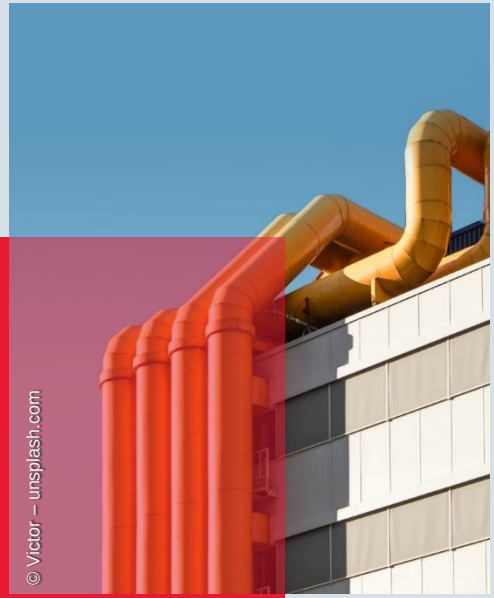
adelphi

IN COOPERATION WITH

accenture



CLIMATE RISK ASSESSMENTS FOR EU TAXONOMY REPORTING

Recommendations on how to perform a robust climate risk and vulnerability assessment

19.04.2023

Webinar: Climate risk assessments in the context of the EU Taxonomy

Christian Kind (adelphi), Lukas Dorsch (adelphi), Thomas Loew (Accenture)

DISCLAIMER

The given recommendations and **any legal references and information are not legally binding and do not constitute legal advice in individual cases. The recommendations cannot and are not intended to replace legal advice**. As such, the authors cannot give a guarantee that implementing the recommendations will result in a legally compliant climate risk and vulnerability assessment as required by the Climate Delegated Act.

OVERVIEW

1. The role of climate risk assessments in the EU Taxonomy
2. Key steps of a taxonomy-aligned climate risk assessment
   - Preparation
   - Screening
   - Climate risk assessment
   - Identification of adaptation solutions
3. Documentation

CLIMATE RISK ASSESSMENTS IN THE EU TAXONOMY

- The EU Taxonomy Delegated Regulation (EU) 2021/2139 ("Climate Delegated Act“) requires companies to carry out a "robust climate risk and vulnerability assessment" (hereafter abbreviated to CRA) for their economic activities in order to achieve taxonomy alignment
  - As a "significant contribution“ criterion for the environmental objective "adaptation to climate change”
  - As a “do no significant harm" (DNSH) criterion to "adaptation to climate change”

- The requirements for a CRA are the same for both purposes; differences in the criteria concern the implementation of adaptation solutions

- The Draft Delegated Acts from 5 April 2023 specify the same DNSH criteria to "adaptation to climate change” for the other four environmental objectives which significantly increases the number of economic activities concerned

EU TAXONOMY REQUIREMENTS FOR CLIMATE RISK ASSESSMENTS (DNSH)

See Climate Delegated Act, Annex I, Appendix A, p. 140):

1. Identification of „physical climate risks that are material to the activity“
2. Assessment “of adaptation solutions that can reduce the identified physical climate risk”

CRA

3. Implementation of adaptation solutions
   - „For existing activities and new activities using existing physical assets“: Preparation of an adaptation plan to implement adaptation solutions in the next five years, “that reduce the most important identified physical climate risks”
   - „For new activities and existing activities using newly-built physical assets“: Integration of adaptation solutions „at the time of design and construction“ and implementation „before the start of operations”

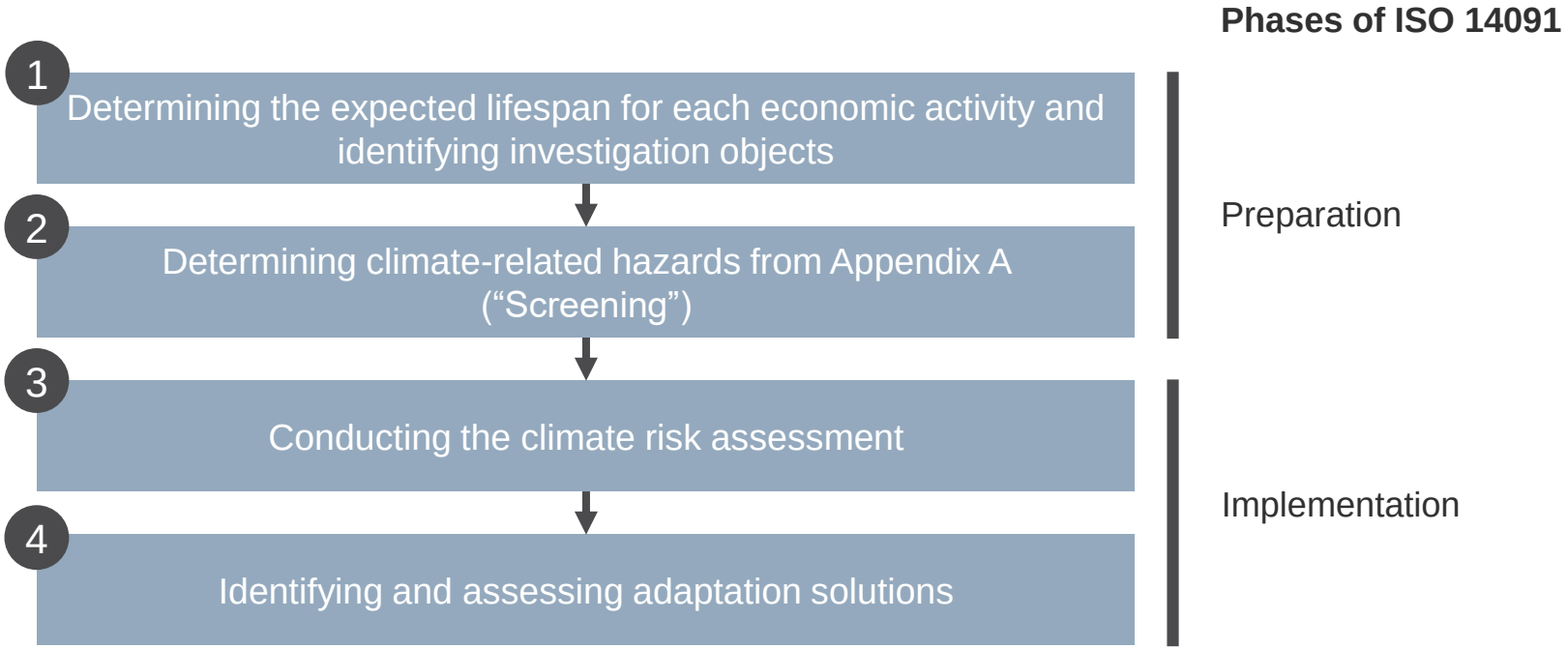
EU TAXONOMY REQUIREMENTS FOR CLIMATE RISK ASSESSMENTS

- The technical screening and DNSH criteria of the Climate Delegated Act set out some general requirements for carrying out CRA:
  - Screening pre-defined climate-related hazards from Appendix A, Section II.
  - Using climate projections consistent with the expected lifetime of the economic activity
  - Take into account state-of-the-art science and methodologies for CRA

- The requirements for CRA were specified in the Draft Commission Notice from 19 December 2022 (“FAQs”, p. 67-71)

- The UBA recommendations for companies on how to perform a robust climate risk and vulnerability assessment (focus: manufacturing sector) are in line with these requirements

KEY STEPS OF A TAXONOMY-ALIGNED CLIMATE RISK ASSESSMENT



Source: adelphi / Dorsch et al. 2022 (adapted)

STEP 1.1: DETERMINING THE EXPECTED LIFESPAN FOR EACH ECONOMIC ACTIVITY

- Which economic activities are eligible under the EU Taxonomy (see “Climate Delegated Act”)
- For which eligible economic activities should EU Taxonomy alignment be achieved?
- What is the lifespan of these economic activities?
  - Option 1: at least ten years => general assumption (“going concern” principle)
  - Option 2: less than ten years => provide specific reasons

Interpretation of legal requirements

173. What are the minimum requirements for a climate risk and vulnerability assessment in terms of scope and level of details (materiality of risks etc.)?

- *Lifespan*
- *All relevant objects of the economic activity should be considered*

(Draft Commission Notice from 19 December 2022 (“FAQs”), p. 71)

STEP 1.2: IDENTIFYING INVESTIGATION OBJECTS

- Investigations objects: What systems carry out the taxonomy-relevant economic activities?

- To be considered for the manufacturing sector:
  - Production sites
  - Procurement (including supply chain)
  - Transportation between sites

Legal requirements

The physical climate risks that are material to the activity have been identified.
(Climate Delegated Act, Annex I, Appendix A)

We recommend: Pay attention to **proportionality** concerning the level of detail when selecting investigation objects in the areas of procurement and transportation

STEP 2: DETERMINING CLIMATE-RELATED HAZARDS FROM APPENDIX A ("SCREENING")

	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic	Changing temperature (air, freshwater, marine water)	Changing wind patterns	Changing precipitation patterns and types (rain, hail, snow/ice)	Coastal erosion
	Heat stress		Precipitation or hydrological variability	Soil degradation
	Temperature variability		Ocean acidification	Soil erosion
	Permafrost thawing		Saline intrusion	Solifluction
			Sea level rise	
			Water stress	
Acute	Heat wave	Cyclone, hurricane, typhoon	Drought	Avalanche
	Cold wave/frost	Storm (including blizzards, dust and sandstorms)	Heavy precipitation (rain, hail, snow/ice)	Landslide
	Wildfire	Tornado	Flood (coastal, fluvial, pluvial, ground water)	Subsidence
			Glacial lake outburst	

Source: Climate Delegated Act, Annex I, Appendix A, Section II., p. 140

Legal requirements

a) screening of the activity to identify which physical climate risks from the list in Section II of this Appendix may affect the performance of the economic activity during its expected lifetime

(Climate Delegated Act, Annex I, Appendix A)

STEP 2.1: FILTERING OUT HAZARDS BASED ON THEIR SPATIAL OCCURRENCE

Is the occurrence of the climate-related hazard possible for the investigation object (production site, procurement, transportation)? (Yes/No)

	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic	Changing temperature (air, freshwater, marine water)	Changing wind patterns	Changing precipitation patterns and types (rain, hail, snow/ice)	Coastal erosion
	Heat stress		Precipitation or hydrological variability	Soil degradation
	Temperature variability		Ocean acidification	Soil erosion
	Permafrost thawing		Saline intrusion	Solifluction
			Sea level rise	
			Water stress	
Acute	Heat wave	Cyclone, hurricane, typhoon	Drought	Avalanche
	Cold wave/frost	Storm (including blizzards, dust and sandstorms)	Heavy precipitation (rain, hail, snow/ice)	Landslide
	Wildfire	Tornado	Flood (coastal, fluvial, pluvial, ground water)	Subsidence
			Glacial lake outburst	

Source: Climate Delegated Act, Annex I, Appendix A, Section II., p. 140 (adapted)

STEP 2.2: FILTERING OUT HAZARDS BASED ON THE POSSIBILITY OF ADVERSE EFFECTS

- Some economic activities cannot be significantly affected in their performance by certain hazards, regardless the underlying climate scenario

- To screen hazards, we suggest to subdivide the investigation objects into system elements that are decisive for their functionality, e.g. for an industrial site
  - Buildings (general, superstructures, basements, …)
  - Indoor operation facilities
  - Outdoor warehouses
  - Access to the site
  - Water supply
  - Productions process
  - Employees
  - …

Interpretation of legal requirements

All relevant objects of the economic activity should be considered

(Draft Commission Notice from 19 December 2022, p. 71)

STEP 2.2: FILTERING OUT HAZARDS BASED ON THE POSSIBILITY OF ADVERSE EFFECTS

1. *Would one or more of the relevant system elements of your investigation object be negatively affected if the climate-related hazard occurred in its most extreme form, including in combination with other climate-related hazards? (Yes/No)*

2. *If so, could the potential adverse effect(s) on system elements significantly impair the performance of the economic activity (for production sites: within the boundary of the site)? (Yes/No)*

Legal requirements

a) screening of the activity to identify which physical climate risks from the list in Section II of this Appendix may affect the performance of the economic activity during its expected lifetime

(Climate Delegated Act, Annex I, Appendix A)

STEP 2.2: FILTERING OUT HAZARDS BASED ON THE POSSIBILITY OF ADVERSE EFFECTS

		Climate-related hazards (EU Taxonomy)					
		Heat wave/ Heat stress	Storm (including blizzards, dust and sandstorms)	Drought / Water stress	Heavy precipitation (rain, hail, snow/ice)	Temperature variability	Changing wind patterns
System elements (industrial site)	Indoor operating facilities	0	0	0	1	0	0
	Outdoor operating facilities	1	0	0	1	0	0
	Indoor warehouses	0	0	0	1	0	0
	Outdoor warehouses	1	0	0	1	0	0
	Access to the site, site traffic (car, truck, train, ship)	1	0	0	1	0	0
	Regional accessibility (car, truck, train, ship)	0	1	0	1	0	0
	To be assessed?	Yes	Yes	No	Yes	No	No

Source: adelphi / Dorsch et al. 2022 (adapted)

STEP 2.2: FILTERING OUT HAZARDS BASED ON THE POSSIBILITY OF ADVERSE EFFECTS

	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic	Changing temperature (air, freshwater, marine water)	Changing wind patterns	Changing precipitation patterns and types (rain, hail, snow/ice)	Coastal erosion
	Heat stress		Precipitation or hydrological variability	Soil degradation
	Temperature variability		Ocean acidification	Soil erosion
	Permafrost thawing		Saline intrusion	Solifluction
			Sea level rise	
			Water stress	
Acute	Heat wave	Cyclone, hurricane, typhoon	Drought	Avalanche
	Cold wave/frost	Storm (including blizzards, dust and sandstorms)	Heavy precipitation (rain, hail, snow/ice)	Landslide
	Wildfire	Tornado	Flood (coastal, fluvial, pluvial, ground water)	Subsidence
			Glacial lake outburst	

Source: Climate Delegated Act, Annex I, Appendix A, Section II., p. 140 (adapted)

STEP 3: CONDUCTING THE CLIMATE RISK ASSESSMENT

1. Understanding significant interrelationships between the climate-related hazards and the system elements of the investigation object

2. Gathering information on current and future climate-related hazards

3. Gathering information on the sensitivity of the possibly affected system elements

4. Assessing the overall physical climate risks

STEP 3.1: UNDERSTANDING IMPACT RELATIONSHIPS

1. *Has the investigation object been adversely affected or nearly affected by impacts of climate-related hazards in your company or in comparable companies in the last one or two decades?*

Interpretation of legal requirements

The basis for a robust climate risk assessment is an understanding of how hazards can affect each individual object with regard to the activity under assessment.
(Draft Commission Notice from 19 December 2022, p. 71)

Source: adelphi/ Dorsch et al. 2022, p. 6

STEP 3.1: UNDERSTANDING IMPACT RELATIONSHIPS

2. *How did these adverse effects arise? (directly/through successive impacts/through combined hazards)*

3. *What could have happened if the climate-related hazards had been stronger or had occurred simultaneously?*

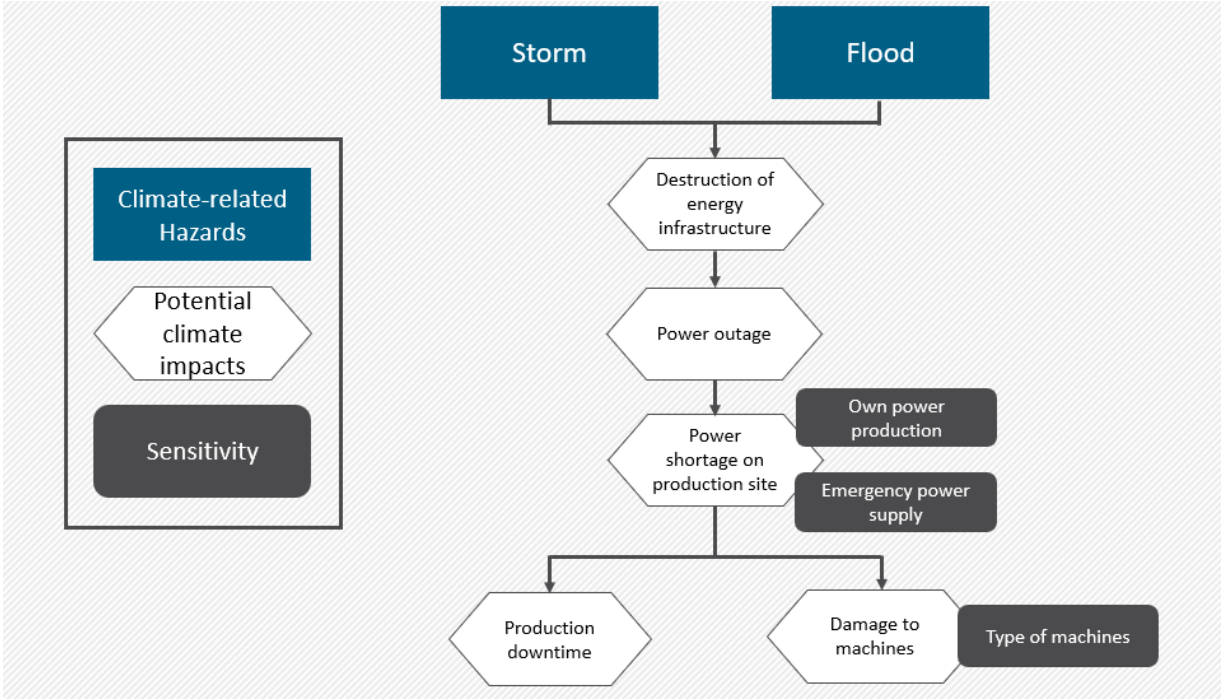
Interpretation of legal requirements

It should be assured beyond reasonable doubt that the economic activity that is being targeted, cannot be affected by secondary or cascading impacts

(Draft Commission Notice from 19 December 2022, p. 71)

STEP 3.1: UNDERSTANDING IMPACT RELATIONSHIPS

If indirect impacts are identified it can be helpful to visualise their effects in flowcharts



Source: adelphi / Dorsch et al. 2022, p. 15

STEP 3.2: GATHERING INFORMATION ON CLIMATE-RELATED HAZARDS

Current climate-related hazards
(time horizon less than 10 years)

What has been the trend for the climate-related hazard over the past one or two decades in the region of the investigation object and in the widersurrounding area/across regions?

Interpretation of legal requirements

(a) for activities with an expected lifespan of less than 10 years, the assessment is performed, at least by using climate projections at the smallest appropriate scale;

(Climate Delegated Act, Annex I, Appendix A)

We recommend: **Use decadal climate predictions** as substitutes, **if available**. Climate projections based on climate models are not trustworthy for time horizons below 10 years.

STEP 3.2: GATHERING INFORMATION ON CLIMATE-RELATED HAZARDS

Future climate-related hazards (time horizon of more than 10 years)

1. *How can the frequency and the intensity of each climate-related hazard change in the future in the region of the investigation object and in the surrounding region/across regions?*
2. *How wide are the ranges of future scenarios? What could be a worst and best case?*

Legal requirements

(b) for all other activities, the assessment is performed using the highest available resolution, state-of-the-art climate projections across the existing range of future scenarios consistent with the expected lifetime of the activity, including, at least, 10 to 30 year climate projections scenarios for major investments.

(Climate Delegated Act, Annex I, Appendix A)

STEP 3.2: GATHERING INFORMATION ON CLIMATE-RELATED HAZARDS

Interpretation of legal requirements

[I]t is not required to use all 4 Intergovernmental Panel on Climate Change (IPCC) pathways. To start the assessment, it is important to see whether the activity that is subject to the climate risk and vulnerability assessment has been subject to impacts from some hazards in the past (e.g. sea-level rise). If this is not the case, following line with the precautionary principle, RCP 8.5 (i.e. low mitigation) should be always used. If positive, lower end scenarios, e.g. RCP 4.5 could be used.
(Draft Commission Notice from 19 December 2022, p. 68f.)

What are the minimum requirements […]?
- *A range of climate projections based on future scenarios*

(Draft Commission Notice from 19 December 2022, p. 72)

We recommend: **Compare one optimistic and one pessimistic case** representing the range of climate model outcomes. A sound option for this is to look at the 15th and 85th percentiles of the RCP8.5 scenario.

STEP 3.3: GATHERING INFORMATION ON THE SENSITIVITY OF SYSTEM ELEMENTS

1. *If relevant system elements of the investigation object have already been affected or nearly affected by the particular climate-related hazard: To which degree was each system element negatively affected?*

2. *To which degree would each relevant system element be negatively affected if the hazard occurred (as experienced by comparable investigation objects)?*

Information basis:

- Experience available for the investigation object
- Extreme events (e.g. loss or damage) of other comparable investigation objects (e.g. other production sites) with high intensity
- Information on losses and damage at comparable companies or locations, if available and useful.

STEP 3.4: ASSESSING THE OVERALL PHYSICAL CLIMATE RISKS

Current climate risks (time horizon less than 10 years)

How material is the potential for adverse consequences from each climate-related hazard for each system element of your investigation object within the next ten years? (low/medium/high)

Future climate risks (time horizon of more than 10 years)

How material is the future potential for adverse consequences from each climate-related hazard for each system element of your investigation object (10-30 years from now)? (low/medium/high)

STEP 3.4: ASSESSING THE OVERALL PHYSICAL CLIMATE RISKS

	Climate-related hazard (EU Taxonomy)											
	Heat wave/ Heat stress			Storm (including blizzards, dust and sandstorms)			Flood - fluvial			etc. ...		
	Current risk	RCP8.5 - optimistic	RCP8.5 - pessimistic	Current risk	RCP8.5 - optimistic	RCP8.5 - pessimistic	Current risk	RCP8.5 - optimistic	RCP8.5 - pessimistic	Current risk	RCP8.5 - optimistic	RCP8.5 - pessimistic
Buildings in general												
Superstructures on buildings												
Basements												
Indoor operating facilities												
Outdoor operating facilities												
Indoor warehouses												

Key: Low risks | Medium risks | High risks

Source: adelphi / Dorsch et al. 2022, p. 22 (adapted)

STEP 4: IDENTIFYING AND ASSESSING ADAPTATION SOLUTIONS

1. *What resources are currently available to adapt to the identified physical climate risks and how are these resources likely to change in the future (based on existing plans)?*

2. *What adaptation solutions are available to effectively reduce the identified physical climate risks? What measures are missing?*

3. *What adaptation solutions can be implemented to reduce the physical climate risks material to your economic activity? What adaptation solutions would be most adequate?*

Legal requirements

c) an assessment of adaptation solutions that can reduce the identified physical climate risk.

[…] reduce the most important identified physical climate risks that are material to that activity.

(Climate Delegated Act, Annex I, Appendix A)

STEP 4: IDENTIFYING AND ASSESSING ADAPTATION SOLUTIONS

Legal requirements

For existing activities and new activities using existing physical assets, the economic operator implements physical and non-physical solutions ('adaptation solutions'), over a period of time of up to five years, that reduce the most important identified physical climate risks that are material to that activity. An adaptation plan for the implementation of those solutions is drawn up accordingly.

For new activities and existing activities using newly-built physical assets, the economic operator integrates the adaptation solutions that reduce the most important identified physical climate risks that are material to that activity at the time of design and construction and has implemented them before the start of operations.
(Climate Delegated Act, Annex I, Appendix A)

For **high climate risks in key system elements, an adaptation plan must be prepared** for implementing adaptation solutions to meet the DNSH requirements. In the case of **medium climate risks**, it is plausible that the company's responsible persons **decide on a case-by-case basis.**

DOCUMENTATION

- For auditing: comprehensible documentation must be available that shows how figures are calculated and how qualitative information is justified

- Documentation of CRA:
  - Preparatory steps performed
  - Assessments made
  - Assessment results

- If climate risks have been identified: adaptation plan including
  - Adaptation solutions (systematically assessed for suitability) risks)
  - Timetable for implementation of adaptation solutions
  - Documentation of already implemented adaptation solutions

OVERVIEW ON THE APPROACH

- Accounts for state-of-the-art science and methodologies (ISO 14091)
- Considers all climate-related hazards from the Climate Delegated Act + adaptation planning
- Transparent and easy to document
- Uses and enhances knowledge within the company
- High effort for the first implementation

CONTACT

Christian Kind

adelphi

Head of Programme Adaptation

kind@adelphi.de

Lukas Dorsch

adelphi

Consultant

dorsch@adelphi.de

Thomas Loew

Accenture

Sustainability Strategy & Consulting

loew@accenture.de

Dr. Inke Schauser

German Environment Agency

KomPass - Climate Impacts and Adaptation

inke.schauser@uba.de

adelphi

Registered seat
Berlin

Offices

Alt-Moabit 91
10559 Berlin
T +49 (30) 8900068-0
F +49 (30) 8900068-10

Landwehrstrasse 37
80336 Munich
T +49 (30) 8900068-140
F +49 (30) 8900068-1

E office@adelphi.de
I www.adelphi.de

adelphi