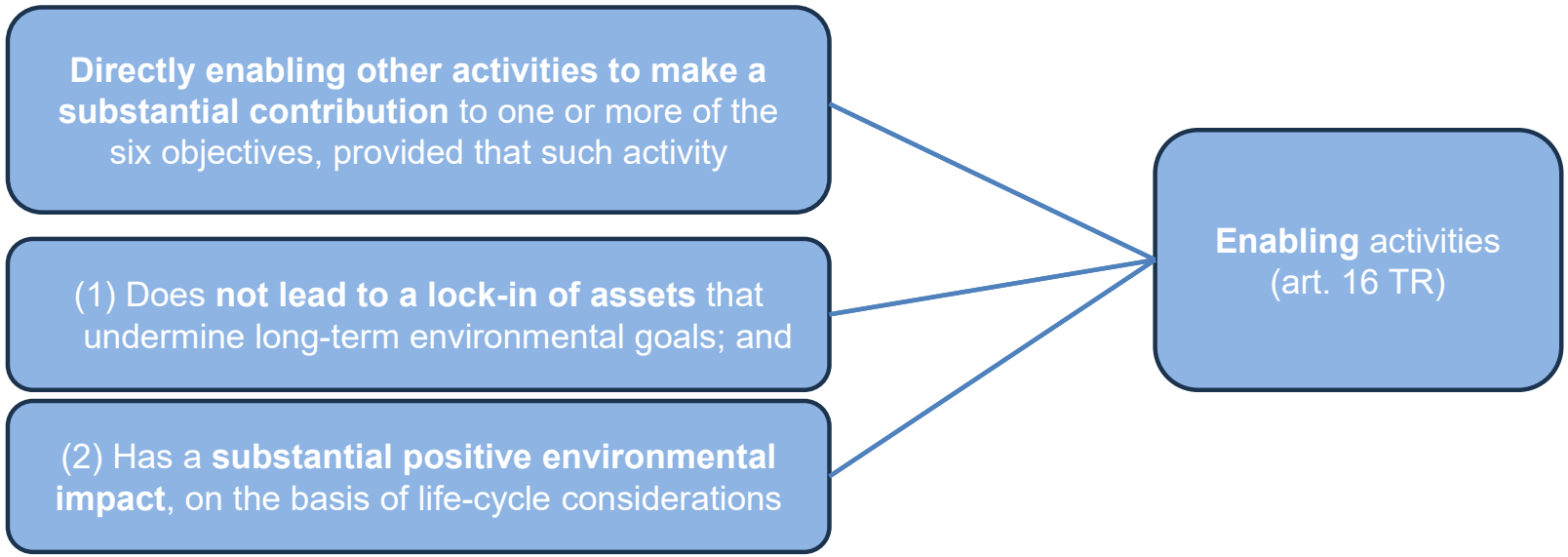

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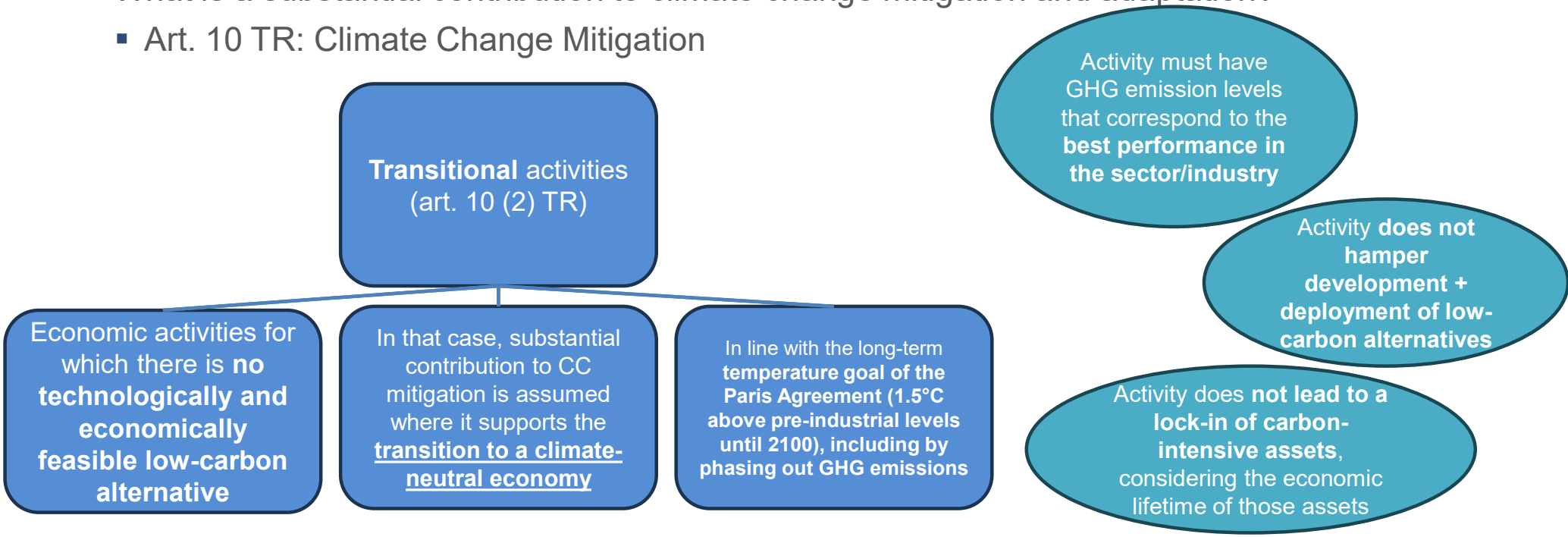

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3. Climate Change Adaptation and Climate Change Mitigation in the EU Taxonomy

- Climate Delegated Act
  - Sets technical screening criteria to determine the **conditions under which an economic activity qualifies as contributing substantially to climate change adaptation and mitigation** *and*
  - Whether the activity causes no significant harm to any of the other five environmental objectives

B. EU Taxonomy

3. Climate Change Adaptation and Climate Change Mitigation in the EU Taxonomy

- Climate Delegated Act
  - **Sectors covered**:
    - Forestry
    - Environmental protection and restoration activities
    - Manufacturing
    - Energy
    - Water supply, sewerage, waste management and remediation activities
    - Transport
    - Construction and real estate
    - Information and communication
    - professional, scientific and technical activities
    - Financial and insurance activities
    - Education
    - Human health and social work activities
    - Arts, entertainment and recreation

B. EU Taxonomy

3. Climate Change Adaptation and Climate Change Mitigation in the EU Taxonomy

- **Climate Delegated Act**
  - **Description of activities** in each of the sectors
  - **Technical Screening Criteria**: what exactly is needed for x activity within y sector to substantially contribute to climate change adaptation?
  - **DNSH**: what is x activity within y sector not allowed to do in order to be considered not doing significant harm to any of the other five environmental objectives?

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3. Climate Change Adaptation and Climate Change Mitigation in the EU Taxonomy

- **Climate Delegated Act**
  - Example: 3.4. Manufacture of batteries – Description

3.4. Manufacture of batteries

Description of the activity

Manufacture of rechargeable batteries, battery packs and accumulators for transport, stationary and off-grid energy storage and other industrial applications and manufacture of respective components (battery active materials, battery cells, casings and electronic components) that result in substantial GHG emission reductions in transport, stationary and off-grid energy storage and other industrial applications.

Recycling of end-of-life batteries.

The economic activities in this category could be associated with NACE C27.2 and E38.3.2 in accordance with the statistical classification of economic activities established by Regulation (EC) No 1893/2006.

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3. Climate Change Adaptation and Climate Change Mitigation in the EU Taxonomy

- **Climate Delegated Act**
  - Example: 3.4. Manufacture of batteries – technical screening criteria

Technical screening criteria

Substantial contribution to climate change adaptation
1. The economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity.
2. The physical climate risks that are material to the activity have been identified from those listed in Appendix A to this Annex by performing a robust climate risk and vulnerability assessment with the following steps:
(a) screening of the activity to identify which physical climate risks from the list in Appendix A to this Annex may affect the performance of the economic activity during its expected lifetime;
(b) where the activity is assessed to be at risk from one or more of the physical climate risks listed in Appendix A to this Annex, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity;

B. EU Taxonomy

3. Climate Change Adaptation and Climate C

- **Climate Delegated Act**
  - Example: 3.4. Manufacture of batteries
    - DNSH

Do no significant harm ('DNSH')	
(1) Climate change mitigation	N/A
(3) Sustainable use and protection of water and marine resources	The activity complies with the criteria set out in Appendix B to this Annex.
(4) Transition to a circular economy	For manufacturing of new batteries, components and materials, the activity assesses the availability of and, where feasible, adopts techniques that support: (a) reuse and use of secondary raw materials and reused components in products manufactured; (b) design for high durability, recyclability, easy disassembly and adaptability of products manufactured; (c) information on and traceability of substances of concern throughout the life cycle of the manufactured products. Recycling processes meet the conditions set out in Article 12 and in Annex III, Part B, of Directive 2006/66/EC, including the use of the latest relevant Best Available Techniques, the achievement of the efficiencies specified for lead-acid batteries, nickel-cadmium batteries and for other chemistries. These processes ensure the recycling of the metal content to the highest degree that is technically feasible while avoiding excessive costs. Where applicable, facilities carrying out recycling processes meet the requirements laid down in Directive 2010/75/EU.
(5) Pollution prevention and control	The activity complies with the criteria set out in Appendix C to this Annex. Batteries comply with the applicable sustainability rules on the placing on the market of batteries in the Union, including restrictions on the use of hazardous substances in batteries, including Regulation (EC) No 1907/2006 and Directive 2006/66/EC.
(6) Protection and restoration of biodiversity and ecosystems	The activity complies with the criteria set out in Appendix D to this Annex.

B. EU Taxonomy

4. Changes (+ relief) as of 1 January 2026 (February 2025 omnibus package)

Element	EU Taxonomy regulations	New proposal
Scope of reporting companies	All companies falling under the CSRD must mandatorily report according to the EU taxonomy	Companies with <1,000 employees and net turnover up to €450 million can **voluntarily** report on the Taxonomy
Partial alignment	Only fully aligned activities are considered as ecologically sustainable	Partial alignment with the Taxonomy should be possible
Materiality thresholds	Companies could set and provide reasoning for thresholds by themselves	No reporting for activities that are not financially material (e.g., not exceeding 10% of turnover, Capex or Opex)

B. EU Taxonomy

4. Changes (+ relief) as of 1 January 2026 (February 2025 omnibus package)

- **Publication of Commission Delegated Regulation on 4 July 2025 → implementation of Omnibus package**
- **Modifications to Disclosures Delegated Act**
  - Taxonomy-compliance granted even if not all KPIs reported
    - Condition: immateriality of these activities (e.g. economic activities represent less than 10% of the CapEx KPI)
  - Exclusion from disclosure duties of certain assets, financial products and instruments
- **Modifications to Climate Delegated Act**
  - Replacement of annexes:
    - Exclusion of certain goods and commodities in order to limit the application of the DNSH principle
- **Modifications to Environment Delegated Act**

VI. Appendix

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Several Specialized Masters Programmes

Start date:
September

Collective Investment Schemes Law & Regulation

Banking & Financial Law

Finance and Economics

Sustainable Finance Track

Thank you!

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The EU Corporate Sustainability Due Diligence Directive

Principles of Regulating MNEs

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