INTERNATIONAL CENTRE FOR SETTLEMENT OF INVESTMENT DISPUTES

In the arbitration proceeding between

AZIENDA ELETTRICA TICINESE

– Claimant –

and

FEDERAL REPUBLIC OF GERMANY

– Respondent –

ICSID Case No. ARB/23/47

Before:
Sir Christopher Greenwood GBE CMG KC (President)
John Beechey CBE
Professor Campbell McLachlan KC

COUNTER-MEMORIAL

26 March 2025

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GLOSSARY

2020 Act	Act to Reduce and End Coal-Fired Power Generation, 8 August 2020
UN IPCC Special Report	2018 UN IPCC Special Report on Global Warming of 1.5°C
2013 Preliminary Permit	Decision by the District Government of Arnsberg on the construction and operation of the Lünen Plant, 20 November 2013
2008 Preliminary Permit	Decision by the District Government of Arnsberg on the construction and operation of the Lünen Plant, 6 May 2008
1958 Law	Law establishing the Azienda Elettrica Ticinese, 25 June 1958
AET	Azienda Elettrica Ticinese
AET Law	The Law on the Azienda Elettrica Ticinese, 10 May 2016
AR5	Fifth UN IPCC Assessment Report
AR6	Sixth UN IPCC Assessment Report
BDEW	German Association of Energy and Water Industries (*Bundesverband der Energie- und Wasserwirtschaft*)
BND	Federal Foreign Intelligence Service (*Bundesnachrichtendienst*)
BNetzA	Federal Network Agency (*Bundesnetzagentur*)
BUND	German Federation for the Environment and Nature Conservation (*Bund für Umwelt und Naturschutz Deutschland*)
Cancún Pledges	Quantified economy-wide emission reduction targets stipulated for under the Cancún Agreements
Claimant	Azienda Elettrica Ticinese
Coal Commission	Commission for Growth, Structural Change, and Employment
Coal-Firing Stop	Order that prohibits the firing of hard-coal in hard-coal fired installations
COP	The United Nations Framework Convention on Climate Change's Conference of the Parties
CO_2	Carbon dioxide
CO_2-eq	Carbon dioxide equivalents
ECT	Energy Charter Treaty, Lisbon, 17 December 1994, UNTS 2080, 95
ECHR	European Charter of Human Rights
ECtHR	European Court of Human Rights
ETS	European Emissions Trading System
EU	European Union
FET	Fair and Equitable Treatment

FICL	Federal Immission Control Law (*Bundesimmissionsschutzgesetz*)
German Advisory Council	German Advisory Council on the Environment (*Sachverständigenrat für Umweltfragen*)
Germany	The Federal Republic of Germany
GHG	Greenhouse gas emissions
$GtCO_2$	Carbon dioxide emissions measured in Gigatons
GWS	Institute of Economic Structures Research (*Gesellschaft für wirtschaftliche Strukturforschung*)
IFoA	Institute and Faculty of Actuaries
INDC	Intended Nationally Determined Contributions
Kyoto Protocol	Kyoto Protocol to the United Nations Framework Convention on Climate Change, UNTS Chapter XXVII 7. a.
LEAG	Lausitz Energie Kraftwerke AG und Lausitz Energie Bergbau AG
Loan Agreement	Loan Agreement between Trianel Kohlekraftwerk Lünen GmbH & Co. KG and Trianel Kohlekraftwerk Lünen Verwaltungs GmbH and Portigon AG and IKB Deutsche Industriebank Aktiengesellschaft, 26 July 2008 (amended from time to time)
Lünen Plant	The Coal-Fired Power Plant in Lünen, Germany
NDC	Nationally Determined Contributions
NFGS	Network for Greening the Financial System
Paris Agreement	Paris Agreement, 12 December 2015, UNTS Chapter XXVII 7.d.
Partnership Agreement	Agreement between the shareholders of Trianel, 8 May 2008
Phase-Out	The phase-out of hard-coal and lignite fired power generation
PIK	Potsdam Institute for Climate Impact Research
Pieroth/Hartmann Report	Legal opinion for the Federal Ministry for Economic Affairs and Energy: "*Constitutional Matters of the Coal Phase-Out Law*" by Professor Bodo Pieroth and Professor Bernd Hartmann, 21 December 2020
PPA	Power Purchase Agreement between Azienda Elettrica Ticinese and Trianel Kohlekraftwerk Lünen GmbH & Co. KG, 8 March 2008 (amended in 2015)
RCPs	Representative Concentration Pathways
Respondent	The Federal Republic of Germany
RFCs	Reasons for Concern
RWE	Rheinisch-Westfälisches Elektrizitätswerk AG
SSP	Shared Socio-Economic Pathways
STEAG	STEAG Energy Services GmbH
Ticino Government	The State Council of the Canton of Ticino, Switzerland

Ticino Parliament	The Grand Council of the Canton of Ticino, Switzerland
Trianel	Trianel Kohlekraftwerk Lünen GmbH & Co. KG
UN IPCC	United Nations Intergovernmental Panel on Climate Change
UNFCCC	United Nations Framework Convention on Climate Change, UNTS Chapter XXVII 7
WBGU	German Advisory Council on Global Change (*Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen*)

I. INTRODUCTION

A. CLAIMANT SEEKS THE FIRST ICSID AWARD ORDERING DAMAGES FOR A CLIMATE-ACTION MEASURE

1. Claimant begins its Request for Arbitration by asserting: "*The dispute is […] no[t] about contesting the need to reduce CO2 emissions*"[1]. The opposite is true. The only alleged Measure that Claimant invokes is the Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 (the "**2020 Act**"). The purpose of the 2020 Act is to mitigate climate change.[2] That is, Claimant wants this Tribunal to be the first investment treaty tribunal ever to order a State to pay damages for a legislative measure dedicated to climate action.

2. Claimant's request must be rejected. As set out in detail in this Counter-Memorial, climate action is necessary to save species, prevent geopolitical conflicts, mitigate poverty, and avoid billions of damages for global economies.[3] Further, climate-action targets are codified in rules of EU and German law that Claimant does not (and cannot) challenge as measures. Above all, the necessity for climate action is a rule of the applicable public international law, *e.g.* the 2015 Paris Agreement.

3. The 2020 Act is a legitimate exercise of Respondent's police powers. Hence, there cannot be any alleged expropriation claim.[4] Further, the 2020 Act is in compliance with the fair-and-equitable treatment ("**FET**") standard because it is within Respondent's right to regulate.[5]

4. In the Memorial, Claimant seeks to circumvent these rules of international law by alleging the 2020 Act would have discriminated the Lünen Plant. In essence, these allegations come down to one complaint, *i.e.* that the 2020 Act does not treat all power plants 100% proportional to their age. Claimant's discrimination allegations are flawed. With the 2020 Act, the legislator had to undertake a complex balancing exercise. In addition to mitigating climate change, the legislator had to safeguard the security of energy supply as well as jobs and social peace. The balancing was within the legislator's margin of appreciation. Articles 10, 13 ECT do

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1 Request for Arbitration, ¶ 3.

2 **C-0097-ENcorrected**, Parliamentary Paper BT-Dr. 19/17342, *Explanatory Memorandum and Draft Coal Ban Law*, 24 February 2020 (excerpts), I. Purpose and necessity of provision, adobe p. 10.

3 See below, II.F.

4 See below, sect. IV.A.1, ¶¶ 380-433.

5 See below, sect. IV.C, ¶¶ 506-554.

not allow, let alone require, to second-guess every detail of a legislator's decision in complex balancing exercises.

5. Finally, Claimant's claim must also be dismissed because the damages valuation of Claimant and its experts denies all scientific and treaty requirements of climate action. For example, Claimant's entire valuation is built on the assumption that CO_2 certificate prices would remain far below the amount needed to reach the goals under the Paris Agreement. An award based on such assumption would deny not only the Paris Agreement but the existential need to reduce CO_2 emissions and mitigate climate change.

B. EVEN BEYOND THE ISSUE OF CLIMATE CHANGE, THE FLAWS IN CLAIMANT'S CASE ARE NUMEROUS

6. Claimant's case must not only fail because it denies the need for climate action. There are, indeed, dozens of other factual and legal flaws in Claimant's case about which Claimant kept silent in its Memorial. These flaws include but are not limited to the following facts:

7. Claimant is not a private investor. Claimant is a Swiss, wholly State-owned entity. The alleged decision to invest was made (i) by parliament (ii) for reasons of State policy, rather than commercial reasons. Therefore, the present dispute is a State-State dispute outside the scope of Article 25 ICSID Convention.[6]

8. Claimant did not invest in reliance on any State regulations. Claimant raises an FET claim, but the term 'legitimate expectations' cannot be found anywhere in the Memorial. That is, Claimant does not even allege to have any legitimate-expectation claim. Nor could Claimant. It is undisputed that an explicit assurance for hard-coal plants' lifetime was never included in any German law, regulation or decision. This is the reason why Claimant advances its incorrect theory that FET would be an abstract prohibition of regulation, which it is not.[7]

9. Claimant conceals that, shortly after the alleged Investment, a referendum with the force of law in Switzerland obligated Claimant to leave the power plant as soon as the breakeven point is reached and by 2035 at the latest (even with losses). That is, under Swiss law, Claimant could not have generated profits from holding its shares in the Lünen Plant. Ignoring this, Claimant presents a lost-profits claim for the alleged profits generated by the shares into the 2050s.

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6 See below, sect. III, ¶¶ 341-377.

7 See below, sect. II.A.2, ¶¶ 41-47, and sect. IV.C.1, ¶¶ 508-538.

Further, Swiss law obligated AET to begin searching for buyers of its shares in 2011. However, in this arbitration, AET presents a hypothetical fair market value without a single evidence on the offers received during the nine years until the 2020 Act.[8]

10. Claimant's Lünen Plant never received a final and binding operating permit before the alleged Measure. In the Memorial, Claimant relies on two preliminary operating permits, the District Government of Arnsberg's preliminary decision (*Vorbescheid*) of 6 Mai 2008 (Exhibit C-33 – "**2008 Preliminary Permit**") and the District Government's preliminary decision of 20 November 2013 (Exhibit C-30, "**2013 Preliminary Permit**"). The 2008 Preliminary Permit was revoked and held unlawful in court. The 2013 Preliminary Permit post-dates the alleged Investment on record by more than five years. Moreover, it was still subject to litigation brought by an environmental NGO in 2020. The outcome of this national litigation could have been the revocation of the permit because the permit was not final and pending. Moreover, under German law, operating permits can be changed at any time, *e.g.* if the scientific standards on air pollution (*TA Luft*) change.[9]

11. Claimant will be liable for the Lünen Plant's final debt because, in 2023, Claimant unnecessarily conceded all of its positions towards the domestic banks. Claimant did not substantiate that under the contracts in place until 2023, Claimant had any obligation to pay for the loan outstanding at the time the Lünen Plant's receives the order that prohibits the firing of hard-coal for the purposes of electricity production ("**Coal-Firing Stops**").[10]

12. Claimant already conceded that its shares in the Lünen Plant had, at best, a fair market value of only EUR 11.0 mil. at the valuation date. This alleged fair market value caps all claims under Article 13(1) ECT. Further losses, if any, could only be claimed under the customary-international law standard. However, Claimant fails to present an *ex post* valuation required under this standard.[11]

13. Claimant could not provide any explanation why the other hard-coal power plants of an age comparable to the Lünen Plant (Westfalen and Moorburg) participated in the auctions

[8] See below, sect. II.B.1, ¶¶ 105-118.

[9] See below, sect. II.B.2, ¶¶ 119-127.

[10] See below, sect. II.E.2, ¶¶ 248-266. For the purposes of this Counter-Memorial, the abbreviation Coal-Firing Stop only relates to the production of electricity through the firing of hard-coal.

[11] See below, sect. V.A.1, ¶¶ 579-581.II.E.1

under the 2020 Act, agreed voluntarily to stop firing coal and received remuneration for this, but the Lünen Plant chose not to participate in the auctions.[12]

14. Claimant also conceded that converting the Lünen Plant to a gas power plant would result in, at least, a EUR 15.3 mil. net benefit for Claimant alone. For context, in Claimant's own case, this net benefit is more than the fair market value of Claimant's shares in the Lünen Plant but-for the Measures (EUR 11.0 mil.). Claimant's domestic co-shareholders even lobby for a conversion.[13] Yet, in this arbitration, Claimant asserts that a conversion would not be an option. However, Claimant does not provide any plausible economic reasons. Nor did Claimant even address that in addition to the conversion option already conceded, other conversions are also possible, *e.g.* with a gas turbine that will render the Lünen Plant hydrogen-ready.[14]

15. Claimant's experts already conceded that the 2020 Act increased the electricity price. Hence, from 2020 until today, the 2020 Act created benefits for the Lünen Plant. However, the German electricity market is not isolated. Just as in Germany, the 2020 Act also increased electricity prices in Switzerland and France. In these countries, AET holds a large hydro and nuclear portfolio. The benefits caused by the 2020 Act and the increased electricity prices for this portfolio must be deducted from the damages (if any).[15]

16. Claimant's treatment of taxes shows a lack of professional scrutiny. Claimant ignores the 17.15% trade tax due on the Lünen Plant's Trianel Kohlekraftwerk Lünen GmbH & Co. KG ("**Trianel**"). Further, Claimant makes a two-paragraph tax gross-up claim without even remotely specifying which taxes would be due on an award (if any) that would not have been due on Claimant's profits (if any) but for the Measures. Many investors before Claimant already saw such frivolous claims rejected by treaty tribunals.[16]

17. These reasons only constitute limited examples of the flaws in Claimant's assertions. For example, section V. below on quantum includes 27 (twenty-seven) sub-sections with flaws in Claimant's alleged damages valuation; several of them, on their own, already sufficient for

[12] See below, sect. II.E.1, ¶¶ 243-247.
[13] See below, sect. II.E.3 ¶¶ 275-275.
[14] See below, sect. II.E.3, ¶¶ 267-277.
[15] See below, sect. II.E.4, ¶¶ 278-280.
[16] See below, sect. V.B.18 and V.B.19.

disposing of Claimant's alleged claim. For the full reasons set out in this Counter-Memorial, Claimant's claims must be dismissed with costs.

C. OVERVIEW OVER STRUCTURE, WITNESSES AND EXPERTS

18. In accordance with the timetable set out in Procedural Order No. 2, the Federal Republic of Germany ("**Respondent**" / "**Germany**") submits this Counter-Memorial together with Exhibits R-1 through R-0190 as well as RL-1 through RL-118. Respondent also re-submits corrected or extended translations of Exhibits C-9, C-12, C-13, C-30, C-33, C-40, C-41, C-47, C-75, C-76, C-78, C-97, C-127.

19. The Counter-Memorial includes Respondent's statement on facts (see below, at II.), preliminary objection to jurisdiction *ratione personae* (at III.), defense on liability (at IV.), and position on quantum (at V.). For the avoidance of doubt, all arguments in the present arbitration on liability are and will be submitted only for the event that the Tribunal should accept jurisdiction (*quod non*). All arguments on quantum are and will be submitted only for the event that the Tribunal should decide that Respondent breached the ECT (which Respondent did not).

20. Together with this Counter-Memorial, Respondent submits the following expert reports and witness statements:

21. The expert report of **Julian Delamer** and **Alan Rozenberg** from Compass Lexecon analyses matters of damages. Contrary to Claimant's experts from Secretariat (who were provided with all input data), they also assess the appropriate input data.

22. The expert report of **Hanns Koenig** from Aurora reviews the power market modelling of Claimant's experts from Frontier and provides a power market modelling with the appropriate input data.

23. The expert report of **Marco Wünsch** and **Hans Dambeck** from Prognos shows the technical conversion options of the Lünen Plant and also reviews technical assumptions of Claimant and its economic experts, *e.g.* on OPEX, maintenance periods and load ramps, from an engineering point of view.

24. The expert report of **Professor Hans-Joachim Schellnhuber** analyses the relevant scientific foundations of climate change and the necessity for its mitigation.

25. Professor Schellnhuber was also a member of the pluralistic, independent commission of stakeholders (the "**Coal Commission**" as Claimant titled it) that recommended the hard-coal phase-out before the 2020 Act. Therefore, Professor Schellnhuber also submits a witness statement.

26. Respondent also submits the witness statements of **Jan-Kristoff Wellershoff** (who was in charge of the Federal Ministry for Economic Affairs and Climate Action's unit providing the first draft of the 2020 Act), **Andreas Jung** (who was in charge of the unit handling the billions of subsidies for hard-coal mining until 2018), and **Thorsten Schmitz-Ebert** (who oversees the District Government of Arnsberg's department supervising the Lünen Plant).

27. All emphases in verbatim quotes have been added unless stated otherwise. Abbreviations are defined in the glossary above or taken from the GAR Universal Citation in International Arbitration Guide (RL-118).

II. FACTS

28. This section includes Respondent's disagreements with the factual allegations made in the Memorial and additional decisive facts not mentioned in the Memorial. Respondent addresses these facts in chronological order, addressing the alleged Investment (see below, at A.), the Lünen Plant's operation after the alleged Investment (at B.), the regulatory steps for climate action until the 2020 Act (at C.), the 2020 Act (at D.), Claimant's voluntary actions after the 2020 Act (at E.), and the evidence on the necessity for climate action as of today (at F.).

A. THE ALLEGED INVESTMENT

29. In the Memorial, Claimant describes the alleged Investment and the circumstances surrounding this alleged Investment incompletely and incorrectly for the following reasons:

- Claimant does not substantiate when an Investment was made (see below, at 1.);
- Claimant does not and cannot make a legitimate-expectation claim because Claimant never received a formal commitment for the Lünen Plant's lifetime (at 2.);
- Claimant does not comment on the climate-action regulations already in place at the time of the Investment (at 3.);
- aware of these shortcomings, Claimant makes a political-speeches case which is not only insufficient, but also incorrect (at 4.-5.);
- Claimant overstates the Lünen Plant's 2008 Preliminary Permit later revoked in court (at 6.);
- Claimant's evidence shows that the only basis for the alleged Investment were not State promises, but its own, internal projections for electricity demand which did not properly foresee the increase in renewable energy capacities (at 7.).

1. AET did not substantiate when an alleged Investment was made

30. A preliminary matter concerns Claimant's assertion that "*AET made a significant financial contribution of EUR 23.433.611,40 [sic]*."[17] Claimant did not submit any evidence to support whether, when or how this sum was paid.

[17] Claimant's Memorial, ¶ 285.

31. Claimant's failure to offer evidence for the making of an Investment has the following consequences: *first*, regarding jurisdiction, Claimant does not meet its burden to proof that it made an Investment. *Second*, regarding the merits, Claimant does not substantiate its claim sufficiently either. Claimant does not clarify when an alleged Investment was made even though this timing is important. For example, Claimant builds its entire alleged umbrella-clause claim on the District Government's preliminary decision of 20 November 2013 (Exhibit C-30, "**2013 Preliminary Permit**") but does not substantiate whether any Investment was made in reliance on the 2013 Preliminary Permit.[18] *Third*, in general, Claimant submitting its Memorial without even substantiating the most fundamental facts of the alleged Investment reflects on the lack of precision in Claimant's pleadings.

32. The limited documentation offered by Claimant with the Memorial for its assertion that "*AET made a significant financial contribution of EUR 23.433.611,40 [sic]*"[19] is insufficient for the following reasons:

33. Claimant submitted the current commercial register excerpt of Trianel (Exhibit C-2). However, the excerpt only shows a capital contribution of Claimant of EUR 4,686,722.28.[20] Further, the commercial register does not state that even this lower contribution was paid. Under the applicable German Commercial Code, the contribution published in the commercial register only shows the amount up to which limited partners are liable. If a limited partner has not paid its contribution, the limited partner becomes liable directly towards third parties up to this amount.[21]

34. The oldest relevant document submitted by Claimant is the proposal for a resolution of AET's board of directors of 23 March 2006 (Exhibit C-66). The document states: "*The cost of AET's participation in this second phase [planning phase] thus amounts to EUR 2,175,000. Part of this amount (approx. EUR 1.2 million) may have to be paid in advance […] before the company can formally start its operation, presumably in July 2006. […] the shares in the project company are calculated in such a way that they cover the remaining project costs from the time of foundation until the end of the project (EUR 13.8 million)*."[22] Claimant does not clarify whether

[18] See in further detail below, ¶ 120.

[19] Claimant's Memorial, ¶ 285.

[20] **C-0002**, Commercial Register for TKL, adobe p. 1.

[21] **R-0018**, Commercial Code, sect. 171.

[22] **C-0066-EN**, AET, Message No. 6/06 to the Board of Directors, *AET's participation in "Trianel Power - Projektentwicklungsgesellschaft Kohlekraftwerk mbH & Co. KG", for the construction of a coal-fired power plant in Germany*, 23 March 2006 (excerpts), adobe pp. 9-10.

and, if yes, when any sums were paid in accordance with this resolution. Nor does Claimant comment on the discrepancy between the total costs mentioned herein (EUR 13.8 mil.) and the alleged Investment amount (EUR 23.433 mil.).

35. Claimant further submitted the proposal for and the authorization of AET's board of directors of 9 April 2008 (Exhibits C-77 and C-82). However, the board decision only authorizes AET to provide funding. It does not confirm that funding was already provided. Notably, the board of directors authorised to provide only EUR 22.0 mil., not EUR 23.433 mil.[23] Moreover, neither the proposal nor the authorisation explains how or why AET's alleged costs of originally EUR 13 mil. almost doubled.

36. The Trianel Partnership Agreement of 8 May 2008 ("**Partnership Agreement**") submitted by Claimant (Exhibit C-80) only states that Claimant was obligated to make a financial contribution.[24] The Agreement does not confirm that such amount was in fact paid.

37. The next document submitted by Claimant is a publication from the State Council of the Swiss Canton of Ticino ("**Ticino Government**") of 9 July 2008 (Exhibit C-63). For context, this publication dates two months after the 2008 Preliminary Permit of May 2008 addressed further below.[25] The publication states: "*To date, AET has been asked to contribute EUR 13.2 million to financing the company. The remaining tranche of approx. EUR 9 million is to be paid within two months of obtaining the building permit, which is expected in mid-2008*."[26] In the Memorial, Claimant does not comment at all on this passage, let alone (i) the discrepancies between EUR 13.2 mil. (the amount mentioned in the publication) and EUR 23.4 mil. (the alleged Investment), (ii) the timing of any of these potential payments, (iii) or which building permit this publication post-dating the 2008 Preliminary Permit meant.

38. Claimant's next alleged evidence (not even referred to in the Memorial) is presented by Claimant's experts from Secretariat. In Appendix C.1 (an Excel file) they list certain alleged

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[23] **C-0082-EN**, AET, *Minutes of the 281st Meeting of the Board of Directors*, 9 April 2008 (excerpts), adobe p. 2: "Di Stefano leaves the meeting due to other commitments. […] Pedrina and David raise concerns about the energy source. […] The president puts the management message to the vote. Result: 7 in favour, 2 abstaining, 0 against. Conclusion: Based on these considerations, the Board of Directors authorises the management to: […] participate in the necessary financing of TPK up to a maximum total of EUR 22 million".

[24] **C-0080-EN**, TKL 2008 Partnership Agreement, 8 May 2008 (excerpts), sect. 3(3).

[25] See below, ¶¶ 75-89.

[26] **C-0063-EN**, Department of Finance and Economic Affairs of the Canton of Ticino, *Message No. 6091 to the Grand Council of the Republic and Canton of Ticino on the Participation of AET in a company for the construction of a thermal power plant in Germany*, 9 July 2008, at 4.5.

Investment amounts and Investment dates. The last alleged Investment is dated 2008. However, the sources cited in this Excel file, Exhibits SD-12 through SD-19 are not receipts of actual transfers of money. Instead, these documents are mere requests by Trianel to AET to make payment. Claimant's experts do not provide proof that payment was made.

39. Claimant's only exhibit indicating that any money was paid by AET is the Ticino Government's report to the Grand Council of the Canton of Ticino ("**Ticino Parliament**") of 23 February 2010 (Exhibit C-84). It mentions that the EUR 23.433 mil. would constitute "*paid-up equity*" ("*capitale proprio versato*" in the Italian original of the document). However, the document does not show *when* or *how* such equity was paid, nor why the amount is higher than anticipated in all the other documents.[27]

40. In conclusion, Claimant did not meet its burden to substantiate its Investment. Above all, the specific timing of any alleged Investment remains unclear. Respondent reserves its rights to raise document-production requests in this regard and supplement the following arguments on the merits once, if at all, Claimant clarified the timing of its alleged Investment.

2. Respondent never gave a formal commitment for the Lünen Plant's lifetime

41. Before addressing the chronology regarding the alleged Investment, Respondent highlights that a long list of matters are undisputed because Claimant has not made any contrary allegations in the Memorial:

42. It is undisputed that neither Claimant nor Trianel ever concluded a contract with any public authority regarding the lifetime of the Lünen Plant.

43. It is also undisputed that the Lünen Plant never received any permit which promised explicitly that the Lünen Plant would be able to operate into the 2050s (which is the timeframe until which the Lünen Plant operates in the damages valuation of Claimant's experts).

44. It is equally undisputed that the Lünen Plant never received any explicit and binding confirmation by any public authority that the regulatory framework in force before the 2020 Act would remain unchanged. On the contrary, it is inherent in any emission permit such as the 2013 Preliminary Permit that the regulatory framework can change at any time. This is addressed in

[27] **C-0084-EN**, Department of Finance and Economic Affairs of the Canton of Ticino*, Special Energy Commission: Majority Report on AETs Message No. 6091 concerning its Participation in TKL* 23 February 2010, adobe p. 11.

further detail below and in the Witness Statement of Mr. Schmitz-Ebert, who oversees the District Government Arnsberg's department supervising the Lünen Plant.[28]

45. It is also undisputed that before the 2020 Act, a German statute which stated explicitly that hard-coal power plants would be able to operate into the 2050s, did not exist.

46. Finally, it is undisputed that before the 2020 Act, a German statute promising hard-coal power plants that the regulatory framework in force before any first preliminary permit would remain unchanged for the lifetime of the plants, did not exist.

47. In light of these undisputed facts, Claimant does not even allege that it would have a claim for legitimate expectations under Article 10(1) ECT. The Memorial does not even mention the term 'legitimate expectation'.

3. AET had to be aware of the regulatory objective to limit climate change

48. In the Memorial, Claimant keeps almost silent that at the time of the alleged Investment, the electricity market was already subject to international, European, and domestic climate-action regulation. Claimant's Investment (if any) was made in full awareness of this regulation.

49. In 1994, the United Nations Framework Convention on Climate Change ("**UNFCCC**") took effect.[29] The UNFCCC is the first of three international legal agreements addressing climate change. The other two are the Kyoto Protocol and the Paris Agreement. The UNFCCC was the first international treaty to recognize that global warming adversely effects natural ecosystems and humankind.[30] Today, it has near universal membership and serves as the legal framework for international climate-action negotiations.[31] It defines as its ultimate objective in Article 2:

> "to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level

[28] See further below, ¶¶ 125-126.

[29] **RL-0001**, United Nations Treaty Collection, Chapter XXVII, 7. United Nations Framework Convention on Climate Change, New York, 9 May 1992.

[30] *Id*., adobe p. 3. The 1987 Montreal Protocol was limited to adverse effects on the ozon layer.

[31] **R-0019**, United Nations Treaty Collection, Parties to the United Nations Framework Convention on Climate Change, New York, 9 May 2022.

> that would prevent dangerous anthropogenic interference with the climate system."[32]

50. The UNFCCC established the Conference of the Parties ("**COP**").[33] The COP is the principal decision-making body of the UNFCCC. Its task is to promote the effective implementation of the Convention. For this purpose, it holds ordinary sessions every year.[34] Through the COP sessions, global climate action targets gradually evolved over the past decades.

51. In 1995, the first COP was held in Berlin and chaired by Respondent's then Minister for the Environment Dr. Angela Merkel. The German Advisory Council on Global Change (*Wissenschaftlicher Beirat der Bundesregierung Globale Umweltveränderungen* - "**WBGU**") advised the Ministry for the Environment through an accompanying statement on global CO_2 reduction targets and implementation strategies.[35] The federal government had established the WBGU as an independent scientific advisory body in 1992. Respondent's expert in the present arbitration, Professor Hans Joachim Schellnhuber, served as the WBGU's vice chairman from 1994 to 1996 and chairman from 1996 until 2000.[36] The WBGU concluded that the tolerable maximum of global warming must not exceed 2.0°C compared to pre-industrial levels.[37]

52. On 26 June 1996, the Council of the European Union became the first political body to adopt the 2°C target:

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[32] **RL-0001**, United Nations Treaty Collection, Chapter XXVII, 7. United Nations Framework Convention on Climate Change, 9 May 1992, Article 2.

[33] *Id*., Article 7.

[34] *Id*., Article 7(4).

[35] **R-0020**, German Advisory Council on Global Change, Scenario for the derivation of global CO_2 reduction targets and implementation strategies - statement on the occasion of the First Conference of the Parties to the Framework Convention on Climate Change in Berlin, 17 February 1995.

[36] Professor Schellnhuber was vice-chairman again from 2004 until 2009 and chairman from 2009 until 2016.

[37] **R-0020**, German Advisory Council on Global Change, Scenario for the derivation global CO_2 reduction targets and implementation strategies - statement on the first Conference of the Parties to the Framework Convention on Climate Change in Berlin, 17 February 1995, p. 7: "The [Quarternary] has shaped our present-day environment, with the lowest temperatures occurring in the last ice age (mean minimum around 10.4 °C) and the highest temperatures during the last interglacial period (mean maximum around 16.1°C). If this temperature range is exceeded in either direction, dramatic changes in the composition and function of today's ecosystems can be expected. If we extend the tolerance range by a further 0.5 °C at either end, then the tolerable temperature window extends from 9.9°C to 16.6°C. Today's global mean temperature is around 15.3°C, which means that the temperature span to the tolerable maximum is currently only 1.3°." See also: **R-0021**, *W.D. Nordhaus*, Can we control carbon dioxide in: IIASA Working Paper-75-63, adobe pp. 24-25: "As a first approximation, it seems reasonable to argue that the climatic effects of carbon dioxide should be kept well within the normal range of long-term climatic variation. According to most sources the range of variation between climatic is in the order of ± 5 C., and at the present time the global climate is at the high end of this range. If there were global temperatures of more than 2 or 3 C. above the current average temperature, this would take the climate outside of the range of observations which have been made over the last several hundred thousand years."

> "Given the serious risk of such an increase and particularly the very high rate of change, the Council believes that global average temperatures should not exceed 2 degrees above pre-industrial level and that therefore concentration levels lower than 550 ppm CO_2 should guide global limitation and reduction effort."[38]

53. In 1997, the German WBGU confirmed:

> "Warming of more than 2°C (relative to the pre-industrial value) and/or a warming rate of more than 0.2°C per decade constitute climate changes that are absolutely intolerable."[39]

54. On 11 December 1997, the third COP enacted the Kyoto Protocol.[40] It entered into force on 16 February 2005.[41] The Kyoto Protocol is the second of three legally binding agreements addressing climate change. For the first time in the history of international climate action, the Kyoto Protocol established legally binding greenhouse gas ("**GHG**") emission reduction targets.[42] The EU member States committed to reduce GHG emissions by 8% compared to 1990 levels within the first commitment period which lasted until 2012.[43]

55. In 2002, the German government, in its coalition agreement confirmed:

> "Germany will continue to play its pioneering role in international climate protection proactively. We will propose that the EU agrees, as part of the international climate protection negotiations for the second commitment period of the Kyoto Protocol to reduce its greenhouse gases by 30% by 2020 (compared to the base year 1990) by 2020. Under this condition, Germany will aim for a contribution of minus 40%."[44]

56. In 2005, the EU renewed its pledge to the 2°C target:

> "The European Council acknowledges that climate change is likely to have major negative global environmental, economic and social

[38] **R-0022**, European Commission PRES/96/188, 1939th meeting of the Council of the European Union - Environment – Brussels, 26 June 1996, adobe p. 9, ¶ 6.

[39] **R-0023**, German Advisory Council on Global Change, Targets for Climate Protection – A Study for the Third Conference of the Parties to the Framework of the Convention on Climate Change in Kyoto, 19 September 1997, pp. 13-14.

[40] **RL-0002**, UNFCCC/CP/1997/L.7/Add.1, Kyoto Protocol to the United Nations Framework Convention on Climate Change, 11 December 1997. **R-0024**, UNFCCC, What is the Kyoto Protocol?, adobe p. 1.

[41] **R-0024**, UNFCCC, What is the Kyoto Protocol?, adobe p. 1.

[42] **RL-0002**, UNFCCC/CP/1997/L.7/Add.1, Kyoto Protocol to the United Nations Framework Convention on Climate Change, 10 December 1997, Art. 3(1) in conjunction with Annex B.

[43] *Id.*, Annex B.

[44] **R-0025-ENG**, Coalition Agreement between SPD and Bündnis90/Die Grünen, Renewal - Justice – Sustainability For an economically strong, social, and ecological Germany, 16 October 2002, adobe p. 2 (**R-0025-GER**, adobe p. 37)

> implications. It confirms that, with a view to achieving the ultimate objective of the UN Framework Convention on Climate Change, the global annual mean surface temperature increase should not exceed 2ºC above pre-industrial level."[45]

57. On 9 March 2007, the EU committed to reduce GHG emissions by 20% by 2020 compared to 1990 levels. Importantly, the EU emphasized that this was an interim target until a "*global and comprehensive post 2012 agreement is concluded*".[46] Correspondingly, at the time of the alleged Investment, Respondent already stated that it had to accelerate a climate policy that aimed to limit global warming to 2°C above pre-industrial levels and set its GHG emission reduction targets accordingly.[47]

58. In conclusion, at the time of any alleged Investment, Claimant had to be aware that the electricity production market was already subject to climate-action regulation. Germany already followed a 2.0°C objective.

4. On Claimant's political speeches exhibits

59. In its Memorial, Claimant alleges that before the alleged Investment, government representatives of the Federal Republic of Germany would have advertised for more hard-coal plants.[48] Claimant's purported evidence are public speeches of politicians. Respondent comments as follows:

60. *First*, it is undisputed that none of these speeches was made in any meeting between any government official and Claimant. Claimant only presents public speeches. Hence, even taken at their highest, Claimant's political speeches cannot substantiate a claim.

61. *Second*, in Claimant's own alleged evidence, the then Federal Minister for the Environment spoke in a speech on 26 April 2007 (Exhibit C-12) of "*the horror scenario of 29 or*

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[45] **R-0026**, Council of the European Union 7619/1/05 REV 1, Brussels European Council Presidency Conclusions of 22 and 23 March 2005, 23 March 2005, ¶ 43.

[46] **R-0027**, Council of the European Union 7224/107/REV 1, Brussels European Council Presidency Conclusions of 8/9 March 2007, 2 May 2007, ¶ 32. On 8 December 2012, the Doha Amendment to the Kyoto Protocol was adopted. It provided for a second commitment period until the end of 2020. However, the amendment only entered into force on 31 December 2020: **R-0024**, UNFCCC, What is the Kyoto Protocol?, adobe p. 1. See also **R-0029**, Council of the European Union 15265/1/09 REV 1, Brussels European Council Presidency Conclusions of 29/39 October 2009, 1 December 2009, II.7.

[47] See in further detail below, sect. 4.

[48] Claimant's Memorial, ¶¶ 46-90.

40 new coal-fired power plants [that] has no basis."[49] For the avoidance of doubt, together with or after the Lünen Plant, only a hand full of hard-coal plants were built. The government did not seek to incentivise a large-scale fleet of hard-coal fired power plants.

62. *Third*, even looking at public speeches, the government did not state to prioritize hard-coal over other sources of energy. On the contrary, the government always emphasized the need to mitigate climate change and that the top priority was to increase renewable-energy capacities. One example is Chancellor Merkel's speech at the laying of the cornerstone for two blocks of the hard-coal Westfalen plant (Exhibit C-13).[50] At the very building site of a hard-coal fired plant, she confirmed:

> "[…] we need the expansion of renewable energies."[51]

63. Respondent considers it unnecessary to turn this arbitration into a reading of political-speeches. Hence, to put only some of the public information on record:

- 1998 government coalition agreement: "*Renewable energies and energy conservation have priority*;"[52]
- 2000 National Climate Action Programme: "*The German government has set itself the goal of doubling the share of renewable energies in the energy supply by 2010. After that, a further drastic increase in the share of renewable energies must be achieved with the participation of all stakeholders.*"[53]
- 2002 National Strategy for Sustainable Development: "*we need to make greater use of renewable energy sources that are environmentally and ecologically compatible*."[54]

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[49] **C-0012-A-EN**, Minister of the Environment Sigmar Gabriel, *Government policy statement*, Bulletin of the German Federal Government Nr. 46-1 of 26 April 2007 (extended excerpts), adobe p. 2, as quoted at Claimant's Memorial, ¶ 88.

[50] Claimant's Memorial, ¶ 65.

[51] **C-0013corrected**, Federal Bulletin No. 86-1, Chancellor of the Federal Republic of Germany Dr. Angela Merkel, *Speech at the foundation stone ceremony for blocks D and E of the Westfalen power plant* of 29 August 2008 [EN/DE] (excerpts), adobe p. 1 (**C-0013**, adobe p. 7).

[52] **R-0030-ENG**, Coalition Agreement between SPD and Bündnis 90/Die Grünen, Awakening and renewal – Germany's path into the 21st century, 20 October 1998, adobe p. 2 (**R-0030-GER**, adobe p. 16).

[53] **C-0038-EN,** Parliamentary Paper 14/4729, *National climate protection programme: Fifth Report of the Interministerial Working Group on CO2 Reduction*, 14 November 2000, (excerpts), adobe p. 3.

[54] **C-0040-ENcorrected**, Parliamentary Paper BT-Dr. 14/8953, *Report of the Federal Government on the prospects for Germany - National Strategy for Sustainable Development*, 25 April 2002, adobe p. 2 (**C-0040-DE**, adobe p. 41).

- Speech of Chancellor Gerhard Schröder of 2 September 2002: "*With the efficient use of energy and a massive expansion of renewable energies, we have set the course for a sensible energy future*."[55]
- Speech of Minister of Economic Affairs of 11 April 2002: "*Acceptance of coal therefore depends very much on how we succeed in limiting CO_2 emissions*."[56]
- Speech of Chancellor Schröder on 6 June 2003: "*[…] we want and need to rely more heavily on renewable energies for the future of our electricity supply than in the past. You know the contribution that these energies make in our country. […] We want to increase this contribution to 12.5 percent by 2010.*"[57]
- Speech of Minister of the Environment of 11 September 2003: "*[…] we cannot be satisfied with the greenhouse gas reductions we have achieved. That is the reason why this coalition has said: We want to save 40 percent of CO_2 and greenhouse gas emissions overall by 2020.*"[58]
- Speech of the Minister of Economic Affairs of 29 September 2003: "*[…] we want to promote the expansion of renewable energies*."[59]
- Speech of the Minister of the Environment on 3 March 2004: "*Even if we pursue ambitious climate protection and ensure that the global temperature does not rise by more than two degrees by the end of this century, we have to reckon with more extreme weather situations*."[60]
- Speech of Chancellor Schröder on 3 June 2004: "*I believe that our goal of achieving greater prosperity and development, better climate protection and more security through renewable energies justifies all our efforts.*"[61]

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[55] **R-0031-ENG/GER**, Federal Bulletin No. 71-1, Chancellor of the Federal Republic of Germany Gerhard Schröder, speech at the World Summit for Sustainable Development, 2 September 2002, adobe p. 2.

[56] **C-0041-ENcorrected**, Federal Minister for Economic Affairs and Technology, Dr Werner Müller, Speech at the Saar Energy Conference, Bulletin of the Federal Government No. 26-2 of 11 April 2002 (extracts), adobe p. 2 (**C-0041-GER**, adobe p. 2).

[57] **R-0032-ENG/GER**, Federal Bulletin No. 46-1, Chancellor of the Federal Republic of Germany Gerhard Schröder, Speech at the Congress of the German Electricity Association, 6 June 2003, adobe pp. 12-13.

[58] **R-0033-ENG/GER**, Federal Bulletin No. 72-4, Minister for Environment, Nature Conservation and Nuclear Safety Jürgen Trittin, Budget debate before the Bundestag, 11 September 2003, adobe p. 2.

[59] **R-0034-ENG**, Federal Bulletin No. 80-3, Minister of Economic Affairs and Labour Wolfgang Clement, Speech at the Energy Conference of Bündnis 90/Die Grünen, 29 September 2003, adobe p. 2 (**R-0034-GER**, adobe p. 7).

[60] **R-0035-ENG/GER**, Federal Bulletin No. 19-1, Minister for Environment, Nature Conservation and Nuclear Safety Jürgen Trittin, Speech before the Bundestag on the draft law for improvement of flood protection, 3 March 2004, adobe p. 1.

[61] **R-0036-ENG/GER**, Federal Bulletin No. 55-1, Chancellor of the Federal Republic of Germany, Speech at the International Conference for Renewable Energies in Bonn, 3 June 2004, adobe p. 8.

- Speech of the Minister for Environment on 2 December 2004: "*The future belongs to renewable energy sources […]. Our guiding principle is clear: global warming of more than two degrees compared to pre-industrial levels must be prevented. Kyoto is an important step, but only a first one. Further ambitious steps must follow.*"[62]
- Speech of Chancellor Schröder on 7 September 2005: "*[…] we pursue an energy policy that […] massively relies on renewable energies. Many people didn't want to believe it when we said it: Relying on alternative, renewable energies is absolutely essential in order to get away from oil.*".[63] This is the same speech that Claimant alleges to favour hard-coal – which it does not.[64]
- Speech of the Minister of the Environment on 13 October 2005: "*The share of renewables is to be further increased. […] After all, renewables make an important contribution to climate protection.*"[65]
- Coalition Agreement of Merkel government in 2005: "*Germany will continue to play its leading role in climate protection. The aim is to limit the global temperature increase to a climate-compatible level of 2°C compared to pre-industrial levels. We will […] propose that, as part of the international climate action negotiations, the EU commits to reducing its greenhouse gas emissions by a total of 30% by 2020 compared to 1990 levels. Under this condition, Germany will endeavour to reduce its emissions beyond this*." [66]
- Speech by Minister of the Environment on 1 December 2005: "*The central concern of this government's environmental policy is climate protection. […] The renewable energies and energy efficiency will be further drivers of progress in the future*."[67]

[62] **R-0037-ENG/GER**, Federal Bulletin No. 110-1, Minister for Environment, Nature Conservation and Nuclear Safety Jürgen Trittin, Speech before the Bundestag on the entry into force of the Kyoto protocol, 2 December 2004, adobe pp. 2, 7.

[63] **C-0009corrected**, Chancellor Gerhard Schröder, *Government Statement*, Bulletin of the German Federal Government Nr. 72-1 of 7 September 2005 DE + EN [EN/DE] (excerpts), adobe p. 3 (**C-0009**, adobe p. 5).

[64] Claimant's Memorial, ¶ 63.

[65] **C-0054-EN**, Minister of Economic Affairs and Labour, Wolfgang Clement, *Speech at the 3rd Ordinary Trade Union Congress*, Bulletin of the Federal Government No. 81-2 of 13 October 2005 (excerpts), adobe p. 4.

[66] **C-0047-ENcorrected**, Coalition Agreement 2005 between CDU/CSU and SPD, "Together for Germany. With courage and humanity", adobe p. 3 (**C-0047-DE**, adobe p. 66).

[67] **R-0038-ENG/GER**, Federal Bulletin No. 94-7, Federal Minister for Environment, Nature Conservation and Nuclear Safety Sigmar Gabriel, Speech before the Bundestag, 1 December 2005, adobe pp. 2, 5.

- Speech by Chancellor Dr. Merkel on 8 November 2006: "*To regard, a temperature increase of two degrees as the upper limit for global warming should really be our common goal*."[68]
- Speech by Chancellor Dr. Merkel on 24 January 2007: "*[…] we want – according to the European Union's resolution – to be pioneers in climate protection and reduce our CO_2 emissions by 20 percent by 2020; if other major international partners follow us, even by 30 percent. We want to increase energy efficiency by 20 percent and the share of renewable energies in energy consumption from seven percent today to 20 percent.*"[69]
- Speech by Chancellor Dr. Merkel on 24 May 2007: "*We must significantly and rapidly reduce greenhouse gas emissions in order to limit global warming to two degrees Celsius.*"[70]

64. To conclude, AET cites a statement of Chancellor Schröder from 12 November 2003 stating that "*a large part of the power plant fleet needs to be modernized or replaced*".[71] However, in the same speech, the Chancellor also noted:

> "We want and need to further increase the proportion of renewable energies. This is necessary in order to achieve our climate protection targets."[72]

5. AET's allegations regarding the ETS are false and contradict its quantum case

65. Claimant's political speeches-case also includes the allegation that "*[a]ccording to Respondent, CO2 emissions would be regulated – solely – by the European Emissions Trading*

[68] **R-0039-ENG/GER**, Federal Bulletin No. 112-2, Chancellor of the Federal Republic of Germany Dr. Angela Merkel, Lecture event of the German Council on Foreign Relations, 8 November 2006, adobe p. 15.

[69] **R-0040-ENG/GER**, Federal Bulletin No. 49-2, Chancellor of the Federal Republic of Germany Dr. Angela Merkel, speech at the European Conference "Future EU Maritime Policy: A European vision of oceans and seas", 2 May 2007, adobe p. 6. See also **R-0041-ENG/GER**, Federal Bulletin No. 19-3, Chancellor of the Federal Republic of Germany Dr. Angela Merkel, Speech on the German EU Council Presidency before the Federal Council, 16 February 2007, adobe p. 7.

[70] **R-0042-ENG/GER**, Federal Bulletin No. 57-1, Chancellor of the Federal Republic of Germany Dr. Angela Merkel, Government Statement on the G8 World Economic Summit, 24 May 2007, adobe p. 7. See also, **R-0189-ENG/GER**, Printed Paper No. 17/3049, Energy concept for an environmentally friendly, reliable and affordable energy supply and 10-point immediate action programme – monitoring and interim report by the federal government, adobe pp. 2-3.

[71] **C-0007-A-EN**, Chancellor Gerhard Schröder, *Speech German Hard Coal Day*, Bulletin of the German Federal Government Nr. 101-1 of 11 November 2003 (extended excerpts), adobe p. 2 as cited in Claimant's Memorial, ¶ 70.

[72] *Id.,* adobe p. 3.

System (ETS)."[73] For context, the ETS is one out of a range of instruments employed to reduce GHG emissions and protect the climate. Under the ETS, policymakers establish a cap on the maximum number of tons of CO_2 that may be emitted by a group of operators within the scope of the ETS. An allowance is mandatory for each ton of CO_2 that is to be emitted. Allowances can be purchased in auctions. As the cap declines steadily each year, the supply of allowances also declines. The EU ETS, which has been operational since 2005, incorporates caps that align with the EU's established climate targets.[74]

66. Claimant's allegation that Respondent would have assured that the ETS would remain the "*sole*" regulation for climate-action purposes is incorrect for the following reasons:

67. *First*, it is undisputed that there was never a legislative or executive promise that the ETS would always remain the "*sole*" climate-action regulation well into the 2050s (until when Claimant's valuation projects damages). Claimant did not put forward any evidence to the contrary.

68. *Second*, the political speeches Claimant cites in paras. 84-90 of the Memorial for its bold allegation that Respondent promised that "*solely*" the ETS would regulate climate action do not support this allegation. To address the cited documents in-turn:

69. The Federal Ministry for the Environment's 2020 Climate Agenda of 1 April 2007 (Exhibit C-11), already quoted in verbatim at para. 86 of the Memorial, speaks of "*the energy mix in 2020*." Undisputedly, the Lünen Plant operated in 2020. The document contains no promises for the time after 2020.

70. The Federal Minister for Environment's speech of 26 April 2007 (Exhibit C-12) only says that the ETS ensures that "*the horror scenario of 29 or 40 new coal-fired power plants has no basis.*"[75] The Minister never spoke of any hard-coal power plant operating into the 2050s.

71. In the same speech, the Minister also promoted the expansion of energy efficiency and renewable energy as well as the use of regulatory law:

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[73] Claimant's Memorial, heading 4, adobe p. 27.

[74] **R-0043**, The European Commission, About the EU ETS, adobe pp. 1-2.

[75] **C-0012-A-EN**, Minister of the Environment Sigmar Gabriel, Government policy statement, Bulletin of the German Federal Government Nr. 46-1 of 26 April 2007 (extended excerpts), adobe p. 2, as quoted at Claimant's Memorial, ¶ 88.

> "One thing is clear: we are also facing far-reaching decisions here if we are really serious about climate protection. We will consistently use regulatory law for climate protection. […]
>
> "In accordance with the decision of the European Council, the drastic increase in energy efficiency and the massive expansion of renewable energies are the right dual strategy."[76]

72. Further, Claimant does not comment that on 29 May 2008, Chancellor Dr. Merkel voiced her concern about the limits of the ETS:

> "In the European Union, too, we are seeing that local and regional CO_2 trading systems are reaching their limits."[77]

73. This shows that the German government had always been aware that market-based approaches would only reach so far to limit global warming. It refutes Claimant's assertion that Respondent guaranteed to limit its climate action to the ETS and market-based approaches.

74. *Third*, Claimant's allegation that it hoped that climate change would be mitigated "*solely*" through the ETS also contradicts Claimant's own quantum case. On quantum, Claimant and its experts apply CO_2 certificate prices that are far below the level needed to reach the Paris Agreement goals. Claimant and its experts do so to limit the costs and, thereby, increase the alleged fair market value of the Lünen Plant. It will be set out in further detail below that this assumption on quantum must be rejected.[78] In conclusion, Claimant's allegation that Respondent promised to "*solely*" regulate climate action through the ETS is incorrect and contradictory.

6. AET overstates the 2008 Preliminary Permit

75. In the Memorial, Claimant alleges that before its alleged Investment, "*Germany recognised an overriding public interest in the Lünen plant*"[79] and cites the District Government of Arnsberg's preliminary permit (*Vorbescheid*) of 6 Mai 2008, Exhibit C-33 ("**2008 Preliminary Permit**").[80] However, Claimant overstates the 2008 Preliminary Permit for the following reasons:

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[76] **C-0012-A-ENcorrected,** Minister of the Environment Sigmar Gabriel, *Government policy statement*, Bulletin of the German Federal Government Nr. 46-1 of 26 April 2007 (extended excerpts), adobe pp. 7, 9.

[77] **R-0044-ENG,** Federal Bulletin No. 54-2, Chancellor of the Federal Republic of Germany Dr. Angela Merkel, Speech at the International Transportation Forum, 29 May 2008 (excerpts), adobe p. 2 (**R-0044-GER**, adobe p. 12).

[78] See below, ¶¶ 607-619.

[79] Claimant's Memorial, heading 4, adobe p. 14.

[80] **C-0033**, District Government of Arnsberg*, 2008 Advance Decision for the construction and operation of the Lünen hard coal-fired power plant (Vorbescheid) and First Partial Permit*, 6 May 2008 (excerpts); quoted at Claimant's Memorial, footnotes 26, 127, 128.

a. The 2008 Preliminary Permit was revoked in court

76. Claimant omits the information that on 1 December 2011, the Higher Administrative Court of North Rhine-Westphalia (*Oberverwaltungsgericht*) sustained a lawsuit by the environmental-protection organisation German Federation for the Environment and Nature Conservation (*Bund für Umwelt und Naturschutz Deutschland* - "**BUND**"). The court held that the 2008 Preliminary Permit was unlawful. Therefore, the court revoked the 2008 Preliminary Permit. The Court held that under the applicable German laws on environmental protection, the impact of the Lünen Plant on the proximate forest required further assessment. The Court found that the assessments submitted by Trianel in its application were insufficient:

> "The assessment of [flora-fauna-habitat] compatibility does not support either a final determination or the provisional positive overall assessment in the preliminary permit."[81]

77. On appeal, the Federal Administrative Court (*Bundesverwaltungsgericht*) confirmed this prior judgment.[82] Hence, the 2008 Preliminary Permit lost its effect. Trianel itself confirmed that the 2008 Preliminary Permit lost its effect. [redacted] Indeed, also Claimant's counsel from the Luther law firm, in a public blog post, states that the court "*revoked*" the 2008 Preliminary Permit.[84]

78. For the avoidance of doubt, the judgment is not based on a mere technicality. [redacted]

79. As a revoked, ineffective permit, the 2008 Preliminary Permit cannot be a basis for any of Claimant's claims.

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[81] **R-0045-ENG/GER**, Higher Administrative Court of North Rhine-Westphalia (*Oberverwaltungsgericht*), Judgment of 1 December 2011 - 8 D 58/08. AK., ¶ 595.

[82] **R-0046-ENG/GER**, Federal Administrative Court (*Bundesverwaltungsgericht*), Order of 5 September 2012 – 7 B 24.12.

[83] [redacted]

[84] **R-0048-ENG/GER**, Luther Blog, Dispute over Trianel hard-coal fired power plant in Lünen enters the next round, 8 September 2017, adobe p. 3: "In its ruling of 1 December 2011, the Münster Higher Administrative Court then revoked the preliminary decision and the first partial permit for the power plant issued by the District Government of Arnsberg."

[85] [redacted]

b. Claimant relies on two passing sentences of a 169-page document

80. In addition to keeping silent about the 2008 Preliminary Permit having been revoked in court, Claimant also overstates the very content of the 2008 Preliminary Permit. For the following reasons, Claimant's allegation that "*Germany itself explicitly recognized that there was an overriding public interest in the construction and operation of the Lünen plant*"[86] cannot be based on the 2008 Preliminary Permit.

81. *First*, over its 169 pages, the 2008 Preliminary Permit only mentions a public interest in passing in one (1) paragraph, with two (2) sentences. The context is that, at Trianel's request, the District Government ordered that the 2008 Preliminary Permit be immediately enforceable. That is, it allowed Trianel to begin construction while the lawsuits against the 2008 Preliminary Permit remained pending.

82. *Second*, the primary reason for allowing Trianel to begin construction was not any public interest. The primary reason was Trianel's private interest. The line of reasoning regarding Trianel's own economic interest spreads over more than five pages (not just two sentences as the *obiter dictum* on any public interest).[87]

83. *Third*, regarding administrative practice, Respondent refers to the witness statement of Mr. Schmitz-Ebert who oversees the District Government Arnsberg's department supervising the Lünen Plant. He explains that not the public interest, but the private interest of the applicant is the focus of the assessment.[88]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

86 Claimant's Memorial, ¶ 39.

87 **C-0033-ENcorrected**, District Government of Arnsberg, 2008 Preliminary Permit, 6 May 2008, pp. 162-167.

88 Schmitz-Ebert WS, ¶¶ 17-21.

89 [redacted]

[redacted]

88. *Fifth*, administrative practice confirms that in the case of large-scale projects, immediate enforceability of a lawful administrative act occurs regularly.

89. In conclusion, the 2008 Preliminary Permit is no evidence for the alleged public interest in the Lünen Plant. What Claimant relies on, is a one-paragraph *obiter dictum* in a permit that was revoked a mere three years later.

7. AET based its alleged Investment only on its own hopes in the market

90. According to the evidence submitted with the Memorial, Claimant did not form any expectations at all regarding the German regulatory framework at the time of the Investment. Instead, the only basis for the alleged decision to invest had been Claimant's own, internal projections how the German electricity market (including CO_2 certificate prices) would develop.

91. *First*, the relevant section C.III. of the Memorial (titled: "*Claimant's decision to invest in the Lünen Plant*") does not contain any factual assertions at all that Claimant relied on any regulatory regime in Germany:

- The Memorial does not refer to any internal document of Claimant referencing German law.
- The Memorial does not refer to any due diligence on German law.

[redacted]

- The Memorial does not refer to any discussions between Claimant and the other shareholders of the Lünen Plant on German law.
- The Memorial does not cite any document in which Claimant relied on the political speeches which Claimant submitted with the Memorial.
- The Memorial does not cite any document in which Claimant relied on the one-paragraph *obiter dictum* in the 2008 Preliminary Permit.

92. *Second*, the only passage in section C.III. of the Memorial remotely connected to this matter is the verbatim quote of the Ticino Government's report of 23 February 2010 (Exhibit C-84). Claimant cites and underlines the following passage: "*In order to ensure a secure, competitive and environmentally sustainable energy supply, the (German) Federal Government centres its integrated energy and climate programme on the construction of highly efficient coal-fired power plants*."[92] After this quote, Claimant does not comment on it. For the avoidance of doubt, this quote does not state anything regarding Claimant's actual expectations for the following reasons:

- the statement speaks of an "*energy and climate programme*", not of any German law;
- the statement is unclear which specific programmes are meant;
- the statement is unclear who allegedly announced these programmes; and
- the statement is silent who from Claimant reviewed any programmes.

93. *Third*, the few documents issued by Claimant and submitted with the Memorial all refer to nothing but Claimant's own internal projections of the German electricity market. None of these projections incline that Claimant expected – let alone on a reasoned basis – the German regulator to act in a certain manner. On the contrary, the following documents show that Claimant and its economic advisors were unable to foresee how renewable energy would develop in Germany:

94. Claimant's first evidence is a feasibility study of Trianel of 14 March 2006 (Exhibit C-68). In Claimant's own assertions, this study only concerns "*the expected shortfall in electricity coverage [in Germany] from 2006 to 2030.*"[93] That is, the study does not go beyond

[92] **C-0084-EN**, Department of Finance and Economic Affairs of the Canton of Ticino*, Special Energy Commission: Majority Report on AETs Message No. 6091 concerning its Participation in TKL*, 23 February 2010, adobe p. 21 as quoted at Claimant's Memorial, ¶ 149.

[93] Claimant's Memorial, ¶ 112.

2030 even though, in this arbitration, Claimant assert that a Coal-Firing Stop would only happen in 2031. Nor does it say anything about any expectations regarding the German regulator.

95. Claimant's second evidence is the market analysis by Enervis of April 2007 (Exhibit C-76). Claimant asserts that "*Enervis found that without the construction of new power plants, the capacity development in the German electricity generation market would decrease significantly, highlighting a large capacity gap and a substantial need for building new power plants*."[94] Hence, again, this is only an alleged economic projection of Claimant. Also, the quote does not differentiate between lignite and hard-coal plants but only generally refers to the building of new power plants. On top of this, this projection did not project the development of renewable energy in line with the later developments.[95]

96. Claimant's third and final purported evidence is the message of the Ticino Government to the Ticino Parliament of 9 July 2008 (Exhibit C-63). The message shows that the Ticino Government did not base any recommendation on German law. The Ticino Government only described its own hopes on how the German market would develop:

> "The presence of a significant hard coal industry and the possibility of water transport on rivers and canals makes Germany a favoured location for coal-fired power production. Now that the nuclear option has been abandoned, and the availability of gas is limited in any case (due to strategic dependence and long-term global reserves), Germany can only achieve the twofold aim of covering its electricity needs and meeting the Kyoto Protocol targets by building new, efficient coal-fired power plants to replace the old, inefficient ones (lignite and coal-fired power plants)."[96]

97. The document does not even purport to state that Respondent ever gave any promises to Claimant regarding this hope. Indeed, the document erred by not anticipating the expansion of renewable energies. Instead, Claimant independently – and incorrectly – formed the hope that Germany "*can only*" achieve its target with hard-coal. Hence, in 2008, Claimant did not predict accurately the development of renewable energy in Germany. Claimant's incorrectly formed hopes cannot justify a claim against Respondent.

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94 *Id.*, ¶ 125.

95 See above, ¶¶ 61, 70.

96 **C-0063-EN**, Department of Finance and Economic Affairs of the Canton of Ticino, *Message No. 6091 to the Grand Council of the Republic and Canton of Ticino on the Participation of AET in a company for the construction of a thermal power plant in Germany*, 9 July 2008, adobe p. 10.

98. *Fourth*, particularly detrimental to Claimant's case is that the documentary evidence submitted with the Memorial contains ample statements that Claimant had been aware of the risks of CO_2 prices but had hoped on a more lenient development of climate-action regulation.

99. Already the proposal to Claimant's board of directors of 23 March 2006 (Exhibit C-66) states that Claimant had been aware of hard-coal being subject to climate-action regulation:

> "The disadvantage of coal is its dependence on the price development of CO_2 emission certificates."[97]

100. Correspondingly, the resolution of Claimant's board of directors of April 2008 (Exhibits C-82) shows that board members had concerns about hard-coal, but that Claimant's own interest regarding the difficulties for baseload capacities in Switzerland was more important for them:

> "The director emphasises the importance of the project, given the increasing consumption of energy in the canton and the difficulty of alternatives for baseload energy production. The Energy Commission is aware of the hard-coal project and the difficulties associated with the future of the canton's energy supply. Di Stefano leaves the meeting due to other commitments. […]
>
> Pedrina and David raise concerns about the energy source."[98]

101. The publication from the Ticino Government of 9 July 2008 (Exhibit C-63) is also clear about the concerns regarding hard-coal. Already in 2008 (when the CO_2 prices were much lower than today), the publication stated:

> "The disadvantage of hard-coal is the (relatively) high CO2 emission per unit of energy produced."[99]

102. For the avoidance of doubt, Claimant already had these concerns although its own, internal CO_2 certificate projections at the time were much below what was later observed. For example, even the "*worst*" scenario for CO_2 certificate prices in Trianel's internal summary of the 2007 Enervis feasibility study was even still below the prices that Claimant's own experts in this

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[97] **C-0066-EN**, AET, Message No. 6/06 to the Board of Directors*, AET's participation in "Trianel Power - Projektentwicklungsgesellschaft Kohlekraftwerk mbH & Co. KG", for the construction of a coal-fired power plant in Germany*, 23 March 2006 (excerpts), adobe p. 4.

[98] **C-0082-EN**, AET, *Minutes of the 281st Meeting of the Board of Directors*, 9 April 2008 (excerpts), adobe p. 2.

[99] **C-0063-EN**, Department of Finance and Economic Affairs of the Canton of Ticino*, Message No. 6091 to the Grand Council of the Republic and Canton of Ticino on the Participation of AET in a company for the construction of a thermal power plant in Germany*, 9 July 2008, adobe p. 11.

arbitration projected as of January 2020.[100] In addition, as Mr. Delamer and Mr. Rozenberg explain in detail in their report, appropriate CO_2 certificate price projections should be much higher.[101]

103. In conclusion, the present case does not concern an Investment (if any) made in reliance on promises by a respondent State. Instead, the case concerns:

- a Swiss municipal company making an Investment (if any) due to its own exceptional baseload capacity needs in Switzerland;
- investing despite being fully aware of concerns about hard-coal; and
- relying only on internal economic projections which proved to be incorrect regarding the development of renewable energy and CO_2 prices.

B. OPERATION OF THE LÜNEN PLANT UNTIL THE 2020 ACT

104. In the Memorial, Claimant keeps silent about several facts that have occurred during the operation of the Lünen Plant. These facts are that:

- a Swiss referendum forces Claimant to exit the Lünen Plant (below, at 1.);
- due to the lawsuit of an NGO, the Lünen Plant never received a final and binding permit before the 2020 Act (at 2.); and
- the domestic bank creditors of the Lünen Plant have already and will continue to collect significant interest payments (at 3.).

1. Swiss law and a referendum in Switzerland force AET to exit the Lünen Plant

105. Claimant fails to disclose to the Tribunal that due to a public referendum vote in Ticino (which has the force of law under Swiss law), Claimant is forced to divest its 15.84% share in Trianel by 2035 at the latest. The chronology of events is the following:

106. On 16 April 2010, the Swiss (not: German) popular initiative "*For an AET without coal*" proposed to amend the 1958 Law establishing the Azienda Elettrica Ticinese ("**1958 Law**").

[100] **C-0076-ENcorrected**, Enervis, Report on the Involvement in the generation market, 26 April 2007 (excerpts), adobe p. 21.

[101] Compass Lexecon ER I, sect. V.1.

The amendment would prohibit Claimant from acquiring shares in coal-fired power plants and force Claimant to sell previously acquired shares (including in the Lünen Plant) by 2015.[102]

107. On 23 February 2011, the Ticino Government introduced a counterproposal. To begin with, the counterproposal required Claimant to pay a levy to a renewable energy fund for every kWh of net output generated from its shares in hard-coal plants. In addition, the counterproposal included a ban on the acquisition of shares in coal-fired plants. Regarding the sale of existing shares, the Ticino Government proposed to extend the deadline to exit the Lünen Plant until 2035 but without AET being allowed to make any profits with holding its share in the Lünen Plant.[103] Indeed, the Ticino Government's proposal states that the exit must already happen before 2035 if the breakeven point is reached (but in 2035 at the latest, even with losses):

> "The counterproposal, on the other hand, gives AET the necessary time, but at most until 2035, to exit the participation without financial loss, while guaranteeing the transition to new renewable energies. The counterproposal confirms the principle exit from the existing power plant and obliges AET, if economically viable, to divest the participation before 2035."[104]

108. The 2035 exit date coincides with the termination date of the PPA. The PPA will end on 30 June 2035.[105]

109. In May 2011, faced with a strong public opinion that Claimant must take some action in favour of climate action, Claimant committed itself to the Ticino Government's counterproposal as the minimum. That is, Claimant did not argue that no commitment whatsoever should be undertaken. Claimant committed to generate 100% of its energy from renewable sources by 2050. To achieve this goal, AET pledged to divest from its investments in coal by 2035:

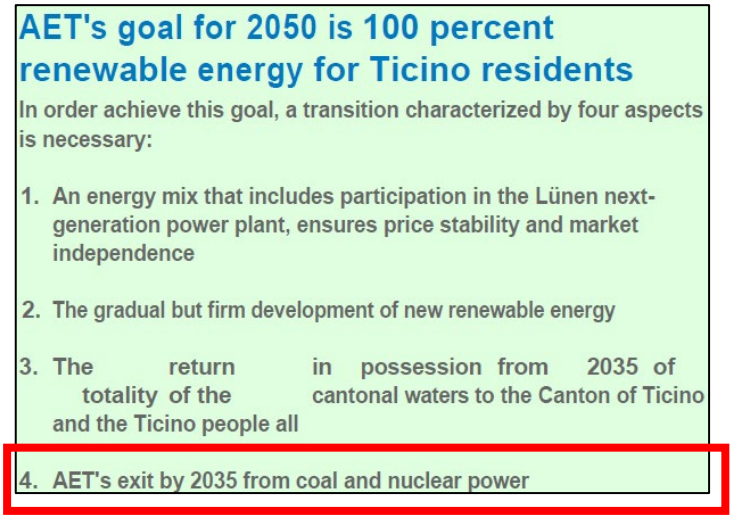
[102] **R-0052-ENG**, Information brochure on the Cantonal vote in Ticino on 5 June 2011, adobe pp. 15, 26 (**R-0052-ITA**, adobe p. 13, 22).

[103] *Id.,* pp. 26-27 (*Id.,* adobe pp. 22-23).

[104] *Id*., adobe p. 21 (*Id.,* adobe p. 17).

[105] Claimant's Memorial, ¶ 129.

AET's climate target for 2050



Source: **R-0053-ENG/ITA,** AET Presentation on the Lünen Investment, adobe p. 1.

110. On 5 June 2011, the Ticino Government's proposal was confirmed in a public referendum.[106]

111. On 1 August 2011, the amendment of the 1958 Law establishing the Azienda Elettrica Ticinese entered into force as proposed by the Ticino Government.[107] Ever since 1 August 2011, Claimant has been obligated by law to divest its entire 15.84% stake in Trianel by 2035 at the latest, without being allowed to own the plant beyond amortisation. Indeed, the Law obligates AET to divest its share "*as soon as possible*". This means that AET had to begin searching for buyers in 2011:

> "I. The Law establishing the AET of 25 June 1958 is amended as follows:
>
> **Art. 2 para. 4 (new):** The company may not acquire shares in coal-fired power stations - in Switzerland or abroad - either directly or indirectly through participation in companies or institutions.
>
> […]
>
> **Transitional rule (new):** Participations already acquired by the company contrary to para. 4 of Art. 2 of this Act shall be disposed of as soon as possible, provided they do not generate financial losses. In any event, such participations must be disposed of by the end of the year 2035 at the latest."[108]

[106] **R-0054-ENG/ITA**, Canton of Ticino, result of the Cantonal vote on 5 June 2011, 6 June 2011, adobe p. 2.

[107] **R-0055-ENG/ITA**, Amendment of the Law establishing the AET of 25 June 1958 in Official Bulletin of Laws Vol. 137 32/2011, 12 July 2011, adobe p. 12.

[108] *Id.,* adobe pp. 11-12.

112. On 10 May 2016, the Ticino Government adopted the Law on the Azienda Elettrica Ticinese ("**AET Law**"). The AET Law updated the 1958 Law.[109] The AET Law incorporates the ban on the acquisition of shares in coal-fired power plants in Article 2(3). A further explanatory note by the Ticino Government confirms that Claimant' obligation to sell any existing shares also remains in place.[110]

113. In the following years, Claimant's participation in Trianel and the transitional rule were the subject of several parliamentary initiatives and inquiries. In this context, Claimant and the Ticino Government confirmed Claimant's legal obligation and Claimant's intent to sell its share in the Lünen Plant. On 17 February 2020, Claimant confirmed to the Ticino Parliament:

> "In conclusion: people's sensitivity to environmental issues has radically changed in recent years, and AET is aware of this, so much so that the company itself is aiming for a 100% renewable supply in the long term. As the MPS itself recalls, Lünen investment was voted for by the people of Ticino, setting 2035 as the deadline for exiting the investment; the German government, however, has limited the operation of fossil coal-fired power stations to 2033. AET will therefore certainly comply with what was decided in the popular vote."[111]

114. On 25 November 2020, the Ticino Parliament confirmed:

> "The current [AET Law] incorporates the previous provision with the amendment proposed by Parliament in Art. 2(3) [ban on coal-shares] while the transitional rule was no longer taken up. The will of the people is in any case not questioned and 2035 is the deadline for the divestment of participations already acquired contrary to Art. 2(3)."[112]

[109] **R-0056-ENG/ITA**, Law on the Azienda Elettrica Ticinese of 10 May 2016 in Official Bulletin of Laws Vol. 146 30/2016 p. 329, Article 22.

[110] **R-0057-ENG/ITA**, The State Council of the Canton of Ticino Message No. 2398 in response to question No 169.23 of 19 December 2023 "Transitional regulation of AET's exit from participation in the Lünen coal-fired power plant", 15 May 2024, adobe p. 2 at 3: "We confirm that 2035 is the closing date for the divestiture of the participation unit held in Trianel Kohlekraftwerk Lünen GmbH & Co. KG (abbr. TKL, the Lünen coal-fired power station)".

[111] As quoted in **R-0058-ENG/ITA**, The State Council of the Canton of Ticino Message No. 7934, Report of the Council of State on the motion of 20 January 2020 tabled by Simona Arigoni Zürcher and co-signatories for MPS-POP- Independents "Coal-fired power station in Lünen: it's time to put an end to AET's participation! Fossil energy must be abandoned as soon as possible, and investments must be thought of and considered only from an eco-sustainable perspective!", 25 November 2020, adobe p. 5.

[112] *Id.,* adobe pp. 1-2.

115. On 21 December 2022, the Ticino Government rejected a proposal[113] to strike the ban on the acquisition of participations in coal-fired power plants, Article 2(3) AET Law, reaffirming:

> "AET will have to divest this shareholding in 2035 at the latest (it is likely that the coal-fired power plant will be decommissioned in earlier years, in connection with the [2020 Act])."[114]

116. On 21 November 2024, the Commission on Environment, Territory and Energy of the Department for Finance and Economic Affairs confirmed:

> "Current regulations set a deadline of 2035 for the divestment of participations in coal-fired plants […] [T]he State Council […] favours a cautious and coordinated approach to achieve the ultimate goal of divestment by the 2035 deadline."[115]

117. On 18 December 2024, the Ticino Government responded to a parliamentary initiative[116] which asked to amend the AET Law. The Ticino Government confirmed that *de lege lata*, Claimant is already obligated to sell its share in Trianel by 2035 at the latest:

> "[The] Council [of State] believes that the legislative basis currently in force is already sufficient to enforce the will of the people for the divestment of AET's holdings in coal-fired power plants by 2035. The Government therefore invites the Parliament to consider the parliamentary initiative elaborated on in the present case as factually exhausted."[117]

[113] **R-0059-ENG/ITA**, Parliamentary initiative No. 678 presented in the form drafted by Sergio Morisoli and co-signatories for the SVP Group for amendment of the Law on the Azienda Elettrica Ticinese (Allow AET to act efficiently and effectively the energy market), 11 April 2022.

[114] **R-0060-ENG/ITA**, The State Council of the Canton of Ticino Message No. 8219, Report on the parliamentary initiative presented on 11 April 2022 in the form drafted by Sergio Morisoli and co-signatories for the SVP Group "amendment of the Law on the Azienda Elettrica Ticinese (Allow AET to act efficiently and effectively the energy market)", 21 December 2022, adobe p. 1.

[115] **R-0061-ENG/ITA**, Majority Report of the Environment, Territory and Energy Commission No. 7943R1 on the motion of 20 January 2020 tabled by Simona Arigoni Zürcher and co-signatories (taken up by Matteo Pronzini) for MPS-POP-Indipendenti, "Coal-fired power station in Lünen: it's time to put an end to AET's participation! Fossil energy must be abandoned as soon as possible and investments must be thought of and considered only from an eco-sustainable perspective!", 21 November 2024, adobe p. 3.

[116] **R-0062-ENG/ITA**, Parliamentary Initiative presented in the form drafted by Matteo Buzzi and co-signatories for the amendment of Art. 23 of the Law on the Azienda Elettrica Ticinese (AET Law) with the insertion of a new para. 4 (Transitional rule for AET's exit from participation in the Lünen coal-fired power plant), 22 January 2024.

[117] **R-0063-ENG/ITA**, State Council of Ticino Message No. 8523, Report on the parliamentary initiative presented on 22 January 2024 in the form drafted by Matteo Buzzi and co-signatories "amendment of Art. 23 of the Law on the Azienda Elettrica Ticinese (AET Law) with the insertion of a new para. 4 (Transitional rule for AET's exit from participation in the Lünen coal-fired power plant)", 18 December 2024, adobe p. 2.

118. In conclusion, even without the 2020 Act, Claimant was obligated by Swiss law to terminate its shareholding in the Lünen Plant as soon as possible and, in any case, no later than by 2035.

2. The Lünen Plant never had a final and binding permit before the 2020 Act

119. Claimant offers the 2013 Preliminary Permit as the only evidence for an alleged commitment under the ECT's umbrella clause in Article 10(1) sentence 5 ECT[118] and as one out of two alleged evidences for the allegation that "*Germany recognised an overriding public interest in the Lünen plant*."[119] To recall, the second alleged evidence is the 2008 Preliminary Permit which had been held unlawful and revoked in court in 2011.[120] The 2013 Preliminary Permit is the result of Claimant's application for a new permit after the 2011 judgment of the Higher Administrative Court of North Rhine-Westphalia. On substance, Claimant overstates the 2013 Preliminary Permit.

120. *First*, by the time that the 2013 Preliminary Permit was issued, the construction of the Lünen Plant had already been completed. The Lünen Plant had already been operating.[121] Claimant's alleged Investment, if any, would have been made already several years before. While Claimant does not substantiate when an alleged Investment was made as set out above,[122] the latest alleged Investment according to Claimant's experts (who do not provide evidence) had been made on 15 May 2008.[123] This was more than five years before the 2013 Preliminary Permit. Claimant has not put on record any evidence of any investment decisions having been made after, let alone based on the 2013 Preliminary Permit.[124] Hence, the 2013 Preliminary Permit could not possibly have been a factor for Claimant's alleged decision to invest.

121. *Second*, the 2013 Preliminary Permit did not become final and binding before the 2020 Act. The environmental-protection NGO that had already challenged the 2008 Preliminary Permit in court, *i.e.* the BUND, also initiated litigation in administrative courts against this permit

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118 Cf. Claimant's Memorial, sect. E IV.

119 Claimant's Memorial, heading 4, adobe p. 14.

120 See above, ¶¶ 76-79.

121 Handover of the plant was in July 2013: **C-0085-EN**, TKL, Power Plant: The project process, adobe p. 6. The Preliminary Permit was issued on 20 November 2013: **C-0030-ENcorrected**, District Government of Arnsberg, 2013 Preliminary Permit, 20 November 2013, adobe p. 1.

122 See above, ¶¶ 30-40.

123 Secretariat-Appendix C.1, cell c11.

124 Cf. Claimant's Memorial, ¶¶ 145-146, 440.

arguing that, *inter alia*, a nearby forest was impacted by the Lünen Plant. The matter went to the Federal Administrative Court which remanded the matter back to the lower instance court in 2019.[125] At the time that the 2020 Act entered into force, the matter was still pending before the Higher Administrative Court of North Rhine-Westphalia. It was only settled in 2023. That is, at any time before this settlement, Claimant bore the risk that the Higher Administrative Court revoked the permit, *e.g.* due to the impacts on the nearby forest.

122. *Third*, Claimant's allegation that "*for the competent authority, the Lünen Plant was inherently in the overriding public interest*"[126] is misleading. The relevant passages of the 2013 Preliminary Permit are a mere *obiter dictum* (just as in the 2008 Preliminary Permit). The passage on public interest in the 2013 Preliminary Permit cited by Claimant stands in the context of the so-called Flora-Fauna-Habitat ("**FFH**") compatibility assessment. This is an assessment of the impacts of a project on the nearby nature and habitat. It is required by German and EU law. To recall, the 2008 Preliminary Permit was held unlawful in court because the FFH assessment had been insufficient. In the 2013 Preliminary Permit, the District Government concluded that the Lünen Plant was not causing critical impacts under the FFH assessment.[127] The public interest would only have been relevant if *arguendo* the Lünen Plant would have caused such impacts. Since it did not, the passage on public interest is a mere *obiter dictum*.[128]

123. The limited relevance of the *obiter dictum* is also shown by Trianel's pleadings in the litigation against the BUND regarding the 2013 Preliminary Permit. In its brief after the judgment of the Federal Administrative Court in 2019, Trianel only argued that the Lünen Plant did not cause impacts on the nearby forest. Trianel made no assertions whatsoever that even if impacts were caused, these would be justified by a public interest.[129]

124. Correspondingly, Mr. Schmitz-Ebert, who leads the department that had issued the 2013 Preliminary Permit and conducted the court litigation, testifies:

> "In the 2013 Preliminary Permit, the public interest is merely an *obiter dictum*. It is only examined in the context of a hypothetical scenario in which certain acidification reference values are exceeded in the adjacent

[125] **R-0064**, Federal Administrative Court (*Bundesverwaltungsgericht*), Judgment of 15 May 2019 - 7 C 27.17.

[126] Claimant's Memorial, ¶ 43.

[127] **C-0030-ENcorrected**, District Government of Arnsberg, 2013 Preliminary Permit, 20 November 2013, sect. 7.9.4.

[128] *Id.*, sect. 7.10.

[129] **R-0065-ENG/GER**, Trianel, Submission by Trianel to the Higher Administrative Court of North Rhine-Westphalia (*Oberverwaltungsgericht des Landes Nordrhein-Westfalen*) of 3 June 2020 - 8 D 99/13.AK.

> forest. As the competent authority, we always based our approval on the assumption that these reference values would be complied with. This was substantiated by expert reports. Accordingly, the key argument in the second administrative court case was not that a public interest would justify exceeding the reference values. Instead, the key argument was that the reference values were complied with."[130]

125. *Fourth*, Claimant keeps silent that, even if it became final and binding, the 2013 Preliminary Permit could not render the Lünen Plant immune from future regulation. Every permit comparable to the 2013 Preliminary Permit bears the risk that applicable regulations on immissions, *e.g.* the so-called *TA Luft* or *TA Lärm* (regulations on air quality and noise) change. The relevant background on German law, including references to legal authorities, is set out in further detail below in the context of the alleged umbrella-clause claim.[131]

126. Also, Mr. Schmitz-Ebert testifies regarding administrative practice:

> "In practice, for example, reference value standards such as the so-called *TA-Luft* (Technical Instruction on Air Quality) and *TA-Lärm* (Technical Instructions on Noise) are regularly amended, *e.g.* due to new scientific findings or EU law. In these cases, approval holders often must retrofit. Failure to do so may result in a regulatory order. In administrative practice, there is no general protection of trust in that the permit granted under imission control law will remain valid indefinitely. Every business applicant that applies for the approval of a major construction project should know this."[132]

127. In conclusion, Claimant overstates the 2013 Preliminary Permit. The Permit post-dates the alleged Investment by more than five years, had not become final and binding before the 2020 Act was enacted, contains a mere *obiter dictum*, and could not protect the Lünen Plant from regulatory changes.

3. The domestic debt investors received and will receive hundreds of millions

128. In the Memorial, Claimant alleges: "*It [the Lünen Plant] will also be shut down well before the investment into the Lünen plant has been amortised*."[133] Claimant's assertion is misleading. Neither Claimant nor its experts comment explicitly on the reason why amortisation

[130] Schmitz-Ebert WS, ¶ 26.

[131] See below, ¶¶ 498-505.

[132] Schmitz-Ebert WS, ¶ 24.

[133] Claimant's Memorial, ¶ 228.

of the alleged Investment happens so late. Only the following hint can be identified in the Memorial:

> "Overall, due to the high debt interest payments, the net income determined by Secretariat remains negative until about 2030 in both the But-For and Actual scenarios."[134]

129. Indeed, the entire reason for any late amortisation of Claimant's alleged Investment is Claimant's own decision for a very high financing leverage of the Lünen Plant. Claimant's experts confirm in passing: "*Construction of the Plant was expected to cost approximately € 1.4 billion. The project financing facility was for a total of € 1.33 billion*."[135] They also committed themselves towards the domestic bank to a re-payment schedule obligating them to pay more than the Lünen Plant earns in profits. Therefore, Claimant made the conscious decision to participate in a power plant which would take decades to yield positive results.[136] This was Claimant's own risk.

130. Conversely, while Claimant and its co-shareholders did not receive dividends, the domestic banks financing the Lünen Plant did and will collect significant interest payments (in addition to the principal repayment). Based on Secretariat's own data, Mr. Delamer and Mr. Rozenberg calculated that until the valuation date, the domestic bank investors already collected EUR 658.3 mil. and will collect a further EUR 172.5 mil. in interest. Notably, these interest payments are in addition to the principal payments.[137]

131. That is, Claimant brings the present damages claim even though the banks providing the bulk of the Lünen Plant's capital collect hundreds of millions. The way how the Lünen Plant was leveraged and its profits allocated to the banks reflects negatively on Claimant's alleged expropriation and fair and equitable treatment case and aggravates, on quantum, that Claimant ultimately conceded all defenses towards the banks after the 2020 Act.[138] The Lünen Plant's high leverage also reflects negatively on the fact that, since 2011, AET was obligated under Swiss law to find a purchaser for its shares but has not put on record anyone having been interested to buy the shares during the nine years until the 2020 Act.

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[134] Claimant's Memorial, ¶ 571.

[135] Cf. Secretariat ER I, ¶ 3.10.

[136] Cf. Secretariat ER I, Figure 6.

[137] Compass Lexecon ER I, footnote 114.

[138] See in further detail below, ¶¶ 463, 467 (on liability), 647-648 (on quantum).

132. In conclusion, before the 2020 Act, the Lünen Plant was a plant (i) which AET was forced to exit by 2035 at the latest, (ii) which did not have a final and binding permit, and (iii) which yielded significant interest payments for the domestic banks due to the plant's high leverage.

C. CLIMATE ACTION: UNCHALLENGED REGULATION UNTIL THE 2020 ACT

133. Claimant challenges the 2020 Act as an alleged Measure in violation of the ECT but keeps silent about the fact that the 2020 Act only follows objectives that had been codified long before the 2020 Act. The objective of climate action is codified in numerous international, European and national instruments. Claimant challenges none of these following instruments.

134. Contrary to Claimant's approach to remain silent about these prior regulations, Respondent will address the regulatory and scientific foundations of climate action in great detail because they are the very reason why the 2020 Act was enacted. Hence, on liability, these unchallenged regulations will be critical considerations why the 2020 Act is a legitimate exercise of Respondent's police powers rather than a violation of Article 13 ECT and why the 2020 Act is in compliance with Article 10 ECT.[139]

135. Respondent addresses the relevant events, conclusions, and regulatory commitments regarding climate action until the 2020 Act in chronological order in this section C. After the summary of the 2020 Act itself (section D. below), the evidence on climate change dated after the 2020 Act will be addressed in further detail below, in section F.

1. In 2014, the 5th UN IPCC Report changed the political discussions

136. The 2015 Paris Agreement, EU, and national climate-action commitments follow scientific evidence, particularly the official publications of the United Nation's Intergovernmental Panel on Climate Change ("**UN IPCC**"). The UN IPCC serves as a scientific policy counsel on climate change research for political, social, and economic decision-making. The role of the UN IPCC is to provide policymakers with assessments of the scientific basis of climate change, its impacts and future risk as well as options for adaption and mitigation.[140]

[139] See below, sect. IV.A.1, ¶¶ 380-433 (Article 13); sect. IV.C.2, ¶¶ 539-555.

[140] **R-0066**, UN IPCC Factsheet, What is the IPCC?, July 2021.

137. The UN IPCC summarizes and assesses the published scientific, technical, and socio-economic literature.[141] During the UN IPCC's review periods (incl. multiple stages of drafting and peer review), hundreds of leading scientists conclude their findings in the UN IPCC Assessment Reports.[142]

138. The UN IPCC Assessment Reports are conservative because they are consensus-based. The scientific community has criticized the UN IPCC Assessment Reports for being too restrained in communicating the impacts of climate change.[143] Sir John Houghton, former chairman and co-chairman of the UN IPCC, conceded in a hearing before the U.S. Senate:

> "IPCC reports have consistently proved to be too conservative."[144]

139. In October 2014, the UN IPCC issued the Synthesis Report of the 5th assessment period ("**AR5**"). AR5 was the first report since 2007. Further, AR5 was the latest report before the 2015 Paris Agreement and the 2020 Act. In the interest of streamlining the present chronology, Respondent defers the detailed presentation of AR5's conclusions to the Annex. To highlight, there were four key conclusions of AR5 that drove the later Paris Agreement negotiations:

140. *First*, the UN IPCC informed of the scientific consensus that mankind influenced the climate system. AR5 found that since the 1950s, many of the observed changes are without precedent over the span of decades to millennia. Global land and ocean surface temperatures have increased by about 0.85°C from 1880 to 2012.[145] From 1901 to 2010, the average global sea level rose by approximately 0.19 meters.[146]

141. *Second*, the UN IPCC informs of the gravest risks caused by climate change for species, economies, food security, and human safety. Therefore, the UN IPCC concludes that

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[141] **R-0067**, UN IPCC Factsheet, What literature does the IPCC assess?, July 2021.

[142] **R-0068**, UN IPCC Factsheet, How does the IPCC review process work?, 15 January 2015.

[143] **R-0069**, The Washington Post, The world's climate change watchdog may be underestimating global warming, 30 October 2014, adobe p. 1.

[144] **R-0070**, Hearings before the Committee in Energy and Natural Resources United States Senate One Hundred Ninth Congress First Session to receive testimony regarding the current state of climate change scientific research and the economics of strategies to manage climate change, 21 July 2005, adobe p. 26.

[145] **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 3.

[146] *Id.,* adobe p. 9.

climate change increases the risk for the displacement of people, violent conflicts, impacts on critical infrastructure, and territorial integrity of many States.[147]

142. *Third*, AR5 is the first report to explicitly endorse as a consensus the risks of so-called tipping points. Tipping points are events which are irreversible and have a self-perpetuating effect on the climate. One example of a tipping point is the melting of the polar glaciers. In 2008, Professor Schellnhuber and fellow colleagues established the terminology in the article "*Tipping elements in the Earth's climate system*".[148] Professor Schellnhuber provides an expert report in this arbitration. Regarding the topic of tipping elements, Respondent refers to section 3 of Professor Schellnhuber's report in its entirety.

143. *Fourth*, the UN IPCC demanded an "*urgent and fundamental departure from business as usual.*"[149] It highlighted that the current soft commitments under the so-called 2010 Cancún pledges would lead to a temperature increase of 3°C.[150] The UN IPCC concluded that stricter commitments were necessary, *e.g.* the decarbonisation of electricity generation.[151] For policymakers, AR5 introduced the concept of a carbon budget, *i.e.* amounts of CO_2 reflecting a certain probability of limiting global warming to a certain degree.

2. In 2015, the Paris Agreement implemented a 1.5°C objective

144. On 4 May 2015, the UN's joint contact group established under the Cancún Agreements issued its final report on the 2013-2015 review period.[152] The report assessed which

[147] **R-0072**, UN IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 21.

[148] **R-0073**, *Schellnhuber et.al.*, Tipping elements in the Earth's climate system in: Proceedings of the National Academy of Science Vol. 105 No. 16, 12 February 2008.

[149] **R-0074**, UN IPCC Climate Change 2014: Synthesis Report, Foreword, p. v.

[150] **R-0075**, UN IPCC Climate Change 2014: Mitigation of Climate Change, Summary for Policymakers, adobe p. 14. The Cancún Pledges are GHG emission reduction targets adopted by the 16th COP in 2010. The EU Member States committed to a 20% reduction by 2020 compared to 1990 levels: **R-0076**, UNFCCC/SBSTA/2014/INF.6, Cancún Pledges, 9 May 2014, ¶ 11.

[151] **R-0075**, UN IPCC Climate Change 2014: Mitigation of Climate Change, Summary for Policymakers, SPM.4.2.2., adobe p. 22.

[152] **R-0077**, UNFCCC Subsidiary Body for Scientific and Technological Advice, Report on the structured expert dialogue on the 2013-2015 review, 4 May 2015.

political action was necessary based on AR5.[153] The report found that the Cancún Agreements' concept that a global warming of 2 °C is considered 'safe' was inadequate.[154]

145. On 12 December 2015, the 21st COP adopted the Paris Agreement.[155] The agreement entered into force on 4 November 2016.[156] Following the UNFCCC and the Kyoto Protocol, the Paris Agreement is the third of the three international treaties addressing climate change. The Paris Agreement is a formal and binding international treaty under the Vienna Convention of the Law of Treaties. Article 20 stipulates the ratification, acceptance, and approval process. Article 21 regulates its entry into force and Article 27 prohibits reservation, requiring ratification of the Agreement in its entirety. The Paris Agreement is unprecedented in its universal applicability as well as in its extensive objectives and commitments. The Paris Agreement has been signed and ratified by 194 States.[157]

146. The Paris Agreement marks the shift from a 2°C to a 1.5°C target. It sets out the goal to limit global warming to well below 2°C, while pursuing efforts to limit the increase to 1.5°C compared to pre-industrialization levels. The core provision, Article 2(1), states:

> "This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by: (a) holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change; […]"[158]

147. To limit global warming to 1.5°C, GHG emissions must begin decreasing by 2025 and must have decreased by 43% by 2030.[159] To achieve this goal, Article 4 of the Paris

[153] It was carried out by the two permanent subsidiary bodies of the UNFCCC, the Subsidiary Body for Scientific and Technological Advice and the Subsidiary Body for Implementation with assistance of the Structured Expert Dialogue. The latter is a forum of scientists, government delegates and representatives from civil society. Its purpose was to "ensure the scientific integrity of the review through a focused exchange of views, information and ideas: *Id.,* ¶ 5.

[154] *Id.,* ¶ 46 Message 5.

[155] **RL-0003**, United Nations Treaty Collection Chapter XXVII, 7 d. Paris Agreement, 12 December 2015.

[156] The EU and Germany ratified the Paris Agreement on 5 October 2016: **R-0078**, United Nations Treaty Collection Chapter XXVII, 7.d Paris Agreement – Status of Ratification, adobe p. 2.

[157] 194 out of 198 Parties to the UNFCCC have ratified, accepted, approved, or acceded to the Paris Agreement. Only Iran, Libya and Jemen have not: *Id.,* adobe pp. 1-3. On 20 January 2025, the United States withdrew from the Paris Agreement for a second time.

[158] **RL-0003**, United Nations Treaty Collection Chapter XXVII, 7 d. Paris Agreement, 12 December 2015, Article 2(1)(a).

[159] **R-0079**, UNFCCC, What is the Paris Agreement?, p.1.

Agreement states that developed Parties (such as Respondent and Switzerland) reduce emissions "*rapid[ly]*":

> "In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty."[160]

148. In addition, the Paris Agreement obligates developed States to formulate absolute emission targets (Article 4(4) Paris Agreement) and to adopt Nationally Determined Contributions ("**NDCs**"). The NDCs must define national climate action targets every five years (Article 4(2) sentence 1 and (9) Paris Agreement). Parties are required to pursue the mitigation actions necessary to achieve the target set in their NDC (Article 4(2) sentence 2).[161]

149. NDCs are recorded in a public registry (Article 4(12) Paris Agreement). Article 4(3) Paris Agreement further states that the NDCs must gradually progress from one five-year circle to the next one, with each NDC expected to be more ambitious than the previous one:

> "Each Party's successive nationally determined contribution will represent a progression beyond the Party's then current nationally determined contribution and reflect its highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.[162]

150. Within a regional economic integration organization, which is itself a party to the Agreement, member States may decide to act jointly under the Agreement.[163] This applies to the EU, Germany, and the other EU Member States who may submit their NDCs jointly. They communicate an emission reduction target that applies to the EU in its entirety.[164]

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[160] **RL-0003**, United Nations Treaty Collection Chapter XXVII, 7 d. Paris Agreement, 12 December 2015, Article 4(1).

[161] *Id.,* Article 4(2) sentence 2: "Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions."

[162] *Id.,* Article 4(3).

[163] *Id.,* Article 4(16).

[164] See **R-0080**, Submission by Latvia and the European Commission on behalf of the European Union and its Member States, Intended Nationally Determined Contribution of the EU and its Member States, 6 March 2015; **R-0081**, Submission by Germany and the European Commission on behalf of the European Union and its Member States, The update of the nationally determined contribution of the European Union and its Member States, 17 December 2020.

3. In 2015/16, the EU and Germany adopted the required 1.5°C target

151. After the conclusion of the Paris Agreement, the EU, and Germany adopted climate-action targets that were necessary based on the scientific evidence of AR5 and to which they were obligated under the Paris Agreement.

152. On 6 March 2015, the EU doubled its GHG reduction goals. In anticipation of the Paris Agreement, the EU submitted its Intended Nationally Determined Contribution ("**INDC**") to the UNFCC Secretariat as stipulated by the 20th COP in 2014.[165] On 5 October 2016, upon the ratification of the Paris Agreement by the EU[166], the EU's INDC turned into its NDC. Thereunder, the EU pledged to a GHG emission-reduction target of 40% by 2030 compared to 1990 levels:

> "The EU and its Member states are committed to a binding target of an at least 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990 […].
>
> The target represents a significant progression beyond its current undertaking of a 20% emission reduction commitment by 2020 compared to 1990 (which includes the use of offsets). It is in line with the EU objective, in the context of necessary reductions according to the IPCC by developed countries as a group, to reduce its emissions by 80-95% by 2050 compared to 1990."[167]

153. In November 2016, Respondent adopted the Climate Action Plan 2050.[168] The Climate Action Plan 2050 is Respondent's long-term strategy for the reduction of GHG emissions. The plan states: "*The German government's climate policy is guided by the Paris Agreement*."[169] The Climate Action Plan 2050 describes the pathway to a largely GHG-neutral Germany by 2050 and pursuing efforts to limit the temperature increase to 1.5°C.[170] Under the Climate Action Plan 2050, Respondent's GHG emission reduction targets were as follows:

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[165] **R-0080**, Submission by Latvia and the European Commission on behalf of the European Union and its Member States, Intended Nationally Determined Contribution of the EU and its Member States, 6 March 2015.

[166] **R-0082**, Official Journal of the European Union L 282/1, Council Decision (EU) 2016/1841 on the conclusion, on behalf of the European Union, of the Paris Agreement adopted under the United Nations Framework Convention on Climate Change, 5 October 2016.

[167] **R-0080**, Submission by Latvia and the European Commission on behalf of the European Union and its Member States, Intended Nationally Determined Contribution of the EU and its Member States, 6 March 2015, sect. 3 and the Annex on why the EU considers its target fair and ambitious, adobe pp. 1, 3.

[168] **R-0083**, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Climate Action Plan 2050, November 2016.

[169] *Id.,* adobe p. 12.

[170] *Id.,* adobe p. 6.

- a 55% reduction by 2030,
- a 70% reduction by 2040, and
- a 80-95% reduction by 2050 compared to 1990 levels.[171]

154. The Climate Action Plan 2050 sets precise emission-reduction targets for each relevant sector until 2030. The energy sector's target is to reduce GHG emissions by 61-62% compared to 1990 levels by 2030 providing for a remaining net output allowance of 175 to 183 million tons of CO_2-eq.[172]

155. The 2017 Climate Action Report showed that Germany would miss its climate protection targets for 2030 by 9 percentage points, *i.e.* a reduction of only 46% instead of 55%.[173]

4. In 2018, the UN IPCC issued a Special Report on the necessity to limit global warming to 1.5°C

156. In 2018, the UN IPCC issued the UN IPCC Special Report on Global Warming of 1.5°C ("**UN IPCC Special Report**"). The report offers a comprehensive comparison between global warming of 1.5°C and 2°C above pre-industrialization levels. In the interest of streamlining the present chronology, Respondent defers the detailed presentation of the AR5's conclusions to the Annex. The Special Report's main conclusions are the following:

157. The UN IPCC Special Report demonstrated that risks and consequences associated with 1.5°C of global warming are more substantial than at present but become intolerable with 2°C of global warming. The difference between 1.5°C and 2.0°C of global warming may result in the extinction of species and poverty of millions.

158. *First*, the UN IPCC concluded that the risk of loss in species and the threat of extinctions under a 1.5°C scenario is only half the risk in a 2.0°C scenario.[174]

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[171] *Id.,* at 4.2, adobe p. 28.

[172] *Id.,* Table 1, adobe p. 8. From the table derives that in 2014, GHG emissions in the energy sector accumulated to 358 million tons CO_2-eq.

[173] **R-0084-ENG**, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Climate Action Report 2017 on the German government's Climate Action Programme 2020, Table 2 (**R-0084-GER**, adobe p. 19).

[174] **R-0085**, UN IPCC Special Report on Global Warming of 1.5°C, Summary for Policymakers, B.3 and B.3.1, adobe p. 8.

159. *Second*, the UN IPCC concluded that limiting global warming to 1.5°C avoids crossing certain tipping points. It slows the increase in ocean temperature and ocean acidification. Instability and mass loss of ice sheets may be prevented.[175]

160. *Third*, limiting global warming to 1.5°C significantly decreases risks to health, livelihoods, water supply, food availability and quality, human security, and economic growth. The number of people exposed to climate related risk and susceptible to poverty is lowered by several hundred million.[176]

161. *Fourth*, the UN IPCC Special Report projected that global warming is likely to reach 1.5°C between 2030 and 2052.[177] As to the timeframe afterwards, the Report concluded that the mitigation ambitions under the Paris Agreement at that time would not suffice for limiting global warming to 1.5°C. Instead, the current ambitions may still lead to global warming of even 3.0°C.[178]

162. Therefore, the UN IPCC Special Report found that limiting global warming to 1.5°C requires reaching net zero GHG emissions around 2050.[179]

5. In light of the Special Report, the EU and Germany tightened their targets

163. On 14 March 2018, the EU implemented a reduction target of 43% by 2030 for the ETS sector.[180] For context, the EU climate target is achieved through two main approaches: the emissions trading system and differentiated contributions from EU Member States in the non-

[175] *Id.,* B.2.2 and B.4, adobe pp. 7-8.

[176] *Id.,* B.5.1, adobe p. 9.

[177] *Id.,* A.1, adobe p. 4.

[178] *Id.,* D.1.1, adobe p. 18.

[179] *Id.,* C.1, adobe p. 12.

[180] **R-0086**, Official Journal of the European Union L 76/3, Directive (EU) 2018/410 of the European Parliament and of the Council amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814, 14 March 2018, ¶ 2, adobe p. 1. On 10 May 2023, the directive was revised further to represent more ambitious ETS targets: **R-0087**, Official Journal of the European Union L 130/134, Directive (EU) 2023/959 of the European Parliament and of the Council of 10 May 2023 amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system, 10 May 2023.

ETS sectors.[181] Energy production from coal-fired power plants counts toward the ETS-sector targets.

164. On 23 September 2019, Respondent committed to reaching net zero GHG emissions in 2050. At the UN Climate Action Summit, Chancellor Dr. Merkel stated:

> "The benchmark for our actions must be the Paris Agreement, which sets the framework for limiting global warming to 1.5 degrees. […] Germany recognizes its responsibility internationally and nationally. […] Germany accounts for one percent of the world's population but causes two percent of global emissions. If everyone acted like Germany, global emissions would double. That is why we have set ourselves the target of reducing 55 percent of our CO_2 emissions by 2030 compared to 1990 and to be carbon neutral by 2050."[182]

165. On 9 October 2019, the federal government adopted the Climate Action Programme 2030 to implement the Climate Action Plan 2050.[183] The Climate Action Programme 2030 is a comprehensive package of measures to achieve the 2030 climate targets. One of these measures is the gradual reduction and phase-out of coal-fired power generation based on the recommendations of the Commission for Growth, Structural Change, and Employment ("**Coal Commission**").[184]

166. On 11 December 2019, the European Commission communicated the European Green Deal.[185] The European Green Deal positioned the EU as a leader in global climate action.[186]

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[181] On 30 May 2018, the EU adopted the Effort Sharing Regulation. This regulation establishes binding annual GHG emission targets for EU Member States from 2021 to 2031 in the non-ETS sector. Pursuant to article 4(1) in conjunction with Annex I, Germany must reduce its emissions in the non ETS sector by 38% compared to 2005 by 2030: **R-0088**, Official Journal of the European Union L 156/26, Regulation (EU) 2018/842 of the European Parliament and of the Council on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013, 30 May 2018. On 19 April 2023, the Effort Sharing Regulation was amended. Thereunder, Germany is obliged to reduce its GHG emissions by 50%: **R-0089**, Official Journal of the European Union, L 111/1, Regulation (EU) 2023/857 of the European Parliament and of the Council amending Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement, and Regulation (EU) 2018/1999, 19 April 2023, Article 1(3) lit. a no. 1 in conjunction with Annex I.

[182] **R-0090-ENG/GER**, Federal Bulletin No. 107-2, Chancellor of the Federal Republic of Germany Dr. Angela Merkel, Speech at the UN Climate Action Summit, 23 September 2019, ¶¶ 3-5.

[183] **R-0091-ENG/GER**, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Climate Action Programme 2030.

[184] **R-0091-ENG**, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Climate Action Programme 2030, 3.4.1.1 (**R-0091-GER**, adobe p. 21).

[185] **R-0092**, European Commission, Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and Committee of the Regions, 11 December 2019.

[186] *Id.,* ¶ 3, adobe, pp. 20-24.

Therein, the European Commission introduced the targets of climate neutrality by 2050 and a net reduction in GHG emissions of 55% by 2030.[187] The European Commission also announced to enshrine these targets in a European Climate Law.[188]

167. On 12 December 2019, the European Council endorsed the objective of achieving climate neutrality by 2050 considering the findings of the 2018 IPCC Special Report:

> "In the light of the latest available science and of the need to step up global climate action, the European Council endorses the objective of achieving a climate-neutral EU by 2050, in line with the objectives of the Paris Agreement.[189]

168. Shortly afterwards, the EU communicated the climate neutrality objective to the UNFCCC secretariat.[190]

169. On 12 December 2019, Respondent adopted the Federal Climate Action Act (*Bundes-Klimaschutzgesetz*).[191] The Federal Climate Action Act incorporated Germany's emission reduction targets under the Climate Protection Plan 2050 into a formal law. Section 1 describes the purpose of the law as follows:

> "The basis of the Act is the obligation according to the Paris Agreement, under the United Nations Framework Convention on Climate Change, to limit the increase in the global average temperature to well below two degrees Celsius and, if possible, to 1.5 degrees Celsius, above the pre-industrial level so as to minimise the effects of worldwide climate change, as well as the commitment made by the Federal Republic of Germany at the United Nations Climate Action Summit in New York on 23 September 2019 to pursue the long-term goal of greenhouse gas neutrality by 2050."[192]

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[187] *Id.,* ¶ 2.1.1., adobe p. 4.

[188] *Id.,* ¶ 2.1.1., adobe p. 4.

[189] **R-0093**, European Council, EUCO 29/19, Conclusions of the European Council meeting on 12 December 2019, 12 December 2019, Section I (1), adobe p. 2.

[190] **R-0094**, Submission by Croatia and the European Commission on behalf of the European Union and its Member States, Long-term low greenhouse gas emission development strategy of the European Union and its Member States, 6 March 2020, adobe p. 1.

[191] **R-0095**, Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Translation of the 2019 Federal Climate Action Act (*Bundes-Klimaschutzgesetz*) of 12 December 2019 as in Federal Law Gazette I p. 2513. The act was amended in 2021 and 2024. The 2019 version of the Act was translated in official communications as "Federal Climate Change Act". The 2024 amendment was translated as "Federal Climate Action Act". For ease of reference, Respondent will refer to all versions of the Act as "Federal Climate Action Act".

[192] *Id.,* section 1.

170. Section 3(1) and (3) of the Federal Climate Action Act set forth the general emission reduction targets:

> "(1) Emissions of greenhouse gases shall be gradually reduced in comparison with their levels in the year 1990. The reduction to be achieved by the target year 2030 shall be at least 55 per cent.
>
> (3) Should higher national climate targets become necessary for compliance with European or international climate targets, the Federal Government shall initiate the steps required to increase the target values referred to in subsection (1) above. Climate targets may be raised but not lowered."[193]

171. Article 4(1) sentence 3 in conjunction with Annex 2 established annual emission limits for various sectors based on the reduction target for 2030, creating a predetermined pathway for progressively lowering emissions each year. For the energy sector, Annex 2 stipulates annual emission volumes of 280 million tons CO_2-eq for 2020, 257 million tons CO_2-eq for 2022, and 175 million tons CO_2-eq for 2030.[194] For the years in between, emissions are to be steadily reduced.[195]

172. On 11 December 2020, the European Council endorsed the objective to reduce GHG emissions by at least 55% by 2030:

> "To meet the objective of a climate-neutral EU by 2050 in line with the objectives of the Paris Agreement, the EU needs to increase its ambition for the coming decade and update its climate and energy policy framework. To that end, the European Council endorses a binding EU target of a net domestic reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990."[196]

173. On 17 December 2020, under the German EU Council Presidency, the European Union submitted the updated version of its first NDC. Thereunder, the EU commits to a net domestic reduction of 55% until 2030:

> "The EU and its Member States wish to communicate the following NDC. The EU and its Member States, acting jointly, are committed to a binding

[193] *Id.,* section 3(1) and (3).

[194] *Id.,* Annex 2.

[195] *Id.,* Article 4(1) sentence 4.

[196] **R-0096**, European Council CO EUR 17/CONCL 8, Conclusions of the European Council meeting on 10/11 December 2020, 11 December 2020, ¶ 12.

target of a net domestic reduction of at least 55% in greenhouse gas emissions by 2030 compared to 1990."[197]

174. Regarding the necessary steps of implementation, the updated version of the EU's first NDC states:

> "The EU's enhanced NDC represents a significant progression beyond both its current undertaking of a 20% emissions reduction commitment by 2020 compared to 1990, and its NDC submitted at the time of ratifying the Paris Agreement. Both the initial NDC and this update require significantly higher emissions reductions than were projected as business as usual at the time of their adoption."[198]

175. On 24 March 2021, the German Federal Constitutional Court declared parts of the Federal Climate Action Act to be unconstitutional because it was too lenient on climate action. The Court found that the climate-action ambitions were insufficient and interfered with the applicants' fundamental constitutional rights.[199] In short, the Act favoured emissions in the short-term and reduced the possible emissions in the long-term.[200] Therefore, the Federal Constitutional Court ruled that the current emission reduction targets would disproportionately impair the fundamental rights of future generations.[201] The court ordered the legislator to set more specific targets for emission reductions from 2031 onwards by the end of 2022 to ensure a fair balance between the interests of current and future generations.[202]

176. Consequently, on 24 June 2021, Respondent amended the Federal Climate Action Act.[203] The latest national GHG emission reduction targets for 2030 until the point when climate neutrality is to be reached in 2045 are stipulated in the amended section 3 of the Federal Climate Action Act:

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[197] **R-0081**, Submission by Germany and the European Commission on behalf of the European Union and its Member States, The update of the nationally determined contribution of the European Union and its Member States, 17 December 2020, ¶ 27.

[198] *Id.,* Annex ¶ 6 *lit*. a How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances, adobe p. 17.

[199] **R-0097**, Federal Constitutional Court, Order of the First Senate of 24 March 2021 - 1 BvR 2656/18, ¶ 195.

[200] *Id.,* ¶ 244.

[201] *Id.,* ¶ 243.

[202] **R-0098-ENG/GER**, Federal Constitutional Court, Order of the First Senate of 24 March 2021 - 1 BvR 2656/18 ¶¶ 264-269, ¶ 268.

[203] **R-0099-ENG/GER**, First law on the amendment Law of the Federal Climate Action Act (*Bundes-Klimaschutzgesetz*) of 18 August 2021 in Federal Law Gazette I p. 3905. The act was amended once more in 2024. The emission reduction targets remained the same: **R-0100**, Federal Ministry of Justice, Translation by the Language Service of the Federal Ministry for Economic Affairs and Climate Action of the 2024 Federal Climate Action Act (*Bundes-Klimaschutzgesetz*) of 15 July 2024 as in Federal Law Gazette I No. 235.

> "(1) Emissions of greenhouse gases are gradually reduced as follows in comparison with their levels in 1990:
>
> 1. by at least 65% by 2030,
>
> 2. by at least 88% by 2040.
>
> (2) By 2045, greenhouse gas emissions are reduced to such an extent that net greenhouse gas neutrality is achieved. Negative greenhouse gas emissions are to be achieved after 2050."[204]

177. Annex 2 updated the annual permissible emission budget for the energy sector to 108 $GtCO_2$ in 2030. Annex 3 now provided for more specific GHG emission reduction targets from 2031 to 2040.[205]

178. On 30 June 2021, the EU adopted the Regulation 2021/1119 (the so-called "**European Climate Law**").[206] The European Climate Law codifies the target of climate neutrality by 2050 and a net reduction in GHG emissions of 55% by 2030. Article 2 of the European Climate law stipulates the legally binding objective of climate neutrality by 2050 and requires EU Member States to adopt the necessary measures. Article 4 codifies the objective of reducing GHG emissions by 55% by 2030 and demands EU Member States to implement rapid and effective reduction measures. The EU introduced this regulation considering the findings of the IPCC:

> "The Intergovernmental Panel on Climate Change (IPCC) [in its 2018 Special Report] illustrates the need to rapidly step up climate action and to continue the transition to a climate-neutral economy. That report confirms that greenhouse gas emissions need to be urgently reduced, and that climate change needs to be limited to 1,5 °C, in particular to reduce the likelihood of extreme weather events and of reaching tipping points."[207]

[204] **R-0099-ENG/GER**, First law on the amendment Law of the Federal Climate Action Act (*Bundes-Klimaschutzgesetz*) of 18 August 2021 in Federal Law Gazette I p. 3905, Article 1(3). See also **R-0100**, Federal Ministry of Justice, Translation by the Language Service of the Federal Ministry for Economic Affairs and Climate Action of the 2024 Federal Climate Action Act (*Bundes-Klimaschutzgesetz*) of 15 July 2024 as in Federal Law Gazette I No. 235, sections 3(1) and (2).

[205] **R-0099-ENG/GER**, First law on the amendment Law of the Federal Climate Action Act of 18 August 2021 in Federal Law Gazette I p. 3905, Article 1(10) and Article 1(11). See also **R-0100**, Federal Ministry of Justice, Translation by the Language Service of the Federal Ministry for Economic Affairs and Climate Action of the 2024 Federal Climate Action Act (*Bundes-Klimaschutzgesetz*) of 15 July 2024 as in Federal Law Gazette I No. 235, sections 4(1) sentences 3-4.

[206] **R-0101**, Official Journal of the European Union L 243/1, EU Regulation (EU) 2021/1119 of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law'), 30 June 2021.

[207] *Id.,* ¶ 3, adobe p. 1.

179. In conclusion, the objective to reduce GHG and limit global warming is an objective resulting out of rules of international law as well as unchallenged measures of EU and German law.

D. THE ALLEGED MEASURE: THE 2020 ACT

180. In compliance with the Paris Agreement and the (likewise unchallenged) regulation of EU and German law, Respondent codified the phase-out of hard-coal and lignite (the "**Phase-Out**"). Following the recommendation of a pluralistic commission of stakeholders (see below, at 1.), the German legislative enacted the 2020 Act (at 2.). The 2020 Act followed legitimate and reasonable considerations that appropriate alternatives were not available (at 3.) and hard-coal and lignite had to be treated differently (at 4.). Respondent also ascertained that the 2020 Act complied with the – strict – requirements under German constitutional law (at 5.). The 2020 Act was challenged before and confirmed by the European Court of Human Rights (at 6.).

1. The 2020 Act was preceded by non-binding recommendations of independent stakeholders

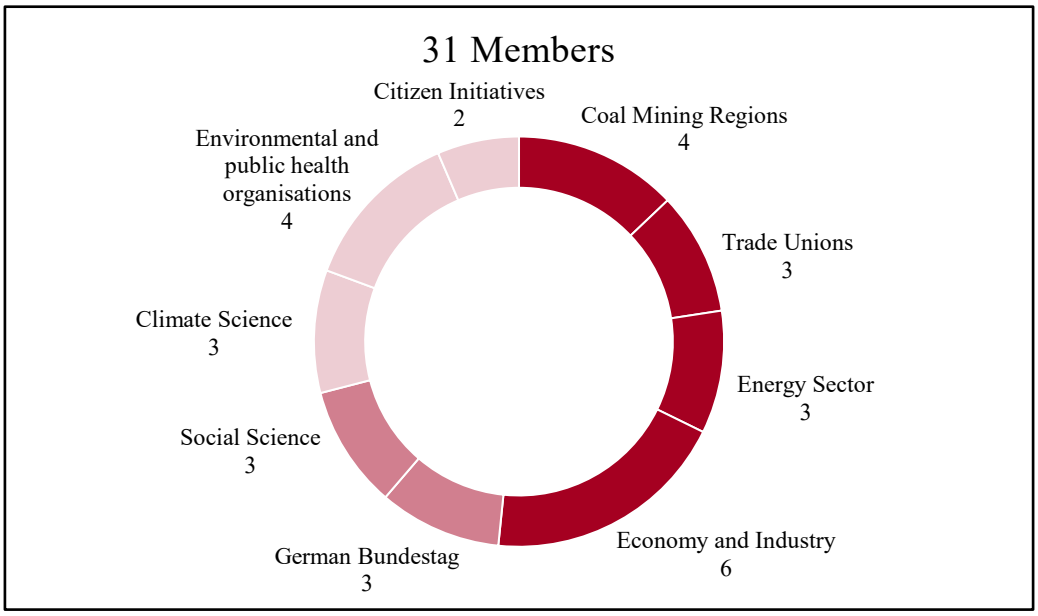
181. In June 2018, the federal government appointed a group of stakeholders to the Commission on Growth, Structural Change and Employment ("**Coal Commission**"). The object and purpose of the appointment was to have an independent assessment whether and, if yes, how a phase-out of hard-coal and lignite would be undertaken after hearing from the relevant stakeholders.

182. Claimant mentions the Coal Commission in the Memorial only briefly. Claimant does not challenge the Coal Commission's recommendations as measures allegedly in violation of the ECT (let alone explain how these independent recommendations of stakeholders could be attributable to Respondent or violate the ECT).

183. The Coal Commission comprised 31 different representatives from politics, business, energy industry, environmental organisations, science, trade unions, citizen initiatives, and the regions affected from a potential coal phase-out. The Commission was chaired, *inter alia*, by economist Dr. Barbara Praetorius, former Minister President of the Federal State Saxony Stanislaw Tillich, and former Minister President of Brandenburg Matthias Platzeck. Other members include Professor Schellnhuber and the then-Chairman of the Executive Board of the German Association of Energy and Water Industries (*Bundesverband der Energie- und*

Wasserwirtschaft - "**BDEW**") Stefan Kapferer. The BDEW is a lobby and interest group for the German electricity and energy sector. It represents not only the major energy suppliers RWE, E.ON, EnBW, and Vattenfall. Crucially, the BDEW also represents half of the co-shareholders of Claimant in the Lünen Plant (14 of the 29 municipal utility companies).[208]

Overview of the 31 members of the Coal Commission



Source: **R-0103-ENG/GER**, Federal Ministry for Economic Affairs and Climate Action, Members of the Coal Commission. (illustration by Respondent)

184. The federal government appointed the Coal Commission in June 2018 to create a broad social consensus on the design of the coal phase-out and the associated structural change based on climate and energy policy in Germany.[209]

185. The Appointment Decision reads:

> "2. Development of a mix of instruments that bring together economic development, structural change, social acceptability, social cohesion and action on climate change and, at the same time, for sustainable energy-producing regions as part of the energy transition.
>
> 4. Measures to ensure that the energy sector is on a reliable course to reach the 2030 target, including a comprehensive impact assessment. The target

[208] Allgäuer Überlandwerke GmbH, Stadtwerke Dachau, Stadtwerke Dinslaken GmbH, Stadtwerke EVB Huntetal GmbH, Stadtwerke Georgsmarienhütte GmbH, Stadtwerke Gronau GmbH, Stadtwerke Jena Netze GmbH, Stadtwerke Lübeck Energie GmbH, Stadtwerke Osnabrück AG, Stadtwerke Sindelfingen GmbH, Stadtwerke Verden GmbH, STAWAG Energie GmbH, Teutoburger Energie Netwerk eG, RhönEnergie Fulda GmbH (formerly Überlandwerk Fulda): **R-0102-ENG/GER**, German Association of Energy and Water Industries (*Bundesverband der Energie- und Wasserwirtschaft*), Overview of Members. For Trianel limited partners see: **C-0080-EN**, TKL 2008 Partnership Agreement (8 May 2008) (excerpts), section 2(2).

[209] **C-0014**, Final Report of the Coal Commission, January 2019, p. 6.

> established by the Climate Action Plan is for the energy sector to reduce emissions by 61% to 62% by 2030 compared with 1990 levels. […]
>
> 5. In addition, a plan for the step-by-step reduction and termination of coal-fired power generation, including an end date and the necessary legal, economic, social, renaturation and structural policy support measures.
>
> 6. Also measures to be taken by the energy industry as a contribution towards minimising the undershoot on the 40% reduction target."[210]

186. Beyond the appointment decision there were no predeterminations on the part of the federal government. The Coal Commission's Protocols record that the then-incumbent Minister of Economic Affairs Peter Altmaier appeared before the commission:

> "Federal Minister for Economic Affairs Peter Altmaier also made clear at the meeting that there were no pre-determinations within the Federal Government that would pre-empt the results of the Commission. In his view, the Commission must first develop proposals for shaping the structural change before deciding on climate policy issues."[211]

187. The Coal Commission convened 15 meetings at which more than 80 experts from a variety of backgrounds presented their views.[212] All meetings were followed by press statements to ensure an open and transparent process.

188. In January 2019, after eight months of deliberations, the Coal Commission issued its Final Report in January 2019 with only one dissenting vote.[213] The key conclusions were the following:

189. *First*, the Coal Commission emphasized that climate action is necessary and, indeed, urgent. Unrestrained climate change would lead to anthropogenic global warming of 4°C. Germany would be particularly affected by its consequences. The Coal Commission also referred to the recommendation of the 2018 UN IPCC Special Report highlighting that a rapid transition to a GHG neutral society by halving CO_2 emissions within each of the next decades is required.[214] Further, the Coal Commission stated explicitly: "*The recommendations of the Commission for*

[210] *Id.*, p. 109.

[211] **R-0104-ENG**, Protocols of the Coal Commission, adobe p. 6 (**R-0104-GER**, adobe p. 39).

[212] **C-0014**, Final Report of the Coal Commission, January 2019, pp. 111-116.

[213] 27 votes in favour, one member dissenting. Only 28 of the 31 members of the Coal Commission were entitled to vote: **C-0014**, Final Report of the Coal Commission, January 2019, pp. 6-7, 117.

[214] *Id.*, p. 13.

Growth, Structural Change and Employment must also be seen in the context of the Paris Agreement." [215]

190. *Second*, in light of the need for climate action, the Coal Commission concluded that a significant reduction in CO_2 emissions from the energy sector is required to reach national climate targets.[216] The Final Report recommended a secured gradual reduction and termination of coal-fired power generation until 2038 with the option to bring the termination date forward to 2035.[217] The reduction path set intermediate targets for 2022 and 2030. It provided for a reduction to 15 GW lignite and 15 GW hard-coal net capacity by 2022, and a further reduction to 9 GW lignite and 8 GW hard-coal net capacity by 2030.[218] For the years in between, the reduction should take place as steadily as possible.[219]

191. *Third*, the Coal Commission differentiated between lignite and hard-coal and proposed different phase-out mechanisms. The German legislator eventually adopted this differentiation. Claimant alleges that such differentiation would amount to discrimination. It does not. Against this background, the reasons for the differentiations will be presented in further detail in sub-section 4. below together with the documentary and witness evidence showing that such differentiation was reasonable.[220]

192. Regarding the result of the differentiation, for lignite energy, the Coal Commission proposed amicable settlement with the operators for lignite capacities.[221] In case mutually agreed solutions could not be reached, the Coal Commission suggested regulatory measures accompanied by compensation payments.[222]

193. For reaching the targets for the hard-coal capacities after 2022, the Coal Commission recommended an auction mechanism offering decommissioning premiums to the bidding hard-coal plants, followed by Coal-Firing Stops. The Commission concluded that an auction process needs incentives for participation. Only the threat of a possible Coal-Firing Stop creates pressure

[215] **R-0003-ENG/GER**, Final Report of the Coal Commission, January 2019, p. 60. The English version contains corrected excerpts of the official English translation C-0014.
[216] *Ibid*.
[217] *Id*., pp. 62-64.
[218] *Id.*, pp. 62-63.
[219] *Id.*, p. 63.
[220] See below, sect. II.D.4, ¶¶ 213-223.
[221] **R-0003-ENG/GER**, Final Report of the Coal Commission, January 2019, p. 63.
[222] *Id.*, p. 64.

on the operators to undercut each other. Compared to a purely regulatory reduction, the option to participate in the auction mechanism to obtain a decommissioning premium is the milder means.[223]

2. On 3 July 2020, German Parliament enacted the 2020 Act

194. On 3 July 2020, the two chambers of the German Parliament, the *Bundestag* and the *Bundesrat*, adopted[224] the 2020 Act.[225] The act entered into force on 14 August 2020.[226]

195. The 2020 Act adopted the recommendations of the Coal Commission regarding the gradual and steady reduction and termination of hard-coal-fired power generation in Germany.[227] The object and purpose of the 2020 Act is as follows:

> "The purpose of this Act is to reduce and end the generation of electrical power via the use of coal in Germany in a socially acceptable, gradual and as far as possible steady way in order to reduce emissions and thus ensure a secure, affordable, efficient and climate-friendly supply of electricity for all."[228]

196. The 2020 Act is intended to help close the gap on the 40% climate target for 2020 and enable the energy industry to reliably achieve its sector target for 2030.[229] The explanatory memorandum to the 2020 Act explicitly refers to the objective of GHG neutrality by 2050 and the objective of reducing GHG by 55% by 2030, as enshrined in the first version of the Federal Climate Action Act.[230]

197. To achieve this objective, the 2020 Act sets forth target levels for the reduction and termination of coal-fired power generation for certain target dates. Combined hard-coal and lignite

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[223] *Id.*, p. 63: "To implement this, the Commission recommends voluntary measures […] a voluntary decommissioning premium for hard-coal capacities."; p. 64: "A voluntary decommissioning premium is to be offered for the remaining capacity as part of an auction process."

[224] **C-0098-EN**, First Chamber of the German Parliament (Bundestag), *Parliamentary Process of the Law to reduce and end coal-fired power generation and to amend other laws (Coal Ban Umbrella Law)* available at https://dip.bundes-tag.de/vorgang/.../258735 (last accessed on 24 July 2024), adobe p. 1.

[225] **R-0105-ENG/GER**, Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479.

[226] *Id.*, adobe p. 1.

[227] **C-0097-ENcorrected**, Parliamentary Paper BT-Dr. 19/17342, *Explanatory Memorandum and Draft Coal Ban Law*, 24 February 2020 (excerpts), adobe p. 3.

[228] **R-0105-ENG/GER**, Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479, section 2(1).

[229] **C-0097-ENcorrected**, Parliamentary Paper BT-Dr. 19/17342, *Explanatory Memorandum and Draft Coal Ban Law*, 24 February 2020 (excerpts), B. Solution, adobe p. 3.

[230] *Id.*, adobe p. 2.

fired power generation is to be reduced to 30 GW by 2022, to 17 GW by 2030, and to 0 GW by 2038.[231] For the years in between, the target level decreases by the same amount each year.[232] Split between hard-coal and lignite, they each shall be reduced to a target level of approximately 15 GW by 2022. This target level is to be reduced further to 8 GW for hard-coal-fired power plants and 9 GW for lignite fired power plants by 2030.[233] For the years in between, the reduction of hard-coal-fired power generation is dependent on the reductions of lignite power plants.[234]

198. For lignite fired power plants, the 2020 Act provides for a shutdown through amicable settlements reached with the only two lignite operators RWE and LEAG.[235] For this purpose, the 2020 Act authorizes the federal government to conclude contracts under public law.[236]

199. For hard-coal fired power plants, the 2020 Act sets forth the following combination of decommissioning auctions and Coal-Firing Stops: from 2020 to 2026, operators of hard-coal power plants can participate in auctions to receive hard-coal premiums (*Steinkohlezuschlag*) for the decommissioning of their power plants in accordance with Part 3 of the 2020 Act.[237] For context, during the auctions 10,734.11 MW of the total of 22,458.00 MW of hard-coal fired power plants on the German market received tenders and shut-down against compensation.[238]

200. The Federal Network Agency (*Bundesnetzagentur* – "**BNetzA**") conducts these decommissioning auctions through determining the annual auction volume and the operators' bids.[239] The bid value is the amount in euros per megawatt of net nominal capacity the bidder has

[231] **R-0105-ENG/GER**, Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479, section 4(1) sentences 1-2.

[232] *Id.*, section 4(1) sentence 3.

[233] *Id*., section 2(2) no. 1-3, 4(2) sentences 1-2.

[234] *Id*., section 4(2) sentence 3.

[235] *Id*., section 40.

[236] *Id*., section 49.

[237] *Id*., section 5(1) no. 1-2.

[238] **R-0106-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), List of awards for auctions under the 2020 Act, 1 September 2020; **R-0107-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), List of awards for auctions under the 2020 Act, 4 January 2021; **R-0108-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), List of awards for auctions under the 2020 Act, 30 April 2021; **R-0109-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), List of awards for auctions under the 2020 Act, 1 October 2021; **R-0110-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), List of awards for auctions under the 2020 Act, 1 March 2022; **R-0111-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), List of awards for auctions under the 2020 Act, 1 August 2022; **R-0112-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), List of awards for auctions under the 2020 Act, 1 June 2023; **R-0113-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), Power Generation – net nominal capacity 2020.

[239] **R-0105-ENG/GER**, Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479, section 6(1), section 10(1).

indicated in his bid.[240] If the bids exceed the auction volume, the BNetzA accepts the bids pursuant to a formula that also takes into account the historic annual net CO_2 emissions per megawatt of nominal net capacity.[241] For each auction, there was a maximum price set forth in the 2020 Act. The maximum price descended from auction to auction to provide an incentive to participate in decommissioning auctions sooner rather than later.[242]

201. Claimant alleges that the Lünen Plant would have been discriminated because "*about half of all shutdown incentives were awarded to power plants which will be at least 40-years old by the time they are shut down*."[243] However, if it would have bid, the Lünen Plant's bid would have been assessed under the same formula as older plants. In fact, the formula favoured the Lünen Plant because it calculates CO_2 emissions per MW capacity (not: MWh production). The Lünen Plant has more total CO_2 emissions per MW capacity (not: MWh production) than older plants because plants such as the Lünen Plant are before older plants on the merit-order and therefore produces more MWh per MW capacity. In any case, within its margin of appreciation, the legislator structured the auctions to reduce as much CO_2 as quickly as possible. As Mr. Wellershoff confirms in his Witness Statement:

> "The main objective of the auction model for hard-coal plants was to reduce as much emissions as possible with as little public spending as necessary. In other words, the 2020 Act was drafted to render the auctions as efficient as possible. Maximum efficiency is the purpose of every reasonable auction. The aim to reduce as much emissions as possible was the reason why, in the auctions, the bids were listed pursuant to a formula of the amount in euros per MW to be shut down and the hard-coal plant's average annual historical carbon dioxide emissions per MW."[244]

202. Following the auctions, the target levels until 2038 are achieved through Coal-Firing Stops in accordance with Part 4 of the 2020 Act.[245]

203. The BNetzA determines the statutory reduction amount for each target date.[246] It then designates, in an ascending order starting with the oldest, hard-coal fired power plants until their

[240] *Id*., section 3 no. 15.

[241] *Id*., section 18(2), (3) and (8).

[242] *Id*., section 19(1).

[243] Claimant's Memorial, ¶ 505.

[244] Wellershoff WS, ¶ 21.

[245] **R-0105-ENG/GER**, Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479, section 5 (1) no 3.

[246] *Id*., section 28, section 33(1).

total net nominal output exceeds the target volume.[247] The BNetzA then issues the Coal-Firing Stops accordingly.[248]

204. Claimant alleges that the Coal-Firing Stops would be discriminatory because "*[t]he first 20 (of over 100) power plants subject to the age-based Shutdown Order only need to close down after more than 50 [years]*."[249] Claimant's allegation fails. *First*, it is undisputed that the Coal-Firing Stops will take place according to the age of the hard-coal plants on the German market. That is, no hard-coal plant older than the Lünen Plant will operate after the Lünen Plant. Claimant does not assert to the contrary. *Second*, it is also undisputed that the first 20 power plants received the Coal-Firing Stops as soon as possible. Claimant does not assert that they should have closed earlier under the 2020 Act. *Third*, the end of hard-coal energy in 2038 is within the legislator's margin of appreciation.

205. In individual cases, the 2020 Act allows for the compensation of the plants' operators via hardship clauses either through a lifetime extension under section 39(1) of the 2020 Act or, for younger power plants that commenced operations after 1 January 2010, through financial compensation pursuant to section 54(2) sentences 4 and 5 of the 2020 Act which state:

> "For hard-coal fired installations that have been commissioned since 1 January 2010 and that, by the time of the evaluations, have neither received compensation by way of auctioning nor been able to use the funding programmes for conversion or replacement, a provision is to be made that avoids undue hardship. This may be achieved either through state-aid compliant compensation for hardship cases or through equivalent measures. In addition, the Federal Government, in cooperation with the Bundesnetzagentur and the transmission system operators, will assess whether transferring the affected power stations to the grid or capacity reserve would be appropriate for grid-related reasons."[250]

206. In the Memorial, Claimant mentions this section only briefly. Claimant alleges: "*section 54(2) only offers compensation for 'undue hardships', focuses primarily on plants that will been* [sic] *able to convert to fire other fuels - an option that, as demonstrated by Claimant's experts is useless without any incentive or subsidy coming from the State*."[251] Claimant's purported explanation is insufficient and incorrect. As set out in further detail below, Claimant

[247] *Id*., section 33(2).

[248] *Id*., section 27, section 35(1).

[249] Claimant's Memorial, ¶ 503.

[250] **R-0105-ENG/GER**, Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479, section 54(2) sentences 4 and 5.

[251] Claimant's Memorial, ¶ 362.

and its experts concede that the conversion of the Lünen Plant to a gas-fired power plant is possible and would even result in a net profit for Claimant.[252] That is, the conversion is not "*useless*" as Claimant asserts, but profitable.

3. The legislator rejected alternatives within its margin of appreciation

207. The Explanatory Memorandum to the 2020 Act explains why the German legislator considered the chosen mechanisms (auctions followed by the Coal-Firing Stops) to be the most effective, cost-efficient, and regulatory solution for ending hard-coal-fired power generation in Germany.[253] In particular, Respondent had considered other regulatory options that were ultimately rejected.

208. The first option was to rely solely on the EU ETS. However, the ETS was found to be insufficient for achieving to the 2030 national climate target, *i.e.* a 55% reduction in GHG emissions. Furthermore, the ETS lacks a reliable reduction path over time that would enable regionally targeted and time-coordinated measures to accompany the structural change associated with ending coal-fired power generation.[254]

209. The second option was the implementation of a national CO_2 minimum price for sectors already regulated under the ETS. However, a minimum CO_2 price would not have provided the same certainty as the 2020 Act. Above all, the 2020 Act aims to provide the utmost certainty for striking a balance between *climate action* on the one hand and a *safe, stable and affordable electricity supply* on the other hand. A minimum CO_2 price could either:

- prove to be too low (thereby putting the climate-action targets at risk); or
- prove to be too high[255] (thereby putting the electricity supply at risk).

210. The third option was mandated Coal-Firing Stops without any auction process. However, this would have meant greater restriction on the operators' rights.[256] Therefore, the

[252] See further below, sect. II.E.3, ¶¶ 267-277.

[253] **C-0097-ENcorrected**, Parliamentary Paper BT-Dr. 19/17342, *Explanatory Memorandum and Draft Coal Ban Law*, 24 February 2020 (excerpts), C. Alternatives, adobe pp. 4-5.

[254] *Ibid*.

[255] *Id*., adobe p. 5.

[256] *Ibid*.

legislator concluded that the mechanism foreseen in the 2020 Act constituted the most reasonable way forward.

211. Finally, Respondent also considered and rejected the option to compensate certain younger hard-coal plants such as Claimant's Lünen Plant outside of the auction mechanism. The reasons for rejecting this option are set out comprehensively in the Witness Statement of Jan-Kristof Wellershoff. At the time, he was in charge of the Federal Ministry for Economic Affairs and Energy's unit responsible for the drafting of the 2020 Act. In summary, Mr. Wellershoff refers to the following multiple reasons. For ease of reference, Respondent quotes them *in verbatim*:

> "37. The first reason was that a compensation for hard-coal power plants that would produce into the 2030s might have put the entire auction model for the 2020s at risk. […]
>
> 38. The second reason was that such compensation would have undermined the principle applied in both the lignite negotiations and the hard-coal auctions, namely that the Federal Government will only pay for shutdowns before 2030 (*i.e.* 8 years before the end of the Phase-Out).
>
> 39. The third reason builds on this principle. Participating in the auctions and shutting down in the 2020s allowed for less lead time to prepare the shutdown. This is not the case for the ordered shutdowns in the 2030s. Shutting-down in the 2030s allowed abundant time for the producers.
>
> 40. The fourth reason was that there was no clear option how to calculate such compensation for some plants and where to cut-off. Not surprisingly, the Federal Government had a duty in these circumstances to avoid unnecessary public spending.
>
> 41. The fifth reason was that the Federal Government was cautious not to set a precedent for unwarranted compensation with a view to future regulatory measures in related or other industries."[257]

212. In conclusion, the 2020 Act has taken the decision to implement the phase-out of hard-coal plants through auctions followed by Coal-Firing Stops. Alternatives such as relying only on certificate prices or compensating certain plants were considered and rejected reasonably.

4. Contrary to Claimant, lignite and hard-coal are not comparable

213. The 2020 Act provides that the phase-out of lignite plants and lignite mines will be governed by a contract between the State and the two main lignite operators RWE and LEAG. Under the contract, RWE and LEAG agreed to a phase-out path and received certain compensation. In the Memorial, Claimant takes issue with this negotiated solution for the lignite

[257] Wellershoff WS, ¶¶ 37-41.

sector and alleges "*[w]hen compared to the treatment of lignite-fired power plants, the treatment of new, highly efficient hard coal-fired power plants is also blatantly discriminatory*."[258] Claimant's allegation is false. There is no discrimination. Hard-coal and lignite cannot be compared. The reason is the mining perspective. In detail:

214. *First*, in general the lignite and the hard-coal industries are distinct. Hard-coal power plants buy their raw materials on the world market. By contrast, German lignite power plants mine their lignite themselves in an interconnected mine in the proximity of the plant. On average, three power plants are connected to one mine. The plants and the mine share the same operator. Whereas hard-coal has a global market price, for lignite, such a global market price does not exist. Lignite is mined in these open-pit mines. All of these facts should be undisputed and, for the avoidance of doubt, are confirmed in the Witness Statements of Mr. Wellershoff and Mr. Jung.[259]

215. *Second*, the phase-out of lignite under the 2020 Act is not only a phase-out of electricity production, but also of lignite mining. Without the power plants, the German lignite mines must close as well. By contrast, at the time of the 2020 Act, hard-coal mining had been phased out already. In this regard, Respondent refers to the Witness Statement of Mr. Jung who was in charge of the Federal Ministry for Economic Affair's unit responsible for the phase-out of hard-coal mining in the 2000s.[260]

216. As a consequence, the 2020 Act's social dimension is far greater when it comes to lignite. Since the 2020 Act regulates the phase-out of lignite mining, it determines the fate of thousands of employees in the mining sector. Indeed, it affects the economic prosperity of entire regions. The matter was reflected abundantly in the pluralistic commission of stakeholders convened in the Coal Commission. The first twelve meetings of the Coal Commission concerned only lignite-related issues.[261] The Commission discussed matters of recultivation of opencast lignite mines,[262] geographic demarcation of lignite mining areas,[263] the situation of employees in the lignite industry,[264] held hearings with representatives of lignite mining operators,[265] and

[258] Claimant's Memorial, ¶ 508.

[259] Wellershoff WS, ¶ 28; Jung WS, ¶ 35.

[260] Jung WS, ¶¶ 21-32.

[261] **C-0014**, Final Report of the Coal Commission, January 2019, p. 111. **R-0104-ENG/GER**, Protocols of the Coal Commission.

[262] **R-0104-ENG**, Protocols of the Coal Commission, adobe p. 3 (**R-0104-GER**, adobe p.18).

[263] *Id.,* adobe p. 4 (*Id.,* adobe p. 20).

[264] *Id.,* adobe p. 8 (*Id.,* adobe p. 41).

[265] *Id.,* adobe p. 5 (*Id.,* adobe p. 31).

visited the lignite mining regions three times.[266] Thereafter, the Commission issued an interim report on the proposed measures relating to the lignite sector.[267] At the end, the Final Report concluded that the social dimension requires a different phase-out path for lignite and hard-coal. In this context, the Report states:

> "The lignite industry plays an outstanding role as an employer in the mining areas. In the Lausitz mining area, for example, the proportion of people employed in mining, energy and water management and the energy industry, which includes the lignite industry, is more than twice the national average. […] Most of these employees have high qualifications. The salaries are significantly above average compared with other employees in the region and most other industries. […] it must be assumed that there are about 60,000 jobs related to the lignite industry."[268]

217. In his Witness Statement, Professor Schellnhuber also confirms that this passage aptly reflects the decisive consideration why he subscribed to the compromise reached in the Coal Commission. He states:

> "I never saw the Phase-Out in isolation. To me, the phase-out of lignite should set a successful example that structural changes in the interest of climate actions are possible without grave social impediments. I had hoped that this would serve as a successful example for future climate action in Germany, e.g. in the agricultural sector. In addition, I had hoped that the Phase-Out in Germany would serve as a successful example for climate action in other countries, particularly in Eastern European countries such as Poland with still a large share of electricity produced from lignite and hard-coal."[269]

218. Mr. Wellershoff, who led the negotiations with the lignite operators about the phase-out on an operative level, also confirms that the social dimension of the lignite phase-out was pivotal:

> "The social dimension of the lignite phase-out is far greater than that of the hard-coal phase-out. The lignite sector employs far more employees due to its mining activities. Therefore, it has a far more significant role for the structure of the relevant regions. Therefore, the negotiation of compensation of the lignite sector always had a social and regional dimension."[270]

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[266] The Coal Commission visited the Lusatian, the Central German, and the Rhenish coal fields: **C-0014**, Final Report of the Coal Commission, January 2019 pp. 115-116.

[267] **R-0104-ENG**, Protocols of the Coal Commission, adobe p. 9 (**R-0104-GER**, adobe p. 66).

[268] **C-0014**, Final Report of the Coal Commission, January 2019, p. 52.

[269] Schellnhuber WS, ¶ 12.

[270] Wellershoff WS, ¶ 30.

219. *Third*, a further difference is that before the 2020 Act, the lignite industry had not received continuous and direct subsidies. However, the hard-coal industry did. Until its phase-out, the hard-coal mining industry had a track-record of decades of subsidies. For the details, Respondent refers to the Witness Statement of Mr. Jung who was in charge of the relevant unit in the Federal Ministry for Economic Affairs handling these subsidies. In particular, he explains that during both, the subsidizing and later the phasing-out of hard-coal mining, the social dimension always had top priority.[271] That is, while the hard-coal industry had been supported for decades for social reasons, the lignite industry received this support only in the context of the 2020 Act. Indeed, the total subsidies that the hard-coal industry received over decades are at least fifty times what the lignite industry will receive under the 2020 Act.[272]

220. *Fourth*, regarding the practicalities of the phase-out, the lignite and hard-coal sectors' different compositions also explain the different phase-out solutions. Mr. Wellershoff summarizes in his Witness Statement as follows:

> "the auction model did not make sense for the lignite sector. In essence, the lignite sector had only two players: (i) RWE for the Western German mines and plants and (ii) the Czech EPH group, particularly its subsidiary LEAG, which ultimately owned the Middle/Eastern German mines and plants. […] An auction does not work with only two bidders. […]
>
> [T]he negotiation model did not make sense for hard-coal power plants. This sector involves not two, but dozens of players. It would have been virtually impossible to bring all of them together to the same table and sign a global settlement."[273]

221. *Fifth*, a further practical aspect regarding the order of lignite plants to be phased-out is that the lignite plants cannot be seen in isolation. Instead, given that several plants are connected to one mine, they must be considered together. This was already confirmed by the Coal Commission:

> "Changes to power station operations have a direct impact on open-cast mining operations, and vice versa. Due to the high proportion of fixed costs in open-cast mining (which has around 80% fixed costs and 20% variable costs), lower coal support or electricity production volumes bring economic challenges for the distributed lignite system. This interplay

[271] Jung WS, sect. C.

[272] Cf. Jung WS, ¶ 23.

[273] Wellershoff WS, ¶¶ 31-32.

> must therefore be borne in mind in all decisions relating to reducing CO_2 in lignite-fired power generation."[274]

222. As Mr. Wellershoff explains in his Witness Statement, the high share of fixed costs for the lignite mines is also a reason why the phase-out had to be carefully planned rather than regulated, for example, only through CO_2 certificate prices:

> "it would have been too dangerous to phase-out both hard-coal and lignite production through increasing the costs of CO_2 certificates. Such an increase could have resulted in a domino effect of lignite plants shutting down very suddenly, causing both social risks and energy-supply risks. The domino effect results out of the fact that if, for example, three lignite plants receive their supplies from one mine, each of these plants will bear, on average, one third of the fixed mining costs. If one plants shuts down, the other two will be unable to bear the fixed costs. Consequently, all three plants would have to shut down. Therefore, a coordinated phase-out through negotiations was the only viable option."[275]

223. In conclusion, contrary to Claimant's allegations, there is no discrimination between hard-coal and lignite because they are not in like circumstances.

5. Respondent assessed thoroughly that the 2020 Act is constitutional

224. To ensure that the 2020 Act conforms to Germany's constitution, the Basic Law (*Grundgesetz*) and the jurisprudence of the Federal Constitutional Court, Respondent commissioned a legal opinion of Professor Bodo Pieroth and Professor Bernd Hartmann (the "**Pieroth/Hartmann Report**").[276] Both have an excellent reputation. For example, Professor Bodo Pieroth is the author of the standard textbook on German constitutional law with which thousands of German law students begin their studies of constitutional law every year. Their Report was finalized shortly after the 2020 Act.

225. The Pieroth/Hartmann Report is of particular relevance for the present case because it deals with several factual matters Claimant raised in the present arbitration, *e.g.* the alleged lack of compensation before a plant's full amortisation[277] as well as the alleged discrimination towards lignite plants.[278] While the Pieroth/Hartmann Report assesses these matters through the

[274] **C-0014**, Final Report of the Coal Commission, January 2019, p. 40.

[275] Wellershoff WS, ¶ 29.

[276] **R-0006-ENG/GER**, Bodo Pieroth and Bernd Hartmann, *Constitutional Matters of the Coal Phase-Out Law*, 21 December 2020.

[277] Claimant's Memorial, ¶¶ 215-233.

[278] *Id.*, ¶¶ 182-202.

perspective of German constitutional law, which is known for its strong substantive protection of individual rights and its wide possibility for individuals to bring claims before the Federal Constitutional Court. Therefore, the Pieroth/Hartmann Report should not only be evidence of fact on German law but also serve as legal authority regarding the weighing of the matters addressed below. The Pieroth/Hartmann Report's key conclusions are the following:

226. *First*, the Report concludes that hard-coal power plants must accept Coal-Firing Stops. A restriction of the operators' fundamental rights under Article 12 (occupational freedom) and Article 14 (property) Basic Law is proportionate because of the object and purpose to protect the national foundations of life and animals. The latter is codified in Article 20a Basic Law. This provision states: "*Mindful also of its responsibility towards future generations, the state shall protect the natural foundations of life and animals by legislation […]*."[279] The Pieroth/Hartmann Report also emphasizes that Germany was allowed to and has committed itself to resolute climate action under international law. In 1997, the Kyoto Protocol had already imposed lasting restrictions on the operators' eligibility for protection. Therefore, the Pieroth/Hartmann Report concludes that regulation of the energy industry was always foreseeable.[280]

227. *Second*, the Pieroth/Hartmann Report concludes that hard-coal power plants do not have any constitutional right to compensation for an expropriation because the owners can still use their property in another manner, *e.g.* through firing different materials.[281]

228. *Third*, the Pieroth/Hartmann Report also addresses the constitutional rule that certain restrictions of the power to use and dispose of property require compensation even though these restrictions do not amount to an expropriation. The Pieroth/Hartmann Report concludes that the 2020 Act as such does not trigger a compensatory duty because the 2020 Act is proportionate in light of the requirements for climate action under the Basic Law and public international law. In this regard, the Pieroth/Hartmann Report also assesses the Federal Constitutional Court's judgment from 2016 regarding the nuclear phase-out. For context, regarding the phase-out of nuclear energy, the Constitutional Court had confirmed that certain compensation was required. For hard-coal, however, the situation differs fundamentally because hard-coal plants threaten the public due to their CO_2 emissions:

[279] **R-0005**, Basic Law for the Federal Republic of Germany, Article 20a.

[280] **R-0006-ENG/GER**, Bodo Pieroth and Bernd Hartmann, *Constitutional Matters of the Coal-Phase Out Law*, 21 December 2020, adobe pp. 42-43.

[281] *Id*., adobe p. 53.

> "In particular, there are no apparent 'special circumstances' in the present case, such as those established by the Federal Constitutional Court in its judgment on the nuclear phase-out, when it was a question of amending a transitional provision that was intended to compensate for restrictions on property. On the contrary: the special social relevance, which according to this judgment limits or even cancels out any compensation claims, is a 'strong one' in the case of hard-coal fired plants, because their CO_2 emissions damage the climate and thus place a burden on the general public."[282]

229. The Pieroth/Hartmann Report also points out that to have any constitutional claim for compensation, hard-coal plants must have exhausted all conceivable amortisation options. Above all, this includes the reasonable conversion of the plant to a use other than the generation of electricity from hard-coal. If the conversion is only prevented by changes in market circumstances, this will not trigger constitutional rights:

> "Amortisation opportunities that were available to the operator but which the operator allowed to pass by unused are not subject to compensation: If a plant could in any case no longer have been operated economically or not economically enough due to other (economic) developments, it is not the statutory shutdown path, but the other (economic) development that causes the failure to achieve full amortisation. However, an unfavourable development for the operator, namely the market situation or even the operator's own mismanagement, cannot be 'passed on' to the general public even if the legislator shuts down the (already uneconomical) operation - to a certain extent by overtaking causality. The fact that such developments prevent the amortisation of an investment is a typical entrepreneurial risk."[283]

230. The Pieroth/Hartmann Report also concludes that the 2020 Act is constitutional because it already provides for compensation of hard-coal plants in hardship situations.[284] To reiterate, in this context, the Lünen Plant did not file a hardship application.

231. *Fourth*, the Pieroth/Hartmann Report also concludes that the different treatment of lignite and hard-coal is justified because, unlike hard-coal plants, lignite plants are intertwined with the German lignite mines. For one, these mines are operated by, in essence, two operators whereas dozens of hard-coal plant operators are active on the market.[285] Further, the lignite mines give the lignite operators a stronger legal position.[286] Above all, the lignite mines trigger a

[282] *Id*., adobe p. 54 (references omitted).

[283] *Id*., adobe p. 55.

[284] *Id*., adobe p. 59.

[285] *Id*., adobe p. 69.

[286] *Ibid*.

significant responsibility of the State to mitigate the consequences of the phase-out and accompany the structural change in the lignite regions and their thousands of inhabitants that depend on employment in lignite mines.[287]

232. In light of the above, the Pieroth/Hartmann Report concludes that the 2020 Act is constitutional.

233. Finally, Respondent notes that the Pieroth/Hartmann Report on German constitutional law even pre-dates the Federal Constitutional Court's judgment of 24 March 2021. To recall, in this judgment, the Federal Constitutional Court decided that the constitutional rights of young and future generations obligate the German legislator to take appropriate climate action.[288] In light of this judgment, there should be even less of a doubt that the Coal-Firing Stops of hard-coal plants under the 2020 Act are proportionate under German constitutional law.

6. The 2020 Act was confirmed by the European Court of Human Rights

234. The 2020 Act has been subject to legal proceedings before the European Court of Human Rights ("**ECtHR**"). The ECtHR confirmed that the 2020 Act complies with the European Convention on Human Rights ("**ECHR**").

235. The suit was brought by STEAG GmbH, a German limited company, which operates eight hard-coal fired power plants in Germany, seven of which were commissioned between 1976 and 1989. The eighth power plant commenced operations in 2013. STEAG GmbH is a consortium of several public utility companies. 85.9% of the shares in STEAG GmbH are held by different German municipalities (including the shareholders of Trianel).[289] STEAG also provides the operation and management of the Lünen Plant.

236. On 15 February 2021, STEAG GmbH filed a complaint before the ECtHR against the 2020 Act based on the grounds of alleged expropriation without sufficient compensation, discrimination of hard-coal versus lignite, and a lack of domestic remedies.[290]

237. On 11 April 2023, the court dismissed the complaint on all three grounds. With regard to the alleged expropriation, the ECtHR found that potential future income is not protected under

[287] *Ibid*.

[288] See above, ¶ 175.

[289] **R-0008**, *STEAG GmbH v. Germany*, no. 10857/21, 11 May 2023, ¶ 2.

[290] *Id*., ¶¶ 8-10.

the Convention. The reason is that future income does not qualify as an existing possession as STEAG GmbH failed to demonstrate that these future profits were already earned or definitely payable.[291]

238. The claim of discrimination based on differing compensation regimes for hard-coal versus lignite power plants was held ill-founded. The Court concluded that there were considerable differences in the mining and structural dimensions of hard-coal and lignite justifying different approaches regarding compensation. This differentiation was rooted in an "*objective and reasonable*" justification.[292]

239. Pertaining to the lack of domestic remedies, the ECtHR noted that the Convention does not guarantee a remedy to challenge a Contracting State's national laws on the grounds of its alleged contrariness to the Convention or domestic legal norms.[293]

240. In conclusion, the ECtHR has already rejected many allegations that AET seeks to bring before the present Tribunal.

E. AET'S VOLUNTARY CONDUCT AFTER THE 2020 ACT

241. Claimant's losses, if any, were caused by Claimant's conduct after the 2020 Act:

- The Lünen Plant could have but did not participate in the auctions (see below, at 1.);
- Claimant could have but did not defend its legal position towards the banks (at 2.); and
- Claimant can but does not convert the Lünen Plant into a gas power plant (at 3.).

242. Concluding on the events following the 2020 Act, Claimant and its experts already conceded that the 2020 Act increased the electricity price and, therefore, created benefits for Claimant in the 2020s. However, Claimant remains silent that its entire power plant portfolio benefits from the increase in electricity prices caused by the 2020 Act (at 4.).

[291] *Id*., ¶ 12.
[292] *Id*., ¶ 19.
[293] *Id*., ¶ 21.

1. The Lünen Plant could have but did not participate in the hard-coal auctions

243. The initial step to mitigate the effects, if any, of the 2020 Act that Claimant failed to take was to participate in the auctions foreseen under the 2020 Act.

244. On 1 September 2020, the first auction under the 2020 Act took place. The auction volume was 4000 MW.[294] The maximum price per MW of net nominal capacity was EUR 165,000.00.[295] The young hard-coal power plants Moorburg A and B (Vattenfall) and Westfalen (RWE) participated in this auction. All three power plants are younger than the Lünen plant, which was put into operation in December 2013. The Westfalen plant began operations on 2 July 2014. Moorburg B commenced operations on 28 February 2015. Moorburg A started operations on 31 August 2015.[296] All three of these plants' bids were accepted in the first auction.[297] This information is in the public domain.

245. Yet, in the Memorial, Claimant does not provide any explanation why participating in the auctions under the 2020 Act was *not* an option for the Lünen Plant but *was* a feasible option for the even younger Westfalen and Moorburg plants.

246. The BNetzA gives public notice of the accepted bids on its website.[298] Individual bid values are not revealed except for the highest and lowest accepted bids, which are anonymised. The overall highest accepted bid was EUR 150,000.00 per MW. The lowest accepted bid was EUR 6,047.00 per MW.[299] This means that Trianel could have generated EUR 110.25 mil in the first auction.[300]

[294] **R-0105-ENG/GER,** Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479, Article 6(3) sentence 2.

[295] *Id.*, Article 19(1) sentence 1.

[296] Claimant's Memorial, ¶ 209.

[297] **R-0114-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), Public announcement of awards, 1 September 2020, adobe p. 3.

[298] As required by **R-0105-ENG/GER**, Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479, Article 24(1).

[299] **R-0114-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), Public announcement of awards, 1 September 2020, adobe p. 2.

[300] The calculation assumes a 735 MW capacity of the Lünen Plant as stated in Claimant's Memorial, ¶ 209 multiplied with EUR 150,000.00.

247. On 1 June 2023, the last auction under the 2020 Act was held. For this auction, the maximum price per MW was EUR 89,000.00[301]. The auction volume was 541.982 MW.[302] Combined bids amounted to 279.631 MW.[303] Hence, the auction was undersubscribed. Every operator that submitted a bid was awarded a premium. Trianel did not participate in this auction.

2. AET could have but did not defend itself against the domestic banks

248. Claimant's experts expect the Lünen Plant will close in April 2031, leaving an outstanding debt that accounts for EUR 13.7 mil. of the net damages.[304] Claimant's valuation experts state: "*We assume that the shareholders would be required to repay the outstanding balance on the project financing facility no later than when the Plant is shut down in April 2031*."[305] Claimant's experts provide no specifics on this assumption.

249. Claimant's explanations in the Memorial (paras. 575-576) why Claimant – a limited partner in Trianel – would be fully liable for Trianel's debt remain short and vague. Indeed, a thorough assessment of the available documentation shows that if Claimant is liable, then because Claimant conceded voluntarily and unnecessarily all defenses that it would have had towards the banks in a situation where the contractual framework included significant uncertainty. In detail:

a. In 2023, Trianel's banks saw the need for an amendment of the contracts

250. In the Memorial, Claimant kept silent about the recent amendment of its PPA with Trianel. For context, Claimant's PPA with Trianel is the contract under which Claimant reimburses Trianel for the loan instalments Trianel paid to the banks. Claimant did not submit any PPA post-dating the 2020 Act to the record.

251. However, a change in the Loan Agreements between Trianel and its banks shows that also Claimant's PPA was amended. Claimant submitted the Loan Agreements as of 2017 (Exhibit C-127) and as of 2023 (Exhibit C-78) to the record. The 2023 version shows – in the part not

[301] **R-0105-ENG/GER**, Act to Reduce and End Coal-Fired Power Generation of 8 August 2020 as amended on 19 December 2022 in Federal Law Gazette I p. 2479, Article 19(1) No. 8.

[302] **R-0115-ENG/GER**, Federal Network Agency (*Bundesnetzagentur - BNetzA*), Public announcement of awards, 1 June 2023, adobe p. 3.

[303] *Id.*, adobe p. 2.

[304] Cf. Compass Lexecon ER I, ¶ 127.

[305] Secretariat ER I, ¶ 6.9.

translated by Claimant – a template PPA amendment that Trianel committed itself to adopt with its PPA purchasers such as Claimant:

> "1. If, in implementation of the Act to Reduce and End Coal-Fired Power Generation (KVBG), the Supplier is permanently prohibited from operating the power plant before the end of the Power Purchase Agreement with effect from 1 January 2032 or at a later date or is restricted to reserve operation and if, as a result, the Purchaser's obligations to pay the renumeration ends, the Purchaser is obliged to make a final payment in accordance with paragraph 2 below. […]
>
> 2. The final payment to be made by the Purchaser is a maximum of EUR […] [power plant share*EUR 120.0 million]."[306]

252. That is, in 2023, Trianel's creditors insisted that Trianel and Claimant agree on an additional provision stipulating that Claimant must pay for the final outstanding debt. The banks having had an interest for a new stipulation already shows that under the prior contracts, Claimant might not have been liable.

b. The contracts before 2023 included significant uncertainty

253. The PPA (between AET and Trianel, Exhibit C-75) and Loan Agreement (between Trianel and the banks, Exhibit C-127) in force before 2023 contain significant uncertainty whether AET would have ever been liable for the final loan instalment. The reasons are the following:

254. *First*, it is undisputed that Claimant is only a limited partner in Trianel. As a limited partner, Claimant is not liable for Trianel's debts. Nor has Claimant asserted to have given any collateral towards the banks. The only mechanism by which Claimant pays for the debt is by reimbursing Trianel through a higher electricity price under the PPA.

255. *Second*, Claimant's allegation that "*[t]he expected shutdown of the plant would not permit TKL or the shareholders […] to terminate the PPAs*"[307] remains without support. In particular, Claimant keeps silent on section 14(4) of the PPA (a passage not translated by Claimant). It states:

> "Both parties are at liberty to terminate the contract in accordance with Section 314 BGB [*i.e.* the German Civil Code], in particular in the event

[306] **C-0078-ENcorrected**, TKL Financing Agreement, 17 November 2023, sect. 18a (insert in square brackets in the original).

[307] Claimant's Memorial, ¶ 576.

of a permanent shutdown (duration of unplanned non-availability longer than 24 months) of the coal-fired power plant."[308]

256. Section 314(1) of the Civil Code, in turn, allows to terminate contracts for a "*compelling reason*."[309] Claimant has not given any explanation why the 2020 Act or a Coal-Firing Stop would not constitute a compelling reason.

257. *Third*, Claimant's implied assumption that the 2020 Act would not a be a compelling reason to terminate the PPA is the exact opposite of its allegation for the Loan Agreement between Trianel and the banks. For the Loan Agreement, Claimant states: "*the expected shutdown of the Lünen plant constitutes a 'material adverse change' in terms of section 24.20 of the Project Financing Agreement*."[310] Claimant does not substantiate how the 2020 Act could constitute a material adverse change under the Loan Agreement, but not a compelling reason under the PPA (referring to sect. 314 Civil Code). For context, the language of the two clauses is as follows:

R-0116, Civil Code, sect. 314(1) (referred to in C-75-ENcorrected, AET-Trianel PPA, sect. 14(4))	**C-127-EN, Trianel-Banks Loan, sect. 24.20**
"Each party may terminate a contract for the performance of a continuing obligation for a compelling reason without a notice period. A compelling reason is given if the terminating party, having taken into account all the circumstances of the specific case and having weighed the interests of both parties against each other, cannot reasonably be required to continue the contractual relationship until the agreed end or until the expiry of a notice period."	"24.20. An event (or series of events) occurs which in the reasonable opinion of the MAJORITY BANKS constitutes or results in a SIGNIFICANT ADVERSE EFFECT."

258. *Fourth*, even assuming *arguendo* Claimant's assertion that Claimant could not terminate the PPA, then Claimant's assertion that the banks can terminate the loan already in light of the "*expected shutdown*", as Claimant alleges, would be incorrect. Above all, sect. 24.11 of the Loan Agreement (another provision not translated by Claimant in C-127) confirms that the actual

[308] **C-0075-ENcorrected**, Power Purchase Agreement between AET and TKL, 8 May 2008, sect. 14(4).

[309] **R-0116**, Civil Code (*Bürgerliches Gesetzbuch*), sect. 314.

[310] Claimant's Memorial, ¶ 575.

receipt of a Coal-Firing Stop would be a material adverse change.[311] *E contrario*, the mere expectation of an order cannot.

259. *Fifth*, a further uncertainty of the PPA is whether loan instalments paid after the last electricity delivery must be reimbursed by AET. Above all, the relevant Annex 1 to the PPA does not clarify as of which time the debt payments must be modelled into the PPA price.[312]

260. *Sixth*, even assuming *arguendo* that the 2020 Act constitutes a material adverse change under the Loan Agreement, Claimant's experts assume that the banks 'sleep' on their termination right for eleven years and only exercise it in 2031. Under German law, 'sleeping' on a termination right for eleven years causes significant risks of having that right forfeited (*Verwirkung*). In particular, German court jurisprudence states that the party having a termination right (here: the banks) should clarify as soon as possible whether it intends to exercise its right of termination.[313] Eleven years is the opposite of 'as soon as possible'.

261. In conclusion, there are numerous reasons why under the contractual framework in place in 2020, AET would not become liable for a debt of Trianel outstanding at the time of the Lünen Plant's Coal-Firing Stop.

c. AET failed to demonstrate prudence in the re-structuring negotiations

262. In light of the banks having insisted on an amendment to the contractual documentation in 2023 (see above, at a.) and the uncertainty of the contracts before 2023 (at b.), Claimant's failure to provide further evidence negatively affects its allegations.

263. *First*, Claimant did not put on record any communication from the banks indicating that they would ever consider exercising a material adverse change clause under the Loan Agreement and demanding immediate repayment. Particularly, the consequence of Trianel defaulting would be the banks taking over the Lünen Plant. Banks are averse to taking over a power plant.

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[311] **C-0127-ENcorrected**, Project Financing Agreement TKL, 8 August 2017, section 24.11: "termination ground: Any authorisation, approval (in the broadest sense) or consent granted to the BORROWER in connection with the PROJECT is found to be invalid or is finally revoked, withdrawn or, to the extent that it results in a MATERIAL ADVERSE EFFECT, substantially modified."

[312] **C-0075-ENcorrected**, Power Purchase Agreement between AET and TKL, 8 May 2008, Annex 1.

[313] **R-0117-ENG/GER**, Federal Court of Justice, Judgment of 24 February 1969 - III ZR 198/65, ¶ 18; **R-0118-ENG/GER**, Federal Court of Justice, Judgment of 18 October 2001 - I ZR 91/99, operative part of the judgment.

264. *Second*, Claimant did not put on record any evidence that it conducted re-structuring negotiations with the banks with the necessary prudence. The uncertainty of the contracts and the banks' natural interest not to operate a power plant gave Claimant sufficient leverage.

265. *Third*¸ Claimant did not put on record any evidence why it would be commercially sensible to have one final payment becoming due at once. Re-structuring should result in the opposite, especially longer repayment schedules or haircuts. In particular, the Lünen Plant can be converted into a gas power plant (see further below, at 3.). This would justify longer repayment schedules.

266. In conclusion, given Claimant's default to produce sufficient evidence, the conclusion as per the evidence on record is that Claimant becomes liable for the final debt outstanding at the time of the Lünen Plant's Coal-Firing Stop because Claimant failed to negotiate with prudence with the banks.

3. AET can but does not want to modernize the Lünen Plant

267. In the Memorial, Claimant conceded that converting the Lünen Plant into a gas-fired power plant is possible. Claimant also conceded that the resulting operation beyond the 2020 Act's Coal-Firing Stop dates would yield a profit for Claimant. In detail, Claimant and its experts conceded:

- the maximum costs would be only EUR 38-47 mil. for the entire power plant (not just for Claimant's shareholding);[314]
- such conversion would result average annual operating profits of at least EUR 35.9 mil. per year.[315]
- deducting the conversion costs from the annual additional operating profits, the conversion into a gas power plant would result in at least a EUR 13.9 mil. net profit for Claimant.[316]

268. Notably, the net profit for AET of EUR 13.9 mil. is discounted as of Claimant's valuation date of January 2020. That is, the actual profit will be significantly higher in nominal

[314] Claimant's Memorial, ¶ 614.
[315] Frontier ER I, Table 2.
[316] Secretariat ER I, ¶ 6.30.

terms. Discounted to January 2020, the net profit of EUR 13.9 mil. for Claimant's share is higher than the alleged fair market value of Claimant's share but-for the Measures (EUR 11.0 mil.).

269. Respondent has instructed the engineering experts Marco Wünsch and Hans Dambeck from Prognos to review the assertions of Claimant and its experts regarding a gas conversion. Respondent refers to their expert report in its entirety. In summary, Mr. Wünsch and Mr. Dambeck conclude the following:

270. *First*, the engineering experts agree that the conversion option, as already conceded by Claimant and its economic experts, is possible. However, on the basis of their engineering expertise, Mr. Wünsch and Mr. Dambeck conclude that the profitability of this option may be even higher. If done with state-of-the-art engineering expertise, the conversion will be cheaper (EUR 22-39 mil. instead of EUR 38-47 mil.) and result in a higher efficiency (47.6% instead of 40-46%) than indicated by Claimant's economic experts.[317]

271. *Second*, Mr. Wünsch and Mr. Dambeck highlight that Claimant only addressed one out of three possible conversions into a gas fired power plant. In simple terms, Claimant's economic experts only addressed the option to replace the coal burner by a gas burner (first option). The remainder of the power plant, particularly the steam turbine, would remain as it is in this option. In addition to this option, there is also the option to install a gas turbine before the steam turbine. This gas turbine could either be built into the existing power plant's buildings (second option) or, together with an optimized steam turbine, on free space outside the current building but on the premises of the property (third option). The third option will have the highest efficiency and will be able to use the plant's existing grid connection.[318]

272. In the Memorial, Claimant only alludes to this second and third option vaguely and in passing. Claimant alleges: "*Converting the Lünen plant into a state-of-the-art gas-fired power plant (i.e. a combined cycle gas turbine ('CCGT') power plant) would go far beyond damage mitigation and essentially mean building a completely new power plant.*"[319]

[317] Prognos ER I, sect. 5.2.1.

[318] Prognos ER I, ¶¶ 31-32.

[319] Claimant's Memorial, ¶ 606.

273. Claimant's allegation is not only false as a matter of fact. As Mr. Wünsch and Mr. Dambeck set out in their expert report, the costs for a "*completely new power plant*" to take Claimant's formulation, would be significantly higher than for all the conversion options.[320]

274. Claimant's allegation also contradicts the following attempts to seek support for such gas conversions.

[redacted]

277. In the Memorial, Claimant does not mention, let alone explain the attempts. [redacted] This should constitute evidence against Claimant's assertion of what can and cannot be expected as a reasonable mitigation measure.

[320] Cf. Prognos ER I, sect. 5.3.1, 5.4.1.

[321] [redacted]

[322] [redacted]

[323] *Id*., adobe p. 2 at (2).

[324] Claimant's Memorial, ¶ 617.

4. The Lünen Plant and AET's entire portfolio profited from the 2020 Act

278. Until the Coal-Firing Stop under the 2020 Act, Claimant's Lünen Plant benefits from the 2020 Act. The 2020 Act increased the electricity prices. Simply put, the phase-out of the other lignite and hard-coal plants increased the wholesale electricity prices that the remaining plants can charge. This fact is confirmed by Claimant's own experts from Frontier and is therefore undisputed.[325]

279. In addition, the phase-out of German lignite and hard-coal plants did not only increase electricity prices in Germany. The phase-out also increased electricity prices in neighbouring European countries such as France and Switzerland. The increase of electricity prices in France and Switzerland means that the 2020 Act created and will continue to create even further benefits for Claimant. Claimant holds shares in hydro and nuclear power plants in France and Switzerland as well as in wind power plants in Germany. Claimant's Swiss, French, and other German power plants also profit from the increase in electricity prices caused by the 2020 Act. The matter will be addressed in further detail below in the quantum section because the benefits for Claimant's non-hard-coal portfolio must be deducted from any hypothetical damages claim.[326]

280. In conclusion, losses, if any, of Claimant were caused by Claimant's own conduct and are off-set by the benefits for Claimant's non-hard-coal portfolio.

F. CLIMATE ACTION: THE EVIDENCE ON THE NECESSITY AS OF TODAY

281. The Tribunal must take into account the strong necessity for climate action with the available scientific evidence as of today. The strong necessity for climate action will be a key factor for the applicability of the police powers doctrine, the legislator's margin of appreciation in deciding against compensation for hard-coal fired plants, and the compliance with Article 10 ECT.[327] The evidence as of today is even stronger than the evidence pre-dating the 2020 Act.

282. Respondent notes that the general need to reduce CO_2 emissions is undisputed. Already at para. 3 of the Request for Arbitration, Claimant asserted: "*The dispute is neither about the existence of climate change and its consequences, nor is it about contesting the need to reduce*

[325] Frontier ER I, ¶¶ 108, 183.a.

[326] See below, ¶¶ 649-673.

[327] See below, section IV.A.1.f, ¶¶ 432-448 (police powers), section IV.C.2, ¶¶ 539-555 (FET).

CO2 emissions or even the right in principle to prohibit the firing of coal. It is about the very basic question of who should bear the financial consequence after a fundamental change of policy."[328] Claimant added in the Memorial: "*Respondent's aim to reduce CO2 emissions is in principle a rationale [sic] policy […].*"[329]

283. While Respondent appreciates that Claimant does not dispute the general need to reduce CO_2 emissions, Respondent rejects Claimant's approach to ignore the extent of the need to reduce CO_2 emissions. This extent is extremely significant. The below summarizes key scientific, political and economic evidence on the necessity for climate action (see below, at 1.-5.). On liability, this evidence will be decisive regarding the legislator's margin of appreciation, the police powers doctrine, and fair and equitable treatment.

1. The latest UN IPCC Assessment Report No. 6 of 2022

284. From August 2021 to April 2022, the three Working Groups issued their contributions to the 6th UN IPCC Assessment Report ("**AR6**"). The Synthesis Report followed one year later.[330]

285. AR6 is the latest UN IPCC assessment report published after the 2020 Act. For general information on the UN IPCC, particularly the UN IPCC's conservative approach, Respondent refers to the passage above and the Annex.[331] Given that AR6 is the latest UN IPCC Report, Respondent will present it slightly more extensively than the older UN IPCC Reports above.[332] In light of AR6 covering hundreds of pages of scientific conclusions, the below summary will still be only very high level. The most important takeaways are:

- the UN IPCC expects a global warming of 2.7-3.5°C with current emissions (at a.);
- the UN IPCC sees the gravest risks caused by global warming (at b.); and
- the recommendations for climate action include the phase-out of fossil fuels (at c.).

[328] Request for Arbitration, ¶ 3.

[329] Claimant's Memorial, ¶ 485.

[330] **R-0121**, UN IPCC, Climate Change 2023: Synthesis Report.

[331] See above, ¶¶ 136-138. See below, sect. VII Annex.

[332] See above, ¶¶ 139-143, 156-162.

a. Likelihood of climate change: with current CO_2 emissions, global warming will very likely (90-100% probability) reach 2.1-3.5°C

286. In AR6, the conservative, consensus-driven UN IPCC informed policy makers that global warming will "*very likely*" (90%-100% probability) reach drastic levels of 2.1°C to 3.5°C.

287. AR6 uses five core illustrative models referred to as Shared Socio-economic Pathways ("**SSP**"). To explain the nomenclature:

- SSP1-1.9 and SSP1-2.6 represent low emission scenarios with CO_2 reaching net zero around 2050 and negative emissions thereafter.
- SSP2-4.5 represent scenarios with CO_2 emissions around current levels until the mid-century.
- SSP3-7.0 and SSP5-8.5 model high and very high CO_2 emissions that roughly double from current levels. [333]

288. The results of the UN IPCC are the following (with the current emissions scenario highlighted):

Changes in global surface temperature

	Near term, 2021–2040		Mid-term, 2041–2060		Long term, 2081–2100	
Scenario	Best estimate (°C)	*Very likely* range (°C)	Best estimate (°C)	*Very likely* range (°C)	Best estimate (°C)	*Very likely* range (°C)
SSP1-1.9	1.5	1.2 to 1.7	1.6	1.2 to 2.0	1.4	1.0 to 1.8
SSP1-2.6	1.5	1.2 to 1.8	1.7	1.3 to 2.2	1.8	1.3 to 2.4
SSP2-4.5	1.5	1.2 to 1.8	2.0	1.6 to 2.5	2.7	2.1 to 3.5
SSP3-7.0	1.5	1.2 to 1.8	2.1	1.7 to 2.6	3.6	2.8 to 4.6
SSP5-8.5	1.6	1.3 to 1.9	2.4	1.9 to 3.0	4.4	3.3 to 5.7

Source: **R-0122**, IPPC, Climate Change 2021: The Physical Science Basis, Summary for Policymakers, Table SPM.1, adobe p. 14.

b. Consequences of climate change: global warming above 1.5°C will extinguish species and cause poverty

289. In AR6, the conservative, consensus-driven UN IPCC concluded that the consequences of global warming above 1.5°C will already be grave. But with current projections

[333] **R-0122**, UN IPCC, Climate Change 2021: The Physical Science Basis, Summary for Policymakers, Box SPM.1.1, adobe p. 12.

of 2.1°-3.5°C they will cause unprecedent extinction, migration, and poverty. The reason is that, in the words of the UN IPCC:

> "damages from climate change escalate with every increment of global warming."[334]

290. Respondent invites the Tribunal to read the UN IPCC's "*Summary for Policy Makers*" of the AR6 Synthesis Report (Exhibit **R-0123**) in full. Respondent refers to it in its entirety. To highlight only five takeaways:

291. *First*, the UN IPCC highlights that climate change above 1.5°C will extinct many species. Entire eco-systems may vanish.[335]

292. *Second*, the UN IPCC highlights that "*[t]here will be an increasing occurrence of some extreme, events unprecedented in the observational record with additional global warming, even at 1.5°C of global warming*."[336] For context, such extreme weather events are, *inter alia*, floods, hurricanes, and extreme heat. AR6 concluded that the frequency and increase in intensity of extreme events that took place once every 10 years has almost tripled since pre-industrial times. With a future global warming level of 1.5°C, extreme weather events will likely occur almost nine times as often. And with additional 2°C global warming almost fourteen times as often.[337]

293. *Third*, AR6 concludes that sea levels are estimated to rise between 3 and 7 meters. That is, entire cities may vanish.[338]

294. *Fourth*, AR6 highlights the risks of so-called tipping points. A tipping point is a critical threshold in the climate system beyond which certain environmental changes become (i) self-perpetuating and (ii) irreversible. Given that Respondent's expert Professor Schellnhuber brought the tipping points into the scientific and political focus, Respondent refers to his expert report for further details.[339]

295. To highlight only one example: AR6 concludes that a global warming of 2-3°C will cause the complete loss of the Greenland ice sheet, and with 50-100% probability also the entire

[334] **R-0123**, UN IPCC, Climate Change 2023: Synthesis Report, Summary for Policymakers, B.2, p. 14.

[335] *Id*., Figure SPM.3, p. 16.

[336] **R-0122**, UN IPCC, Climate Change 2021: The Physical Science Basis, Summary for Policymakers, B 2.2.2, adobe p. 15.

[337] *Id*., Figure SPM.6, adobe p. 18.

[338] Cf. *Id*., Figure SPM.8 lit. e, adobe p. 22.

[339] Schellnhuber ER, sect. 3.

Antarctica ice sheet.[340] The UN IPCC also concluded that changes in ice sheets and global sea levels are already irreversible. Mountains and polar glaciers will continue to melt for decades and centuries – even after net zero has been reached.[341]

296. *Fifth*, the UN IPCC concludes that these and other risks will cause unprecedented poverty and migration, particularly in African, Asian, and South American countries. To recall, therefore, the UN IPCC had already concluded in its 2018 Special Report that already the difference between 1.5°C and 2.0°C will determine poverty for hundreds of millions of people:

> "limiting global warming to 1.5°C, compared with 2°C, could reduce the number of people both exposed to climate-related risks and susceptible to poverty by up to several hundred million by 2050."[342]

297. For the projected global warming of up to 3.5°C, the consequences will be far worse[343] because "*damages from climate change escalate with every increment of global warming*."[344]

c. Mitigation of climate change: fossil fuels must be phased-out

298. The UN IPCC concludes that economies must act immediately and reduce CO_2 emissions drastically to have any realistic chances of limiting global warming to a sustainable degree.

299. Above all, the UN IPCC concluded that, as of 2020, the remaining CO_2 budget to limit global warming to 1.5°C will only be 400 $GtCO_2$ (for a 67% chance), respectively 500 $GtCO_2$ (for a 50% chance). For context, the historical CO_2 emissions between 1900-2019 were 2390 $GtCO_2$.[345] That is, the remaining CO_2 budget of the entire world will in this century be less than 20% of what was emitted in the entire last century.

300. The UN IPCC concludes that the use of fossil fuels alone will cause more CO_2 emissions than permissible under these budgets.[346] Therefore, the UN IPCC underlines that

[340] **R-0122**, UN IPCC, Climate Change 2021: The Physical Science Basis: Summary for Policymakers, B.5.2, adobe p. 21.

[341] *Id*., B.5.2, adobe 21.

[342] **R-0085**, UN IPCC Special Report on Global Warming of 1.5°C, Summary for Policymakers, B.5.1, adobe p. 9.

[343] **R-0124**, UN IPCC, Climate Change 2022: Impacts, Adaptation and Vulnerability: Summary for Policymakers, SPM.3 lit. f, adobe p. 17.

[344] **R-0123**, UN IPCC, Climate Change 2023: Synthesis Report, Summary for Policymakers, B.2, p. 14.

[345] **R-0122**, UN IPCC, Climate Change 2021: The Physical Science Basis: Summary for Policymakers, Table SPM.2, adobe 29.

[346] **R-0123**, UN IPCC, Climate Change 2023: Synthesis Report, Summary for Policymakers, B.5, p. 19.

substantial cuts in the use of fossil fuels will be critical to limit global warming to 1.5°C or even 2°C.[347] In this regard, the UN IPCC explicitly recommends "*[s]caling up and enhancing the use of regulatory instruments*".[348] The 2020 Act is such a regulatory instrument. In conclusion, AR6 is strong evidence of the 2020 Act's necessity.

2. The 2025 study of the Bundeswehr University on geopolitical effects

301. Global climate change not only leads to significant economic losses but entails geopolitical risks. The destabilizing effect of climate change sparks potential for international conflicts implying threats to Germany's national security.

302. On 12 February 2025, the University of the Bundeswehr Munich and the Potsdam Institute for Climate Impact Research ("**PIK**") in cooperation with Germany's Foreign Intelligence Service (*Bundesnachrichtendienst* – "**BND**") issued an interdisciplinary study on climate change.[349] The study establishes a direct and inextricable factual link between climate change and national security concerns. The President of the BND, Dr. Bruno Kahl, identified climate change as one of five major existential threats to Germany:

> "The BND sees the consequences of climate change such as destabilization and migration as one of the five major external threats to our country, alongside an aggressively expansive Russia, China's global political ambitions, increasing cyber dangers and the continued virulence of international terrorism."[350]

303. Unchecked climate change will lead to an unprecedented increase in the displacement of people and migration movements. Projections show a 2.7°C increase in global temperatures. By the end of the century, 22-39% of the world's population will live in regions unsuitable for human habitation.[351] The report identifies large parts of Africa and the Near and Middle East as

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[347] *Id*., C.3.2, p. 28: "Net zero CO_2 energy systems entail: a substantial reduction in overall fossil fuel use."; B.6.3, p. 21: "Global modelled mitigation pathways reaching net zero CO_2 and GHG emissions include transitioning from fossil fuels without carbon capture and storage (CCS) to very low- or zero-carbon energy sources, such as renewables […]."

[348] *Id*., C.6.4, p. 32: "Regulatory and economic instruments could support deep emissions reductions if scaled up and applied more widely (*high confidence*). Scaling up and enhancing the use of regulatory instruments can improve mitigation outcomes in sectoral applications, consistent with national circumstances (*high confidence*)".

[349] **R-0125-ENG/GER**, Metis Institute of Strategy & Foresight, Adelphi Research, Federal Foreign Intelligence Service (*Bundesnachrichtendienst - BND*) and the Potsdam Institute for Climate Impact Research, National Interdisciplinary Climate Risk Assessment, February 2025.

[350] **R-0125-ENG**, Metis Institute of Strategy & Foresight, Adelphi Research, Federal Foreign Intelligence Service (*Bundesnachrichtendienst - BND*) and the Potsdam Institute for Climate Impact Research, National Interdisciplinary Climate Risk Assessment, February 2025, adobe p. 2 (**R-0125-ENG**, adobe p. 8).

[351] *Id*., adobe p. 8 (*Id*., adobe p. 39).

politically fragile and highly vulnerable to climate change.[352] Scarcity of food and water is set to catalyze existing conflicts and bears the potential for inciting armed conflicts.[353] World Bank models project 44 million to 216 million internal migrants.[354] This will also trigger migration movements towards Germany presenting challenges to domestic security as Failing States, displacement and lack of prospect cater to the appeal of militants and extremists:

> "In this way, climate change exacerbates the factors that indirectly contribute to terrorism. Islamist actors use these developments as starting points for Islamist interpretations and already using climate change to some extent to propagate extremist narratives."[355]

304. The prospect of a largely ice-free arctic region has far-reaching military, political and economic implications. State actors may claim the Arctic as a resource extraction area and seek control over shipping routes creating security challenges for Germany as a NATO member:[356]

> "Russia has therefore been expanding its military presence and activities in the Arctic for several years. At the same time, Russia's ability to interfere with the northern shipping route on the Northwest Passage – and the Northeast Passage anyway – represents an increasing strategic challenge for Germany and its allies."[357]

305. The increasing likelihood of international conflicts and the occurrence of natural disasters demand capable armed forces. In this regard, climate change encompasses unique challenges to the operational readiness and resilience of the German military force. Extreme climate and weather events alter the conditions under which personnel, infrastructure, and military equipment operate:

> "The increasingly adverse environment affects national and alliance defense as well as international crisis management (ICM) and secondary tasks. The demand for ICM and administrative assistance will increase. All of this must be considered for planning and procurement cycles. Ships, aircraft and combat vehicles that are being built and planned today will be in service under the climatic conditions of 2040." [358]

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[352] *Id*., adobe p. 6 (*Id*., adobe p. 37).

[353] *Id*., adobe p. 5 (*Id*., adobe p. 36).

[354] *Id*., adobe p. 8 (*Id*., adobe p. 39).

[355] *Id*., adobe p. 8 (*Id*., adobe p. 39).

[356] *Id*., adobe p. 4 (*Id*., adobe p. 15).

[357] *Id*., adobe p. 10 (*Id*., adobe p. 51).

[358] *Id*., adobe p. 9 (*Id*., adobe p. 40). ICM refers to international operations of the Bundeswehr in general. Administrative assistance refers to aid and support services at a national level in the event of natural disasters and catastrophes as stipulated for under **R-0005**, Basic Law for the Federal Republic of Germany, Article 35.

306. Ultimately, insufficient climate action threatens to undermine the legitimacy of the international rule-based order. Should industrialised nations fail to achieve the objectives set out in the Paris Agreement, this may lead to a decline in the perceived effectiveness and significance of international agreements. Consequently, the international community may feel less obligated to adhere to the terms of the Paris Agreement:

> "If the global community does not succeed in limiting global warming in accordance with the Paris Agreement, this could fuel doubts about the legitimacy and effectiveness of **the rules-based international order**. This has made a significant contribution to maintaining stability and peace in recent decades. Actors that are already challenging the United Nations system and the entire rules-based order would use this to further their goals."[359]

3. The studies on the economic impacts of climate change

307. Climate change not only impacts ecosystems. It has long been imposing a significant financial burden on societies worldwide. The following section will present renowned studies to quantify both the economic costs of climate change that have already been incurred and the costs that are still to be expected, distinguishing between the global (see below, at a.) and the national level (at b.).

a. Global scale

308. On 17 April 2024, the PIK published the highly regarded study "*The economic commitment of climate change*".[360] The PIK is a leader in the field of interdisciplinary climate impact research. It's founding director is Respondent's expert Professor Schellnhuber, who, however, was not involved in this study. The study assessed extreme temperature and rainfall extremes from 1,600 regions over the past fifteen years and found substantial lagging effects of 8-10 years for temperature events and up to 4 years for precipitation events.[361] It concludes an average global income reduction of 19%. Global annual damages will amount to USD 38 trillion by mid-century in a baseline scenario without any additional climate impacts.[362] This outweighs the mitigation costs to limit global warming to below 2°C by the factor six.[363]

[359] *Id*., adobe p. 4 (*Id*., adobe p. 15).
[360] **R-0126**, *Kotz et. al*, The economic commitment of climate change in: Nature Vol. 628, 18 April 2024.
[361] *Id*., pp. 551-552.
[362] *Id*., p. 552.
[363] *Id*., p. 553.

309. On 7 November 2024, the International Chamber of Commerce published the report "*The economic costs of extreme weather events*".[364] The report analysed close to 4,000 climate-related extreme weather events from 2014 to 2023. It estimates that these events have cost USD 2 trillion in economic losses with USD 451 billion incurred over the last two years alone.[365] This estimate is very conservative. Underreporting biases from regions particularly vulnerable to climate impacts and the non-consideration of indirect losses render this number a "*significant underestimate of the true economic cost of climate-related extreme weather events*".[366]

310. In November 2024, the Network for Greening the Financial System ("**NFGS**") issued its fifth assessment series of macro-financial scenarios for climate risks and the associated damages.[367] The NFGS is a consortium of over 160 central banks and supervisory authorities that aims to develop best practices for climate risk management in the financial sector.[368] The NFGS concluded that if CO_2 emissions reach global net zero by 2050, leading to a 50% chance of limiting global warming to 1.5°C,[369] the global GDP will still decrease by 7%.[370] If no further climate action is being taken, leading to global warming of 3°C by 2080,[371] the NFGS concludes that the reduction in GDP will be twice as much, *i.e.* a 15% loss in GDP.[372]

311. On 16 January 2025, the Institute and Faculty of Actuaries ("**IFoA**") and the University of Exter published the report "*Planetary Solvency – Finding Our Balance with Nature*".[373] The Institute and Faculty of Actuaries is a royal-chartered professional body that represents Actuaries in the United Kingdom and ensures professional standards and qualifications in the insurance, pensions, and risk management industry.[374] The IFoA study builds on the

[364] **R-0127**, Oxera, The economic cost of extreme weather events, prepared for the International Chamber of Commerce, 7 November 2024.

[365] *Id*., adobe p. 37 para 4.15.

[366] *Id*., adobe p. 38 para 4.16.

[367] **R-0128**, Network for Greening the Financial System, Long-term scenarios for central banks and supervisors, November 2024.

[368] **R-0129**, Network for Greening the Financial System, Origin and purpose, adobe p. 1.

[369] **R-0130**, Network for Greening the Financial System, Scenario Portal, adobe p. 2.

[370] **R-0128**, Network for Greening the Financial System, Long-term scenarios for central banks and supervisors, November 2024, adobe pp. 26, 31.

[371] **R-0130**, Network for Greening the Financial System, Scenario Portal, adobe p. 3.

[372] **R-0128**, Network for Greening the Financial System, Long-term scenarios for central banks and supervisors, November 2024, adobe pp. 26, 31.

[373] **R-0131**, Institute and Faculty of Actuaries and the University of Exeter, Planetary Solvency, Finding our balance with nature, January 2025.

[374] **R-0132**, Institute and Faculty of Actuaries, About Us.

assessment series of the NFGS addressed above.[375] Unlike the NFGS, the IFoA additionally considers the self-perpetuating effects of climate change tipping points.[376] According to the IFoA, the real economic impact of climate change will result in a 50% loss of global GDP between 2070 and 2090 if immediate climate action is not taken.[377]

312. Also in January 2025, Munich Re, the world's largest reinsurer, published its most recent annual report on losses from natural catastrophes. The company's accompanying press release is titled "*Climate change is showing its claws: The world is getting hotter, resulting in severe hurricanes, thunderstorms, and floods*."[378] Munich Re maintains one of the world's most comprehensive databases on losses from natural catastrophes. Since 1980, Munich Re has been recording key information on loss events on a global scale. To analyse losses from natural catastrophes, Munich Re consults authorities, scientific institutions, associations, the insurance industry, and media reports. The analysis also incorporates the company's own extensive expertise and market data on global insurance markets.[379] The 2025 Munich RE report shows that the total losses for 2024 alone was EUR 320 bln. which was almost twice as much as the annual average losses during the 30 prior years:

Natural Disasters in 2024

	The figures of the year 2024	The figures of the year 2023 (adjusted for inflation)	Average of the last 5 years (2019 – 2023) (adjusted for inflation)	Average of the last 10 years (2014 – 2023) (adjusted for inflation)	Average of the last 30 years (1994 – 2023) (adjusted for inflation)
Overall losses in US$ bn	320	268	261	236	181
Insured losses in US$ bn	140	106	106	94	61
Fatalities (approx.)	11,000	77,600	23,000	17,500	42,000

Source: **R-0136**, Munich Re NatCatSERVICE, Natural disasters in 2024, January 2025, adobe p. 1.

[375] **R-0128**, Network for Greening the Financial System, Long-term scenarios for central banks and supervisors, November 2024, adobe pp. 7, 31.

[376] **R-0131**, Institute and Faculty of Actuaries and the University of Exeter, Planetary Solvency – Finding our balance with nature, January 2025, adobe p. 13.

[377] **R-0133**, Institute and Faculty of Actuaries, Current climate policies risk catastrophic societal and economic impacts, 16 January 2025, adobe p. 1.

[378] **R-0134**, Munich Re Media Release, Climate change is showing its claws: The world is getting hotter, resulting in severe hurricanes, thunderstorms, and floods, 9 January 2025.

[379] **R-0135-ENG**, Munich Re NatCatSERVICE, Nature Catastrophe-Knowhow for risk management and research, 2011, adobe pp. 5-6 (**R-0135-GER**, p. 1-2).

313. The data provided by Munich Re is in line with estimates of the world's second largest insurer, Swiss Re, published shortly before the Munich RE report.[380] Swiss Re also calculates USD 320 billion in total economic losses compared to USD 302 billion in 2023. This is USD 68 billion above the average of their previous 10-year average estimate of USD 254 billion.[381] Swiss Re's Chief Economist expects rising insurance premiums over the next years:

> "However, with natural catastrophe risks rising and higher price levels, the annual increase of 5–7% in insured losses will continue, and protection gaps could remain high."[382]

314. In March 2025, the Boston Consulting Group and the University of Cambridge published the study "*Too Hot to Think Straight, Too Cold to Panic – Landing the Economic Case for Climate Action with Decision Makers*".[383] The study finds that the current 3°C global warming trajectory will cause economic damages of up to 34% of the cumulative GDP by 2100.[384] The study compares this estimate to the economic damages that would be avoided on a 2°C trajectory. The resulting costs of inaction equals up to 27% of the cumulative GDP.[385] That is, the world forfeits up to 27% of economic growth if global warming is not limited to below 2°C. This is equivalent to eight times the cost of eradicating extreme poverty on a global scale, eight times the global military expenditure, seven times the cost of all infrastructure investments needed, and three times the global healthcare spending, all accounted for until 2100.[386] Ultimately, the study concludes that when it comes to mitigation, Paris Agreement-aligned climate action before 2050 is absolutely crucial as this may avoid 95% of the cost of inaction.[387] The study calls for policymakers to transition to net zero GHG emissions as soon as possible.[388]

[380] **R-0137**, Swiss Re Press Release, Hurricanes, severe thunderstorms and floods drive insured losses above USD 100 billion for 5th consecutive year, says Swiss Re Institute, 5 December 2024.

[381] *Id*., adobe p. 3.

[382] *Id*., adobe p. 2.

[383] **R-0138**, Boston Consulting Group and the University of Cambridge, Too Hot to Think Straight, Too Cold to Panic – Landing the Economic Case for Climate Action with Decision Makers, 12 March 2023.

[384] *Id*., adobe p. 10.

[385] *Id*., adobe p. 20.

[386] *Id*., adobe p. 21.

[387] *Id*., adobe p. 22.

[388] *Id*., adobe p. 30.

b. National level

315. On 29 June 2022, Prognos published the report "*Overview of past extreme weather damage in Germany"*[389]. The report quantifies the damages incurred from 2000 to 2021. In December 2022, the Institute for Economic and Social Affairs (*Gesellschaft für wirtschaftliche Strukturforschung* - "**GWS**") issued the report "*Economic costs of climate change: scenario analysis up to 2050*"[390]. The GSW report projects potential damages until 2050. Both studies form part of the broader project study "*Costs of Climate Change Impacts in Germany*".

316. The studies were commissioned by the Ministry for Environment, Nature Conservation and Nuclear Security and the Ministry for Economic Affairs and Climate Action in the wake of the natural disasters that had struck Germany in the previous years: the drought and heat extreme summers of 2018 and 2019 and the Ahr Valley flood in 2021. The studies present the most comprehensive data on the economic costs of climate change in Germany to date.

317. Regarding past losses, between 2000 and 2021, 619 extreme weather and climate events occurred in Germany.[391] The total damage amounts to almost EUR 145 billion.[392]

318. So-called large singular events dominated the causes of damages. Between 2000-2021, 38 large scale singular events occurred.[393] The largest singular event was the Ahr Valley flood in the Federal States North Rhine-Westphalia and Rhineland-Palatinate in July 2021.[394] The extreme heat and drought in 2018/19 is the next largest.[395] With the exception of the Elbe flood in 2002, the recorded timeframe 2000-2013 hardly contained any singular events. Notably, the Elbe flood in 2002 caused less damages than the heat waves in 2018/2019 alone.[396]

[389] **R-0139-ENG/GER**, Prognos, Project report "Costs of climate change impacts", Overview of past extreme weather damage in Germany, 29 June 2022.

[390] **R-0140-ENG/GER**, GWS Research Report 2022/22, Economic costs of climate change: scenario analysis up to 2050 – study as part of the project costs of climate change impacts in Germany, December 2022.

[391] **R-0139-ENG**, Prognos, Project report "Costs of climate change impacts", Overview of past extreme weather damage in Germany, 29 June 2022, adobe p. 2 (**R-0139-GER**, adobe p. 40).

[392] *Id*., adobe p. 6 (*Id*., adobe p. 45).

[393] *Id*., adobe p. 3 (*Id*., adobe p. 41).

[394] *Id*., flash flood named "*Bernd*", adobe p. 5 (*Id*., adobe p. 44). Confirmed by **R-0127**, Oxera, The economic cost of extreme weather events, prepared for the International Chamber of Commerce, 7 November 2024, Table 4.3, adobe p. 43.

[395] **R-0139-ENG**, Prognos, Project report "Costs of climate change impacts", Overview of past extreme weather damage in Germany, 29 June 2022, adobe pp. 5, 8 (**R-0139-GER**, adobe pp. 44, 47).

[396] *Id*., adobe pp. 5, 8 (*Id*., adobe pp. 44, 47).

319. Regarding future losses, GSW's study provided three distinct scenarios: a weak, a medium, and a strong climate change scenario until 2050. These scenarios do not constitute predictions. Their purpose is to provide a representative illustration of the ramifications of climate change.[397]

320. Even in the weak climate-change scenario, the total economic damage expected by 2050 amounts to up to EUR 900 billion. This sum not only covers insured events but constant reductions in profitability for, *inter alia*, the German agriculture, forestry, health care, manufacturing (through supply-chain problems), and insurance sectors. The total negative impact on Germany's GDP equals a reduction of 0.6% to 1.8% by 2050, indicating a potential shrinking of the economy even under a weak climate change scenario:

> "This loss is so high that, without adaptation, the economy will not continue to grow but, on the contrary, will shrink even with weak climate change."[398]

321. In conclusion, the evidence of the enormous financial costs caused by climate change on a global and national scale is overwhelming.

4. The climate-action targets of Claimant's home State Switzerland

322. Claimant's home State Switzerland has also adopted climate targets that are similar to those of Respondent.

323. Switzerland's commitments under the Paris Agreement include halving CO_2 emissions by 2030 and achieving net zero by 2050:

> "Switzerland is committed to follow the recommendations of science in order to limit warming to 1.5 degrees Celsius. In view of its climate target of net zero greenhouse gas emissions by 2050, Switzerland's first NDC is to reduce its net greenhouse gas emissions by at least 50 per cent by 2030 compared with 1990 levels, corresponding to an average reduction of net greenhouse gas emissions by at least 35 per cent over the period 2021-2030."[399]

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[397] **R-0140**, GWS Research Report 2022/22, Economic costs of climate change: scenario analysis up to 2050 – study as part of the project costs of climate change impacts in Germany, December 2022, adobe p. 4 (**R-0140-GER**, adobe p. 92).

[398] *Id*., adobe p. 2 (*Id*., adobe p. 90).

[399] **R-0141**, UNFCCC, Switzerland's information necessary for clarity, transparency and understanding in accordance with decision 1/CP.21 of its updated and enhanced first nationally determined contribution (NDC) under the Paris Agreement (2021–2030), 13 November 2024, adobe p. 2.

324. These are also enshrined in Federal Swiss Law. Article 3 of the Federal Act on the Reduction of CO_2 codifies the objective of halving GHG emissions by 2030.[400]

325. When signing the Paris Agreement, Switzerland had initially only committed to halve its GHG emissions by 2030 and to achieve a 70-85% reduction in GHG by 2050.[401] However, based on the findings of the UN IPCC Special Report in 2018, the federal government decided to adopt the net zero by 2050 target to "*[meet] the internationally agreed target of limiting global warming to a maximum of 1.5°C*"[402] as the former reduction target represented a pathway that was consistent with limiting global warming to only 2°C by 2100.[403]

326. Switzerland's Long-Term Climate Strategy outlines the pathway to achieve the net zero target. The introductory summary reiterates the necessity to achieve net zero GHG emissions by 2050 to limit global warming to below 1.5°C and to meet Switzerland's commitments under the Paris Agreement:

> "The science is clear: to ensure sufficiently high probability of global warming remaining below 1.5° Celsius, global CO2 emissions must be reduced to net zero by the middle of this century at the latest. […] By aiming to cut its greenhouse gas emissions to net zero by 2050, Switzerland is making a contribution to the Paris Agreement that is in line with its climate policy responsibility and capacities."[404]

327. Claimant's only shareholder is the Swiss Canton of Ticino. The Ticino Government included the target of climate neutrality in its current 2023-2027 Government Programme.[405] The Cantonal Energy and Climate Plan also incorporates the federal and cantonal target of climate neutrality.[406]

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[400] **R-0142-ENG/GER**, Federal Act on the Reduction of CO_2 emissions, Article 3(1) lit. a.

[401] **R-0143**, UNFCCC, Switzerland's intended nationally determined contribution (INDC) and clarifying information, adobe pp. 1-2.

[402] **R-0144**, The Federal Council, Federal Council aims for a climate-neutral Switzerland by 2050, 28 August 2019, adobe p. 1.

[403] *Ibid*.

[404] **R-0145**, The Federal Council, Switzerland's Long-Term Strategy, adobe p. 4.

[405] **R-0146-ENG**, Republic and Canton of Ticino, Legislative Programme 2023-2027, February 2024, Goal 16 (**R-0146-ITA**, adobe p. 43).

[406] **R-0147-ENG/ITA**, Republic and Canton of Ticino, Cantonal Energy and Climate Plan, July 2024, ¶ 5.1.1.

5. The latest report of the German Advisory Council on the Environment

328. Since 2020, the German Advisory Council on the Environment ("**German Advisory Council**") determines remaining national CO_2 budgets for a selected temperature target and the likelihood of meeting the target based on the findings of the UN IPCC Assessment Reports.[407] The German Advisory is an independent expert body advising the federal government on environmental issues. It consists of seven university professors with expert knowledge in different fields of environmental science which are appointed every four years through a Federal Cabinet decision.[408]

329. The German Advisory Council calculates Respondent's national budget per capita based on the global CO_2 budget in relation to Germany's 1.1% share in the world's population. Historical emissions are accounted for from 2016, the year of the Paris Agreement's entry into force.[409] The Federal Constitutional Court described this methodological approach in the 2021 ruling[410] as "*verifiable*" and "*sound*".[411]

330. In September 2022[412] and October 2024[413], the German Advisory Council updated the national CO_2 budget based on the latest global CO_2 budget calculations in AR6 and new data for historic emissions. A 50% chance of limiting global warming to 1.5°C leaves a remaining CO_2 budget of only 1.04 $GtCO_2$ from 2025 onwards.[414] For context, the $GtCO_2$ that the Lünen Plant would emit in the But-for scenario of Claimant's experts until the 2050s would already account for more than 10% of the remaining possible CO_2 emissions.[415]

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[407] **R-0148**, German Advisory Council on the Environment, Towards an ambitious environmental policy in Germany and Europe, Summary, May 2020.

[408] **R-0149**, German Advisory Council on the Environment, Mission.

[409] **R-0150**, German Advisory Council on the Environment, A justified ceiling to Germany's CO_2 emissions: Questions and answers on its CO_2 Budget, Statement September 2022, ¶ 7.

[410] See above, ¶ 175.

[411] **R-0097**, Federal Constitutional Court, Order of the First Senate of 24 March 2021 - 1 BvR 2656/18, ¶ 224.

[412] **R-0150**, German Advisory Council on the Environment, A justified ceiling to Germany's CO_2 emissions: Questions and answers on its CO_2 Budget, Statement September 2022.

[413] **R-0151-ENG/GER**, German Advisory Council on the Environment, Where do we stand with the CO_2 budget? An update, Opinion corrected version of October 2024.

[414] **R-0152**, The German Advisory Council on Environment CO_2 Budget Calculator. Subtracting 0.66 $GtCO_2$ for 2024: **R-0154**, Agora Energiewende, The energy transition in Germany – the status quo, January 2025, at. 1, adobe p. 8. See also **R-0047-ENG/GER**, Tagesspiegel, Advisory body to the government: Germany's CO_2 budget is said to be practically exhausted.

[415] See further below, sect. II.G.

331. The German Advisory Council also provides data that is based on the peer reviewed article "*Indicators of Global Climate Change 2022: annual update of large-scale indicators of the state of the climate system and human influence*" by Piers M. Forster *et.al*.[416] Mr. Forster contributed to AR5 and AR6 as a coordinating lead author. His peer reviewed article closely follows the method and structure of AR6. Its purpose is to close the information gap that is created through the UN IPCC's assessment period intervals.[417] Forster's calculations show an even lower remaining global CO_2 budget. Germany's national budget for staying within 1.5°C of global warming even at a 50% probability estimate is already exhausted.[418]

6. Expert opinion of Professor Hans Joachim Schellnhuber

332. With regard to the scientific necessity for climate action, Respondent submits the Expert Report of Professor Hans Joachim Schellnhuber on the scientific foundations, prospects, and consequences of climate change. Professor Schellnhuber is amongst the world's most respected climate scientists. He has held positions, *inter alia*, with the UN IPCC, the World Bank, Imperial College London, and as advisor of the President of the European Commission José Manuel Barroso. Respondent refers to Professor Schellnhuber's report in its entirety and highlights the following:

333. *First*, Professor Schellnhuber sets out that the global earth surface and the oceans have already heated up drastically.[419] CO_2 is causing this warming. As Professor Schellnhuber formulates it:

> "there is practically no other complex topic on which scientists are in such an agreement as anthropogenic climate change."[420]

334. *Second*, Professor Schellnhuber is amongst the scientists who brought the issue of tipping elements into the scientific and, later, climate-political focus. As set out above, tipping elements include rapid, non-linear, potentially cascading changes of the eco-system. Professor Schellnhuber's expert report provides further examples of the tipping elements that climate

[416] **R-0153**, *Piers M. Forster et. al.*, Indicators of Global Climate Change 2022: annual update of large-scale indicators of the state of the climate system and human influence in: Earth System Science Data 15, 2295-2327, 2023.

[417] *Id*., p. 2296.

[418] **R-0152**, The German Advisory Council on Environment CO_2 Budget Calculator. Subtracting 0.66 $GtCO_2$ for 2024: **R-0154**, Agora Energiewende, The energy transition in Germany – the status quo, January 2025, at. 1, adobe p. 8.

[419] Schellnhuber ER, sect. 1.

[420] Schellnhuber ER, ¶ 35.

change will cause, if not mitigated. These include *e.g.* the Arctic and Antarctic, rainforests, the Great Barrier Reef, and the Sahel Monsoon.[421]

335. *Third*, Professor Schellnhuber summarizes the drastic risks for natural habitats of humans and other species. Above all, he states that the most recent scientific research comes to the following conclusion:

> "with the full implementation of the currently agreed national climate plans, global warming by the end of the 21st century is likely to reach about 2.7°C, and, as a result, about 1/3 of the projected global population would live outside the physically bearable climate zone ("human climate niche") (see also Figure 14) and would die, should they stay in place. In other words, if official global climate policies continue, large parts of our planet would gradually become physiologically uninhabitable, which in turn would lead to an uncontrollable migration movement numbering in the billions."[422]

336. In conclusion of this section F., while Claimant does not seek to "*contest the need to reduce CO2 emissions*" in this arbitration,[423] the Tribunal's Award cannot be silent about climate change as Claimant implies. Climate change is happening rapidly. It causes the extinction of species, poverty and risk to life and health for humans, and extraordinary losses for the global and German economy. These facts must be taken into account in assessing the police-powers doctrine and fair and equitable treatment as set out in further detail in section IV. on liability below.

G. CONTRARY TO AET, THE LÜNEN PLANT IS NOT CLIMATE-FRIENDLY

337. In the Memorial, Claimant alleges: "*Its high efficiency also makes the Lünen plant particularly valuable from an environmental perspective.*"[424] Claimant also alleges: "*Germany also needed new coal-fired plants to meet its climate goals.*"[425] This is incorrect. The Lünen Plant is not valuable for climate action. The Lünen Plant is a strong polluter.

338. The fact that a referendum with the force of law in Switzerland obligates AET to exit the Lünen Plant for climate-change reasons[426] should already be evidence enough.

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[421] Schellnhuber ER, sect. 3.

[422] Schellnhuber ER, ¶ 66.

[423] Cf. Request for Arbitration, ¶ 3.

[424] Claimant's Memorial, ¶ 37.

[425] Claimant's Memorial, ¶ 67.

[426] See above, sect. II.B.1, ¶¶ 105-118.

339. In addition, Professor Schellnhuber analyses in his expert report that the CO_2 emitted by the Lünen Plant alone in Claimant's but-for scenario from 2020 onwards would account for more than 2% of Germany's entire national CO_2 budget deducted from the UN IPCC budgets as of 2020. His calculation is as follows:

- The model of Claimant's experts of Frontier (Exhibit FE-35) includes both the annual costs for CO_2 emissions (Tab „Model Results", row 110) as well as the annual costs per certificate in EUR/tCO_2 (Tab "Fuel and EU-ETS Costs", row 13).
- Dividing the total certificate costs by the cost per certificate results in 0.12 $GtCO_2$.
- According to the expert council implementing the UN IPCC budgets for Germany, limiting global warming to 1.5°C with a 50% probability leaves a CO_2 budget of only 5.3 $GtCO_2$ for Germany from 2020 onwards.[427]

340. Notably, the 2 % result out of the comparably lenient budget as of 2020. As set out above, the budget from 2025 for a 50% chance of limiting global warming to 1.5°C leaves a remaining CO_2 budget of only 1.04 $GtCO_2$ for Germany.[428] From this reduced budget, the Lünen Plant alone would take a significant greater share. In conclusion, the Lünen Plant is not climate-friendly but a heavy polluter.

[427] Schellnhuber ER, sect. 5.

[428] **R-0152**, The German Advisory Council on Environment CO_2 Budget Calculator. Subtracting 0.66 $GtCO_2$ for 2024: **R-0154**, Agora Energiewende, The energy transition in Germany – the status quo, January 2025, at. 1, adobe p. 8. See also **R-0047-ENG/GER**, Tagesspiegel, Advisory body to the government: Germany's CO_2 budget is said to be practically exhausted.

III. PRELIMINARY OBJECTION TO JURISDICTION *RATIONE PERSONAE*

341. Respondent objects to the Tribunal's jurisdiction *ratione personae* because Article 25(1) ICSID Convention and Article 26 ECT only applies to investor-State disputes, not State-State disputes. Under the applicable legal standard (see below, at A.), Claimant does not meet the criteria of a private investor (at B.).

A. LEGAL STANDARD

342. Article 25(1) ICSID Convention reads in its relevant part:

> "(1) The jurisdiction of the Centre shall extend to any legal dispute arising directly out of an investment, between a Contracting State (or any constituent subdivision or agency of a Contracting State designated to the Centre by that State) and a national of another Contracting State, which the parties to the dispute consent in writing to submit to the Centre."

343. Therefore, an ICSID tribunal does not have jurisdiction over State-State disputes between two or more Contracting States. This was confirmed by the Tribunal in *CSOB v. Slovak Republic*:

> "The language of Article 25(1) of the Convention makes clear that the Centre does not have jurisdiction over disputes between two or more Contracting States. Instead, the dispute settlement mechanism set up by the Convention is designed to deal with disputes between Contracting States and nationals of other Contracting States.".[429]

344. Claimant bears the burden of establishing the jurisdictional requirement under Article 25 ICSID Convention.[430] The ICSID tribunal in *National Gas v. Egypt* (V.V. Veeder presiding, Professor Brigitte Stern, The Hon. L. Yves Fortier) summarized the position as follows:

> "For present purposes, this approach means that the burden of establishing jurisdiction, including consent, lies primarily upon the Claimant. Although it is the Respondent which has here raised specific jurisdictional objections, it is not for the Respondent to disprove this Tribunal's jurisdiction. Under international law, as a matter of legal logic and the application of the principle traditionally expressed by the Latin maxim

[429] See only **RL-0004**, *Ceskoslovenska Obchodni Banka, a.s. v. The Slovak Republic*, ICSID Case No. ARB/97/4, Decision of the Tribunal on Objections to Jurisdiction, 24 May 1999, ¶ 16.

[430] **RL-0005**, *Marko Mihaljevic v. Republic of Croatia*, ICSID Case No. ARB/19/35, Award, 19 May 2023, ¶¶ 64-65; **RL-0006**, *Anglo-Adriatic Group Limited v. Republic of Albania*, ICSID Case No. ARB/17/6, Award, 7 February 2019, ¶ 208; **RL-0007**, *Churchill Mining and Planet Mining Pty Ltd v. Republic of Indonesia*, ICSID Case No. ARB/12/40 and 12/14, Decision on Jurisdiction (Churchill Mining Plc), 24 February 2014, ¶ 96; **RL-0008**, *National Gas S.A.E. v. Arab Republic of Egypt*, ICSID Case No. ARB/11/7, Award, 3 April 2014, ¶ 118.

> '*actori incumbit probatio*', it is for the Claimant to discharge the burden of proving all essential facts required to establish jurisdiction for its claims."[431]

345. Accordingly, Claimant, as a wholly State-owned company, must establish in this case, that it qualifies as "*a national of*" Switzerland rather than acting as or on behalf of Switzerland itself. The following criteria are decisive for this assessment:

1. The *Broches* test for Article 25(1) ICSID Convention

346. Whether State-owned entities like Claimant have standing under Article 25(1) ICSID Convention is determined by the so-called '*Broches* test'. The test was named after Mr. Aron Broches, the founding Secretary-General of ICSID and one of the principal drafters of the ICSID Convention. The test establishes two 'knock-out' criteria which, if not disproven by Claimant, disqualify State-owned entities as claimants in ICSID proceedings. Mr. Broches framed the applicable test as follows:

> "It would seem, therefore, that for purposes of the Convention a mixed economy company or government-owned corporation should not be disqualified as a 'national of another Contracting State' unless it is acting as an agent for the government or is discharging an essentially governmental function."[432]

347. This formulation was adopted as the determinative test by investment treaty tribunals under the ICSID Convention such as the tribunals in *CSOB v. Slovak Republic* (Professor Thomas Buergenthal presiding, Andreas Bucher, Professor Piero Bernardini) and *Cyprus Popular Bank v. Greece* (Juan Fernández-Armesto, Professor Philippe J. Sands, Professor Giorgio Sacerdoti) as well as several other tribunals.[433]

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[431] **RL-0008**, *National Gas S.A.E. v. Arab Republic of Egypt*, ICSID Case No. ARB/11/7, Award, 3 April 2014, ¶ 118.

[432] **RL-0009**, Aron Broches, *The Convention on the Settlement of Investment Disputes Between States and Nationals of Other States*, Recueil des Cours, Collected Courses of the Hague Academy of International Law, 1972, II, pp. 354-355.

[433] **RL-0004**, *Ceskoslovenska Obchodni Banka, a.s. v. The Slovak Republic*, ICSID Case No. ARB/97/4, Decision of the Tribunal on Objections to Jurisdiction, 24 May 1999, ¶ 17; **RL-0010-ENG**, *Flughafen Zürich A.G. and Gestión e Ingeniería IDC S.A. v. Bolivarian Republic of Venezuela*, ICSID Case No. ARB/10/19, Award, 18 November 2014, ¶ 274; **RL-0011**, *Beijing Urban Construction Group Co. Ltd. v. Republic of Yemen*, ICSID Case No. ARB/14/30, Decision on Jurisdiction, 31 May 2017, ¶¶ 31, 33; **CLA-0068**, *Masdar Solar & Wind Cooperatief U.A. v. Kingdom of Spain*, ICSID Case No. ARB/14/1, Award, 16 May 2018, ¶ 170; **RL-0012**, *Cyprus Popular Bank Public Co. Ltd. v. Hellenic Republic*, ICSID Case No. ARB/14/16, Decision on Jurisdiction and Liability, 8 January 2019, ¶¶ 374-378. In *Rumeli v. Kazakhstan* both parties accepted in principle the *Broches* test but the tribunal did not have to refer to it because it rejected the factual allegations of the respondent State concerning jurisdiction: **RL-0013**, *Rumeli*

2. The ILC Articles inform the application of the *Broches* test

348. In applying the *Broches* test, the Tribunal should take guidance from the principles developed in the jurisprudence of international courts and tribunals in respect of customary international law, codified in the International Law Commission's Articles on Responsibility of States for Internationally Wrongful Acts of 2001 ("**ILC Articles**").[434] The ILC Articles contain a structured codification of the customary international law on attribution.

349. Above all, the test whether a claimant "*is acting as an agent for the government*" (*Broches* test) is redolent of the 'control test' under Article 8 ILC Articles. Article 8 attributes the conduct of an entity to the State if that entity "*is in fact acting on the instructions of, or under the direction or control of, that State in carrying out the conduct*."[435]

350. In *Beijing Urban Construction v. Yemen*, the tribunal (The Hon. Ian Corneil Binnie, Professor Zachary Douglas, Mr. John M. Townsend) recognised the connection between the *Broches* test and the ILC Articles in the following terms:

> "The *Broches* factors are the mirror image of the attribution rules in Articles 5 and 8 of the *ILC's Articles on State Responsibility*. The *Broches* test lays down markers for the non-attribution of State status."[436]

351. The tribunal in *Masdar* v. Spain (Mr. John Beechey, Professor Brigitte Stern, Mr. Gary Born) applied by analogy Articles 5 and 8 ILC Articles to determine whether the claimant could be attributed to its home State for the purposes of Article 25(1) ICSID Convention. The *Masdar* tribunal formulated the following test:

> "The ILC Articles have been embodied in Resolution A/56/83 adopted by the General Assembly of the United Nations on 28 January 2002. This resolution is considered as a statement of customary international law on the question of attribution for purposes of asserting the responsibility of a State towards another State, which is applicable by analogy to the responsibility of States towards private parties. […]
>
> The question is therefore to examine whether the acts of Claimant, as a separate entity, can be attributed to the State of Abu Dhabi, either because it exercises governmental authority ('*prérogatives de puissance*

Telekom A.S. and Telsim Mobil Telekomunikasyon Hizmetleri A.S. v. Republic of Kazakhstan, ICSID Case No. ARB/05/16, Award, 29 July 2008, ¶¶ 211-213 (claimants), 291-292 (respondent).

[434] **CLA-0055**, ILC, Draft articles on Responsibility of States for Internationally Wrongful Acts, with commentaries, 2001.

[435] *Id*., Article 8.

[436] **RL-0011**, *Beijing Urban Construction Group Co. Ltd. v. Republic of Yemen*, ICSID Case No. ARB/14/30, Decision on Jurisdiction, 31 May 2017, ¶ 34.

> *publique'*) or because it is under the effective control of the State in its investment activities."[437]

352. Accordingly, the following criteria from the jurisprudence in respect of the ILC Articles should inform the application of the *Broches* test by this Tribunal on the facts of this case.

3. Under Article 8 ILC Articles, control over the Investment decision is decisive

353. The decisive criterion is whether the relevant investment decision was taken on the instructions of, or under the direction or control of the claimant's home State.

354. For attribution to respondents, the jurisprudence under Article 8 ILC Articles is clear. Article 8 ILC Articles requires control over the individual, contested measure. The often-cited bases are the ICJ's decisions in *Certain Paramilitary Activities in Nicaragua*[438] and *Bosnia Genocide*. To quote the latter, the ICJ confirms that attribution applies to the specific act in question:

> "This is so where an organ of the State gave the instructions or provided the direction pursuant to which the perpetrators of the wrongful act acted or where it exercised effective control over the action during which the wrong was committed."[439]

355. For attribution of investor claimants to their home State, the same test must apply. Therefore, the investment decision should be the focal point of the analysis under Article 25(1) ICSID as it was confirmed by the tribunals in *Beijing Urban Construction v. Yemen* and *Masdar v. Spain.* Both tribunals analysed whether the specific investment decision was controlled by the State. The tribunal in *Beijing Urban Construction v. Yemen* asked "*whether [the claimant BUCG] functions as an agent of the State in the fact-specific context*", specifically whether:

> "in building an airport terminal in Yemen, BUCG was acting as an agent of the Chinese State".[440]

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[437] **CLA-0068**, *Masdar Solar & Wind Cooperatief U.A. v. Kingdom of Spain*, ICSID Case No. ARB/14/1, Award, 16 May 2018, ¶¶ 167, 169.

[438] **RL-0014**, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, International Court of Justice, Judgment – Merits, 27 June 1986, ¶ 115.

[439] **RL-0015**, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, International Court of Justice, Judgment, 26 February 2007, I.C.J. Reports 2007, p. 43, ¶ 406.

[440] **RL-0011**, *Beijing Urban Construction Group Co. Ltd. v. Republic of Yemen*, ICSID Case No. ARB/14/30, Decision on Jurisdiction, 31 May 2017, ¶ 39.

356. Correspondingly, the *Masdar v. Spain* tribunal applied Article 8 ILC Articles to Spain's objection that the claimant's investment must be attributed to its home State Abu Dhabi and inquired whether Abu Dhabi had "*a control on its [the claimant's] investment decisions*."[441]

357. Likewise, under Article 25(1) ICSID Convention, the Tribunal should analyse whether Claimant's alleged Investment was made under State control.

B. APPLICATION

358. Claimant's Investment (if any) was made under State control and, indeed, also for State interests. The evidence is the following:

359. *First*, Ticino's elected parliament,[442] the Grand Council, had to and did decide over Claimant's decision to invest.

360. Claimant is governed by the 1958 Law.[443] Under this law, Claimant is "*under the supervision of the State*".[444] The key provision is Article 5(4) 1958 Law. Under this provision, Claimant's participation in the Lünen Plant required the Ticino Parliament's decision because it was a "*new installation, participation*":

> "Commitments of the company exceeding the ordinary administration and normal energy trade, namely those relating to new installations, participations, major renovations, or even commercial ones, insofar as they require the taking out of loans exceeding the normal operating requirements or the granting of major long-term guarantees, are subject to the approval of the Grand Council."[445]

[441] **CLA-0068**, *Masdar Solar & Wind Cooperatief U.A. v. Kingdom of Spain*, ICSID Case No. ARB/14/1, Award, 16 May 2018, ¶ 171.

[442] **R-0155 -ENG/GER**, Constitution of the Republic and Cantone of Ticino, 14 December 1997, Article 57.

[443] **R-0156-ENG/ITA**, Law establishing the AET, 25 June 1958. The 1958 Law was repealed after the alleged Investment by **R-0056-ENG/ITA**, Law on the Azienda Elettrica Ticinese of 10 May 2016 in Official Bulletin of Laws Vol. 146 30/2016 p. 329.

[444] **R-0156-ENG/ITA**, Law establishing the AET, 25 June 1958, Article 5(1). See also **R-0056-ENG/ITA**, Law on the Azienda Elettrica Ticinese of 10 May 2016 in Official Bulletin of Laws Vol. 146 30/2016 p. 329, Article 5(1).

[445] **R-0156-ENG/ITA**, Law establishing the AET, 25 June 1958, Article 5(4). A similar provision is included in **R-0056-ENG/ITA**, Law on the Azienda Elettrica Ticinese of 10 May 2016 in Official Bulletin of Laws Vol. 146 30/2016 p. 329, Article 6(5).

361. On 9 July 2008, Claimant and the Ticino Government, therefore, submitted the investment decision to Ticino's parliament.[446]

362. On 23 March 2010, Ticino's parliament authorized the specific decision to invest in Trianel through a legislative decree.[447] Notably, in the same decision, Ticino's parliament rejected a separate proposal from Claimant and the Ticino Government to invest in a gas-fired power plant in Uerdingen (Germany).[448]

363. Further evidence in this regard is that Claimant, as the only shareholder in Trianel, negotiated an exit clause in the Partnership Agreement. Claimant had a special right to leave the project in case the Ticino Parliament refused the authorization.[449]

364. *Second*, as set out above, not only the decision to invest, also the decision to *leave* the power plant was made under State control. Indeed, a public referendum with the force of law obligated Claimant to leave the Lünen Plant as soon as possible but, in any case, no later than 2035 (regardless of whether or not the loan is repaid).[450]

365. *Third*, Claimant's company strategy is driven by State interests. It exercises a public mandate attributed to it by the Cantonal Energy Law, the 1958 Law and the Cantonal Energy Plan. The Cantonal Energy Law promulgates the public purpose of Claimant:

> "(1) The purpose of this law is to promote a sufficient, secure, economical and environmentally compatible energy supply for the Canton." [451]

366. Article 2(2) of the 1958 Law, which was added through the Cantonal Energy Law, specifies this public purpose:

> "In accordance with the provisions of the cantonal energy law of 8 February 1994 (LEn) and the cantonal energy plan (PEC), the company contributes to the implementation and coordination of the canton's energy

[446] **C-0063-EN/IT,** Department of Finance and Economic Affairs of the Canton of Ticino, *Message No. 6091 to the Grand Council of the Republic and Canton of Ticino on the Participation of AET in a company for the construction of a thermal power plant in Germany*, 9 July 2008.

[447] **R-0158-ENG/ITA**, Legislative Decree Concerning the participation of the Azienda Elettrica Ticinese in a company to build a thermal power plant in Germany of 23 March 2010 in Official Bulletin of Laws and Executive Acts Volume 136 17/2020, p. 130.

[448] **C-0063-EN**, Department of Finance and Economic Affairs of the Canton of Ticino, *Message No. 6091 to the Grand Council of the Republic and Canton of Ticino on the Participation of AET in a company for the construction of a thermal power plant in Germany*, 9 July 2008, adobe p. 27.

[449] See Claimant's Memorial, ¶ 148.

[450] See above, sect. II.B.1, ¶¶ 105-118.

[451] **R-0157-ENG/ITA,** Cantonal Energy Law, 8 February 1994, Article 1(1).

> policy choices, to the production and marketing of electricity, natural gas and energy from renewable sources; it promotes the rational use energy and the limitation of consumption, the differentiation in the use of energy vectors, as well as research and experimentation in field of energy from renewable sources.[452]

367. In this context, the Ticino Government labels AET "*a kind of operational arm for the Canton*". The Government did so in the 2013 Cantonal Energy Plan. These Plans determine the guiding principles, strategic objectives, and general directions of the Canton's energy policy:

> "AET constitutes a kind of operational arm for the Canton. Thanks to AET, in fact, the Canton can implement the PEC's guidelines, particularly in relation to the coverage of demand and power generation, and implement many of the most important measures, either directly with its support or indirectly by delegating responsibility to it. AET's corporate policy is and will be bound by the PEC […]."[453]

368. Indeed, corresponding to Claimant's general status, Claimant can also exercise governmental authority through rendering administrative acts. The 1958 Law and the Law on AET even provide for the remedy of an appeal to the Administrative Cantonal Court against such administrative act.[454] While the alleged Investment in Germany was not an administrative act, Claimant's power under Swiss public law shows its special status.

369. *Fourth*, the decision to invest in the Lünen Plant was made for State interests, not for purely commercial interests. Already the evidence submitted by Claimant shows that Claimant's motivation to invest in the Lünen Plant was not simply profit-driven. Instead, Claimant's main concerns were the baseload capacities in Switzerland.

370. The resolution of Claimant's board of directors of April 2008 (Exhibits C-82) shows that the board approved the project in accordance with Claimant's mission to service the Canton and to rectify the shortage of baseload energy production:

> "The director emphasises the importance of the project, given the increasing consumption of energy in the canton and the difficulty of alternatives for baseload energy production. The Energy Commission is

[452] **R-0156-ENG/ITA**, Law establishing the AET, 25 June 1958, Article 2(2). See also **R-0056-ENG/ITA**, Law on the Azienda Elettrica Ticinese of 10 May 2016 in Official Bulletin of Laws Vol. 146 30/2016 p. 329, Article 2(2).

[453] **R-0159-ENG/ITA**, State Council of the Canton of Ticino, Cantonal Energy Plan 2013, April 2013, ¶ 10.3; See also **R-0147-ENG/ITA**, Republic and Canton of Ticino, Cantonal Energy and Climate Plan, July 2024, ¶ 10.3.

[454] **R-0156-ENG/ITA**, Law establishing the AET, 25 June 1958, Article 19a: **"**Administrative law decisions of the company may be appealed to the Administrative Cantonal Court." See also **R-0056-ENG/ITA**, Law on the Azienda Elettrica Ticinese of 10 May 2016 in Official Bulletin of Laws Vol. 146 30/2016 p. 329, Article 20.

aware of the hard-coal project and the difficulties associated with the future of the canton's energy supply."[455]

371. The next evidence is the Ticino Government's investment proposal to the Ticino Parliament of 9 July 2008 (Exhibit C-63). The document is not an 'investor prospectus', but a demonstration of the public interests behind the investment decision:

- "*In 2004, AET developed a production strategy to meet the mitigation of production coverage that is affecting Europe and in our country: […] the participation in production plants abroad, so as to be able to offset the expected coverage deficit in Switzerland and balance the electricity market production portfolio of neighbouring countries, which is closely interconnected with the Swiss market*."[456]
- "*AET must also ensure the supply of electricity to Ticino, at stable prices if possible*."[457]
- "*The reversion of concessions for the large hydroelectric plants in Ticino, which is obviously very important from a strategic point of view for Ticino, will not take place for another 30 years. The problem of meeting the Canton of Ticino's energy needs cannot therefore be addressed until this period is up. Even after this period, the opportunity and, at least in part, the need to export peak energy in order to import baseload energy will remain open, both from an economic and a general environmental perspective*."[458]

372. The document also includes extensive analyses of the electricity demand and supply in Switzerland in sect. 3.3. It begins by stating: "*The following figure illustrates the electricity shortfall expected in Switzerland from 2020. There is general agreement over this outlook. The debate centres around the most appropriate solution: renew the nuclear power plant stock or build new gas-fired power plants?*"[459] Claimant's approach to assess these issues from a national, rather than a company perspective, differs from private utility companies.

[455] **C-0082-EN**, AET, *Minutes of the 281st Meeting of the Board of Directors*, 9 April 2008 (excerpts), adobe p. 2.

[456] **C-0063-EN**, Department of Finance and Economic Affairs of the Canton of Ticino, *Message No. 6091 to the Grand Council of the Republic and Canton of Ticino on the Participation of AET in a company for the construction of a thermal power plant in Germany*, 9 July 2008, adobe p. 3.

[457] *Id.*, adobe p. 4.

[458] *Id.*, adobe p. 6.

[459] *Id.*, adobe p. 7.

373. Further evidence is the Special Energy Commission's report on the Ticino Government's application of 23 February 2010 (Exhibit C-84). The document begins:

> "The parameters of this important decision [investment in Lünen Plant] must be assessed.by reflecting on AET's public role and the strategy it has followed to date. What contribution should the Azienda Elettrica Ticinese make to our canton?"[460]

374. The Commission goes on to consider a collapsing band energy supply in the Canton of Ticino. The Canton's energy demand is 2.7 TWh/year. Prior to the alleged Investment, Claimant only generated 1.6 TWh/year from its own production and participations. By 2020, the Canton needed an additional 120 MW in participations.[461]

375. The Special Energy Commission continues with the reason that Ticino's "*operational arm*" (*op. cit.*) seeks baseload capacities in Germany:

> "Due to high market liquidity and the power trading exchange, Germany is the benchmark supply market for electricity trading for most Swiss electricity companies, and thus also for AET. AET has been carrying out most of its strategic portfolio hedging activities on this market for years. This situation stems from the fact that in contrast to the German market, the Swiss market is unfortunately affected by low liquidity due to the limited number of players and Swiss lack of enthusiasm for opening up the market. Having accepted that Germany is AET's benchmark market, having a production asset as well as access to a transparent market offers AET an additional advantage. […] AET would have the option of selling the energy from the coal-fired power plant in Germany and buying back the same quantity sold in Germany on the Swiss market."[462]

376. *Fifth*, all of Claimant's operating profit (including from any Award, *quod non*) goes into the State budget.[463] For example, in 2007 and 2008, from ca. EUR 13 million of operational profit, EUR 3.2 million were paid as interest on State capital and EUR 10 million were disbursed as profit to the State.[464]

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[460] **C-0084-EN**, Department of Finance and Economic Affairs of the Canton of Ticino, *Special Energy Commission: Majority Report on AETs Message No. 6091 concerning its Participation in TKL*, 23 February 2010, p. 3.

[461] *Id*., adobe p. 4.

[462] *Id*., adobe p. 5.

[463] **R-0160-ENG/GER**, Azienda Elettrica Ticinese, About Us.

[464] **R-0161-ENG/ITA**, Legislative Decree Concerning the approval of the income statement for the years 2007/2008 and the balance sheets of the AET, 22 and 23 March 2010 in Official Bulletin of laws and executive acts Volume 136 17/2020, pp. 129-130.

377. In conclusion, Claimant's decision to participate in the Lünen Plant was made by parliament and for State interests. Therefore, Claimant is not a private investor as required by Article 25(1) ICSID Convention and Article 26 ECT. Hence, the dispute is a State-State dispute and outside the jurisdiction of this ICSID Tribunal.

IV. LIABILITY

378. Contrary to Claimant's allegations, the 2020 Act is in compliance with the ECT. In the following, Respondent will respond to Claimant's alleged claims in the order that Claimant presented them in the Memorial.

A. EXPROPRIATION

379. Claimant's expropriation claim must be dismissed because the 2020 Act is a legitimate exercise of Respondent's police powers (at 1.) that is not discriminatory (at 2.). Even if the Tribunal were not to apply the police powers doctrine (*quod non*), the claim would still have to be rejected because the 2020 Act does not constitute an expropriation of the alleged Investment (at 3.).

1. The 2020 Act is a legitimate exercise of Respondent's police powers

380. The 2020 Act does not trigger any compensation duty under Article 13 ECT because it is a legitimate exercise of Respondent's police powers.

381. Under the applicable legal standard, the police powers doctrine is a rule of customary international law that this Tribunal must apply (see below, at a.). The doctrine not only covers the enforcement of *existing* regulation but also the enactment of *additional* regulation by a State for the protection of public health and the environment (at b.). Under the police powers doctrine, the democratically elected legislator of a sovereign State has a wide margin of appreciation (at c.). This margin of appreciation is even greater where a State acts to fulfil international obligations under the Paris Agreement (at d.) and international human rights (at e.).

382. In the present case, the doctrine's general requirements are met because the 2020 Act is a *bona fide* act in the public interest and of general application (at f.).

a. The police powers doctrine is a rule of customary international law

383. The police powers doctrine is rooted in customary international law. Accordingly, an ever-growing number of investment tribunals have accepted and applied the police powers doctrine to find that a legitimate exercise of a State's police powers does not constitute an expropriation and does not require compensation.

384. Already on 17 September 1985, the Iran-US Claims Tribunal held that a *bona fide* exercise of a State's police powers bars compensation claims for an alleged expropriation:

> "It is also an accepted principle of international law that a State is not liable for economic injury which is a consequence of bona fide 'regulation' within the accepted police power of states."[465]

385. The next authority is *Saluka v. Czech Republic.* The case concerned the Czech banking sector and the claimant's investment in a major Czech bank. During the height of the Czech banking crisis in the late 1990s / early 2000s, the claimant's bank was placed under forced administration due to concerns of financial instability.[466] While the Czech Republic had extended aid to other competitors, no such aid was granted to the claimant's bank.[467] In the following, a takeover of the claimant's bank by another Czech bank was facilitated by the State.[468] The tribunal under the Netherlands-Czech Republic BIT rejected the claimant's expropriation claim. The tribunal held that the measures were an exercise of the Czech Republic's police powers and thus no compensation was required. The tribunal relied on the 1961 Harvard Draft Convention[469], the U.S. Third Restatement on Foreign Relations Law[470], and the accompanying note to the 1967 OECD Draft Convention on the Protection of Foreign Property.[471] The most frequently cited paragraph of the decision is:

> "In the opinion of the Tribunal, the principle that a State does <u>not commit an expropriation and is thus not liable to pay compensation</u> to a dispossessed alien investor when it adopts general regulations that are

[465] **RL-0016**, *Sedco, Inc. v. National Iranian Oil Company and The Islamic Republic of Iran*, IUSCT Case Nos. 128 and 129, Interlocutory Award (Award No. ITL 55-129-3), 17 September 1985, ¶ 90.

[466] **RL-0020**, *Saluka Investments BV v. The Czech Republic*, PCA Case No. 2001-04, Partial Award, 17 March 2006, ¶ 136.

[467] *Id*., ¶¶ 75-81.

[468] *Id*., ¶ 143.

[469] **RL-0017**, Draft convention on the international responsibility of States for injuries to aliens, prepared by the Harvard Law School, 1961, Article 10(5): "An uncompensated taking of an alien property or a deprivation of the use or enjoyment of property of an alien which results from the execution of tax laws; from a general change in the value of currency; from the action of the competent authorities of the State in the maintenance of public order, health or morality; or from the valid exercise of belligerent rights or otherwise incidental to the normal operation of the laws of the State shall not be considered wrongful […]."

[470] **RL-0020**, *Saluka Investments BV v. The Czech Republic*, PCA Case No. 2001-04, Partial Award, 17 March 2006, ¶ 260. § 712 of the United States Restatement (Third) of Foreign Relations Law (1987) states (as cited in the award): "[…] a State is not responsible for loss of property or for other economic disadvantage resulting from bona fide general taxation, regulation, forfeiture for crime, or other action that is commonly accepted as within the police power of States, if it is not discriminatory."

[471] **RL-0018**, OECD Draft Convention on the Protection of Foreign Property, 1967. See also **RL-0019**, OECD, "*Indirect Expropriation" and the "Right to Regulate" in International Investment Law*, OECD Working Papers on International Investment, 2004/4, September 2004, p. 5, fn. 10: "It is an accepted principle of customary international law that where economic injury results from a bona fide non-discriminatory regulation within the police power of the State, compensation is not required."

> 'commonly accepted as within the police power of States' forms part of customary international law today."[472]

386. In *Invesmart v. Czech Republic*, the tribunal followed the reasoning of *Saluka*:

> "International investment treaties were never intended to do away with their signatories' right to regulate. As found in *Saluka,* where the instant Treaty was being applied, notwithstanding the breadth of its prohibition against expropriation and the absence of an express regulatory power exception, Article 5 imports into the Treaty the customary international law notion that a deprivation can be justified if it results from the exercise of regulatory actions aimed at the maintenance of public order. This is common sense."[473]

387. In *Feldman v. Mexico*, the tribunal also accepted the police powers doctrine as customary international law:

> "[G]overnments must be free to act in the broader public interest through protection of the environment, new or modified tax regimes, the granting or withdrawal of government subsidies, reductions or increases in tariff levels, imposition of zoning restrictions and the like. Reasonable governmental regulation of this type cannot be achieved if any business that is adversely affected may seek compensation, and it is safe to say that customary international law recognizes this".[474]

388. In the same vein, the tribunal in *Philip Morris v. Uruguay* held:

> "The Claimants add that there is no room under Article 5(1) or otherwise in the BIT for carving out an exemption based on the police powers of the State. […] The Tribunal disagrees. As pointed out by the Respondent, Article 5(1) of the BIT must be interpreted in accordance with Article 31(3)(c) of the VCLT requiring that treaty provisions be interpreted in the light of '[a]ny relevant rules of international law applicable to the relations between the parties,' a reference 'which includes ... customary international law.' This directs the Tribunal to refer to the rules of customary international law as they have evolved."[475]

389. The customary international law nature of the police powers doctrine was further confirmed in *Casinos Austria v. Argentina*, where the tribunal held that "*[p]olice powers and the*

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[472] **RL-0020**, *Saluka Investments BV v. The Czech Republic*, PCA Case No. 2001-04, Partial Award, 17 March 2006, ¶ 262.

[473] **RL-0021**, *Invesmart, B.V. v. Czech Republic*, Award, 26 June 2009, ¶ 498.

[474] **RL-0022**, *Marvin Roy Feldman Karpa v. United Mexican States*, ICSID Case No. ARB(AF)/99/1, Award, 16 December 2002, ¶ 103.

[475] **CLA-0028**, *Philip Morris Brand SARL, Philip Morris Products S.A. and Abal Hermanos S.A. v. Oriental Republic of Uruguay*, ICSID Case No. ARB/10/7, Award, 8 July 2016, ¶¶ 289-290.

right to regulate are recognized components of a State's sovereignty and firmly grounded in customary international law."[476]

390. In *Methanex Corp. v. USA*, the tribunal confirmed:

> "[A]s a matter of general international law, a non-discriminatory regulation for a public purpose, which is enacted in accordance with due process and, which affects, inter alios, a foreign investor or investment is not deemed expropriatory and compensable unless specific commitments had been given by the regulating government to the then putative foreign investor contemplating investment that the government would refrain from such regulation."[477]

391. In *Suez v. Argentina*, the tribunal stated in reliance on *Methanex Corp v. USA* that when "*evaluating a claim of expropriation it is important to recognize a State's legitimate right to regulate and to exercise its police power in the interests of public welfare and not to confuse measures of that nature with expropriation*."[478] Almost the identical reasoning was applied in *AWG v. Argentina*, which by agreement of the parties was handled together by the same tribunal but resulted in two awards.[479]

392. In *Quiborax v. Bolivia*, the tribunal held that "*[i]nternational law has generally understood that regulatory activity exercised under the so-called 'police powers' of the State is not compensable.*"[480]

[476] **RL-0023**, *Casinos Austria International GmbH and Casinos Austria Aktiengesellschaft v. Argentine Republic*, ICSID Case No. ARB/14/32, Award, 5 November 2021, ¶ 332.

[477] **RL-0024**, *Methanex Corporation v. United States of America*, Final Award of the Tribunal on Jurisdiction and Merits, 3 August 2005, Part IV – Chapter D ¶ 7.

[478] **RL-0025**, *Suez, Sociedad General de Aguas de Barcelona S.A., and InterAgua Servicios Integrales del Agua S.A. v. The Argentine Republic*, ICSID Case No. ARB/03/17, Decision on Liability, 30 July 2010, ¶ 128. See also **RL-0026**, Campbell McLachlan *et al.*, *International Investment Arbitration Substantive Principles* (2nd edn., OUP 2017), ¶ 8.1.4.6.

[479] **RL-0027**, *AWG Group Ltd. v. The Argentine Republic*, Decision on Liability, ICSID Case No. ARB/03/19, 30 July 2010, ¶ 139: "As numerous cases have pointed out, in evaluating a claim of expropriation it is important to recognize a State's legitimate right to regulate and to exercise its police power in the interests of public welfare and not to confuse measures of that nature with expropriation."

[480] **CLA-0108**, *Quiborax SA and Non Metallic Minerals SA v. Bolivia*, ICSID Case No. ARB/06/02, Award, 16 September 2015, ¶ 202.

393. Similar confirmations of the applicability and scope of the police powers doctrine were issued in *Eco Oro v. Colombia*,[481] *Chemtura v. Canada*,[482] *Koch Minerals v. Venezuela*;[483] *El Paso v. Argentina*,[484] *Les Laboratoires Servier v. Poland*,[485] *Bank Melli v. Bahrain*,[486] *Burlington v. Ecuador*,[487] *Magyar Farming v. Hungary*,[488] and *Oxus Gold v. Uzbekistan*.[489]

b. The doctrine covers enforcement of existing and additional regulation

394. For the avoidance of doubt, the police powers doctrine is not restricted to the enforcement of existing regulation. The doctrine also covers *additional* regulation. Anything else would impose an undue restriction on a State's right to regulate. This is confirmed by ample

[481] **RL-0028**, *Eco Oro Minerals Corp. v. Republic of Colombia*, ICSID Case No. ARB/16/41, Decision on Jurisdiction, Liability and Directions on Quantum, 9 September 2021, ¶ 699: "In sum, the Challenged Measures were adopted in good faith, are non-discriminatory and designed and applied to protect the environment such that they are a legitimate exercise of Colombia's police powers and do not constitute indirect expropriation."

[482] **RL-0029**, *Crompton (Chemtura) Corp. v. Government of Canada*, PCA Case No. 2008-01, Award, 2 August 2010, ¶ 266. "A measure adopted under such circumstances is a valid exercise of the State's police powers and, as a result, does not constitute expropriation."

[483] **RL-0030**, *Koch Minerals Sàrl and Koch Nitrogen International Sàrl v. Bolivarian Republic of Venezuela*, ICSID Case No. ARB/11/19, Award, 30 October 2017, ¶ 7.19: "The bar for the Claimant's claims is thus high under international law, as confirmed by a '*jurisprudence constante*' established over many years." and 7.20: "Accordingly, the standard of review of a State's conduct to be undertaken by an international tribunal includes a significant measure of deference towards the State making the impugned measure. Such a tribunal cannot simply put itself in the position of the Sate and weigh the measure anew, particularly with hindsight."

[484] **CLA-0069**, *El Paso Energy International Company v. Argentine Republic*, ICSID Case No. ARB/03/15, Award, 31 October 2011, ¶ 240: "In sum, a general regulation is a lawful act rather than an expropriation if it is non-discriminatory, made for a public purpose and taken in conformity with due process. In other words, *in principle, general non-discriminatory regulatory measures, adopted in accordance with the rules of good faith and due process, do not entail a duty of compensation.*"

[485] **RL-0031**, *Les Laboratoires Servier, S.A.A., Biofarma, S.A.S., Arts et Techniques du Progres S.A.S. v. Republic of Poland*, UNCITRAL, Award, 14 February 2012, ¶¶ 569-584.

[486] **RL-0032**, *Bank Melli Iran and Bank Saderat Iran v. The Kingdom of Bahrain*, PCA Case No. 2017-25, Final Award, 9 November 2021, ¶ 631: "Indeed, if the administration and liquidation of Future Bank were a bona fide, non-discriminatory and proportionate answer to Future Bank's unlawful activities, such measures would not qualify as an expropriation and would therefore not give rise to the State's duty to provide compensation. To hold otherwise would entail that States could be held liable to pay compensation for enforcing their existing laws and regulations against the investor's wrongdoings."

[487] **RL-0033**, *Burlington Resources, Inc. v. Republic of Ecuador,* ICSID Case No. ARB/08/5, Decision on Liability, 14 December 2012, ¶ 471: "In fact, Ecuador has argued – and Burlington has not objected – that the following requirements needed to be met: […] (iii) a measure not justified under the police power doctrine ('a State may justify deprivations of private property on the basis of its police powers in order to promote the general welfare and enforce its laws on its territory.')" See also ¶ 473: "Pursuant to the standard set forth above, the Tribunal must ascertain whether the *coactiva* measures […] (iii) found no justification in the police powers doctrine."

[488] **RL-0034**, *Magyar Farming Company Ltd, Kintyre Kft and Inicia Zrt v. Hungary*, ICSID Case No. ARB/17/27, Award, 13 November 2019, ¶ 364: "Investment treaty jurisprudence recognizes that, in certain circumstances, a bona fide exercise of the State's right to regulate is exempt from the duty to provide compensation."

[489] **RL-0035**, *Oxus Gold plc v. Republic of Uzbekistan, the State Committee of Uzbekistan for Geology & Mineral Resources, and Navoi Mining & Metallurgical Kombinat*, Final Award, 17 December 2015, ¶¶ 741-742: "As a matter of principle, general regulations, even if having negative effect on an investor's property, are not to be considered as expropriatory. Several arbitral tribunals have restated this fundamental principle."

authorities. Since the 2020 Act aims to protect the environment and public health from the negative effects of climate change, the following summary of jurisprudence focuses on those decisions which addressed regulation for the protection of the environment and public health.

395. The seminal authority is the award by the tribunal in *Philip Morris v. Uruguay* presided by the late Judge Crawford. The tribunal had to decide whether Uruguay's new tobacco control legislation constituted an expropriation or a legitimate exercise of Uruguay's police powers. Two tobacco control measures were at the heart of the dispute: (i) the so-called 'Single Presentation Requirement', an ordinance by the Health Ministry that precluded all tobacco manufacturers to advertise more than one type of cigarette out of their brand family (prohibiting Philip Morris to advertise for Malboro Red and Gold at the same time) and (ii) the '80/80 Regulation' requiring that 80% of the front and backside of each cigarette package had to be covered with health warnings.

396. The tribunal rejected Philip Morris' expropriation claim. The *Philip Morris* tribunal found that Uruguay had the right to adopt new regulation aimed at the protection of public health. The tribunal found that "*[p]rotecting public health has since long been recognized as an essential manifestation of the State's police power*".[490] The tribunal also considered that both the Single Presentation Requirement and the 80/80 Regulation were rooted in national and international obligations by Uruguay to protect public health. Accordingly, the measures were taken *bona fide* for the purpose of protecting the public welfare.[491] After many paragraphs of analysis of the sources of international law the award concluded:

> "The principle that the State's reasonable bona fide exercise of police powers in such matters as the maintenance of public order, health or morality, excludes compensation even when it causes economic damage to an investor and that the measures taken for that purpose should not be considered as expropriatory did not find immediate recognition in investment treaty decisions. But a consistent trend in favor of differentiating the exercise of police powers from indirect expropriation emerged after 2000. […]
>
> In light of the foregoing, the Tribunal concludes that the Challenged Measures were a valid exercise by Uruguay of its police powers for the protection of public health. As such, they cannot constitute an expropriation of the Claimants' investment. For this reason also, the

[490] **CLA-0028**, *Philip Morris Brand SARL, Philip Morris Products S.A. and Abal Hermanos S.A. v. Oriental Republic of Uruguay*, ICSID Case No. ARB/10/7, Award, 8 July 2016, ¶ 291.

[491] **CLA-0028**, *Philip Morris Brand SARL, Philip Morris Products S.A. and Abal Hermanos S.A. v. Oriental Republic of Uruguay*, ICSID Case No. ARB/10/7, Award, 8 July 2016, ¶¶ 305-306.

> Claimants' claim regarding the expropriation of their investment must be rejected."[492]

397. In *Magyar Farming v. Hungary*, the tribunal had to decide on the abolition of a statutory 'pre-lease right' for Hungarian potato and dairy farms. While prior to the legislative change the claimant had been able to secure farm leases by matching the offer of a bidding third party, the new legislation led to several farm licenses previously held by claimant to be awarded to local farmers. The tribunal presided by Professor Kaufmann-Kohler held explicitly that both existing and new regulations are covered by the police powers doctrine:

> "This being so, a review of investment awards shows that measures annulling rights of the investor – as in the present case – can be exempt from the otherwise applicable duty of compensation only in a narrow set of circumstances. These circumstances can be categorized in two broad groups:
>
> • First, the exemption from compensation may apply to generally accepted measures of police powers that aim at enforcing existing regulations against the investor's own wrongdoings […]
>
> • The second group consists of regulatory measures aimed at abating threats that the investor's activities may pose to public health, environment or public order. This line of case law relates to measures such as the prohibition of harmful substances, tobacco plain packaging, or the imposition of emergency measures in times of political or economic crises."[493]

398. In *Eco Oro Minerals v. Colombia*, a Canadian mining company challenged Colombia's designation of a large portion of its mining concession as a protected ecological area. Colombia enacted this regulation because the area was deemed as a vital source for water and biodiversity. The tribunal confirmed that such a new regulation enacted for the protection of the environment falls within a State's police powers doctrine:

> "[I]t cannot be disputed that the Challenged Measures were for the protection of the environment. […] [T]he Challenged Measures were non-discriminatory and designed and applied to protect a legitimate public welfare objective, namely the protection of the environment. They were adopted in good faith. The Challenged Measures were therefore a legitimate exercise by Colombia of its police powers […]."[494]

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[492] **CLA-0028**, *Philip Morris Brand SARL, Philip Morris Products S.A. and Abal Hermanos S.A. v. Oriental Republic of Uruguay*, ICSID Case No. ARB/10/7, Award, 8 July 2016, ¶¶ 295, 307.

[493] **RL-0034**, *Magyar Farming Company Ltd, Kintyre Kft and Inicia Zrt v. Hungary*, ICSID Case No. ARB/17/27, Award, 13 November 2019, ¶ 366.

[494] **RL-0028**, *Eco Oro Minerals Corp. v. Republic of Colombia*, ICSID Case No. ARB/16/41, Decision on Jurisdiction, Liability and Directions on Quantum, 9 September 2021, ¶¶ 636 and 642.

399. Similarly, in *Feldmann v. Mexico*, the tribunal found that the enactment of new regulations, including for the protection of the environment, falls within a State's police powers:

> "At the same time, governments must be free to act in the broader public interest through protection of the environment, new or modified tax regimes, the granting or withdrawal of government subsidies, reductions or increases in tariff levels, imposition of zoning restrictions and the like. Reasonable governmental regulation of this type cannot be achieved if any business that is adversely affected may seek compensation, and it is safe to say that customary international law recognizes this."[495]

400. The *Feldman* tribunal particularly acknowledged the State's right to change its laws and regulations over time to adapt to changing circumstances. A foreign investor must anticipate that such changes may occur as part of its investment risk:

> "[N]ot all government regulatory activity that makes it difficult or impossible for an investor to carry out a particular business, change in the law or change in the application of existing laws that makes it uneconomical to continue a particular business, is an expropriation under Article 1110. Governments, in their exercise of regulatory power, frequently change their laws and regulations in response to changing economic circumstances or changing political, economic or social considerations. Those changes may well make certain activities less profitable or even uneconomic to continue."[496]

401. In *Chemtura v. Canada*, a U.S. manufacturer of lindane, an agricultural insecticide, claimed that Canada had violated its rights under the NAFTA when prohibiting the sale of lindane. Lindane is considered to be harmful to human health and the environment. Consequently, Canada banned lindane because it was said to be harmful to human health and the environment. The tribunal rejected *Chemtura*'s expropriation claim and found the police powers doctrine to be applicable:

> "Irrespective of the existence of a contractual deprivation, the Tribunal considers in any event that the measures challenged by the Claimant constituted a valid exercise of the Respondent's police powers. As discussed in detail in connection with Article 1105 of NAFTA, the PMRA took measures within its mandate, in a non-discriminatory manner, motivated by the increasing awareness of the dangers presented by lindane for human health and the environment. A measure adopted under such

[495] **RL-0022**, *Marvin Roy Feldman Karpa v. United Mexican States*, ICSID Case No. ARB(AF)/99/1, Award, 16 December 2002, ¶ 104.

[496] *Id.*, ¶ 112.

> circumstances is a valid exercise of the State's police powers and, as a result, does not constitute an expropriation."[497]

c. The legislator has a wide margin of appreciation

402. In the assessment of the police powers doctrine's requirements, States must be afforded a significant margin of appreciation when enacting regulations in the exercise of their police powers. This margin of appreciation must be particularly wide for regulations enacted by the legislator. This is for four reasons:

403. *First*, an investment tribunal is not a regulator. Their primary role is to resolve disputes, not to shape regulatory frameworks.

404. *Second*, unlike the legislative branch of the government, *i.e.* parliament, an investment tribunal lacks democratic legitimacy. Unlike the legislator, an investment tribunal is not composed of democratically elected representatives. Allowing an investment tribunal to heavily scrutinize legislative decisions would undermine the will of the electorate and fundamental principles of democratic governance.

405. *Third*, expanding the tribunal's review power over legislative acts would pose a risk to disrupt the balance of powers between the executive, legislative, and judicial branches. A tribunal's role should be limited to enforcing treaty obligations, not second-guessing sovereign law-making.

406. *Fourth*, States must retain the ability to regulate in the public interest without undue interference from investment tribunals. Excessive tribunal review could discourage governments from enacting necessary measures to protect public health and the environment.

407. The legislator's wide margin of appreciation in the context of the police powers doctrine is confirmed by numerous authorities. To begin with the late James Crawford's work in *Brownlie's Principles on International Law*:

> "**The margin of appreciation**
>
> This takes the form of a legal discretion which recognizes that the respondent state can be presumed to be best qualified to appreciate the necessities of a particular situation affecting it. […] Nonetheless,

[497] **RL-0029**, *Crompton (Chemtura) Corp. v. Government of Canada*, PCA Case No. 2008-01, Award, 2 August 2010, ¶ 266.

> something like it is inevitable if we are not to have government by judiciary or – in the international context – by quasi-judiciary."[498]

408. Numerous investment tribunals have confirmed the State's margin of appreciation for regulatory measures. In *Philip Morris v. Uruguay*, the margin of appreciation was confirmed by the majority of the tribunal in the context of the claimant's FET claim:

> "The Tribunal agrees with the Respondent that the 'margin of appreciation' is not limited to the context of the ECHR but 'applies equally to claims arising under BITs,' at least in contexts such as public health. The responsibility for public health measures rests with the government and investment tribunals should pay great deference to governmental judgments of national needs in matters such as the protection of public health."[499]

409. This reasoning is equally applicable to a claim for expropriation. As under the FET standard, the public welfare and public interest is an important consideration for determining a regulatory measure pursuant to the police powers doctrine.

410. Turning to further decisions by investment tribunals, a margin of appreciation was also confirmed in *Saluka v. Czech Republic* with regard to the investor's FET claim:

> "Even though Article 3 obviously leaves room for judgment and appreciation by the Tribunal, it does not set out totally subjective standards which would allow the Tribunal to substitute, with regard to the Czech Republic's conduct to be assessed in the present case, its judgment on the choice of solutions for the Czech Republic's."[500]

411. In *Invesmart v. Czech Republic*, the tribunal affirmed this same reasoning:

> "Numerous tribunals have held that when testing regulatory decisions against international law standards, the regulators' right and duty to regulate must not be subjected to undue second-guessing by international tribunals. Tribunals need not be satisfied that they would have made precisely the same decision as the regulator in order for them to uphold such decisions."[501]

412. Also in *Kardassopoulos v. Georgia*, the tribunal held that the State must be accorded deference when assessing whether a measure of expropriation was in the Georgian public

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[498] **RL-0036**, James Crawford, *Brownlies Principles of Public International Law,* (9th edn., OUP 2019), p. 640.

[499] **CLA-0028**, *Philip Morris Brand SARL, Philip Morris Products S.A. and Abal Hermanos S.A. v. Oriental Republic of Uruguay*, ICSID Case No. ARB/10/7, Award, 8 July 2016, ¶ 399.

[500] **RL-0020**, *Saluka Investments BV v. The Czech Republic*, PCA Case No. 2001-04, Partial Award, 17 March 2006, ¶ 284.

[501] **RL-0021**, *Invesmart, B.V. v. Czech Republic*, UNCITRAL, Award, 26 June 2009, ¶ 501.

interest.[502] In the same vein, the tribunal in *LIAMCO v. Libya* held that "*[m]otives are indifferent to international law, each State being free 'to judge for itself what it considers useful or necessary for the public good [...].*"[503]

413. Indeed, the State's motives must be considered when assessing the extent of the margin of appreciation. This understanding results in the following simple formula: The greater the importance of the protected public interests and the greater the danger to such interests, the wider the State's margin of appreciation.

d. The Paris Agreement requires an even greater margin of appreciation

414. The necessity for climate action is a particularly important public interest and, therefore, requires an extraordinary margin of appreciation. The Paris Agreement, *i.e.* a treaty norm binding for both Germany, Switzerland, and hundreds of other States, obligates the signatories to take climate-action measures. To re-state the key articles:

> "Article 2
>
> 1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:
>
> (a) Holding the increase in the global average temperature to well below 2ºC above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change; […]
>
> Article 3
>
> As nationally determined contributions to the global response to climate change, all Parties are to undertake and communicate ambitious efforts […]. The efforts of all Parties will represent a progression over time, while recognizing the need to support developing country Parties for the effective implementation of this Agreement.
>
> Article 4
>
> 1. In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of [GHG] emissions as soon as

[502] **CLA-0034**, *Ioannis Kardassopoulos v. The Republic of Georgia*, ICSID Case No. ARB/05/18, Award, 3 March 2010, ¶ 391: "Beginning with the first criterion, the Tribunal finds that, on all the evidence, it is arguable that the expropriation of Mr. Kardassopoulos' rights was in the Georgian public interest. As the Claimants acknowledge, the Respondent is entitled to a measure of deference in this regard."

[503] **RL-0037**, *Libyan American Oil Company v. The Government of the Libyan Arab Republic*, Award, 12 April 1977, ¶ 241: "Motives are indifferent to international law, each State being free 'to judge for itself what it considers useful or necessary for the public good.'"

> possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of [GHG] in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty.
>
> 2. Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions."[504]

415. A great margin of appreciation for climate-action measures is also in compliance with the ECT.

416. Article 24(2) lit. i ECT acknowledges:

> "The provisions of this Treaty […] shall not preclude any Contracting Party from adopting or enforcing any measure (i) necessary to protect human, animal or plant life or health."

417. Furthermore, Article 19 ECT is an entire Article on States' rights to act in favour of environmental aspects. It states, *inter alia*:

> "In pursuit of sustainable development and taking into account its obligations under those international agreements concerning the environment to which it is party, each Contracting Party shall strive to minimize in an economically efficient manner harmful Environmental Impacts […]."

418. Finally, the ECT's preamble states that the ECT recognizes the United Nations Framework Convention on Climate Change. The is the very Framework Convention under which the Paris Agreement (just as the Kyoto Protocol) was concluded.[505]

419. In conclusion, the Paris Agreement and the ECT require to afford State a great margin of appreciation in the context of the police powers doctrine already established under customary international law. A measure that implements obligations under the Paris Agreement cannot trigger compensation duties. Otherwise, the risk of liability may create a chilling effect.

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[504] **RL-0003**, United Nations Treaty Collection Chapter XXVII 7 d., Paris Agreement, Articles 2(1)(a), 3, 4(1) and (2).

[505] **CLA-0002**, Energy Charter Treaty, Preamble.

e. Human rights require regulation to mitigate climate change

420. The adverse impact of climate change on human health and the environment also has a significant negative impact on human rights. Therefore, climate change measures adopted by a State are measures directed at the protection of human rights. Therefore, States must be afforded an even greater right to regulate in favour of climate action.

421. The authorities recognizing that climate action is required to protect international human rights are the following:

(i) European Court of Human Rights

422. In its judgment of 9 April 2024, the ECtHR found that Switzerland had violated its positive obligation under Article 8[506] of the ECHR by not adopting the required domestic regulatory framework to quantify and limit GHG emissions.[507]

423. The ECtHR found in clear terms that climate change adversely impacts human rights, including Article 8 of the ECHR:

> "In sum, on the basis of the above findings, the Court will proceed with its assessment of the issues arising in the present case by taking it as a matter of fact that there are sufficiently reliable indications that anthropogenic climate change exists, that it poses a serious current and future threat to the enjoyment of human rights guaranteed under the Convention, that States are aware of it and capable of taking measures to effectively address it, that the relevant risks are projected to be lower if the rise in temperature is limited to 1.5°C above pre-industrial levels and if action is taken urgently, and that current global mitigation efforts are not sufficient to meet the latter target."[508]

[506] **RL-0038**, European Convention on Human Rights, Article 8: "(1) Everyone has the right to respect for his private and family life, his home and his correspondence. (2) There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others."

[507] **RL-0039**, *Verein Klimaseniorinnen Schweiz and others v. Switzerland*, European Court of Human Rights, Application no. 53600/20, Judgment of the Grand Chamber, 9 April 2024, ¶¶ 573-574: "In conclusion, there were some critical lacunae in the Swiss authorities' process of putting in place the relevant domestic regulatory framework, including a failure by them to quantify, through a carbon budget or otherwise, national GHG emissions limitations. Furthermore, the Court has noted that, as recognised by the relevant authorities, the State had previously failed to meet its past GHG emission reduction targets. By failing to act in good time and in an appropriate and consistent manner regarding the devising, development and implementation of the relevant legislative and administrative framework, the respondent State exceeded its margin of appreciation and failed to comply with its positive obligations in the present context. The above findings suffice for the Court to find that there has been a violation of Article 8 of the Convention." (references omitted).

[508] *Id.*, ¶ 436.

> "[…] Article 8 must be seen as encompassing right for individuals to effective protection by the State authorities from serious adverse effects of climate change on their life, health, well-being and quality of life to put in place the relevant regulatory framework to quantify and limit the national GHG emissions."[509]

424. The ECtHR also found that States, in this case Switzerland, have a positive obligation to protect human rights against climate change:

> "Accordingly, the State's obligation under Article 8 is to do its part to ensure such protection. In this context, the State's primary duty is to adopt, and to effectively apply in practice, regulations and measures capable of mitigating the existing and potentially irreversible, future effects of climate change. This obligation flows from the causal relationship between climate change and the enjoyment of Convention rights […] and the fact that the object and purpose of the Convention, as an instrument for the protection of human rights, requires that its provisions must be interpreted and applied such as to guarantee rights that are practical and effective, not theoretical and illusory […].
>
> In line with the international commitments undertaken by the member States, most notably under the UNFCCC and the Paris Agreement, and the cogent scientific evidence provided, in particular, by the IPCC […], the Contracting States need to put in place the necessary regulations and measures aimed at preventing an increase in GHG concentrations in the Earth's atmosphere and a rise in global average temperature beyond levels capable of producing serious and irreversible adverse effects on human rights, notably the right to private and family life and home under Article 8 of the Convention."[510]

(ii) General Assembly of the United Nations

425. On 28 July 2021, the General Assembly of the United Nations adopted Resolution 76/300.[511] The Resolution recognizes the right to a clean, healthy, and sustainable environment as a human right. The preamble and the four operative parts state:

> "[A] vast majority of States have recognized some form of the right to a clean, healthy and sustainable environment through international agreements, their national constitutions, legislation, laws or policies."[512]
>
> "1. Recognizes the right to a clean, healthy and sustainable environment as a human right;

[509] *Id*., ¶ 519.

[510] *Id*., ¶¶ 545-546 (references omitted).

[511] **RL-0040**, UN Resolution 76/300, 76th session, 97th plenary meeting of 28 July 2022.

[512] **RL-0040**, UN Resolution 76/300, 76th session, 97th plenary meeting of 28 July 2022, Preamble.

> 2. Notes that the right to a clean, healthy and sustainable environment is related to other rights and existing international law;
>
> 3. Affirms that the promotion of the human right to a clean, healthy and sustainable environment requires the full implementation of the multilateral environmental agreements under the principles of international environmental law;
>
> 4. Calls upon States, international organizations, business enterprises and other relevant stakeholders to adopt policies, to enhance international cooperation, strengthen capacity-building and continue to share good practices in order to scale up efforts to ensure a clean, healthy and sustainable environment for all."[513]

426. Importantly, this Resolution was adopted by the overwhelming majority of 161 of the 169 present UN Member States. Switzerland also voted in favour.[514]

(iii) Secretary General of the United Nations

427. In 2009, the Secretary General recognized the connection between the protection of the environment and human rights:

> "The United Nations human rights treaty bodies all recognize the intrinsic link between the environment and the realization of a range of human rights, such as the right to life, to health, to food, to water and to housing."[515]

428. In 2022, the Secretary General explicitly expressed that with regard to climate change, States have an obligation to take action to protect people from the adverse effect on human rights:

> "The nine core international human rights instruments set forth binding legal obligations on the States that are party to them, including some that are relevant to climate change. In the context of climate change, fulfilling these obligations may require States to, among other things, take action to protect people against climate change-related harms that impact on the enjoyment of human rights and to implement inclusive climate policies. Climate action should empower people in vulnerable situations, ensuring their full and effective participation as rights holders."[516]

[513] *Id*., Operative Parts.

[514] **R-0162**, Official Records A/76/PV.97, United Nations General Assembly 97th Plenary Meeting, 28 July 2022, adobe p. 11.

[515] **R-0163**, Report of the Secretary-General to the General Assembly A/64/350, Climate change and its possible security implications, 11 September 2009, ¶ 14.

[516] **R-0164**, Report of the Secretary General A/HRC/50/57, The impacts of climate change on the human rights of people in vulnerable situations, 6 May 2022, ¶ 19.

(iv) United Nations Human Rights Council

429. On 23 March 2008, the United Nations Human Rights Council ("**UNHRC**") adopted Resolution 7/23, recognizing that "*climate change poses an immediate and far-reaching threat to people and communities around the world and has implications for the full enjoyment of human rights*."[517] This Resolution was subsequently followed by a significant number of further resolutions and special procedures, recognizing the adverse impact of climate change on human rights.[518]

(v) United Nations Human Rights Committee

430. The UN Human Rights Committee, the UN treaty body responsible for monitoring the International Covenant on Civil and Political Rights (one of the UN's nine core human rights

[517] **RL-0041**, Human Rights Council Resolution 37/8, adopted on 22 March 2018, p. 1.

[518] **RL-0042**, Human Rights Council Resolution 10/4, adopted on 25 March 2009, p. 1: "*Noting* that climate change-related impacts have a range of implications, both direct and indirect, for the effective enjoyment of human rights including, inter alia, the right to life, the right to adequate food, the right to the highest attainable standard of health, the right to adequate housing, the right to self-determination and human rights obligations related to access to safe drinking water and sanitation, and recalling that in no case may a people be deprived of its own means of subsistence, […]"; **RL-0043**, Human Rights Council Resolution 18/22, adopted on 17 October 2011, p. 3: "*Affirming* that human rights obligations, standards and principles have the potential to inform and strengthen international and national policymaking in the area of climate change, promoting policy coherence, legitimacy and sustainable outcomes […]"; **RL-0044**, Human Rights Council Resolution 26/27, adopted on 27 June 2014, p. 4: "*Calls* upon all States to continue to enhance international dialogue and cooperation in relation to the adverse impact of climate change on the enjoyment of human rights, including the right to development, particularly in developing countries, especially least developed countries, small island developing States and African countries, including through dialogue and measures, such as the implementation of practical steps to promote and facilitate capacity-building, financial resources and technology transfer; […]"; **RL-0045**, Human Rights Council Resolution 29/15, 29th session, adopted on 2 July 2015, pp. 2-3, calling for a panel discussion and analytical study on the impacts of climate change on the enjoyment of the right to health; **RL-0046**, Human Rights Council Resolution 32/33, adopted on 1 July 2016, p. 4, urging parties to integrate human rights in climate change mitigation and adaptation and calling for a panel discussion on the adverse impact of climate change on the rights of the child; **RL-0047**, Human Rights Council Resolution 35/20, adopted on 22 June 2017, p. 5, calling for the protection and promotion of the human rights of migrants and persons displaced across international borders in the context of the adverse impact of climate change; **RL-0048**, Human Rights Council Resolution 38/4, adopted on 5 July 2018, p. 5, requesting an analytical study and panel discussion on the integration of gender-responsive approaches into climate policies; **RL-0049**, Human Rights Council Resolution 41/21, adopted on 12 July 2019, p. 2, recognizing the disproportionate effect of the negative impacts of climate change on the rights of persons with disabilities; **RL-0050**, Human Rights Council Resolution 44/7, adopted on 16 July 2020, p. 3, recognizing the disproportionate effect of the negative impacts of climate change on the rights of older persons; **RL-0051**, Human Rights Council Resolution 47/24, adopted on 14 July 2021, pp. 2-3, recognizing the disproportionate effect of the negative impacts of climate change on the rights of persons in vulnerable situations; **RL-0052**, Human Rights Council Resolution 48/13, adopted on 8 October 2021, pp. 2, 3: "[The HRC] [r]ecognizes the right to a clean, healthy and sustainable environment as a human right that is important for the enjoyment of human rights [...]."; **RL-0053**, Human Rights Council Resolution 50/9, adopted on 7 July 2022, p. 3, recognizing the adverse impact of climate change on the realization of the right to food; **RL-0054**, Human Rights Council Resolution 53/6, adopted on 12 July 2023, p. 6: "deep and rapid cuts in global emissions to avert, minimize and address loss and damage from sudden and slow-onset climate events that have an adverse impact on the enjoyment of human rights". See also **R-0165**, Report of the Office of the United Nations High Commissioner for Human Rights on the relationship between climate change and human rights, 10th session A/HRC/10/61, 15 January 2009; **RL-0055**, Universal Declaration of Human Rights.

instruments), accepted specific obligations related to climate change from the right to life stipulated in Article 6 of the Covenant.[519] In its 2019 General Comment No. 36, it stated:

> "Environmental degradation, climate change and unsustainable development constitute some of the most pressing and serious threats to the ability of present and future generations to enjoy the right to life. The obligations of States parties under international environmental law should thus inform the content of article 6 of the Covenant, and the obligation of States parties to respect and ensure the right to life should also inform their relevant obligations under international environmental law. Implementation of the obligation to respect and ensure the right to life, and in particular life with dignity, depends, inter alia, on measures taken by States parties to preserve the environment and protect it against harm, pollution and climate change caused by public and private actors."[520]

(vi) Interim conclusion on the legal standard

431. In conclusion, the police powers doctrine is a rule of customary international law. It applies to additional regulations. Its requirements must be assessed with deference to the legislator's margin of appreciation, particularly given the climate-change and human rights dimension of the 2020 Act.

f. The 2020 Act is a *bona fide* act in the public interest of general application

432. The 2020 Act meets the requirements of the police powers doctrine because it is a *bone fide* act in the public interest of general application. The 2020's regulatory purpose is to reduce CO_2 emissions to protect the general public from a further aggravation of global warming and its severe, negative consequences. Section 2 of the 2020 Act confirms as much:

> "The purpose of this Act is to reduce and end the generation of electrical power via the use of coal in Germany in a socially acceptable, gradual and as far as possible steady way in order to reduce emissions and thus ensure a secure, affordable, efficient and climate-friendly supply of electricity for all."

433. Claimant also confirms that the 2020 Act "*aims to reduce CO2 emissions*".[521] Claimant also explicitly confirms that the 2020 Act aims to combat climate change. Therefore, the legitimate public purpose of the 2020 Act cannot reasonably be contested by Claimant in light

[519] **RL-0056**, International Covenant on Civil and Political Rights, Article 6(1): "Every human being has the inherent right to life. This right shall be protected by law. No one shall be arbitrarily deprived of his life."

[520] **RL-0057**, UN Human Rights Committee, General Comment No. 36 on Article 6 of 3 September 2019, ¶ 62.

[521] Claimant's Memorial, ¶ 183: "Although the Coal Ban Law aims to reduce CO2 emissions […]."

of its Memorial submissions.[522] For the avoidance of doubt, Respondent refers to the Facts sections II.C and II.D above showing that (i) a long-list of unchallenged measures recognize the need to CO_2 emissions in the interest of climate action and (ii) that the 2020 Act aims at reducing CO_2 emissions through phase-out paths for hard-coal plants.

2. The 2020 Act is not discriminatory

434. Contrary to Claimant's allegations, the 2020 Act is not discriminatory.

a. Legal standard

435. Regarding its alleged expropriation claim, Claimant does not specify the legal standard. Claimant only refers to its alleged claim under Article 10(1) sentence 3 ECT.[523] For context, the latter provision states: "*[…] no Contracting Party shall in any way impair by unreasonable or discriminatory measures their management, maintenance, use, enjoyment or disposal*." Respondent agrees that the standard of discrimination regarding expropriation assessments entails no obligations beyond what is already required under Article 10(1) sentence 3 ECT. If anything, the burden for a claimant to prove discrimination must be higher. In detail:

436. *First*, under Article 10(1) sentence 3 ECT that Claimant relies on, the onus of proving a discrimination is on Claimant. This was confirmed in *e.g.* the ECT awards in *Parkerings v. Lithuania* and *Pawloski v. Czech Republic*.[524] That same onus must apply in expropriation cases because Claimant conceded that Article 10(1) sentence 3 ECT informs Article 13 ECT.

437. *Second*, as formulated in *Plama v. Bulgaria*, a discrimination claim requires the claimant to prove:

> "like persons being treated in a different manner in similar circumstances without reasonable or justifiable grounds."[525]

[522] *Id*., ¶ 329: "Thus, the fact that the Coal Ban Law aims at combatting climate change and serves a legitimate public purpose, is irrelevant to the decision whether the measure constitutes indirect expropriation."

[523] *Id*., ¶ 364.

[524] **RL-0058**, *Parkerings-Compagniet AS v. Lithuania*, ICSID Case No. ARB/05/8, Award, 11 September 2007, ¶ 393; **CLA-0098**, *Pawlowski AG and Project Sever s.r.o. v. Czech Republic*, ICSID Case No. ARB/17/11, Award, 1 November 2021, ¶ 535.

[525] **CLA-0016**, *Plama Consortium Limited v. Republic of Bulgaria*, ICSID Case No. ARB/03/24, Award, 27 August 2008, ¶ 184.

438. The tribunal in *Parkerings v. Lithuania* (Professor Laurent Lévy presiding, The Hon. Marc Lalonde, Professor Julian D.M. Lew) held that reasonable or justifiable grounds for a differentiation necessarily entail that investors are not in like circumstances:

> "[T]he situation of the two investors will not be in like circumstances if a justification of the different treatment is established." [526]

439. *Third*, the host State has a broad margin of appreciation regarding the assessment whether like circumstances or a reasonable/justifiable ground for a distinction exist. In *Pawlowski v. Czech Republic*, a real-estate investor complained that the Czech Republic had defined different zones in which different rules applied to construction projects. The tribunal found that the State had a "*margin of discretion*" when it came to formulating these zones:

> "In establishing and amending zoning rules, municipal authorities take into consideration a variety of geographical, environmental and social reasons, and in weighing these factors they must enjoy a certain margin of discretion. The authorisation granted to develop a certain plot of agricultural land situated in Prague Komorany, does not of itself imply discrimination against Projekt Sever if its agricultural land in Benice is denied similar treatment; each project has its own characteristics, each project is situated in another environment and these differences can legitimately influence the authorities' decision."[527]

440. Regarding an expropriation claim under NAFTA Chapter 11, the tribunal in *GAMI v. Mexico* (Professor Jan Paulsson, Mr. Julio Lacarte Muró, Professor Michael Reisman) confirmed that a plausible connection with a legitimate goal of policy is sufficient even if the host State was "*misguided*" and "*clumsy*" in the application of that policy:

> "The Government may have been misguided. That is a matter of policy and politics. The Government may have been clumsy in its analysis of the relevant criteria for the cutoff [*sic*] line between candidates and non-candidates for expropriation. Its understanding of corporate finance may have been deficient. But ineffectiveness is not discrimination. The arbitrators are satisfied that a reason exists for the measure which was not itself discriminatory. That measure was plausibly connected with a legitimate goal of policy (ensuring that the sugar industry was in the hands of solvent enterprises) and was applied neither in a discriminatory manner nor as a disguised barrier to equal opportunity."[528]

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[526] **RL-0058**, *Parkerings-Compagniet AS v. Lithuania*, ICSID Case No. ARB/05/8, Award, 11 September 2007, ¶ 375, see also ¶ 427. See also **CLA-0098**, *Pawlowski AG and Project Sever s.r.o. v. Czech Republic*, ICSID Case No. ARB/17/11, Award, 1 November 2021, ¶ 533.

[527] **CLA-0098**, *Pawlowski AG and Project Sever s.r.o. v. Czech Republic*, ICSID Case No. ARB/17/11, Award, 1 November 2021, ¶ 547.

[528] **RL-0059**, *GAMI Invs. Inc. v. United Mexican States*, UNCITRAL, Final Award, 15 November 2004, ¶ 114.

441. This wide margin of appreciation of host States regarding discrimination assessments is echoed in the jurisprudence of several tribunals, *e.g. Pope & Talbot* (requiring only "*a reasonable nexus to rational government policies*"[529]), *SD Myers* (requiring only a "*legitimate public policy measures that are pursued in a reasonable manner*"[530]), and *Feldman*.[531]

442. *Fourth*, if the host State already has as wide margin of appreciation regarding ordinary discrimination claims, this margin of discretion must apply *a fortiori* and, indeed, to an even greater extent regarding Respondent's police powers in the present case. As set out above, the climate-change dimension of the alleged Measure, particularly the Paris Agreement and international human rights require a great margin of appreciation for Respondent.[532]

b. Application

443. Under this legal standard, Claimant failed to discharge its onus that it would have been discriminated. The relevant evidence is the following:

444. *First*, it is undisputed that the 2020 Act does not target Claimant's as a foreign investor. Effects, if any, of the 2020 Act apply to the Lünen Plant as a whole. Claimant is only a minority investor in this Plant, together with a majority of domestic investors. Claimant presented no evidence that Respondent intended to treat Claimant any differently than domestic investors.

445. *Second*, it is undisputed that the 2020 Act's effects on the hard-coal plants with a comparable age as the Lünen Plant (the Westfalen and Moorburg plants) are the same as the effects on the Lünen Plant. The only difference is that, unlike the Lünen Plant, the Westfalen and Moorburg plants decided to participate in the auctions, whereas the Lünen Plant made the conscious decision not to participate in the auctions.[533]

446. *Third*, it is undisputed that the 2020 Act auction mechanism foresaw the same formula for all hard-coal power plants. Indeed, Claimant complains that the bids for all hard-coal plants

[529] **RL-0060**, *Pope & Talbot Inc. v. Government of Canada*, UNCITRAL, Award on the Merits of Phase 2, 10 April 2001, ¶ 78.

[530] **CLA-0105**, *S.D. Myers, Inc. v. Government of Canada*, UNCITRAL, First Partial Award, 13 November 2000, ¶ 246.

[531] **RL-0022**, *Marvin Roy Feldman Karpa v. United Mexican States*, ICSID Case No. ARB(AF)/99/1, Award, 16 December 2002, ¶¶ 170, 182: "a rational justification".

[532] See above, sect. IV.A.1.d and IV.A.1.e, ¶¶ 414-431.

[533] See above, sect. II.E.1, ¶¶ 243-247.

were assessed based on a formula considering the historical CO_2 emissions of the plants.[534] That is, Claimant's remaining allegation is not that the Lünen Plant *was* treated differently, but that it *should have* been treated differently than older hard-coal power plants in the auctions. Claimant's position is, again, erroneous. Since the formula is based on historical CO_2 emissions compared to MW installed capacity (not MWh production), the Lünen Plant already had an advantage because it had a higher production than older plants. In any case, the auction formula was a reasonable policy decision of the German legislator. Granting a 'special treatment' to some hard-coal power plants might have put the auctions at risk as set out in detail in the Witness Statement of Mr. Wellershoff.[535]

447. *Fourth*, regarding the Coal-Firing Stops after the auction-determined phase-out, it is undisputed that pursuant to the formula under the 2020 Act, all hard-coal power plants that are older than the Lünen Plant will receive their Coal-Firing Stop before the Lünen Plant. Claimant's only complaint in this regard is that the older plants had a longer lifetime. Again, this allegation is erroneous as Claimant's theory questions the entire phase-out path until 2038.

448. *Fifth*, Claimant's final allegation that "*[w]hen compared to the treatment of lignite-fired power plants, the treatment of new, highly efficient hard coal-fired power plants is also blatantly discriminatory*"[536] is erroneous. Lignite and hard-coal are two different industries. The reason is the mining perspective. In the interest of avoiding repetition, Claimant refers to the extensive evidence summarized in the Facts section above (sect. II.D.4, paras. 213-223). In conclusion, the 2020 Act is not discriminatory. Claimant's expropriation claim must be rejected because the 2020 Act is a legitimate exercise of Respondent's police powers.

3. In any case, the 2020 Act does not constitute an indirect expropriation

449. Even if the Tribunal would not apply the police powers doctrine (*quod non*), Claimant's expropriation claim must be rejected because, contrary to Claimant, the 2020 Act does not constitute an indirect expropriation of Claimant.

[534] Claimant's Memorial, ¶¶ 268-274.
[535] Wellershoff WS, ¶ 37.
[536] Claimant's Memorial, ¶ 508.

a. Legal standard

450. International law has set a very high threshold for establishing that an act of the State constitutes an expropriation. The alleged measure must have substantially deprived Claimant of its Investment. It is upon Claimant to prove that Respondent's intervention caused the Investment's 'neutralization', 'destruction', or 'virtual annihilation'. The mere diminution of value is insufficient for finding of an expropriation.

451. In *Tecmed v. Mexico*, the tribunal described the required intensity of State intervention to constitute an expropriation as a 'neutralization or destruction':

> "Therefore, it is understood that the measures adopted by a State, whether regulatory or not, are an indirect *de facto* expropriation if they are irreversible and permanent and if the assets or rights subject to such measure have been affected in such a way that '...any form of exploitation thereof...' has disappeared; i.e. the economic value of the use, enjoyment or disposition of the assets or rights affected by the administrative action or decision have been neutralized or destroyed."[537]

452. The requirement of a 'neutralization' was later confirmed by the tribunal in *CMS v. Argentina*:

> "The essential question is therefore to establish whether the enjoyment of the property has been effectively neutralized."[538]

453. Likewise, the tribunal in *CME v. Czech Republic* reaffirmed the requirement of an 'effective neutralization':

> "De facto expropriations or indirect expropriations, i.e. measures that do not involve an overt taking but that effectively neutralize the benefit of the property of the foreign owner, are subject to expropriation claims."[539]

454. The tribunal in *Corn Products International v. Mexico* required that "*[g]overnment measures which have a detrimental effect on an investor's markets, even if they are discriminatory […] are not expropriatory unless they have the effect of destroying the business in question*."[540]

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[537] **CLA-0082**, *Técnicas Medioambientales Tecmed, S.A. v. The United Mexican States*, ICSID Case No. ARB(AF)/00/2, Award, 29 May 2003, ¶ 116.

[538] **CLA-0045**, CMS *Gas Transmission Company v. The Argentine Republic*, ICSID Case No. ARB/01/8, Award, 12 May 2005, ¶ 262.

[539] **CLA-0095**, *CME Czech Republic BV v. Czech Republic*, Partial Award, UNCITRAL, 13 September 2001, ¶ 604.

[540] **RL-0061**, *Corn Products International, Inc. v. United Mexican States*, ICSID Case No. ARB (AF)/04/1 (NAFTA), Decision on Responsibility, 15 August 2008, ¶ 93.

455. In *Sempra Energy v. Argentina,* the tribunal required for an expropriation to occur that the value of the business must have been 'virtually annihilated':

> "Many of the measures discussed in the instant case have had a very adverse effect on the conduct of the business concerned. This is, however, again a question that the Treaty addresses in the context of other safeguards for protecting the investor. A finding of indirect expropriation would require more than adverse effects. It would require that the investor no longer be in control of its business operation, or that the value of the business have been virtually annihilated."[541]

456. The tribunal in *Glamis Gold v. United States* stated that "*the foundational threshold inquiry [is] whether the property or property right was in fact taken*."[542] The *Glamis Gold* tribunal explained that the test for this inquiry is whether the challenged measures "*substantially impaired the investor's economic rights, i.e. ownership, use or management of the business, by rendering them useless*."[543] Despite the adverse effect that the government measures in question had upon the investment in *Glamis Gold*, the tribunal held that there was no expropriation because the Claimant's investment still retained some value.[544]

457. As far as loss of value is concerned, Claimant's own counsel, Mr. Happ, explained in one of his publications, that the threshold is not met unless Respondent deprives Claimant of almost 100% of its investment:

> "Most tribunal seem to agree that expropriation can only occur where diminution in value is very close to 100 per cent."[545]

458. In *Foresight v. Spain*, the tribunal held that an 83% deprivation of the investor's equity investment is insufficient to constitute an expropriation:

> "The Claimants contend that 83% of the value of their equity investment in the companies that own the PV facilities has been destroyed as a result of the disputed measures. This, the Claimants submit, amounts to a substantial deprivation, or 'substantial interference', and thus constitutes an expropriation of their investment. […]

[541] **RL-0062**, *Sempra Energy International v. Argentine Republic*, ICSID Case No. ARB/02/16, Award, 28 September 2007, ¶ 285 (award annulled on other grounds).

[542] **RL-0063**, *Glamis Gold Ltd. v. United States of America*, Award, 8 June 2009, ¶ 356.

[543] *Id*., ¶ 357.

[544] *Id*., ¶¶ 535-536

[545] **RL-0064**, R. Happ and N. Rubins, Digest of ICSID Awards and Decisions 2003-2007 (2009), adobe p. 31.

> The Majority of the Tribunal accepts that the Claimants have suffered serious financial losses as a result of the disputed measures. But this is not enough to sustain an expropriation claim."[546]

459. Indeed, in *LG&E v. Argentina*, one of the authorities on which Claimant relies to support its allegations, the tribunal held that even a reduction of 90% of the investment's value is insufficient to amount to an expropriation:

> "LG&E articulates its expropriation claim as one of indirect expropriation. In other words, LG&E argues that the Argentine Government's treatment of Claimants' investment in the Licensees constitutes an indirect expropriation of the investments because the value of LG&E's holdings in the Licenses has been reduced by more than 90% as a result of Respondent's abrogation of the principal guarantees of the tariff system […].
>
> Thus, the effect of the Argentine State's actions has not been permanent on the value of the Claimants' shares, and Claimants' investment has not ceased to exist. Without a permanent, severe deprivation of LG&E's rights with regard to its investment, or almost complete deprivation of the value of LG&E's investment, the Tribunal concludes that these circumstances do not constitute expropriation."[547]

460. In addition, the tribunal in *El Paso v. Argentina*, after confirming the findings in *LG&E v. Argentina*,[548] held that the mere loss of value of an investment is insufficient to constitute an expropriation:

> "In conclusion, the Tribunal, consistently with mainstream case-law, finds that for an expropriation to exist, the investor should be substantially deprived not only of the benefits, but also of the use of his investment. A mere loss of value, which is not the result of an interference with the control or use of the investment, is not an indirect expropriation."[549]

461. The tribunal in *Venezuela Holdings v. Venezuela* even required a total loss of value:

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[546] **CLA-0065**, *Foresight Luxembourg Solar 1 S.À.R.L. and others v. Kingdom of Spain*, SCC Case No. 2015/150, Final Award, 14 November 2018, ¶¶ 428, 430.

[547] **CLA-0024**, *LG&E Energy Corp., LG&E Capital Corp., and LG&E International, Inc. v. Argentine Republic*, ICSID Case No. ARB/02/1, Decision on Liability, 3 October 2006, ¶¶ 177, 200.

[548] **CLA-0069**, *El Paso Energy International Company v. Argentine Republic*, ICSID Case No. ARB/03/15, Award, 31 October 2011, ¶ 255: "Finally, it is worth mentioning that in all the Argentinian cases decided so far, the loss in value of the investment was not considered a sufficient basis for a finding of expropriation, even where the loss was quite significant and comparable to the losses claimed in the present case by El Paso. In LG&E, for example, although according to the claimant the value of LG&E's holdings in the licenses had been reduced by more than 90% as a result of Respondent's abrogation of the principal guarantees of the tariff system, the tribunal did not find an expropriation, as the measures themselves did not interfere 'with the investment's ability to carry on its business,' even though the profits were drastically diminished."

[549] **CLA-0069**, *El Paso Energy International Company v. Argentine Republic*, ICSID Case No. ARB/03/15, Award, 31 October 2011, ¶ 256.

> "The Tribunal considers that, under international law, a measure which does not have all the features of a formal expropriation may be equivalent to an expropriation if it gives rise to an effective deprivation of the investment as a whole. Such a deprivation requires either a total loss of the investment's value or a total loss of control by the investor of its investment, both of a permanent nature."[550]

b. Application

462. The 2020 Act is far from neutralizing any alleged Investment for the following reasons:

463. *First*, Claimant presents its Investment as a "*power plant slice*"[551] of the Lünen Plant. As set out above, the Lünen Plant has already and will continue to generate hundreds of millions for the banks who have provided the debt capital to the Lünen Plant.[552] It was Claimant's and its co-shareholders' choice to leverage the Lünen Plant with approx. 90% debt. Respondent is not responsible for this choice. Nor could Respondent practically look at the debt-equity ratios of all hard-coal power plants on the market.

464. *Second*, the 2020 Act does not deprive Claimant of its property title. To summarize the above, Claimant has already conceded that:

- the Lünen Plant could operate beyond 2031 if converted to natural gas;
- the maximum costs for a conversion would be only EUR 38-47 mil. for the entire power plant (not just for Claimant's shareholding);[553]
- such conversion would result in average annual profits of at least EUR 35.9 mil. per year;[554] and
- the conversion into a gas power plant would result in at least a EUR 13.9 mil. profit for Claimant.[555]

465. Moreover, the engineering experts Mr. Wünsch and Mr. Dambeck conclude that the one conversion option acknowledged by Claimant will be cheaper and more efficient. Further they

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[550] **RL-0065**, *Venezuela Holdings, B.V., et al (case formerly known as Mobil Corporation, Venezuela Holdings, B.V., et al.) v. Bolivarian Republic of Venezuela*, ICSID Case No. ARB/07/27, Award, 9 October 2014, ¶ 286.

[551] Claimant's Memorial, p. 38 (Heading 3: "Claimant operates a 'power plant slice'")

[552] See above, sect. II.B.3, ¶¶ 128-132.

[553] Claimant's Memorial, ¶ 614.

[554] Frontier ER I, Table 2.

[555] Secretariat ER I, ¶ 6.30.

show that there are further conversion options such as adding a gas turbine to the current steam turbine.[556]

466. But even taking the EUR 13.9 mil. increase in value for Claimant's share as acknowledged by Claimant, already this increase is more than the entire alleged fair market value of Claimant's share but-for the Measures. The latter is only EUR 11.0 mil.

467. *Third*, as to Claimant's allegation that the 2020 Act leaves Claimant with the alleged obligation to pay the Lünen Plant's outstanding debt after a Coal-Firing Stop, as set out above, it was Claimant's choice to concede all possible defenses in the negotiations with the banks. Given the significant uncertainty of the contractual documentation before the 2023 amendments, Claimant has not established that it was obligated to re-pay the loan to the banks.[557]

468. *Fourth*, another important factor is that, as set out above, the Lünen Plant never had a final and binding permit before the 2020 Act. When the 2020 Act was enacted, a court litigation by an NGO against the Lünen Plant's operating permit regarding potential impacts on a nearby forest was still pending.[558] If the Lünen Plant never had a final and binding permit before the 2020 Act, the court's judgment in favour of the NGO could not possibly have been an expropriation. If a judgment in consideration of the nearby forest cannot be an expropriation, a Coal-Firing Stop in the interest of the future global fauna and flora (and the survival of human civilisation) cannot be an expropriation *a fortiori*.[559]

469. *Fifth*, the 2020 Act conferred benefits on Claimant. It is undisputed by Claimant's experts that the 2020 Act increased the electricity prices. It is also undisputed that the Lünen Plant benefitted from these increased electricity prices in the 2020s. In addition, Claimant's entire portfolio in Switzerland, Germany and France, incl. hydro, wind and nuclear power plants can profit from these increased electricity prices.[560]

470. In conclusion, the 2020 Act does not neutralize any Investment. Instead, the 2020 Act leaves unaffected:

- Claimant's title;

[556] See above, sect. II.E.3, ¶¶ 270-272.
[557] See above, sect. II.E.2, ¶¶ 248-266.
[558] See above, sect. II.B.2, ¶ 121.
[559] See above, sect. IV.A.1.f, ¶¶ 432-433.
[560] See above, sect. II.E.4, ¶¶ 278-280.

- Claimant's option to convert the Lünen Plant profitably into a gas plant
- hundreds of millions of interests paid and to be paid by Trianel to the banks;
- Claimant's defense against the banks under the uncertain contracts;
- Claimant's always-existing risk given that the Lünen Plant did not have any final and binding permit before the 2020 Act;
- the benefits for Claimant's non hard-coal portfolio.

B. UMBRELLA CLAUSE

471. Contrary to Claimant's allegations, Respondent did not violate its obligations under the umbrella clause in Article 10(1) sentence 5 ECT.

1. Legal standard

472. Article 10(1) sentence 5 ECT states: "*Each Contracting Party shall observe any obligations it has entered into with an Investor or an Investment of an Investor of any other Contracting Party*." Treaty jurisprudence developed the following legal standard on how to determine whether a relevant obligation exists.

a. Umbrella clauses are conceived for contractual obligations

473. Above all, the umbrella clause in Article 10(1) ECT only applies to contractual arrangements with investors or their investments. This follows from the language, context, object and purpose as well as historical background of the ECT's umbrella clause. In detail:

474. *First*, the ordinary meaning of the text of the umbrella clause in Article 10(1) sentence 5 ECT ("*entered into with*") refers to contracts. The ECT tribunal in *Encavis v. Italy* (Professor Fernández-Armesto, Wendy Miles, Alexis Mourre) considered that the limitation to contractual undertakings followed from the ordinary meaning of the terms "*to enter into*". The tribunal expressly excluded unilateral administrative acts from the scope of the umbrella clause:

> "A good faith reading of the ordinary meaning of the terms indicates that the Umbrella Clause only encompasses obligations of a contractual nature: the Merriam-Webster dictionary defines 'to enter into' as meaning 'to make oneself a party to or in', 'to form or be part of", 'to participate or share in'; and it specifically gives as an example the wording to 'enter into an agreement'. Any of these definitions requires an interaction between the State and the investor, a bilateral legal relationship that gives

> rise to an obligation, where the State agrees to become the debtor and the investor (or the investment) assumes the position of creditor. The instrument that typically records such a legal relationship is a contract.
>
> By contrast, norms of general applicability or unilateral administrative acts adopted by the State, are incapable of creating contractual obligations 'entered into with' an investor or an investment. This does not mean they do not mirror existing legal obligations created by law. They arise however as a result of unilateral acts performed by the State, which do not require any action from the investor (or investment), who is merely the addressee of such norms or acts."[561]

475. The tribunal in *RWE Innogy v. Spain* (presided by Samuel Wordsworth) found additional support for limiting the scope of the ECT's umbrella clause to contractual obligations by the requirement that obligations be entered into 'with' investors and their investments rather than 'with regard to' investors and investments:

> "The Tribunal considers that this analysis applies all the more so in the context of the ECT wording, where the obligation must be '*entered into with*' as opposed to '*entered into with regard to*' an Investor or Investment. This is all the more suggestive of a direct consensual link."[562]

476. *Second*, the authentic French and Spanish versions are even clearer. Both the Spanish and the French limit the application of the umbrella clause to obligations 'contracted' with investors or their investments:

> Spanish: "Toda Parte Contratante cumplirá las obligaciones que haya contraído con los inversores o con las inversiones de los inversores de cualquier otra Parte Contratante."
>
> French: "Chaque partie contractante respecte les obligations qu'elle a contractées vis-à-vis d'un investisseur ou à l'égard des investissements d'un investisseur d'une autre partie contractante."

477. Accordingly, the tribunal in *RREEF v. Spain* (presided by Professor Pellet) held that the expression 'entered into', read in the context of the French and Spanish versions, limits the clause to contractual obligations:

> "On the one hand, the expression 'any obligations' calls for a broad interpretation but, on the other hand, the phrase 'it has entered into' seems to refer exclusively to bilateral relationships existing between the Respondent and the Claimants, to the exclusion of general rules; and the

[561] **CLA-0009**, *Encavis AG and others v. Italian Republic*, ICSID Case No. ARB/20/39, Award, 11 March 2024, ¶¶ 551-552.

[562] **CLA-0076**, *RWE Innogy GmbH v. Kingdom of Spain*, ICSID Case No. ARB/14/34, Decision on Jurisdiction, Liability, and Certain Issues of Quantum, 30 December 2019, ¶¶ 676-680, quote at ¶ 678.

> Spanish ('*las obligaciones que haya contraído con los inversores*') or French ('*les obligations qu'elle a contractées vis-à-vis d'un investisseur*') lead to the conclusion that the last sentence of Article 10(1) ECT only applies to contractual obligations."[563]

478. *Third*, extending the umbrella clause beyond contracts would undermine the other standards of protection under Article 10(1) sentences 1-4 ECT, especially the clear rules on fair and equitable treatment and legitimate expectations. These clear rules would be rendered redundant if – as Claimant asserts – every operating license would be protected by the umbrella clause. In Claimant's reading, the umbrella clause turns every license into a stabilization guarantee. This would deprive the FET standard of its effective meaning.

479. *Fourth*, umbrella clauses do not have the object and purpose to turn treaty tribunals into judicial appeal bodies for every matter of national laws. This would pose a 'floodgates' risk never intended by umbrella clauses in treaties. Exactly this 'floodgates' risk was the reason why the tribunal in *9REN v. Spain* (The Honourable Ian Binnie, David Haigh and Johnny Veeder) decided to limit the application of the ECT's umbrella clause to contractual undertakings:

> "The Tribunal is sensitive to the implications of Spain's 'floodgates' argument. The ECT uses the term 'any obligation'. The term 'any obligation' must be interpreted according to the words used in Article 10(1) of the ECT. It is used in the context of an obligation 'entered into' by the State 'with an Investor'. That context is apt for a bilateral contract, such as a concession or licence agreement. It is not apt to describe a State's public legislation or administrative regulations. A State does not 'enter into' such legislation with a private party. In any event, a legitimate expectation, divorced from its anchorage in the FET standard, is itself not a free standing 'obligation' in the sense of Article 10(1) of the ECT."[564]

480. *Fifth*, the object and purpose of umbrella clauses is to bind the host State to a commitment tailored to a specific investor/investment and for which the host State has received consideration. General national legislation and regulation does not fulfil that criterion. This was the reason why the tribunal in *SunReserve v. Italy* (Professor van den Berg, Professor Sachs, Professor Giardina) held:

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[563] **CLA-0075**, *RREEF Infrastructure (G.P.) Limited and RREEF Pan-European Infrastructure Two Lux S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/13/30, Decision on Responsibility and on the Principles of Quantum, 30 November 2018, ¶¶ 283-285, quote at ¶ 284.

[564] **RL-0066**, *9REN Holding S.a.r.l v. Kingdom of Spain*, ICSID Case No. ARB/15/15, Award, 31 May 2019, ¶¶ 342-346, quote at ¶ 342.

> "a legislative or regulatory framework directed equally at foreign and domestic investors cannot create specific enough obligations in order to satisfy the requirement. Accordingly, such legislative or regulatory acts cannot create 'obligations' that can be considered as having been 'entered into' with investors or investments for the purposes of the Umbrella Clause in Article 10(1) ECT."[565]

481. Correspondingly, the tribunal in *Belenergia v. Italy*, confirmed this position:

> "Yet, a rule addressing national and foreign investors cannot, because of its general character, create only obligations only vis-à-vis the former, including when they are investors of a Contracting Party."[566]

482. *Sixth*, the limitation to contractual obligations is in line with the historical origins and purpose of the umbrella clause which was conceived in the 1950s for the purposes of improving the protection of investor-State contracts. The *Eureko* tribunal recapitulated the history of the umbrella clause before applying an umbrella clause to contracts concluded between the investor and the State on the facts. The history shows that the purpose of umbrella clause is the protection of contracts:

> "The provenance of 'umbrella clauses' has been traced to proposals of Elihu Lauterpacht in connection with legal advice he gave in 1954 in respect of the Iranian Consortium Agreement, described in detail in an article in *Arbitration International* by Anthony C. Sinclair. It found expression in Article II of a draft Convention on Investments Abroad ('the Abs-Shawcross Draft') of 1959, which provided: 'Each Party shall at all times ensure the observance of any undertakings which it may have given in relation to investments made by nationals of any other Party.' It was officially espoused in Article 2 of the OECD draft Convention on the Protection of Foreign Property of 1967, in whose preparation, Lauterpacht, as a representative of the United Kingdom, played a part. It provided that: 'Each Party shall at all times ensure the observance of undertakings given by it in relation to property of nationals of any other Party' The commentary to the draft Convention stated that, 'Article 2 represents an application of the general principle of *pacta sunt servanda* - the maintenance of the pledged word' which 'also applies to agreements between States and foreign nationals'. Commenting on this article in his Hague Academy lectures in 1969, Professor Prosper Weil concluded that: 'The intervention of the umbrella treaty transforms contractual obligations into international obligations...' ('*Problèmes relatifs aux contrats passés entre un État et un particulier.*'). The late Dr. F. A. Mann described the umbrella clause as 'a provision of particular importance in that it protects

[565] **CLA-0036**, *Sun Reserve Luxco Holdings SRL v Italy*, SCC Case No. 1322016, Award, 25 March 2020, ¶ 991.

[566] **RL-0067**, *Belenergia S.A. v. Italy*, ICSID Case No. ARB/15/40, Award, 6 August 2019, ¶ 617. Cited by **CLA-0058**, *Isolux Infrastructure Netherlands B.V. v. Kingdom of Spain*, SCC V2013/153, Award (Excerpts), 17 July 2016, ¶ 771. See also **CLA-0040**, *Mohammad Ammar Al-Bahloul v. The Republic of Tajikistan*, SCC Case No. V (064/2008), Partial Award on Jurisdiction and Liability, 2 September 2009, ¶ 257.

> the investor against any interference with his contractual rights, whether it results from a mere breach of contract or a legislative or administrative act, and independently of the question whether or no such interference amounts to expropriation …'. The leading work on bilateral investment treaties states that: 'These provisions seek to ensure that each Party to the treaty will respect specific undertakings towards nationals of the other Party. The provision is of particular importance because it protects the investor's contractual rights against any interference which might be caused by either a simple breach of contract or by administrative or legislative acts …'. The United Nations Centre on Transnational Corporations, in a 1988 study on BITs, found that an umbrella clause 'makes the respect of such contracts [between the host State and the investor] … an obligation under the treaty'. These and other relevant sources are authoritatively surveyed in Christoph Schreuer, 'Travelling the BIT Route: Of Waiting Periods, Umbrella Clauses and Forks in the Road,' as well in as Stanimir A. Alexandrov, 'Breaches of Contract and Breaches of Treaty'."[567]

483. Against this background, the Energy Charter Secretariat in its 2002 Guide to the ECT stated that the umbrella clause "*covers any contract that a host country has concluded with a subsidiary of the foreign investor in the host country, or a contract between the host country and the parent company of the subsidiary*."[568]

484. *Seventh*, for the sake of completeness, Respondent puts on record legal authorities on the ECT[569] and other treaties with similarly worded umbrella clauses[570] which confirm that umbrella clauses are limited to contractual undertakings. Any decision of the Tribunal to the

[567] **CLA-0047**, *Eureko B.V. v. Republic of Poland*, Partial Award, 19 August 2005, ¶ 251.

[568] The Energy Charter Treaty: A Reader's Guide, Energy Charter Secretariat, 2002, p. 26, as cited in **CLA-0051**, *Stadtwerke München GmbH and others v. Kingdom of Spain*, ICSID Case No. ARB/15/1, Award, 2 December 2019, ¶ 382.

[569] **CLA-0058**, *Isolux Infrastructure Netherlands B.V. v. Kingdom of Spain*, SCC V2013/153, Award (Excerpts), 17 July 2016, ¶ 769; **RL-0068**, *Novenergia II - Energy & Environment (SCA) (Grand Duchy of Luxembourg), SICAR v. The Kingdom of Spain*, SCC Case No. 2015/063, Final Award, 15 February 2018, ¶ 715; **RL-0067**, *Belenergia S.A. v. Italian Republic*, ICSID Case No. ARB/15/40, Award, 6 August 2019, ¶¶ 612-619; **CLA-0072**, *OperaFund Eco-Invest SICAV PLC and Schwab Holding AG v. Kingdom of Spain*, ICSID Case No. ARB/15/36, Award, 6 September 2019, ¶ 569; **CLA-0051**, *Stadtwerke München GmbH and others v. Kingdom of Spain*, ICSID Case No. ARB/15/1, Award, 2 December 2019, ¶¶ 379-384.

[570] **CLA-0054**, *Noble Ventures, Inc .v. Romania*, ICSID Case No. ARB/01/11, Award, 12 October 2005, ¶ 51; **RL-0069**, *CMS Gas Transmission Company v. The Argentine Republic*, ICSID Case No. ARB/01/8, Decision on Annulment, 25 September 2007, ¶ 95 a) and b); **RL-0070**, *Mobil Exploration and Development Inc. Suc. Argentina and Mobil Argentina S.A. v. Argentine Republic*, ICSID Case No. ARB/04/16, Decision on Jurisdiction and Liability, 10 April 2013, ¶¶ 1010-1013; **RL-0035**, *Oxus Gold plc v. Republic of Uzbekistan, the State Committee of Uzbekistan for Geology & Mineral Resources, and Navoi Mining & Metallurgical Kombinat*, Final Award, 17 December 2015, ¶¶ 368-371; **RL-0071**, *Kontinental Conseil Ingénierie v. Gabonese Republic*, PCA Case No. 2015-25, Final Award, 23 December 2016, ¶ 177.

contrary would be against an overwhelming jurisprudence. In conclusion, Article 10(1) sentence 5 ECT only applies to contractual commitments.

b. Article 10(1) sentence 5 ECT refers to the host State's domestic law

485. Whether an alleged commitment meets the threshold for a contract under Article 10(1) sentence 5 should not be determined under some autonomous, international standard on which commitments fulfil the criteria of a contract or 'quasi-contract', but under domestic law (here: German law). In *Plama v. Bulgaria*, the tribunal (Professor van den Berg, V.V. Veeder, Carl Salans) described the decisiveness of domestic law as follows:

> "whether an obligation has arisen depends on the law governing that obligation, and so the interpretation of the term 'obligation' for purposes of the umbrella clause would rely primarily on that law rather than on international law. In other words, to be afforded the protection of the BIT, the obligation must qualify as such under its governing law."[571]

486. The *Encavis* tribunal expressly confirmed this position under the ECT:

> "For Italy to breach its commitment under the last sentence of Art. 10(1), a necessary prerequisite is that the Republic 'has entered into' an obligation – a question which can only be adjudicated applying the appropriate municipal law. International law does not have rules regarding the creation of contractual obligations entered into between investors and host States: this is a question which must be established by the governing law of the contract, determined applying the appropriate conflict of law rules."[572]

487. The relevance of German law is also accepted by Claimant who refers to German domestic law throughout to describe the effect of the permits under the Federal Immission Control Law ("**FICL**").

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[571] **CLA-0041**, *Ioan Micula, Viorel Micula, S.C. European Food S.A, S.C. Starmill S.R.L. and S.C. Multipack S.R.L. v. Romania*, ICSID Case No. ARB/05/20, Final Award, 11 December 2013, ¶¶ 417-418. See also **CLA-0044**, *SGS Société Générale de Surveillance S.A. v. Republic of the Philippines*, ICSID Case No. ARB/02/6, Decision on Jurisdiction, 29 January 2004, ¶ 126; **CLA-0008**, *Silver Ridge Power BV v. Italian Republic*, ICSID Case No. ARB/15/37, Award, 26 February 2021, ¶ 378; **CLA-0049**, *Continental Casualty Company v. Argentine Republic*, ICSID Case No. ARB/03/9, Award, 5 September 2008, ¶ 298; **CLA-0009**, *Encavis AG and others v. Italian Republic*, ICSID Case No. ARB/20/39, Award, 11 March 2024, ¶¶ 582-587.

[572] **CLA-0009**, *Encavis AG and others v. Italian Republic*, ICSID Case No. ARB/20/39, Award, 11 March 2024, ¶ 585.

c. Claimant conceded that the inducement of investment is required

488. The final aspect of the legal standard under Article 10(1) sentence 5 ECT is that the relevant contractual obligation must also have induced Investments. This element has two prongs.

489. *First*, the host State must have had the purpose to induce investments. This is undisputed by Claimant. Claimant's Memorial states: "*what is decisive is that the State has undertaken a commitment with the purpose to induce investments*."[573]

490. *Second*, the investor must have invested because of the host State's obligation. Again, this appears undisputed between the Parties. Claimant's Memorial states: "*the administrative or legislative promise by the host State was the reason an investment was made and was intended to induce such investment*."[574]

2. Application

491. The only alleged commitment put forward by Claimant under the ECT's umbrella clause is the 2013 Preliminary Permit. However, it does not fall under the umbrella clause for the following reasons:

a. The 2013 Preliminary Permit is not a contract and not contract-like

492. First of all, the 2013 Preliminary Permit is not a contract. However, as set out above, Article 10(1) sentence 5 ECT applies only to contracts. Respondent could stop here.

493. Apparently anticipating that Respondent will rely on the clear majority jurisprudence on Article 10(1) sentence 5 ECT, Claimant's Memorial contains the stunning allegation that "*there are significant parallels to a contractual relationship with regard to the contract-like status of the permits in this case*."[575] Under the applicable German law, this statement is erroneous. An operating permit has nothing to do with a contract.[576]

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[573] Claimant's Memorial, ¶ 388.

[574] *Ibid*.

[575] *Id*., ¶ 409.

[576] See also **R-0166-ENG/GER**, Higher Administrative Court of Lower-Saxony (*Oberverwaltungsgericht des Landes Sachsen-Anhalt*), Judgment of 21 June 2016 - 2 L 53/14, ¶ 11: "The permit pursuant to section 4 FICL is a purely property-related permit. If the plant is transferred, the permit is transferred to whoever acquires the plant; the acquirer does not require a new permit. The permit is linked to the operator status, so that a person who takes over the operator status becomes the permit holder; the previous operator loses this position."

b. The 2013 Permit did not induce, but post-dates the alleged Investment

494. Even if the Tribunal were to assess the 2013 Preliminary Permit despite not being a contract *(quod non)*, the 2013 Preliminary Permit does not meet the undisputed criteria regarding the inducing of Investment.

495. *First*, Claimant has not put on record an Investment made after the 2013 Preliminary Permit. The last alleged Investment (Claimant's equity contribution of 2008) was made more than five years before the permit as set out above.[577]

496. *Second*, Claimant has not put on record any evidence at all that Respondent had any knowledge of any foreign investor holding a share in Trianel, let alone that Respondent issued the 2013 Preliminary Permit with the very purpose to induce foreign investment. Claimant's minority share in Trianel was irrelevant for the consideration whether or not to grant the 2013 Preliminary Permit.

497. Again, Claimant missing the criteria under Article 10(1) sentence 5 ECT is evidence and Respondent could stop here.

c. At the time of the 2020 Act, the 2013 Permit was only preliminary

498. The next reason why the 2013 Preliminary Permit was not protected under Article 10(1) sentence 5 ECT at the time Respondent enacted the 2020 Act is also a simple one. In 2020, the 2013 Preliminary Permit was not even final and binding.

499. Under German law, permits only become final and binding if they are not legally challenged within a certain period of time.

500. As set out above, in 2020, the NGO BUND's litigation against the 2013 Preliminary Permit was still pending in court. The cause of action concerned the potential impacts of the Lünen Plant on a nearby forest. The NGO only withdrew its challenge on 20 January 2023. Before 20 January 2023, Claimant always bore the risk of the 2013 Preliminary Permit being revoked in court. Therefore, Article 10(1) sentence 5 ECT cannot protect Claimant against the Measure.

[577] See above, ¶ 120.

d. Under German law, the 2013 Permit does not create a relevant obligation

501. Even if the Tribunal would assess the 2013 Preliminary Permit despite not being a contract, despite not having induced an Investment, and despite not being final and binding (*quod non*), under the applicable German law the 2013 Preliminary Permit does not create any relevant obligations. Claimant alleges that such permits "*entail the enforceable and specific obligations of Respondent to allow the construction and operation of the Lünen Plant for an indefinite period of time and only to interfere with the permit regulations according to the already existing regulatory framework of the FICL and general administrative law.*"[578] Claimant's allegations fail for the following reasons:

502. *First*, Claimant has not substantiated how an operating permit under the FICL would be different from any regular operating permit under other laws. If Claimant's case is that every operating permit falls under the umbrella clause, this will only further illustrate the absurdity of the theory.

503. *Second*, Claimant's allegation that Respondent could only interfere "*according to the already existing regulatory framework*" is incorrect as a matter of German law. Under German law, the legal requirements with which power plants must comply are dynamic. In practice, for example, technical regulations on air quality (*TA Luft*) and noise (*TA Lärm*) are frequently amended. EU law is frequently amended. Therefore, permits are frequently amended. The Witness Statement of Mr. Schmitz-Ebert, who oversees the District Government of Arnsberg's department supervising the Lünen Plant, confirms this in detail.[579] Indeed, section 17 FICL contains an explicit power of supervisory authority to restrict the operation of powerplants.[580] For the avoidance of doubt, the German constitution does not protect a permit from legislative changes either.[581]

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[578] Claimant's Memorial, ¶ 398.

[579] Schmitz-Ebert WS, ¶¶ 16-24.

[580] Cf. **R-0167-ENG/GER**, German Federal Administrative Court (*Bundesverwaltungsgericht*), Judgment of 12 December 2023 - 7 C 4.22, ¶ 19: "There is no general principle in the law on immission control according to which legal positions granted to the plant operator must be retained despite significant changes in the factual or legal situation and may only be withdrawn against compensation."

[581] **R-0168**, Federal Constitutional Court, Judgment of 6 December 2016 - 1 BvR 2821/11, ¶ 231: "A licence awarded under atomic energy law to construct and operate a nuclear power plant, or a licence to produce power (§ 7 secs. 1 and 1a AtG [Atomic Energy Law]), is not in and of itself a protected property right under Art. 14 GG [Basic Law]. Such licences to operate dangerous plants are state permits which, depending on their configuration, overcome either repressive or preventive prohibitions that reserve the option of granting the permission to carry out the activity sought. Thus they are not comparable with those subjective public rights on which established constitutional case-law confers

504. *Third*, by definition, a contract can only be entered into voluntarily. An FICL operating permit, is not issued voluntarily. Claimant itself confirmed: "*This is a non-discretionary decision*."[582]

505. In conclusion, the 2013 Preliminary Permit does not meet any of the criteria for an umbrella-clause claim under Article 10(1) sentence 5 ECT. For the avoidance of doubt, even if the Tribunal were to decide otherwise (*quod non*) the nature of the 2020 Act as a legitimate exercise of Respondent's police powers as set out in detail above, also bars any umbrella-clause claim.

C. FAIR AND EQUITABLE TREATMENT (FET)

506. Respondent did not violate its obligation to accord to Claimant's investment fair and equitable treatment under Article 10(1) ECT, which reads:

> "Each Contracting Party shall, in accordance with the provisions of this Treaty, encourage and create stable, equitable, favourable and transparent conditions for Investors of other Contracting Parties to make Investments in its Area. Such conditions shall include a commitment to accord at all times to Investments of Investors of other Contracting Parties fair and equitable treatment."

507. To begin with, Claimant does not make a legitimate-expectations claim. The term 'legitimate expectations' cannot be found anywhere in the Memorial. That is, Claimant conceded that it does not have a legitimate-expectations claim. Nor could Claimant. As set out above, it is undisputed that an explicit assurance for hard-coal plants' lifetime was never included in any German law, regulation or decision.[583]

protection of the type provided to property. According to this case-law, such property-type protection is granted due to the fact that those rights provide individuals with a legal interest which is tantamount to that of an owner and strong enough to assume that depriving it without compensation would contradict the Basic Law in terms of its rule-of-law content. Such rights are characterised by a power of disposal – at least a limited one – and by the fact that they are obtained, to a significant extent, through an acquisition measure that is based an act accomplished by the owner itself. Licences under atomic energy law lack both of these features."

[582] Claimant's Memorial, ¶ 399.

[583] See above, sect. II.A.2, ¶¶ 41-47.

1. Legal standard

508. Instead, Claimant advances an abstract theory that "*The FET standard protects investors against fundamental changes or disproportional burdens*"[584] This standard is incorrect because:

- Claimant's only basis, Article 10(1) sentence 1 ECT, is not an independent standard of treatment, but merely declaratory in nature (see below, at a.);
- jurisprudence is clear in that FET protects only a narrow set of categories (at b.);
- the ECT acknowledges States' right to regulate in environmental matters (at c.);
- jurisprudence recognizes States right to regulate even beyond these matters (at d.); and
- Claimant's approach to rely on certain minority jurisprudence in the Spanish renewables cases is flawed (at e.).

a. Article 10(1) sentence 1 ECT is merely declaratory in nature

509. The first flaw in Claimant's legal standard is that Claimant bases the alleged violation of the FET standard only on sentence 1 of Article 10(1) ECT. However, Article 10(1) sentence 1 ECT does not impose a stand-alone 'obligation of stability' to provide regulatory stability on the State. Contrary to Claimant, Article 10(1) sentence 1 ECT merely serves to illustrate, but does not go beyond, the protection of legitimate expectation, which is a recognised obligation under the FET standard.

510. Tribunals have consistently rejected the notion that Article 10(1) sentence 1 ECT would impose an independent obligation of stability on the State. This includes the authorities on which Claimant relied.

511. The tribunal in *AES v. Kazakhstan* (Professor Tercier, Professor Lowe, Professor Sachs) considered in its award, to which Claimant referred for its theory, that sentence 1 of Article 10(1) ECT does not add to the specific sets of protection under the FET standard.

> "[T]he Arbitral Tribunal considers that the duty to encourage and create stable and transparent conditions for investment is already covered by the more specific protection standards set out in the remaining part of Article

[584] Claimant's Memorial, p. 113.

> 10(1) of the ECT and does not constitute as self-standing independent standard.
>
> The Arbitral Tribunal is of the opinion that the first sentence of Article 10(1) of the ECT does not establish an independent standard affording protection going beyond the protection already afforded under the more specific protection standards set out in the remaining part of Article 10(1) of the ECT. Consequently, no independent claim may be based on the first sentence of Article 10(1) of the ECT."[585]

512. Likewise, the tribunal in *Isolux v. Spain*, on whose award Claimant also relied, considered it "*absurd*" for an investor to rely solely on sentence 1 of Article 10(1) ECT:

> "[T]he Arbitral Tribunal does not find in this Article [10(1) sentence 1 ECT] an autonomous obligation for the Contracting Parties to encourage and create stable and transparent conditions for the making of investments in their territory, the violation of which, *per se*, would generate rights in favour of investors of another Contracting Party. It would be absurd, for example, for an investor to sue a State for compensation for failing to promote stable and transparent conditions for investments in its territory if said failure were not the cause of the breach of another obligation to the investor, such as to grant the investment fair and equitable treatment, protection and security, etc.
>
> The Claimant explains that '*this standard prohibits a Contracting Party from establishing a regulatory framework designed to attract investment - as the Respondent has done - only to later radically abolish it.*' But that is merely an illustration of the obligation to respect the legitimate expectations of the investor. In fact, the Claimant does not offer any convincing jurisprudential or doctrinal support for its approach, on the contrary, the court in the *Plama* case adopted a position similar to the one at hand when it stated that '*stable and equitable conditions are clearly part of the fair and equitable standard under the ECT*'. In fact, the Claimant implicitly recognises this by stating that under such a standard the reasonableness and proportionality of the measures must be considered in light of the investor's legitimate expectations, which protect the FET standard."[586]

513. The tribunal in *Stadtwerke München v. Spain* – also relied on by Claimant – concluded in the very paragraph cited by Claimant that Article 10(1) sentence 1 was "*too general to create enforceable definite rights*":

> "[T]he first sentence of Article 10(1) does not contain an independent obligation whose breach would be actionable by investors of the Contracting Parties, and Spain's measures should instead be considered

[585] **CLA-0074**, *The AES Corporation and Tau Power B.V. v. Republic of Kazakhstan*, ICSID Case No. ARB/10/16, Award, 1 November 2013, ¶¶ 382-383.

[586] **CLA-0058**, *Isolux Infrastructure Netherlands B.V v. Kingdom of Spain*, SCC Case No. V2013/153, Award (Extracts), 12 July 2016, ¶¶ 764-765.

> under the scope of the standard of fair and equitable treatment in Article 10(1) of the ECT, and in particular of the protection of the Claimants' legitimate expectations. […]
>
> Consequently, the Tribunal concludes that the first sentence of Article 10(1) is far too general to create enforceable definite rights of investors against Contracting Parties. The Tribunal therefore rejects the Claimants first claim and will assess the Respondent's measures in the light of the other standards analyzed below."[587]

514. Accordingly, the tribunal in *Stadtwerke München v. Spain* analysed the investor's case in terms of the established pockets of liability under the FET standard, including the frustration of legitimate expectation. The tribunal *inter alia* concluded that the investor did not have a legitimate expectation of regulatory stability and rejected the claim.[588]

515. Several further decisions by investment treaty tribunals, on which Claimant relied for support for its theory, have explicitly rejected sentence 1 of Article 10(1) ECT as a stand-alone obligation.[589] This is in line with other authorities, not referred to by Claimant, which rejected an independent obligation under sentence 1 of Article 10(1) ECT, instead considering it to be, in the words of the *Novenergia II* tribunal, "*simply an illustration of the obligation to respect the investor's legitimate expectations through the FET standard, rather than a separate or independent obligation*."[590]

516. Finally, contrary to Claimant, the alleged principle of proportionality does not import a stand-alone 'obligation of stability' into the FET standard either. The principle does not impose further *restrictions* on a State's right to regulate. Rather, it provides a *justification* for State action where it would otherwise be a violation of international law. Claimant's own authorities prove

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[587] **CLA-0051**, *Stadtwerke München GmbH and others v. Kingdom of Spain*, ICSID Case No. ARB/15/1, Award, 2 December 2019, ¶¶ 195, 198.

[588] *Id*., ¶ 308.

[589] **CLA-0016**, *Plama Consortium Limited v. Republic of Bulgaria*, ICSID Case No. ARB/03/24, Award, 27 August 2008, ¶¶ 172-173; **CLA-0057**, *Electrabel S.A. v. The Republic of Hungary*, ICSID Case No. ARB/07/19, Decision on Jurisdiction, Applicable Law and Liability, 30 November 2012, ¶ 7.79; **CLA-0064**, *Eiser Infrastructure Limited and Energia Solar Luxembourg S.A.R.L v. Kingdom of Spain*, ICSID Case No. ARB/13/36, Award, 4 May 2017, ¶¶ 380-382; **CLA-0065**, *Foresight Luxembourg Solar S.a.r.l. and others v. Kingdom of Spain*, SCC Case No. V(2015/150), Final Award, 14 November 2018, ¶¶ 350-352; **CLA-0011**, *PV Investors v. Kingdom of Spain*, PCA Case No. 2012-14, Final Award, 28 February 2020, ¶ 567; **CLA-0012**, *LSG Building Solutions GmbH et al v. Romania*, ICSID Case No. ARB/18/19, Decision on Jurisdiction, Liability and Principles of Reparation, 11 July 2022, ¶ 1020.

[590] **RL-0068**, *Novenergia II - Energy & Environment (SCA) (Grand Duchy of Luxembourg), SICAR v. The Kingdom of Spain*, SCC Case No. 2015/063, Final Award, 15 February 2018, ¶ 646. See also **CLA-0067**, *Antaris Solar GmbH and Dr. Michael Göde v. The Czech Republic*, PCA Case No. 2014-01, Award, 2 May 2018, ¶ 365; **RL-0072**, *Sevilla Beheer B.V. and others v. Kingdom of Spain*, ICSID Case No. ARB/16/27, Decision on Jurisdiction, Liability and the Principles of Quantum, 11 February 2022, ¶ 715.

this. Most of Claimant's authorities applied the principle of proportionality in the context of the protection of legitimate expectation. They held that a State can depart from the investor's legitimate expectations through proportionate regulatory action.[591] Other tribunals applied the principle of proportionality in the context of expropriation. They held that proportionate State action is not expropriatory.[592] Some tribunals used the term 'disproportionate' to refer to the traditional FET concept of 'arbitrariness': "*The Tribunal and the Parties have used interchangeably, references to 'arbitrariness', 'irrationality', 'unreasonable', 'inequitable' and 'disproportionate' treatment, as all amounting for present purposes to much the same concept under the ECT's FET standard, conveniently here collectively addressed as 'arbitrariness'*."[593] None of Claimant's authorities applied the principle of proportionality as understood by Claimant as a stand-alone reason to impose liability on the State.

517. In conclusion, when it comes to regulatory changes, the FET standard under Article 10(1) ECT protects legitimate expectations, as recognised by the constant jurisprudence of international tribunals. The standard does not impose an independent "obligation of stability" above and beyond the protection of legitimate expectations.

b. FET guarantees only a narrow catalogue of treatments

518. Contrary to Claimant, FET does not contain some abstract prohibition of regulatory changes. FET contains a narrow catalogue of specific obligations as they are now developed in jurisprudence. The recognised catalogue of conduct does not include an abstract 'obligation of stability', but only the protection of specific legitimate expectations. The tribunal

[591] **CLA-0079**, *EDF (Services) Limited v. Romania*, ICSID Case No. ARB/05/13, Award, 8 October, 2009, ¶¶ 216-220; **CLA-0074**, *The AES Corporation and Tau Power B.V. v. Republic of Kazakhstan*, ICSID Case No. ARB/10/16, Award of 1 November 2013, ¶¶ 401-403; **CLA-0075**, *RREEF Infrastructure (G.P.) Limited and RREEF Pan-European Infrastructure Two Lux S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/13/30, Decision on Responsibility and on the Principles of Quantum, 30 November 2018, ¶ 324; **CLA-0076**, *RWE Innogy GmbH v. Kingdom of Spain*, ICSID Case No. ARB/14/34, Decision on Jurisdiction, Liability, and Certain Issues of Quantum of 30 December 2019, ¶¶ 550-551, 568-571; **CLA-0077**, *Hydro Energy 1 S.à r.l. and Hydroxana Sweden AB v. Kingdom of Spain*, ICSID Case No. ARB/15/42, Decision on Jurisdiction, Liability and Directions on Quantum, 9 March 2020, ¶ 676; **CLA-0027**, *Cavalum SGPS, S.A. v. Kingdom of Spain*, ICSID Case No. ARB/15/34, Decision on Jurisdiction, Liability and Directions on Quantum, 31 August 2020, ¶¶ 564, 657. See also **CLA-0063**, *Occidental and others v. Republic of Ecuador*, ICSID Case No. ARB/06/11, Award, 5 October 2012, ¶¶ 388-390, 424-425 where the principle of proportionality was applied to the termination of a contract with the investor.

[592] **CLA-0082**, *Técnicas Medioambientales Tecmed, S.A. v. The United Mexican States*, ICSID Case No. ARB(AF)/00/02, Award, 29 May 2003, ¶ 122; **CLA-0083**, *Azurix Corp. v. The Argentine Republic*, ICSID Case No. ARB/01/12, Award, 14 July 2006, ¶ 311.

[593] **CLA-0084**, *Electrabel S.A. v. Republic of Hungary*, ICSID Case No. ARB/07/19, Award, 25 November 2015, ¶ 167.

in *Electrabel v. Hungary* presided by Professor Kaufmann-Kohler summarised the obligations under the FET standard as follows:

> "[…] the obligation to provide fair and equitable treatment comprises several elements, including an obligation to act transparently and with due process; and to refrain from taking arbitrary or discriminatory measures or from frustrating the investor's reasonable expectations with respect to the legal framework adversely affecting its investment."[594]

519. Another persuasive summary is provided in *Rumeli v. Kazakhstan* by the tribunal composed of Professor Hanotiau, The Honourable Marc Lalonde and Steward Boyd:

> "As it emerges from the arbitral case law, the principle encompasses, *inter alia*, the following concrete principles:
>
> - the State must act in a transparent manner (*Metalclad, Tecmed*);
> - the State is obliged to act in good faith (*Tecmed, Waste Management*);
> - State conduct cannot be arbitrary, grossly unfair, unjust, idiosyncratic, discriminatory, or lacking in due process (*Waste Management*);
> - the State must respect procedural propriety and due process (*Amco, Azinian, Fabiani, Brown*)."[595]

520. An almost endless line of arbitral awards rendered over the last 20 years confirms that FET includes a narrow catalogue of categories without an obligation of stability outside the protection of specific legitimate expectations.[596]

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[594] **CLA-0057**, *Electrabel S.A. v. The Republic of Hungary*, ICSID Case No. ARB/07/19, Decision on Jurisdiction, Applicable Law and Liability, 30 November 2012, ¶ 7.74.

[595] **RL-0013**, *Rumeli Telekom A.S. and Telsim Mobil Telekomunikasyon Hizmetleri A.S. v. Republic of Kazakhstan*, ICSID Case No. ARB/05/16, Award, 29 July 2008, ¶583.

[596] **RL-0073**, *Michael Anthony Lee-Chin v. Dominican Republic*, ICSID Case No. UNCT/18/3, Final Award, 6 October 2023, ¶ 434; **CLA-0099**, *Addiko Bank AG v. Montenegro*, ICSID Case No. ARB/17/35, Award (Excerpts), 24 November 2021, ¶ 538; **RL-0028**, *Eco Oro Minerals Corp. v. Republic of Colombia*, ICSID Case No. ARB/16/41, Decision on Jurisdiction, Liability and Directions on Quantum, 9 September 2021, ¶ 754; **RL-0074**, *Spółdzielnia Pracy Muszynianka v. Slovak Republic*, PCA Case No. 2017-08/AA629, Award, 7 October 2020, ¶ 461; **RL-0075**, *SunReserve Luxco Holdings S.A.R.L. et al. v. The Italian Republic*, SCC Case No. V(2016/32), Final Award, 25 March 2020, ¶ 178; **RL-0074**, *Mohamed Abdel Raouf Bahgat v. Arab Republic of Egypt (I)*, PCA Case No. 2012-07, Final Award, 23 December 2019, ¶ 246; **CLA-0029**, *UAB E Energija (Lithuania) v. Republic of Latvia*, ICSID Case No. ARB/12/33, Award, 22 December 2017, ¶ 834; **RL-0077**, *Deutsche Telekom AG v. The Republic of India*, PCA Case No. 2014-10, Interim Award, 13 December 2017, ¶ 336; **CLA-0041**, *Ioan Micula, Viorel Micula, S.C. European Food S.A, S.C. Starmill S.R.L. and S.C. Multipack S.R.L. v. Romania*, ICSID Case No. ARB/05/20, Final Award, 11 December 2013, ¶ 519; **RL-0078**, *Deutsche Bank AG v. Democratic Socialist Republic of Sri Lanka*, ICSID Case No. ARB/09/2, Award, 31 October 2012, ¶ 420; **RL-0079**, *Bosh International, Inc. and B&P, LTD Foreign Investments Enterprise v. Ukraine*, ICSID Case No. ARB/08/11, Award, 25 October 2012, ¶ 212; **RL-0080**, *Inmaris Perestroika Sailing Maritime Services GmbH and others v. Ukraine*, ICSID Case No. ARB/08/8, Award (Excerpts), 1 March 2012, ¶ 265; **CLA-0094**, *Spyridon Roussalis v. Romania*, ICSID Case No. ARB/06/1, Award, 7 December 2011, ¶ 314; **RL-0081**, *Frontier Petroleum Services Ltd. v. The Czech Republic*, PCA Case No. 2008-09, Final Award, 12 November 2010, ¶ 284; **RL-0082**, *Alpha Projektholding GmbH v. Ukraine*, ICSID Case No.

c. The ECT recognizes the right to regulate in environmental matters

521. For environmental matters in particular, an abstract prohibition of regulatory changes would go against the wording, context, object, and purpose of the ECT. The ECT does not seek to constrain but acknowledges the deference to the State. The references in the ECT are the following:

522. Article 24(2) lit. i ECT acknowledges:

> "The provisions of this Treaty […] shall not preclude any Contracting Party from adopting or enforcing any measure (i) necessary to protect human, animal or plant life or health."

523. The language of Article 24 ECT is adopted from Article XX of the 1994 GATT.[597] Article XX 1994 GATT is an exception of treaty breaches.[598] Correspondingly, the ECT tribunal in *RWE v. Spain* held that Article 24 ECT "*militate against any expansive concept of [the] FET standard under Article 10(1)*".[599]

524. Furthermore, Article 19 ECT is an entire Article on States' rights to act in favour of environmental aspects. It states:

> "In pursuit of sustainable development and taking into account its obligations under those international agreements concerning the environment to which it is party, each Contracting Party shall strive to minimize in an economically efficient manner harmful Environmental Impacts occurring either within or outside its Area from all operations within the Energy Cycle in its Area, taking proper account of safety. In its policies and actions each Contracting Party shall strive to take precautionary measures to prevent or minimise environmental

ARB/07/16, Award, 8 November 2010, ¶ 420; **RL-0083**, *Bayındır İnşaat Turizm Ticaret ve Sanayi A.Ş. v. Islamic Republic of Pakistan (I)*, ICSID Case No. ARB/03/29, Award, 27 August 2009, ¶ 178; **RL-0021**, *Invesmart, B.V. v. Czech Republic*, Award, 26 June 2009, ¶ 200; **RL-0084**, *Waguih Elie George Siag and Clorinda Vecchi v. Arab Republic of Egypt*, ICSID Case No. ARB/05/15, Award, 1 June 2009, ¶ 450; **RL-0085**, *Duke Energy Electroquil Partners and Electroquil S.A. v. Republic of Ecuador*, ICSID Case No. ARB/04/19, Award, 18 August 2008, ¶ 340; **CLA-0093**, *Biwater Gauff (Tanzania) Ltd. v. United Republic of Tanzania*, ICSID Case No. ARB/05/22, Award, 24 July 2008, ¶ 602; **CLA-0024**, *LG&E Energy Group v. Argentine Republic*, ICSID Case No. ARB/02/1, Decision on Liability, 3 October 2006, ¶ 131.

[597] **RL-0086**, General Agreement on Tariffs and Trade (GATT) 1994, Article XX: "Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures: (b) necessary to protect human, animal or plant life or health; […]."

[598] See for example **RL-0087**, WTO Panel Report on "United States - Section 337 of the Tariff Act of 1930", adopted on 7 November 1989, BISD 36S/345, 385, ¶ 5.9.

[599] **CLA-0076**, *RWE Innogy GmbH and RWE Innogy Aersa S.A.U. v. Kingdom of Spain*, ICSID Case No. ARB/14/34, Decision on Jurisdiction, Liability, and Certain Issues of Quantum, 30 December 2019, ¶¶ 445-447.

> degradation. The Contracting Parties agree that the polluter in the Areas of Contracting Parties, should, in principle, bear the cost of pollution, including transboundary pollution, with due regard to the public interest and without distorting Investment in the Energy Cycle or international trade. Contracting Parties shall accordingly."

525. The precautionary principle mentioned in Article 19 ECT is included as a principle of international environmental protection law in numerous international instruments, chief among them the UNFCCC.[600] Of particular relevance is the recent *Eco Oro v. Colombia* decision. The tribunal held that the precautionary principle supported Colombia's case that measures had to be taken for the protection of an endangered ecosystem where the consequences for the ecosystem were potentially irreversible. The consideration applies *a fortiori* to climate-action measures. Whereas the *Eco Oro* tribunal assessed "*uncertain*" damages, the damage caused by climate change is certain. The tribunal stated in respect of the protection of the 'páramo', an Andean ecosystem:

> "The precautionary principle is clearly relevant when considering the effect and proportionality of the measures with respect to the protection of the páramos. […] This is particularly the case in a circumstance such as this where (i) there is no certainty as to the damage that could be caused by mining activities and whether or not such damage would be irreversible and (ii) if not irreversible, the time it would take for the páramo to regenerate."[601]

526. In addition, the ECT's preamble references and "*recogniz[es]*" explicitly the United Nations Framework Convention on Climate Change. On this Convention, for example, the Kyoto Protocol and the Paris Agreement were concluded.[602]

527. Moreover, Article 2 ECT incorporates the 1991 European Energy Charter. The *Silver Ridge* tribunal referred to the preamble and title I of the European Energy Charter to interpret the ECT:

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[600] **RL-0001**, United Nations Treaty Collection Chapter XXVII, 7. United Nations Framework Convention on Climate Change, Article 3(3). See also **RL-0088**, Rio Declaration on Environment and Development, Principle 15; **RL-0089**, The Vienna Convention for the Protection of the Ozone Layer and The Montreal Protocol on Substances that Deplete the Ozone Layer, preambles; **RL-0090**, Convention on Environmental Impact Assessment in a Transboundary Context, Article 2(1); **RL-0091**, Convention to Combat Desertification, preamble, Article 10(2)(c); **RL-0092**, Convention on Biological Diversity, preamble; **RL-0093**, Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), Article 2(2)(a); **RL-0094**, Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Preamble, Article 3(1).

[601] **RL-0028**, *Eco Oro Minerals Corp. v. Republic of Colombia*, ICSID Case No. ARB/16/41, Decision on Jurisdiction, Liability and Directions on Quantum, 9 September 2021, ¶¶ 654-655.

[602] **CLA-0002**, Energy Charter Treaty, Preamble.

> "In view of the express reference of Article 2 of the ECT to the European Energy Charter, the Tribunal considers this document, notably its preamble and its 'Title 1: Objectives: […]' to be relevant to enlighten the ECT's object and purpose."[603]

528. The 1991 Charter stresses the need to balance long-term cooperation in the energy sector with environmental protection. Its preamble emphasizes the conviction of the contracting parties "*of the essential importance of efficient energy systems in the production, conversion, transport, distribution and use of energy for security of supply and for the protection of the environment*" as well as their aim "*to utilise fully the potential for environmental improvement, in moving towards sustainable development*".[604] One of the objectives of the 1991, to which Article 2 ECT refers, specifically mentioned in "*Title I: Objectives*" is "*Energy efficiency and environmental protection*".[605]

529. In addition to the ECT, an entire protocol was committed to the protection of the environment: the 1994 Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects.[606] Its preamble recalled the ECT preamble and "*the declarations therein that cooperation is necessary in the field of energy efficiency and related environmental protection*". The protocol's preamble includes further reference to the "*work undertaken by international organizations and for a in the field of energy efficiency and environmental aspects of the energy cycle*" and "*significant economic and environmental gains*" to be made from energy efficiency. Moreover, the protocol expressly identifies as its objective the reduction of "*adverse Environmental Impacts of energy systems*".

d. FET does not prohibit, but acknowledges the right to regulate

530. Even beyond environmental matters, FET does not prohibit but recognizes the right of States to regulate and the legislators' margin of appreciation. This is recognised by numerous

[603] **CLA-0008**, *Silver Ridge Power BV v. Italian Republic*, ICSID Case No. ARB/15/37, Award, 26 February 2021, ¶ 398.

[604] **CLA-0002**, European Energy Charter, preamble.

[605] *Id*., title 1.

[606] **RL-0095**, Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects.

investment treaty tribunals under the ECT[607] and other treaties.[608] For example, Claimant's authority *RREEF v. Spain* (presided by Professor Pellet) states:

> "In order to appreciate the legitimacy (or illegitimacy) of the Claimants' expectations in the present case, it must be kept in mind that it is generally recognized that States are in charge of the general interest and, as such, enjoy a margin of appreciation in the field of economic regulations. As a result, the threshold of proof as to the legitimacy of any expectation is high and only measures taken in clear violation of the FET will be declared unlawful and entail the responsibility of the State." [609]

531. Further ECT tribunals have pointed to the "*high measure of deference*" [610] which a State enjoys in the exercise of its right to regulate. The majority of the *Antaris* tribunal (Lord Collins of Mapesbury and Judge Tomka) stated:

> "The host State is not required to elevate the interests of the investor above all other considerations, and the application of the FET standard allows for a balancing or weighing exercise by the State and the determination of a breach of the FET standard must be made in the light of the high measure of deference which international law generally extends to the right of national authorities to regulate matters within their own borders."[611]

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[607] **CLA-0057**, *Electrabel S.A. v. The Republic of Hungary*, ICSID Case No. ARB/07/19, Decision on Jurisdiction, Applicable Law and Liability, 30 November 2012, ¶ 8.35; **CLA-0067**, *Antaris GmbH et al v. Czech Republic*, PCA Case No. 2014-01, Award, 2 May 2018, ¶ 360(9); **CLA-0075**, *RREEF Infrastructure (G.P.) Limited and RREEF Pan-European Infrastructure Two Lux S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/13/30, Decision on Responsibility and on the Principles of Quantum, 30 November 2018, ¶ 324; **RL-0096**, *CEF Energia BV v. Italian Republic*, SCC Case No. V2015/158, Award, 16 January 2019, ¶ 185(9); **CLA-0076**, *RWE Innogy GmbH v. Kingdom of Spain*, ICSID Case No. ARB/14/34, Decision on Jurisdiction, Liability, and Certain Issues of Quantum, 30 December 2019, ¶ 553; **CLA-0077**, *Hydro Energy 1 S.à r.l. and Hydroxana Sweden AB v. Kingdom of Spain*, ICSID Case No. ARB/15/42, Decision on Jurisdiction, Liability and Directions on Quantum, 9 March 2020, ¶ 582; **CLA-0027**, *Cavalum SGPS, S.A. v. Kingdom of Spain*, ICSID Case No. ARB/15/34, Decision on Jurisdiction, Liability and Directions on Quantum, 31 August 2020, ¶ 424.

[608] **CLA-0105**, *SD Myers Inc v. Canada*, UNCITRAL, First Partial Award, 13 November 2000, ¶ 261; **RL-0058**, *Parkerings-Compagniet AS v. Lithuania*, ICSID Case No. ARB/05/8, Award, 11 September 2007, ¶ 332; **CLA-0049**, *Continental Casualty Company v. Argentine Republic*, ICSID Case No. ARB/03/9, Award, 5 September 2008, ¶ 181; **RL-0027**, *AWG Group Ltd. v. The Argentine Republic*, ICSID Case No. ARB/03/19, Decision on Liability, 30 July 2010, ¶ 236; **CLA-0069**, *El Paso Energy International Company v. The Argentine Republic,* ICSID Case No. ARB/03/15, Award, 31 October 2011, ¶ 358; **CLA-0028**, *Philip Morris Brand Sàrl (Switzerland), et al. v. Oriental Republic of Uruguay*, ICSID Case No. ARB/10/7, Award, 8 July 2016, ¶ 399.

[609] **CLA-0075**, *RREEF Infrastructure (G.P.) Limited and RREEF Pan-European Infrastructure Two Lux S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/13/30, Decision on Responsibility and on the Principles of Quantum, 30 November 2018, ¶ 324.

[610] **CLA-0067**, *Antaris GmbH et al v. Czech Republic*, PCA Case No. 2014-01, Award, 2 May 2018, ¶ 360(9); **RL-0096**, *CEF Energia BV v. Italian Republic*, SCC Case No. V2015/158, Award, 16 January 2019, ¶ 185(9); **CLA-0077**, *Hydro Energy 1 S.à r.l. and Hydroxana Sweden AB v. Kingdom of Spain*, ICSID Case No. ARB/15/42, Decision on Jurisdiction, Liability and Directions on Quantum, 9 March 2020, ¶ 582; **CLA-0027**, *Cavalum SGPS, S.A. v. Kingdom of Spain*, ICSID Case No. ARB/15/34, Decision on Jurisdiction, Liability and Directions on Quantum, 31 August 2020, ¶ 424.

[611] **CLA-0067**, *Antaris GmbH et al v. Czech Republic*, PCA Case No. 2014-01, Award, 2 May 2018, ¶ 360(9). Cited by **RL-0096**, *CEF Energia BV v. Italian Republic*, SCC Case No. V2015/158, Award, 16 January 2019, ¶ 185(9).

532. Further tribunal emphasized that the margin of appreciation is justified *inter alia* by the political legitimation of the States (*SD Myers*),[612] the political pressure under which States have to act (*Continental Casualty*),[613] the nature of the issue as a discretionary exercise involving many complex factors (*Electrabel*)[614] as well as the focus of the State on the overall impact of a certain policy rather than the impact on a single investment (*RWE v. Spain*).[615]

533. In conclusion, Article 10(1) ECT does not contain any prohibition of climate-action regulation. Instead, the FET standard only prohibits a narrow catalogue of treatment. Abstract regulatory changes are not included nor can they. Instead, the ECT and jurisprudence on FET in general recognize the right to regulate and the margin of appreciation of the legislator.

e. Claimant interprets the Spain renewables cases erroneously

534. To conclude on the legal standard, Respondent highlights that the only authorities Claimant presents is the minority jurisprudence in the Spanish renewables cases. If anything, these make Respondent's case, not Claimant's case. As the Spanish renewables cases have been dealt with in ample jurisprudence, Respondent will keep it brief:

535. *First*, the energy industries were different. The Spain cases are all renewable energy cases. None of them concerns the phase-out of conventional energy. Needless to say, renewable energy is in the interest of climate action, hard-coal is not.

536. *Second*, the legal claims were different. The Spanish renewables cases are legitimate-expectations cases. All claimants in the Spain cases (unlike Claimant in the present case) raise legitimate expectations in the context of FET.[616]

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[612] **CLA-0105**, *SD Myers Inc v. Canada*, UNCITRAL, First Partial Award, 13 November 2000, ¶ 261.

[613] **CLA-0049**, *Continental Casualty Company v. Argentine Republic*, ICSID Case No. ARB/03/9, Award, 5 September 2008, ¶ 181.

[614] **CLA-0057**, *Electrabel S.A. v. The Republic of Hungary*, ICSID Case No. ARB/07/19, Decision on Jurisdiction, Applicable Law and Liability, 30 November 2012, ¶ 8.35.

[615] **CLA-0076**, *RWE Innogy GmbH v. Kingdom of Spain*, ICSID Case No. ARB/14/34, Decision on Jurisdiction, Liability, and Certain Issues of Quantum, 30 December 2019, ¶ 262.

[616] **CLA-0058**, *Isolux Infrastructure Netherlands B.V v. Kingdom of Spain*, SCC Case No. V2013/153, Award (Extracts), 12 July 2016, ¶¶ 764-765; **CLA-0064**, *Eiser Infrastructure Limited and Energia Solar Luxembourg S.A.R.L v. Kingdom of Spain*, ICSID Case No. ARB/13/36, Award, 4 May 2017, ¶¶ 380-382; **CLA-0067**, *Antaris Solar GmbH and Dr. Michael Göde v. The Czech Republic*, PCA Case No. 2014-01, Award, 2 May 2018, ¶ 365; **CLA-0068**, *Masdar Solar & Wind Cooperatief U.A. v. Kingdom of Spain*, ICSID Case No. ARB/14/1, Award, 16 May 2018, ¶ 520; **CLA-0065**, *Foresight Luxembourg Solar S.a.r.l. and others v. Kingdom of Spain*, SCC Case No. V(2015/150), Final Award, 14 November 2018, ¶¶ 361, 378; **CLA-0060**, *Athena Investments AS (formerly*

537. *Third*, the facts were different. The core of the Spanish cases is a specific subsidy regime enacted by the Spanish legislator. A specific 'hard-coal regime' never existed before the 2020 Act. Further, the Spain cases centre on provisions such as Article 44(3) Royal Decree 661/2007 stipulating that future reforms would not affect existing facilities.[617] The present case does not involve any promises that would even be remotely comparable.

538. *Fourth*, most of the cases cited by Claimant either rejected the claims of the investors in their entirety[618] or, in the renewables cases, granted only limited compensation for the reform of the subsidy regime based on a "reasonable rate of return".[619] Claimant's approach to theorize that the minority jurisprudence rejecting more claims than in other cases leads to a new obligation is absurd.

2. Application

539. Respondent did not violate the fair and equitable treatment standard pursuant to Article 10(1) of the ECT. In the interest of efficiency, Respondent refers to the evidence in the Facts section above in its entirety. To summarize only the 15 most important reasons:

540. *First*, already before Claimant's alleged Investment in the Lünen power plant, Claimant had to anticipate that the German regulatory framework for energy production was subject to change due to climate change.[620]

Greentech Energy Systems AS) and others v. Kingdom of Spain, SCC Case No. V 2015-150, Final Award, 23 December 2018, ¶ 456; **CLA-0051**, *Stadtwerke München GmbH and others v. Kingdom of Spain*, ICSID Case No. ARB/15/1, Award, 2 December 2019, ¶¶ 195, 198, 308; **CLA-0011**, *PV Investors v. Kingdom of Spain*, PCA Case No. 2012-14, Final Award, 28 February 2020, ¶¶ 567, 572-620; **CLA-0077**, *Hydro Energy 1 S.à r.l. and Hydroxana Sweden AB v. Kingdom of Spain*, ICSID Case No. ARB/15/42, Decision on Jurisdiction, Liability and Directions on Quantum, 9 March 2020, ¶ 684; **CLA-0027**, *Cavalum SGPS, S.A. v. Kingdom of Spain*, ICSID Case No. ARB/15/34, Decision on Jurisdiction, Liability and Directions on Quantum, 31 August 2020, ¶¶ 414, 470 et seq.

617 See for example **CLA-0066**, *Watkins Holdings S.à r.l. and others v. Kingdom of Spain*, ICSID Case No. ARB/15/44, Award, 21 January 2020, ¶ 49.

618 **CLA-0016**, *Plama Consortium Limited v. Republic of Bulgaria*, ICSID Case No. ARB/03/24, Award, 27 August 2008, ¶ 305; **CLA-0032**, *AES Summit Generation Limited and AES-Tisza Erömü Kft v. The Republic of Hungary*, ICSID Case No. ARB/07/22, Award, 23 September 2010, ¶ 16.1; **CLA-0058**, *Isolux Infrastructure Netherlands B.V v. Kingdom of Spain*, SCC Case No. V2013/153, Award (Extracts), 12 July 2016, operative part; **CLA-0067**, *Antaris GmbH et al v. Czech Republic*, PCA Case No. 2014-01, Award, 2 May 2018, ¶ 465; **CLA-0051**, *Stadtwerke München GmbH and others v. Kingdom of Spain*, ICSID Case No. ARB/15/1, Award, 2 December 2019, ¶ 407; **CLA-0009**, *Encavis AG and others v. Italian Republic*, ICSID Case No. ARB/20/39, Award, 11 March 2024, ¶ 864.

619 **CLA-0011**, *PV Investors v. Kingdom of Spain*, PCA Case No. 2012-14, Final Award, 28 February 2020, ¶¶ 638-640; **CLA-0077**, *Hydro Energy 1 S.à r.l. and Hydroxana Sweden AB v. Kingdom of Spain*, ICSID Case No. ARB/15/42, Decision on Jurisdiction, Liability and Directions on Quantum, 9 March 2020, ¶¶ 694-697; **CLA-0027**, *Cavalum SGPS, S.A. v. Kingdom of Spain*, ICSID Case No. ARB/15/34, Decision on Jurisdiction, Liability and Directions on Quantum, 31 August 2020, ¶ 642.

620 See above, sect. II.A.3-II.A.5, ¶¶ 48-74.

541. *Second*, there is no evidence that prior to its alleged Investment, Claimant formed any expectations regarding the stability of the German regulatory framework for energy production.[621]

542. *Third*, there was no assurance under German law or regulation that a hard-coal power plant had any expected lifetime, let alone a guarantee that it would be able to operate until the 2050s. There is also no evidence that any assurance was given by Germany that the regulatory framework would not change.[622]

543. *Fourth*, the Lünen Plant never had a final and binding permit before the 2020 Act. As a matter of German law, the 2013 Preliminary Permit could have been revoked in court at any time.[623]

544. *Fifth*, the 2020 Act was based on the recommendations of the Coal Commission in 2018/2019. The Commission included a diverse list of stakeholders that recommended phasing out energy production from hard-coal and lignite.[624]

545. *Sixth*, the goal of the 2020 Act was to reduce CO_2 emissions to mitigate global warming. With that, it aims at protecting universal human rights, to save species, prevent geopolitical conflicts, mitigate poverty, and reduce enormous financial costs due to climate change – all on a global scale.[625]

546. *Seventh*, the 2020 Act was necessary to comply with Germany's international obligations established under the 2015 Paris Agreement: to reduce global warming to 1.5°C compared to pre-industrialization levels.[626]

547. *Eighth*, the 2020 Act was necessary to comply with German's obligation under unchallenged Measures of EU law and prior German laws.[627]

[621] See above, sect. II.A.7, ¶¶ 90-103.
[622] See above, sect. II.A.2, ¶¶ 41-47.
[623] See above, sect. II.B.2, ¶¶ 119-127.
[624] See above, sect. II.D.1, ¶¶ 181-193.
[625] See above, ¶ 195.
[626] See above, ¶¶ 146-147.
[627] See above, sect. II.C.3, ¶¶ 151-155, and sect. II.C.5, ¶¶ 163-179.

548. *Ninth*, the 2020 Act is constitutional. This has been confirmed by independent expert assessments. [628]

549. *Tenth*, the 2020 Act complies with Germany's obligations under the ECHR as confirmed by the ECtHR in a suit brought by the operator of the Lünen Plant, STEAG.[629]

550. *Eleventh*, the 2020 Act gave the Lünen Plant the option to participate in auction tenders and receive compensation. The Lünen Plant decided consciously against this option.[630]

551. *Twelfth*, the 2020 Act does not deprive Claimant of the ability to convert the Lünen Plant into a gas plant. So far, Claimant decided voluntarily against this option.[631]

552. *Thirteenth*, the 2020 Act created considerable benefits for Claimant's non-hard-coal portfolio.[632]

553. *Fourteenth*, the only reason why Claimant might potentially not have reached the breakeven point before the closure of the Lünen Plant is that the Lünen Plant is heavily leveraged. The banks who have provided approximately 90% of the Lünen Plant's capital have already collected and will continue to collect considerable interest.

554. *Fifteenth*, even without the 2020 Act, Swiss law and a referendum in Switzerland would have forced the State-owned company Claimant to exit the Lünen Plant and to divest as soon as viable, in any case no later than 2035 (even with losses).[633]

555. In conclusion, the 2020 Act is in compliance with the FET standard.

D. FULL PROTECTION AND SECURITY (FPS)

556. Contrary to Claimant's allegations, Respondent did not fail to accord to Claimant's Investment the most constant or full protection and security ("**FPS**") pursuant to Article 10(1) ECT.

[628] See above, sect. II.D.5, ¶¶ 224-233.
[629] See above, sect. II.D.6, ¶¶ 234-238.
[630] See above, sect. II.E.1, ¶¶ 243-247.
[631] See above, sect. II.E.3, ¶¶ 267-277.
[632] See above, sect. II.E.4, ¶¶ 278-280.
[633] See above, sect. II.B.1, ¶¶ 105-118.

1. Legal standard

557. The basis of Claimant's alleged claim, *i.e.* the allegation that "*The standard […] is breached when a State circumvents or completely abolishes the legal basis for the investment*"[634] is already incorrect. The FPS standard is limited to the physical protection of the investment for the following reasons:

558. *First*, otherwise, the FPS standard would undermine the structured principles of the FET and expropriation standard. FPS would be a mere 'after-thought' to FET claims. Against this background, the tribunal in *Electrabel v. Hungary* presided by Professor Kaufmann-Kohler held that the FPS standard in ECT is limited to physical integrity and underlined:

> "The second part of Article 10(1) ECT requires Hungary to ensure that all covered investments 'shall also enjoy the most constant protection and security'. The FET standard and this FPS standard are two distinct standards of protection under the ECT, dealing with two different types of protection for foreign investors. […] In the Tribunal's view, given that there are two distinct standards under the ECT, they must have, by application of the legal principle of 'effet utile', a different scope and role."[635]

559. The tribunal in *Hydro Energy v. Spain* (Lord Collins, Peter Rees, Professor Knieper) adopted the reasoning of the *Electrabel* tribunal when interpreting the Article 10(1) ECT and concluded:

> "In the present case, there is no allegation of failure to provide constant protection and security in the traditional sense of protection against third parties, and since in the wider sense it adds little or nothing to the FET standard, it is not necessary to say more than on the normal reading of the expression, against the background of customary international law and the practice of modern tribunals, the former view is correct and that it connotes an obligation which is distinct from FET."[636]

560. Correspondingly, a long list of investment treaty awards confirm that the FPS standard is restricted to physical integrity.[637]

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[634] Claimant's Memorial, ¶ 473.

[635] **CLA-0057**, *Electrabel S.A. v. The Republic of Hungary*, ICSID Case No. ARB/07/19, Decision on Jurisdiction, Applicable Law and Liability, 30 November 2012, ¶¶ 7.80, 7.83.

[636] **CLA-0077**, *Hydro Energy 1 S.àr.l. and Hydroxana Sweden AB v. Kingdom of Spain*, ICSID Case No. ARB/15/42, Decision on Jurisdiction, Liability and Directions on Quantum, 9 March 2020, ¶¶ 559-566, quote at ¶ 566.

[637] **RL-0020**, *Saluka Investments BV v. The Czech Republic*, PCA Case No. 2001-04, Partial Award, 17 March 2006, ¶ 483; **RL-0013**, *Rumeli Telekom A.S. and Telsim Mobil Telekomunikasyon Hizmetleri A.S. v. Republic of*

561. *Second*, Claimant's purported authorities are merely a minority view. Furthermore, all of them are mere *obiter dicta*. That is, in none of these cases did the investor win exclusively due to the FPS standard.[638] Hence, there is no authority that a claim under some 'legal' FPS standard could succeed while the FET claim has failed. This was recently highlighted by the ECT tribunal in *RENERGY v. Spain* (Judge Simma, Professor Schreuer, Professor Sands):

> "[T]he Tribunal does not consider that MCPS offers any additional protection against legislative change in addition to the protection afforded by the FET standard, in particular the protection of the investor's legitimate expectations. The Tribunal finds this approach to be supported by *AES v. Hungary* and *Isolux v. Spain*. Moreover, while some tribunals seem to have considered that actions other than failure to protect the investor's physical integrity could violate the comparable standard of full protection and security under other investment treaties, it seems that those tribunals routinely reached the same result as under the FET standard. This confirms the Tribunal's view that, in case of the ECT, MCPS does not provide additional protection against legislative change as compared to FET."[639]

562. *Third*, even taking Claimant's authorities at their highest, they do not support that legislative actions could violate the FPS standard.

Kazakhstan, ICSID Case No. ARB/05/16, Award, 29 July 2008, ¶ 668; **CLA-0069**, *El Paso Energy v. Argentina*, ICSID Case No. ARB/03/15, Award, 31 October 2011, ¶ 522; **CLA-0094**, *Spyridon Roussalis v. Romania*, ICSID Case No. ARB/06/1, Award 7 December 2011, ¶¶ 321, 609; **RL-0097**, *Ulysseas, Inc. v. The Republic of Ecuador*, PCA Case No. 2009-19, Final Award, 12 June 2012, ¶¶ 271-272; **RL-0098**, *UAB E energija v. Republic of Latvia*, ICSID Case No. ARB/12/33, Award of the Tribunal, 22 December 2017, ¶ 840; **RL-0099**, *Infinito Gold Ltd. v. Republic of Costa Rica*, ICSID Case No. ARB/14/5, Award, 3 June 2021, ¶ 623; **CLA-0099**, *Addiko Bank AG v. Montenegro*, ICSID Case No. ARB/17/35, Award (Excerpts), 24 November 2021, ¶ 775; **CLA-0091**, *Public Joint Stock Company Mobile TeleSystems v. Turkmenistan II*, ICSID Case No. ARB(AF)/18/4, Award, 14 June 2023 [Redacted], ¶ 395; **CLA-0090**, *Gabriel Resources Ltd. And Gabriel Resources (Jersey) v. Romania*, ICSID Case No. ARB/15/31, Award, 8 March 2024 [Redacted], ¶ 874.

[638] The tribunals found violations of the FPS standard and at least also the FET standard: **CLA-0095**, *CME Czech Republic BV v. Czech Republic*, Partial Award, UNCITRAL, 13 September 2001, ¶¶ 609-614; **CLA-0083**, *Azurix Corp. v. The Argentine Republic*, ICSID Case No. ARB/01/12, Award, 14 July 2006, ¶¶ 377, 393, 408 (e.g. FET, FPS) ; **CLA-0087**, *Siemens A.G. v. Argentine Republic*, ICSID Case No. ARB/02/8, Award, 6 February 2007, ¶¶ 273, 309 (expropriation, FET, FPS); **CLA-0093**, *Biwater Gauff (Tanzania) Ltd. v. United Republic of Tanzania*, ICSID Case No. ARB/05/22, Award, 24 July 2008, ¶¶ 519-521, 628, 731 (expropriation, FET, FPS); **CLA-0096**, *National Grid P.L.C. v. The Argentine Republic*, UNCITRAL, Award, 3 November 2008, ¶¶ 179, 190 (FET, FPS).

Where tribunals dismissed claims under the FET standard, they also dismissed the claims under the FPS standard: **CLA-0094**, *Spyridon Roussalis v. Romania*, ICSID Case No. ARB/06/1, Award 7 December 2011, ¶¶ 321, 609; **CLA-0097**, *Tenaris S.A. and Talta - Trading e Marketing Sociedade Unipessoal Lda. v. Bolivarian Republic of Venezuela I*, ICSID Case No. ARB/11/26, Award, 29 January 2016, ¶¶ 424, 449; **CLA-0089**, *Anglo American PLC v. Bolivarian Republic of Venezuela*, ICSID Case No. ARB(AF)/14/1, Award, 18 January 2019, ¶¶ 472, 484-485; **CLA-0088**, *Global Telecom Holding S.A.E. v. Canada*, ICSID Case No. ARB/16/16, Award, 27 March 2020, ¶¶ 648, 682.

[639] **CLA-0031**, *RENERGY S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/14/18, Award, 6 May 2022, ¶ 945.

563. Claimant's reference to *Siemens v. Argentina* for its definition of "*legal security*" as "*certainty in its norms and, consequently, their foreseeable application*" is inapposite.[640] The language of the Germany-Argentina BIT expressly guaranteed the "*legal security*" of the investment.[641] Even on the facts of this case, the investor complained about the re-negotiation of his contract with the Argentine government, *i.e.* about executive action.[642]

564. Claimant's summary of *CME v. Czech Republic* is also incorrect. The tribunal concluded that the Czech Republic had "*dismantled*" the legal framework of the investment, it meant that the regulatory body had coerced the investor into amending agreements affecting the exclusivity of a broadcasting license. The Czech parliament had passed a new law, but the violation of the FPS standard was expressly based only on the conduct of the regulatory body.[643]

565. The cases of *Global Telecom Holding v. Canada*, *Anglo American v. Venezuela*, *Azurix v. Argentina* also concerned actions by regulatory bodies concerning radio frequencies,[644] VAT certificates,[645] and the termination of a concession agreement.[646] Likewise, the cases of *Biwater Gauff v. Tanzania* and *Tenerais v. Venezuela*, which Claimant cited for its theory that "*[t]he state is strictly liable for all actions of its own State organs, including its legislative bodies*",[647] only concerned executive action such as the seizure of property, the removal of staff, and inciting violence against the investment.[648] Finally, *Spyridon Roussalis v. Romania* concerned legal proceedings against the investor.[649] On the facts, the *Roussalis* tribunal rejected the FPS claim "*as there has been no allegation that the temporary interdiction order compromised the physical integrity of Claimant's investment against interference by use of force*."[650] Therefore, there is no authority for the theory that the FPS standard could be breached by legislative action.

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[640] Claimant's Memorial, ¶ 475 with reference to **CLA-0087**, *Siemens A.G. v. Argentine Republic*, ICSID Case No. ARB/02/8, Award, 6 February 2007, ¶ 303.

[641] **CLA-0087**, *Siemens A.G. v. Argentine Republic*, ICSID Case No. ARB/02/8, Award, 6 February 2007, ¶ 303.

[642] *Id*., ¶ 308.

[643] **CLA-0095**, *CME Czech Republic BV v. Czech Republic*, Partial Award, UNCITRAL, 13 September 2001, ¶¶ 501-520, 586, 613.

[644] **CLA-0088**, *Global Telecom Holding S.A.E. v. Canada*, ICSID Case No. ARB/16/16, Award, 27 March 2020, ¶ 8.

[645] **CLA-0089**, *Anglo American PLC v. Bolivarian Republic of Venezuela*, ICSID Case No. ARB(AF)/14/1, Award, 18 January 2019, ¶ 479.

[646] **CLA-0083**, *Azurix Corp. v. The Argentine Republic*, ICSID Case No. ARB/01/12, Award, 14 July 2006, ¶ 406.

[647] Claimant's Memorial, ¶ 396.

[648] **CLA-0097**, *Tenaris S.A. and Talta - Trading e Marketing Sociedade Unipessoal Lda. v. Bolivarian Republic of Venezuela I*, ICSID Case No. ARB/11/26, Award, 29 January 2016, ¶ 439.

[649] **CLA-0094**, *Spyridon Roussalis v. Romania*, ICSID Case No. ARB/06/1, Award, 7 December 2011, ¶¶ 147-157.

[650] *Id*., ¶ 609.

2. Application

566. Respondent complied with the FPS standard because it is undisputed that the physical integrity of Claimant's alleged Investment is not at issue.

567. Even if the Tribunal were to decide that the FPS standard entails wider protection (*quod non*), the reasons set out in detail above why Respondent complied with Article 13 ECT and the FET standard[651] apply correspondingly to any 'legal' FPS standard.

E. ARTICLE 10(1) SENTENCE 3 ECT

568. Claimant concludes its Memorial by alleging two claims under Article 10(1) sentence 3 ECT. Contrary to Claimant, however, the 2020 Act is neither unreasonable (see below, at 1.) nor discriminatory (at 2.).

1. Unreasonableness

a. Legal standard

569. The 2020 Act is not "*unreasonable*" within the meaning of Article 10(1) sentence 3 ECT. The Article states:

> "Such Investments shall also enjoy the most constant protection and security and no Contracting Party shall in any way impair by unreasonable or discriminatory measures their management, maintenance, use, enjoyment or disposal."

570. Claimant alleges that a State's conduct would be unreasonable within the meaning of Article 10(1) sentence 3 ECT if a State "*having induced the Claimants to invest, there was a sudden and drastic change in [the State's] policy*."[652] This is incorrect.

571. *First*, the threshold for the standard of reasonableness is that the investor must prove that the State's conduct does not even bear a reasonable relationship to a rational policy. The often-quoted definition of the term "*unreasonable*" stems from the *Saluka* tribunal. The tribunal specified that:

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[651] See above, ¶¶ 432-470 (expropriation), ¶¶ 539-555 (FET).

[652] Memorial, ¶ 490 with reference to **CLA-0066**, *Watkins Holdings S.à r.l. and others v. Kingdom of Spain*, ICSID Case No. ARB/15/44, Award, 21 January 2020, ¶ 597.

> "The standard of 'reasonableness' has no different meaning in this context than in the context of the 'fair and equitable treatment' standard with which it is associated; and the same is true with regard to the standard of 'non-discrimination'. The standard of 'reasonableness' therefore requires, in this context as well, a showing that the State's conduct bears a reasonable relationship to some rational policy."[653]

572. The tribunal in *AES v. Hungary*, on which Claimant relies as authority, applied the same standard:

> "There are two elements that require to be analyzed to determine whether a state's act was unreasonable: the existence of a rational policy; and the reasonableness of the act of the state in relation to the policy."[654]

573. The tribunal in *Clayton v. Canada* emphasized that a State is not required to show that the measures were perfect in their design or implementation.[655]

574. *Second*, Claimant confuses the standard of reasonableness with the standard of legitimate expectations. Legitimate expectations are a prong of the FET standard (on which Claimant does not rely in the Memorial), but not of unreasonableness. Claimant did not provide any authority for a tribunal sustaining a legitimate-expectations claim only under Article 10(1) sentence 3 ECT.

575. Indeed, the tribunal in *Kruck v. Spain* presided by Professor Lowe rejected the claimant's allegation that a violation of Article 10(1) sentence 3 ECT could follow from a frustration of legitimate expectations and emphasized that measures must be unreasonable by themselves and not by reference to any prior conduct by the State. Notably, the *Kruck* tribunal rejected the claim under Article 10(1) sentence 3 ECT even though it sustained the FET claim:

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653 **RL-0020**, *Saluka Investments BV v. The Czech Republic*, PCA Case No. 2001-04, Partial Award, 17 March 2006, ¶ 460.

654 **CLA-0032**, *AES Summit Generation Limited and AES-Tisza Erömü Kft v. The Republic of Hungary*, ICSID Case No. ARB/07/22, Award, 23 September 2010, ¶ 10.3.7.

655 **RL-0101**, *William Ralph Clayton, William Douglas Clayton, Daniel Clayton and Bilcon of Delaware, Inc. v. Government of Canada*, PCA Case No. 2009-04, Award on Jurisdiction and Liability, 17 March 2015, ¶ 437: "The Tribunal agrees that international responsibility and dispute resolution, in the investor context, is not supposed to be the continuation of domestic politics and litigation by other means. Modern regulatory and social welfare states tackle complex problems. Not all situations can be addressed in advance by the laws that are enacted. Room must be left for judgment to be used to interpret legal standards and apply them to the facts. Even when state officials are acting in good faith there will sometimes be not only controversial judgments, but clear-cut mistakes in following procedures, gathering and stating facts and identifying the applicable substantive rules. State authorities are faced with competing demands on their administrative resources and there can be delays or limited time, attention and expertise brought to bear in dealing with issues. The imprudent exercise of discretion or even outright mistakes do not, as a rule, lead to a breach of the international minimum standard."

> "The Tribunal accordingly considers that while the adoption of the measures was a breach of the right of the DSG Claimants to fair and equitable treatment, the measures did not themselves constitute an independent violation of the DSG Claimants' rights not to have the management, use, enjoyment or disposal of their investments impaired by unreasonable or discriminatory measures. This element of the DSG Claimants' claim is dismissed."[656]

b. Application

576. Applying the decisive *Saluka* standard ("*a reasonable relationship to some rational policy*"), the 2020 Act is indeed a non-issue. The 2020 Act mitigates climate change. So far, Claimant has not disputed that climate action is rational. Therefore, the claim must be dismissed.

2. Discrimination

577. Contrary to Claimant's allegations, the 2020 Act is not discriminatory, especially not under Article 10(1) sentence 3 ECT. Claimant's contention in the Memorial is that the alleged discrimination assessment would be the same for its alleged claims under Article 13 ECT[657] and Article 10(1) sentence 3 ECT. Therefore, Respondent refers in full to the reasons set out above at paras. 434-448 why the 2020 Act is not discriminatory.

[656] **RL-0102**, *Mathias Kruck, Frank Schumm, Joachim Kruck, Jürgen Reiss and others v. Kingdom of Spain*, ICSID Case No. ARB/15/23, Decision on Jurisdiction, Liability and Principles of Quantum, 14 September 2022, ¶¶ 260-261. In a separate opinion, Professor Douglas considered hat there may not even have been a violation of the investors' legitimate expectations (**RL-0103**).

[657] Cf. Memorial, ¶¶ 363-364: "Article 13(1)(b) of the ECT requires that to be lawful, an expropriatory measure cannot be discriminatory, i.e. the investor must not be treated differently than other investors in a similar situation. As it will be further detailed below (see Section E.VII), the Coal Ban Law constitutes a discriminatory measure."

V. QUANTUM

578. The 2020 Act did not cause any losses for Claimant. As set out in ample jurisprudence,[658] Claimant bears the burden to proof a quantum case. Claimant failed to establish such case for the reasons summarized below. These include reasons that require to strike the entire or the largest part of the damages claim from the outset (see below at A.) and further reasons that would each require to reduce any hypothetical claim if the Tribunal were *arguendo* to decide to work with Claimant's valuation (at B.).

A. FUNDAMENTAL FLAWS REQUIRING TO STRIKE DAMAGES FROM THE OUTSET

1. Claimant's concession that the expropriation claim is at best EUR 11 mil.

579. Claimant's first alleged legal basis for its claim is Article 13(2) sentence 1 ECT.[659] The standard of compensation in Article 13(1) sentence 2 ECT is as follows:

> "Such compensation shall amount to the fair market value of the Investment expropriated at the time immediately before the Expropriation or impending Expropriation became known in such a way as to affect the value of the Investment (hereinafter referred to as the 'Valuation Date')."

580. Therefore, Article 13(1) sentence 2 ECT only allows compensation for the fair market value but-for the Measures. In this regard, Claimant and its experts made the stunning concession

[658] **RL-104**, *Westwater Resources, Inc. v. Republic of Türkiye*, ICSID Case No. ARB/18/46, Award, 3 March 2023, ¶ 296; **RL-0102**, *Mathias Kruck, Frank Schumm, Joachim Kruck, Jürgen Reiss and others v. Kingdom of Spain*, ICSID Case No. ARB/15/23, Decision on Jurisdiction, Liability and Principles of Quantum, 14 September 2022, ¶ 354; **RL-0023**, *Casinos Austria International GmbH and Casinos Austria Aktiengesellschaft v. Argentine Republic*, ICSID Case No. ARB/14/32, Dissenting Opinion of Dr. Santiago Torres Bernárdez, 5 November 2021, ¶ 413; **CLA-0098**, *Pawlowski AG and Project Sever s.r.o.v. Czech Republic*, ICSID Case No. ARB/17/11, Award, 1 November 2021, ¶¶ 728-37; **RL-0028**, *Eco Oro Minerals Corp. v. Republic of Colombia*, ICSID Case No. ARB/16/41, Decision on Jurisdiction, Liability and Directions on Quantum, 9 September 2021, ¶ 894; **CLA-0008**, *Silver Ridge Power BV v. Italian Republic*, ICSID Case No. ARB/15/37, Award, 26 February 2021, ¶ 532; **CLA-0073**, *SolEs Badajoz GmbH v. Kingdom of Spain*, ICSID Case No. ARB/15/38, Award, 31 July 2019, ¶ 478; **RL-0105**, *Víctor Pey Casado and President Allende Foundation v. Republic of Chile*, ICSID Case No. ARB/98/2, Award, 13 September 2016, ¶¶ 205-206; **CLA-0137**, *Mobil Investments Canada Inc. and Murphy Oil Corporation v. Government of Canada (I)*, ICSID Case No. ARB(AF)/07/4, Award, 20 February 2015, ¶¶ 52-53; **RL-0106**, *The Rompetrol Group N.V. v. Romania*, ICSID Case No. ARB/06/3, Award, 6 May 2013, ¶ 190; **CLA-0110**, *Joseph Charles Lemire v. Ukraine (II)*, ICSID Case No. ARB/06/18, Award, 28 March 2011, ¶ 155; **RL-0107**, *Grand River Enterprises Six Nations, Ltd., et.al. v. United States of America*, Award, 12 January 2011, ¶ 237; **CLA-0082**, *Técnicas Medioambientales Tecmed, S.A. v. United Mexican States*, ICSID Case No. ARB(AF)/00/2, Award, 29 May 2003, ¶ 190.

[659] Claimant's Memorial, ¶ 515: "As the Tribunal knows, the applicable standard of compensation for lawful expropriations is set out in Article 13(1) of the ECT."

that the alleged fair market value of AET's shares in the Lünen Plant but-for the Measures is at best EUR 11.0 mil.[660]

581. The remainder of the alleged claim (EUR 74.4 mil.) does not qualify under Article 13(1) sentence 2 ECT. That remainder concerns an allegedly-negative value in the Actual scenario. That is, Claimant seeks to claim EUR 74.4 of the alleged EUR 85.5 mil. not as "*the fair market value […] immediately before*" (Article 13(1) ECT) the 2020 Act, but as the allegedly-negative value after the 2020 Act. Article 13(1) ECT, however, is clear. It does not allow to claim any allegedly-negative value after a measure, but only a value "*immediately before*" the measure. Therefore, EUR 74.4 mil. of Claimant's alleged claim as of January 2020 must be struck under Article 13(1) ECT.

2. Premature valuation date under Article 13(1) ECT

582. A further fundamental flaw in Claimant's claim under Article 13(1) ECT is that Claimant applies a premature valuation date. Article 13(1) ECT states that the alleged Investment must be valued "*at the time immediately before the Expropriation or impending Expropriation became known*." Claimant instructed its experts to apply as valuation date the day the draft 2020 Act was introduced in the *Bundestag* (January 2020). However, for the following reasons, choosing January 2020 as the valuation date is premature, pending the decision whether and when a Coal-Firing Stop will be issued to the Lünen Plant.

583. *First*, in the Memorial, Claimant alleges "*the foreseen Shutdown Path for the Lünen plant results in a shutdown by April 2031*."[661] The forecast Claimant refers to is only the forecast of its own experts. The 2020 Act does not set any fixed shut-down date for individual plants. The 2020 Act only states that hard-coal fired power production must end by 2038 and prescribes certain interim reduction targets for 2022 and 2030. The only fixed rule in the 2020 Act in this regard is that the orders prohibiting the firing of hard-coal (they do not prohibit to fire natural gas) must be issued in accordance with the hard-coal plants' age.[662]

584. *Second*, the precise date when the Lünen Plant receives its Coal-Firing Stop will be subject to an order from the Federal Network Agency (*Bundesnetzagentur*, "**BNetzA**"). To date,

[660] Secretariat ER I, ¶ 2.11 (Table 1): "But-For FMV: € 11,031,574."
[661] Claimant's Memorial, ¶ 358.
[662] **R-0105-ENG/GER**, section 29(4) and (5), section 33(2).

it has not issued any order to the Lünen Plant. The BNetzA issues these orders based on a complex assessment of the German electricity market's demand and supply. Compared to the expectations as of 2020, it may well be that the Lünen Plant receives an order earlier or later than projected as of 2020.[663]

585. *Third*, sect. 54(1) of the 2020 Act itself stipulates that the reduction targets under the 2020 Act are subject to review by the government. The next reviews must occur by 15 August 2026 and 15 August 2029. Given the drastic changes in the energy market's environment since 2020 (*e.g.* through the war in Ukraine), it is not excluded that this review results in changes to the phase-out paths.[664]

586. *Fourth*, events since January 2020 have already shown that the phase-out paths under the 2020 Act may be adjusted in individual circumstances. In 2022, as a result of the ever-increasing geopolitical challenges, the government of the Federal State of North Rhine-Westphalia agreed with the operator RWE to extend the lifetime of two lignite plants from 2022 until 2024 in exchange for moving the shut-down dates of other lignite plants from 2038 to 2030.[665]

587. *Fifth*, the Lünen Plant might stop firing hard-coal voluntarily even before any order under the 2020 Act. Indeed, as set out in further detail below in sect. 4, all calculations of Claimant's experts are contingent on their input data which ignores the goals under the Paris

[663] *Id*., section 34(3) sentence 1: "On the basis of the accompanying grid analysis in accordance with subsection (2), the Bundesnetzagentur conducts an assessment as to whether the statutory reduction orders for individual hard-coal fired installations in the ranking as per section 29 (5) should be suspended in the interest of security and reliability of the electricity supply system and makes a recommendation to the Federal Ministry for Economic Affairs and Energy four weeks prior to each administrative order date at the latest. Section 35(2) sentence 1: "On the basis of the accompanying grid analysis as per section 34 (2), the Bundesnetzagentur suspends the statutory reduction order for individual hard-coal fired installations as per subsection (1) if the assessment in accordance with section 34 (3) sentences 1 and 2 shows that a particular hard-coal fired installation is essential to the security and reliability of the electricity supply system."

[664] *Id*., section 54(1): "The Federal Government conducts reviews on 15 August 2022, 15 August 2026, 15 August 2029 and 15 August 2032, on a scientific basis, including established criteria and associated indicators, to assess the effects of reducing and ending coal-fired power generation on supply security, the number and installed capacity of installations converted from coal to gas, the maintenance of heat supply, and electricity prices, and to review the attainment of the statutory target level as per section 4 as well as the contribution to achieving the associated climate targets, proposing measures to achieve these targets in the event that they are at risk of not being met. At the review dates specified in sentence 1, the Federal Government also examines the effects on raw materials, in particular gypsum obtained during coal-fired power generation. The respective target levels as per section 4 remain unaffected by the outcome of the examination referred to in sentence 2. In the review on 15 August 2022, the Federal Government also reviews the social compatibility of reducing and ending coal-fired power generation."

[665] **R-0169-ENG**, Ministry for Economic Affairs, Industry, Climate Action and Energy of the Federal State North Rhine-Westphalia, Key decision 2023: Milestone for climate action, strengthening security of supply and clarity for the people of the region, sect. 1.1.3.1. Key Agreement on the lignite phase-out by 2030 (**R-0169-GER**, adobe p. 6).

Agreement through *e.g.* unrealistically low CO_2 certificate prices, renewables expansions, and battery storage capacities. Changing this input data suffices to project that the Lünen Plant ought to stop firing coal voluntarily in the late 2020s.

588. In conclusion, choosing January 2020 as valuation date is pre-mature, pending the decision whether and when an order prohibiting the burning of hard-coal will be issued.

3. Failure to provide *ex post* valuation required by customary international law

589. Claimant's second alleged legal basis for its claim is the customary international law standard.[666] However, Claimant failed to instruct its experts to undertake a valuation in accordance with this standard. Therefore, Claimant's alleged claim under the customary-international-law standard must be rejected in its entirety.

590. Claimant presents the same valuation for its claims under Article 13(1) ECT and the customary international law standard. Claimant instructed its experts to undertake a so-called *ex ante* valuation. Such information ignores information after January 2020. An *ex ante* valuation is permissible under Article 13(1) ECT. However, it is not permissible under the customary international law standard. For the following reasons, the customary international law standard requires that all information up to the date of the award is included (*ex post* valuation):

591. *First*, at its core, the distinction between *ex post* and *ex ante* valuations is a question of causation. An *ex ante* valuation protects the claimant from the effects of real, non-challenged events post-dating the measure. While these events would have reduced the investment's value also in the absence of any measures, they are excluded from an *ex ante* valuation. An *ex post* valuation takes these events into account.

592. The rationale of an *ex ante* valuation only applies under Article 13(1) ECT. Here, the claimant is protected against post-measure events because the respondent State took control over the investment. Therefore, the respondent State bears the risk. This rationale does not apply for non-expropriation claims valued under the customary international law standard.

593. *Second*, the *ex post* approach is appropriate under the customary international law standard because the object and purpose of the customary international law standard is to prove

[666] Claimant's Memorial, ¶ 518: "The ECT does not explicitly address compensation for breaches of the ECT. Thus, the damage caused by Respondent's violations of its obligations under Article 10 of the ECT is to be determined in accordance with customary international law."

full reparation. Full reparation requires full information. The risk of using limited, rather than full information is over-compensation for the investor which would breach the ILC Articles.

594. *Third*, the *ex post* standard is required due to the function of full reparation. This function is to serve as a substitute for restitution. Article 35(1) ILC Articles states:

> "The State responsible for an internationally wrongful act is under an obligation to compensate for the damage caused thereby, insofar as such damage is not made good by restitution."

595. The *Chorzów Factory* judgment also described the monetary claim under customary international law as applying only if restitution is not possible:

> "Restitution in kind, or, if this is not possible, payment of a sum corresponding to the value which a restitution in kind would bear."[667]

596. Restitution can only possibly be made after the date of the award, *i.e.* after the order for restitution. Restitution cannot be made at the same time as a treaty breach. Otherwise, there would not be any treaty breach. That is, valuing the damages as of the date of the award is the only way to guarantee that damages are a proper substitute for restitution.

597. *Fourth*, applying an *ex post* valuation date is also necessary to draw a meaningful distinction between the customary international law standard on the one hand and Article 13(1) sentence 2 ECT on the other hand. As per its wording, Article 13(1) sentence 2 ECT requires an *ex ante* valuation. This provision in the ECT would be redundant if the customary international law standard would already allow for an *ex ante* valuation. Investors could rely on FET instead of incurring the burden of proving an expropriation claim. Expropriation claims would be redundant. The Tribunal, however, must give an effective, rather than a redundant meaning to Article 13(1) ECT.

598. *Fourth*, persuasive legal authorities confirm that the customary international law requires that a valuation is made as of the date of the decision (*ex post*).

599. The PCIJ's seminal *Chorzów Factory* case is the first example. The judgment is unequivocal that the customary international law standard requires an *ex post* valuation:

> "The dispossession of an industrial undertaking […] then involves the obligation to restore the undertaking and, if this is not possible, to pay its

[667] **CLA-0106**, *Factory at Chorzów (Merits)*, PCIJ Series A. No 17, Judgment, 13 September 1928, p. 47.

> value at the time of indemnification which value is designed to take place of restitution which has become impossible."[668]

600. A further example is the treatise *Calculation of Compensation and Damages in International Investment Law* (2nd edition, Oxford Univ. Press 2017) of Professor Irmgard Marboe of the University of Vienna, an updated version of her professorial thesis (*Habilitation*) written under supervision of Professor Christoph Schreuer. In chapter 3.C of her treatise, Professor Marboe analyses the valuation date separating strictly between "*(1) The Valuation Date in Expropriation Cases*"[669] and "*(2) The Valuation Date in Other Cases*".[670] In an analysis spanning several pages and many authorities, Professor Marboe concludes:

> "3.324 Under the premise of 'restitution' it seems logical that, as a matter of principle, the valuation date should be the date of the award. Schwarzenberger pointed this out in his analysis of the *Chorzów* factory case. The choice of a valuation date as late as possible ensures that all information available until that date may and can be used in order to arrive as closely as possible to full reparation. […]
>
> 3.331 The fact that subsequent events and developments are included in the valuation may also reduce the amount of damages. This is the consequence of the principle of full reparation on the basis of the restitution approach. If subsequent events led to a diminution of value, the injured party would have suffered this also in the absence of the unlawful act. This part of the damages is therefore not causally linked to the violation. Only in expropriation cases, is the objected value at the time of the expropriation the guaranteed minimum to be received. In other cases of state responsibility there is no such lower limit."[671]

601. Another persuasive authority is the award of the tribunal majority in *Quiborax v. Bolivia* – Professor Kaufmann-Kohler (as president) and The Honourable Marc Lalonde. The tribunal held that an unlawful expropriation occurred and that his would only lead to the customary international law standard.[672] The tribunal then stated at the beginning of a detailed analysis:

> "370. The Tribunal has already held that the standard of compensation in this case is not the one set forth in Article VI(2) of the BIT, but the full reparation principle under customary international law as enunciated by

[668] *Id*., pp. 91-92.

[669] **RL-0108**, Irmgard Marboe*, Calculation of Compensation and Damages in International Investment Law* (2nd edn, OUP 2017), p. 129.

[670] *Id*., p. 147.

[671] *Id*., ¶¶ 3.324, 3.331.

[672] **CLA-0108**, *Quiborax S.A., Non Metallic Minerals S.A. and Allan Fosk Kaplún v. Plurinational State of Bolivia,* ICSID Case No. ARB/06/2, Award, 16 September 2015, ¶ 371: "The treaty standard does not apply to unlawful expropriations, which are governed by the full reparation principle.".

> the PCIJ in Chorzów and restated in Article 31 of the ILC Articles. As explained in the following paragraphs, the majority of the Tribunal considers that this requires an ex post valuation, i.e., valuing the damage on the date of the award and taking into consideration information available then."[673]

602. The tribunal continued with a further 15 paragraphs of reasoning. The *Quiborax* tribunal analysed the *Chorzów Factory* case (the analysis on its own spans six paragraphs), other jurisprudence, decisions of the European Court of Human Rights and scholarship.[674] Importantly, the tribunal then provided a list of strong and persuasive rationales why the customary international law standard requires an *ex post* valuation. The tribunal reasoned that "*damages stand in lieu of restitution which would take place just following the award or judgment*."[675] The tribunal further added that "*what must be repaired is the actual harm done, as opposed to the value of the asset when taken*."[676] The tribunal also reasoned persuasively: "*What matters is that the victim of the harm is placed in the situation in which it would have been in real life, not more, not less. Using actual information is better suited for this purpose than projections […]*."[677]

603. *Fifth*, in its Memorial, Claimant only makes the following passing allegation regarding the legal standard for the valuation date under the customary international law standard: "*Article 13(1) of the ECT describes an ex ante valuation date. The same applies for other breaches of investment protection standards. [footnote 412]*"[678] However, Claimant overstates the cases cited in footnote 412 of its Memorial:

604. In *AAPL v. Sri Lanka* (CLA-92), the tribunal did not sustain an *ex ante* claim, but rejected the lost-profits claims altogether. The reason was that "*the assumptions upon which the Claimant's projection were based in the present case [are] insufficient in evidencing that Serendib was effectively by January 27, 1987, a 'going concern' that acquired a valuable 'goodwill' and enjoying a proven 'future profitability'*."[679] Therefore, the award is only an authority that the investor bears the burden of demonstrating the investment's status as a going

[673] *Id*., ¶ 371.

[674] *Id*., ¶¶ 371-376.

[675] *Id*., ¶ 377.

[676] *Ibid*.

[677] *Id*., ¶ 379.

[678] Claimant's Memorial, ¶ 527.

[679] **CLA-0092**, *Asian Agricultural Products Ltd. (AAPL) v. Republic of Sri Lanka*, ICSID Case No. ARB/87/3, Award, 27 June 1990, ¶ 107.

concern. The award is not an authority that if the investment was a going concern, the investor could ignore subsequent developments through applying an *ex ante* valuation date.

605. In *Murphy v. Ecuador* (CLA-116), the tribunal stated only that an *ex ante* valuation would be permissible in cases of loss of control or ownership: "*Under customary international law, if an investor loses ownership or control of its primary investment due to the breach by a host state of its international law obligations, the commonly accepted standard for calculating damages is to appraise the fair market value of the lost investment at the time it was lost, without taking into account subsequent events*."[680] As set out above, loss of ownership or control is also the rationale why expropriation provisions such as Article 13 ECT prescribe an *ex ante* valuation. An *ex ante* valuation is prescribed because the investor should not be exposed to value-reducing developments if the investor has no control or ownership during these developments. This rationale does not apply in a fact-pattern such as the present case where the Lünen Plant continues to operate for many years after the 2020 Act (and can operate as a gas power plant even after a Coal-Firing Stop under the 2020 Act).

606. In conclusion, the customary international law standard requires an *ex post* valuation. Claimant has not presented such *ex post* valuation. Therefore, there is no substantiated claim under this standard on record.

4. Inconsistent input data ignoring the Paris Agreement goals

607. The next reason why Claimant's claims must be dismissed in their entirety is because the claims are dependent on input data from Claimant's experts of Frontier that deny all necessities to mitigate climate change. In particular, the input data applied by Claimant's experts includes very low CO_2 certificate costs for the Lünen Plant. Low costs translate into higher profits, *i.e.* higher alleged damages. Mr. Delamer and Mr. Rozenberg (Compass Lexecon) conclude, based on the power market modelling of Mr. Koenig (Aurora), that supplementing the input with data in line with the Paris Agreement will already reduce damages to zero.[681] Above all, the Lünen Plant would become unprofitable already before the Coal-Firing Stop under the 2020 Act in the 2030s.[682]

[680] **CLA-0116**, *Murphy Exploration and Production Company International v. Republic of Ecuador II*, PCA Case No. 2012-16 (formerly AA 434), Partial Final Award, 6 May 2016, ¶ 482.

[681] Compass Lexecon ER I, ¶¶ 97, 176.

[682] Compass Lexecon ER I, sect. VI.1.; Aurora ER I, sect. 4-5.

a. Reasons for Paris Agreement-compliant input data

608. For the following reasons, the Tribunal must apply the input data on, *inter alia*, CO_2 certificate prices, renewables expansions and battery capacities recommended by Mr. Delamer and Mr. Rozenberg, *i.e.* the Ten-Year Net Development Plan (TYNDP) Global Ambition ("GA") and Distributed Energy ("DE") scenarios from the European Network of Transmission System Operators for Gas ("ENTSO-G") and Electricity ("ENTSO-E"). As Mr. Delamer and Mr. Rozenberg set out, this TNYDP GA/DE input data reflects the sensible pathways meant to reach the targets set by the Paris Agreement.[683]

609. *First*, under Article 26(6) ECT the Tribunal must apply international law. The 2015 Paris Agreement is a norm of international law. It binds, *inter alia*, Germany and Claimant's home State Switzerland. Applying projections which are far below what is necessary to reach the Paris Agreement targets would violate this binding norm of international law.[684]

610. *Second*, applying projections which are far below what is necessary to limit global warming to 1.5°C would deny States' obligations under international human rights (obligations confirmed *e.g.* by the European Court of Human Rights). Also, these international human rights are part of the applicable law.[685]

611. *Third*, applying projections which are far below what is necessary to limit global warming to 1.5°C would also deny that the 1.5°C target is codified in unchallenged measures of EU and German law.[686]

612. *Fourth*, applying projections which are far below what is necessary to limit global warming to 1.5°C would also deny the targets codified by Claimant's home State Switzerland. This contradiction would be even more severe given that Claimant has made any alleged Investment under Swiss State control as set out above.[687]

613. *Fifth*, applying projections which are far below what is necessary to limit global warming to 1.5°C would also be at odds with Claimant's own case on liability which is that

[683] Compass Lexecon ER I, sect. V.1.

[684] See above, ¶¶ 146-147.

[685] See above, sect. IV.A.1.e, ¶¶ 420-431.

[686] See above, sect. II.C.3, ¶¶151-155, and sect. II.C.5, ¶¶ 163-179.

[687] See above, sect. II.F.4, ¶¶ 322-327.

Claimant allegedly hoped that the unchallenged climate-action targets would be reached "*solely*" as Claimant puts it through the EU CO_2 certificate price mechanism.[688]

614. *Sixth*, Mr. Delamer and Mr. Rozenberg set out in detail in their expert report, that, already in 2016 (years before the 2020 Act), the market had expectations of tightening regulation and climate-action policies beyond the phase-out of hard-coal energy. These expectations should not be ignored when determining the fair market value.[689]

615. *Seventh*, as Mr. Delamer and Mr. Rozenberg point out in their expert report, the proposed input data of Claimant's experts is also inappropriate because Claimant's expert use inconsistent input data mixing *e.g.* electricity prices from one source with CO_2 certificate prices from other sources. Indeed, Claimant's experts themselves rely on ENTSO-E regarding electricity demand in Germany.[690]

b. Real market transactions validate that Claimant's data is unrealistic

616. Finally, Mr. Delamer and Mr. Rozenberg point out that transactions that happened in reality show that the market projections of Claimant and its experts cannot be followed.

617. Two transactions are the bids of Vattenfall (for the Moorburg plants) and RWE (for the Westfalen plant) in the auctions under the 2020 Act. Even the maximum price awarded to them is far below the value per MW calculated by Claimant's experts for the Lünen Plant. Even the alleged value per MW installed capacity in the Actual scenario calculated by Claimant's experts is more than three times higher than what RWE voluntarily accepted for participating with the Westphalen plant in the auctions.[691] This shows that Claimant's experts apply general methodological flaws. Regarding the methodology, Vattenfall's and RWE's decision to bid are relevant. They are market players. Vattenfall is fully State-owned (just like Claimant). RWE is by majority privately owned. Several minority shareholders of RWE are publicly owned and identical to the shareholders in the Lünen Plant, *e.g.* the Dortmund Utilities (Stadtwerke Dortmund).

618. A further example is Engie's 2019 sale to U.S. investor Riverstone. The transaction included Engie's Wilhelmshaven hard-coal power plant in Northern Germany. The transaction

[688] See above, sect. II.A.5, ¶¶ 65-74.
[689] Compass Lexecon ER I, sect. IV.3.
[690] *Id*., sect. V.1.1.
[691] Cf. *Id*., sect. V.4.1.

pre-dates the 2020 Act. Therefore, it is indicative for values in the But-for scenario. Mr. Delamer and Mr. Rozenberg conclude on the basis of the public transaction information that the value per MW allocated by U.S. investor Riverstone is only approximately one tenth of the value Claimant's experts allocate to the Lünen Plant's value per MW in the But-for scenario.[692] This shows that Claimant's valuation is unreasonable, *inter alia*, because it is built on CO_2 certificate-price hopes that deny reality.

619. For the above reasons, the Tribunal must not base the quantification of Claimant's losses (if any) on projections that are insufficient to reach the Paris Agreement targets. Applying input data in line with the Paris Agreement is already sufficient to reduce damages to EUR 0. The result is reasonable because it shows that if the unchallenged regulations under the Paris Agreement, other norms of international law, EU law and German law that require to meet climate targets are implemented correctly in the market, they are sufficient to push polluting power plants such as the Lünen Plant out of the market before 2038.

5. Concealed Swiss legal obligation to exit Lünen Plant

620. The next reason which, on its own, is sufficient to reject Claimant's claim in its entirety is that Claimant concealed its obligation to exit the Lünen Plant under Swiss law. To recall, a referendum with the force of law obligates Claimant (also a State-owned company) to exit the Lünen Plant as soon as the breakeven point is reached but in any case no later than 2035 (even with losses).[693] That is, Swiss law obligates AET not to make any profits through holding the shares in the Lünen Plant. Claimant's valuation, however, projects Claimant's alleged cash-flows well into the 2050s. Above all, Claimant claims lost-profits for these alleged cash-flows of the Lünen Plant. This contradicts Claimant's obligations under Swiss law. In addition, since 1 August 2021, AET has been obligated by law to divest its entire 15.84% stake in Trianel as soon as possible. Claimant cannot claim damages in this arbitration for a hypothetical fair market value without disclosing its actual efforts to divest its shareholding.

[692] *Id*., sect. V.4.2.

[693] See above, sect. II.B.1, ¶¶ 105-118.

6. Failure to submit a reviewable power-market modelling

621. Claimant failed to submit a power-market model that could be replicated and reviewed by other experts. Therefore, Claimant's claim is not substantiated and must be dismissed in its entirety.

622. Respondent instructed Mr. Hanns Koenig (Aurora) to review the power market modelling of Claimant's experts, express his views on any material points of agreement or disagreement in this regard, and undertake sensitivity analyses in Claimant's power market model, *e.g.* regarding the conversion into a gas power plant and the benefits for AET's non-hard-coal portfolio.

623. Mr. Koenig concluded that the data submitted on record by Claimant's experts from Frontier is insufficient to replicate their model. Accordingly, unless and until Claimant provides further data, Respondent cannot exercise its due-process right to have the model reviewed in depth and have sensitivity analyses done in this model.

624. For the reasons why Claimant's model cannot be replicated, Respondent refers to Chapter 3 of Mr. Koenig's expert report in its entirety.

625. In summary, Mr. Koenig concludes the following: *first*, Frontier failed to provide essential data points necessary to replicate the model, *e.g.* regarding power plants operating on neighbouring European markets or the effect of intra-European energy trading on its price projections.[694] *Second*, in other respects, the information and results of the Frontier Report are inconsistent with each other. Claimant's experts provide no indication which information prevails. This prevents Mr. Koenig from identifying the input data which Frontier used for its modelling in key aspects such as the overall installed capacity of power plants and power demand in Germany and neighbouring countries.[695] *Third*, Mr. Koenig notes that he was already able to identify several methodological and scenario design flaws in the modelling which serves to exaggerate the gross margin of hard-coal power plants.[696] While these flaws must be corrected in any case as set out in the following section B., they cast further doubt on whether the other aspects

[694] Aurora ER I, section 3.3.

[695] *Id*., section 3.2.

[696] *Id*., section 3.1.

where Frontier did not provide sufficient information have been treated in an adequate manner, or whether the lack of information only conceals further flaws in the model.

626. In conclusion, Claimant failed to substantiate its case.

B. FURTHER NECESSARY REDUCTIONS TO CLAIMANT'S VALUATION (*QUOD NON*)

627. Even if the Tribunal were to consider basing any claim on Claimant's and its experts' valuation (*quod non*), this valuation remains exaggerated for the following reasons.

1. Failure to mitigate damages: rejection of plant conversion

628. The first reason is Claimant's concession that a conversion of the Lünen Plant into a gas plant would be possible and would increase the value of the Lünen Plant. As a result, the conversion would mitigate Claimant's alleged losses. However, Claimant refuses such mitigation. Under the applicable legal standard (see below, at 1.) Claimant cannot claim damages for losses caused by its own failure to mitigate damages (at 2.).

a. Legal standard on mitigation

629. The following principles govern Claimant's duty to mitigate its damages:

630. *First*, the principle that investors must take reasonable steps to mitigate their losses is an established principle of investment arbitration and international law. The tribunal in *Middle East Cement v. Egypt* (presided by Professor Böckstiegel) recognised mitigation as a general principle of international law:

> "The duty to mitigate damages is not expressly mentioned in the BIT. However, this duty can be considered to be part of the General Principles of Law which, in turn, are part of the rules of international law which are applicable in this dispute according to Art. 42 of the ICSID Convention."[697]

[697] **CLA-0124**, *Middle East Cement v. Arab Republic of Egypt*, ICSID Case ARB/99/6, Award of 12 April 2002, ¶ 167.

631. The tribunal in *HEP v. Slovenia* (Sir David A.R. Williams, Professor Jan Paulsson, The Hon. Charles N. Brower), ruling under the ECT, also classified mitigation as a general principle of international law:

> "With regard to […] mitigation, the Tribunal finds that general principles of international law applicable in this case require an innocent party to act reasonably in attempting to mitigate its losses."[698]

632. The principle of mitigation precludes the claimant from recovering its loss to the extent that it could have been reasonably avoided by the claimant. The application of the mitigation obligation was summarized by the tribunal in *Clayton/ Bilcon v. Canada* (Judge Bruno Simma presiding):

> "The rationale of the duty to mitigate damages is to encourage efficiency and to minimize the consequences of unlawful conduct (such as a breach of treaty). […] The first limb of the mitigation principle concerns the unreasonable failure by the claimant to act subsequent to a breach of treaty, where it could have reduced the damages arising (including by incurring certain additional expenses).[699]

633. *Second*, contrary to Claimant, Respondent is neither subject to a "*high*" burden of proof nor are there certain mitigation measures which would be "*conceptually beyond the scope damage mitigation*".[700] Mitigation is subject to the usual standard of proof and whether a mitigation measure is reasonable depends on the facts of the individual case.

634. Claimant is wrong to allege that Respondent's burden of proof "*is a high one*". For this allegation Claimant relies on the award in *Cairn v. India* as well as one article which in turn

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[698] **CLA-0126**, *Hrvatska Elektroprivreda d.d. v. Republic of Slovenia*, ICSID Case No. ARB/05/24, Award, 17 December 2015, ¶ 215. See also **RL-0109**, *Case concerning the Gabčíkovo-Nagymaros Project (Hungary v. Slovakia)*, International Court of Justice, Judgment, 25 September 1997, ¶¶ 80-81; **CLA-0095**, *CME Czech Republic BV v. Czech Republic*, Partial Award, UNCITRAL, 13 September 2001, ¶ 482 ("[o]ne of the established principles in arbitral case law"); **CLA-0121**, *AIG Capital Partners, Inc. and CJSC Tema Real Estate Company Ltd. v. The Republic of Kazakhstan*, ICSID Case No. ARB/01/6, Award, 7 October 2003, ¶ 10.6.4(1) and (3) ("adopted in common law and civil law countries as well as in International Conventions and other international instruments […] frequently applied by international tribunals", "recognized in international law"); **RL-0110**, *EDF International S.A., SAUR International S.A. and León Participaciones Argentinas S.A. v. Argentine Republic*, ICSID Case No. ARB/03/23, Award, 11 June 2012, ¶ 1302 ("a well-established principle in investment arbitration"); **CLA-0118**, *William Richard Clayton et al. v. The Government of Canada*, PCA Case No. 2009-04, Award on Damages, 10 January 2019, ¶¶ 195-202 (196: "an important aspect of State responsibility […] affirmed by the ILC and applied by international tribunals"). See also **CLA-0055**, ILC Draft Articles on Responsibility of States for Internationally Wrongful Acts, with commentaries, 2001, Article 31, ¶ 11.

[699] **CLA-0118**, *William Richard Clayton et al. v. The Government of Canada*, PCA Case No. 2009-04, Award on Damages, 10 January 2019, ¶¶ 204-205. Cited by **CLA-0120**, *Cairn Energy PLC and Cairn UK Holdings Limited (CUHL) v. Government of India*, PCA Case No. 2016-07, Award, 21 December 2020, ¶ 1887.

[700] Claimant's Memorial, ¶¶ 596, 602.

also relies on *Cairn v. India*.[701] The tribunal in *Cairn v. India* did not advocate a "*high*" burden of proof. The tribunal merely required, as is true for every disputed fact, that Claimant's unreasonable conduct must be proved rather than speculated on:

> "As a rule, it will require sufficient evidence to show that a claimant's conduct (action or inaction) following the Respondent's breach was unreasonable, abusive or against its own economic interests. For this reason, tribunals are seldom persuaded by speculative options of mitigation that are proposed in hindsight."[702]

635. Correspondingly, Claimant's other authorities which addressed the burden of proof also did not state that this burden of proof on mitigation was "*a high one*", as Claimant puts it.[703]

636. *Third*, Claimant's theory that certain measures are "*conceptually beyond the scope damage mitigation*"[704] is incorrect. Which mitigation measures could reasonably be expected from the claimant at the time is a question of fact, not law. The tribunal in *EDF v. Argentina* (Professor William W. Park, Mr. Jesús Remón Peñalver, Professor Gabrielle Kaufmann-Kohler) emphasized:

> "Whether the aggrieved party has taken reasonable steps to reduce the loss is a question of fact, not law. What is reasonable depends largely upon the facts of the individual case."[705]

637. The tribunal in *AIG v. Kazakhstan*, on which Claimant relied for its theory, also confirmed that what is reasonable depends on the facts:

> "The question of mitigation of damages is always a question of fact: as to whether the loss was avoidable by reasonable action that could have been taken by a Claimant is also a question of fact, not of law."[706]

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[701] Claimant's Memorial, ¶ 596 with reference to **CLA-0120**, *Cairn Energy PLC and Cairn UK Holdings Limited (CUHL) v. Government of India*, PCA Case No. 2016-07, Award, 21 December 2020, ¶ 1888; **CLA-0123**, C. Osborne, D. Grunwald and Ö. Kama, *Contributory Fault, Mitigation and other Defences to Damages*, The Investment Treaty Arbitration Review, 18 June 2021, p. 5.

[702] **CLA-0120**, *Cairn Energy PLC and Cairn UK Holdings Limited (CUHL) v. Government of India*, PCA Case No. 2016-07, Award, 21 December 2020, ¶ 1888.

[703] **CLA-0121**, *AIG Capital Partners, Inc. and CJSC Tema Real Estate Company Ltd. v. The Republic of Kazakhstan*, ICSID Case No. ARB/01/6, Award, 7 October 2003, ¶ 10.6.4(4); **CLA-0122**, *Unión Fenosa Gas S.A. v. Arab Republic of Egypt*, ICSID Case No. ARB/14/4, Award, 31 August 2018, ¶ 10.126.

[704] Claimant's Memorial, ¶ 602.

[705] **RL-0110**, *EDF International S.A., SAUR International S.A. and León Participaciones Argentinas S.A. v. Argentine Republic*, ICSID Case No. ARB/03/23, Award, 11 June 2012, ¶ 1306.

[706] **CLA-0121**, *AIG Capital Partners, Inc. and CJSC Tema Real Estate Company Ltd. v. The Republic of Kazakhstan*, ICSID Case No. ARB/01/6, Award, 7 October 2003, ¶ 10.6.4(4).

638. Indeed, Claimant's authorities for its theory also turned on their own facts rather than purporting to lay down abstract rules on what constitutes (un)reasonable post-breach behaviour. In *SPP v. Egypt*, the claimant did not have to accept an alternate site for the project that site was unsuitable.[707] In *AIG v. Kazakhstan*, the claimant did not have to accept an alternate site *inter alia* because the original site "*served as a principal pre-condition for the implementation of the investment project*"[708] and the respondent "*expressly disclaimed that there was any legal obligation on the part of the Claimants to accept the alternate site*".[709] In *Unión Fenosa v. Egypt*, the tribunal accepted detailed evidence of the claimant on their sales volume, customer base, and pricing which suggested that a certain mitigation measure would not reduce the overall amount of claims.[710] Likewise, the tribunal in *HEP v. Slovenia*, accepted the investor's contention that it could not have taken certain mitigation measures for a mix of financial and regulatory reasons.[711]

b. Application

639. For the following reasons, the facts of the case establish that Claimant's refusal to consider any conversion into a gas power plant violates the duty to mitigate damages.

640. *First*, the increase in value through a gas power plant is not speculative, but undisputed. In detail, Claimant and its experts conceded:

- the maximum costs would be only EUR 38-47 mil. for the entire power plant (not just for Claimant's shareholding);[712]
- such conversion would result in average annual profits of at least EUR 35.9 mil. per year;[713] and
- the conversion into a gas power plant would result in at least a EUR 13.9 mil. profit for Claimant.[714]

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[707] **CLA-0125**, *Southern Pacific Properties (Middle East) Limited v. Arab Republic of Egypt*, ICSID Case No. ARB/84/3, Award, 20 May 1992, ¶ 172.

[708] **CLA-0121**, *AIG Capital Partners, Inc. and CJSC Tema Real Estate Company Ltd. v. The Republic of Kazakhstan*, ICSID Case No. ARB/01/6, Award, 7 October 2003, ¶ 10.6.4(4).

[709] *Id*., ¶ 10.6.4(5)(a).

[710] **CLA-0122**, *Unión Fenosa Gas S.A. v. Arab Republic of Egypt*, ICSID Case No. ARB/14/4, Award, 31 August 2018, ¶ 10.129.

[711] **CLA-0126**, *Hrvatska Elektroprivreda d.d. v. Republic of Slovenia*, ICSID Case No. ARB/05/24, Award, 17 December 2015, ¶ 217.

[712] Claimant's Memorial, ¶ 614.

[713] Frontier ER I, Table 2.

[714] Secretariat ER I, ¶ 6.30.

641. Notably, the engineering experts Mr. Wünsch and Mr. Dambeck (Prognos) conclude that this conversion would be possible with even lower costs and higher efficiency. They also note that additional conversion options exist which, depending on the hydrogen strategy, may result in even better conversion options.[715]

642. *Second*, Claimant's main alleged defense that "*a conversion would mean that an Investor would need to change its coal-fired power plant into a different type of plant*"[716] is only an attempt to escape the mitigation duty through semantics. What matters is not the 'type' of plant, but the real opportunity to minimize losses. The conversion option that Claimant itself already conceded means, in essence, that simply the coal burner is replaced by a gas burner. As already evidenced by the low costs of the conversion (according to Claimant's experts no more than EUR 38-47 mil. for the entire plant, not just Claimant's share), this is not significant. EUR 38-47 mil. are a fraction of the costs of a new plant (costing likely more than EUR 1 bln.).

643. *Third*, Claimant complains that banks might be reluctant to finance the conversion. Claimant asserts to have doubts whether banks "*would even still provide financing for fossil fuel-fired power plants.*"[717] There cannot be a dispute that banks finance gas power plants. Gas power plants are being built from scratch in Germany. It is implausible that all of them are built with 100% equity (which Claimant would have to proof). Also, the EU taxonomy regulation labels gas power plants as sustainable. This gives an incentive for banks to finance these plants.[718]

644. *Fourth*, Claimant also complains that the costs of the conversion would amount already to 31 % of the equity provided for building the plant.[719] However, the equity Claimant provided for the original building of the Lünen Plant was only low because Claimant made the voluntary decision to finance the project with high leverage. This is Claimant's not Respondent's problem. Investors with a high leverage or even over-leverage cannot have a *carte blanche* to escape mitigation duties. Otherwise, investment law would treat aggressive investors more favourably than investors who plan conservatively.

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[715] Cf. Prognos ER I, ¶¶ 41-43.

[716] Claimant's Memorial, ¶ 609.

[717] Claimant's Memorial, ¶ 609.

[718] **R-0170,** Official Journal of the European Union L 198/13, Regulation EU (2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088, 22 June 2020.

[719] Claimant's Memorial, ¶ 610.

645. *Fifth*, Claimant complains that it would have to "*speculate that also all other shareholders would be willing to do so [converting]*."[720] However, Claimant cannot hide behind its co-shareholders. Claimant, not Respondent, chose these co-shareholders in the first place. If the co-shareholders take an irrational decision, this must be held against Claimant, not against Respondent. Furthermore, Respondent recalls that Claimant's co-shareholder Trianel GmbH has already written two letters to the Ministry for Economic Affairs and Climate Action to advertise for a conversion.[721]

646. In conclusion, Claimant failed to mitigate its damages. Any claim (if any) must be reduced by EUR 13.9 mil. at a minimum (the increase in value through a conversion according to Claimant's experts). Respondent reserves the right to amend this amount after document production and once Claimant has provided sufficient data from its power market modelling to supplement this model with the correct input data from Mr. Wünsch and Mr. Dambeck (see also below, section H.).

2. Failure to mitigate damages: concessions towards banks

647. A further reason why Claimant's damages (if any) would have to be reduced is Claimant's failure to mitigate its damages and by negotiating with prudence with the Lünen Plant's banks. EUR 13.7 mil. of the alleged net claim relates to the allegedly outstanding debt at the time of the Lünen Plant's Coal-Firing Stop.[722]

648. However, as set out above, the only clear contractual rule that would obligate Claimant to pay for this outstanding debt is a contract amendment from 2023, *i.e.* concluded voluntarily three years after the alleged Measure. The contractual documentation before 2023 put on record by Claimant shows significant uncertainty whether Claimant would be contractually liable for such debt. Claimant failed to demonstrate that it exercised all prudence in the re-structuring negotiations with the banks.[723]

[720] *Ibid*.

[721] See above, ¶¶ 275-275.

[722] Compass Lexecon ER I, ¶ 127.

[723] See in detail above, ¶¶ 262-266.

3. Failure to account for benefits through portfolio effect

649. In addition, benefits that AET's power plants other than the Lünen Plant enjoyed as a result of the increase in electricity prices caused by the 2020 Act must be taken into account on quantum.

a. Legal standard

650. The legal standard requires to account for benefits caused by the alleged measures. Article 36 ILC Articles state:

> "1. The State responsible for an internationally wrongful act is under an obligation to compensate for the damage caused thereby, insofar as such damage is not made good by restitution.
>
> 2. The compensation shall cover any financially assessable damage including loss of profits insofar as it is established."

651. The provision requires to assess all consequences of the relevant acts that are quantifiable. If the relevant act also causes benefits, these reduce the damage. Hence, they must be taken into account.

652. Indeed, this is in line with the formulation of the PCIJ in *Chorzów Factory*:

> "reparation must wipe out all the consequences of the illegal act and reestablish the situation which would, in all probability have existed if that act had not been committed."[724]

653. Customary international law requires to assess "*all the consequences*", *i.e.* not just detrimental, but also beneficial consequences. Otherwise, reparation would not "*reestablish the situation*" but-for the challenged measures but would put the investor in a better situation than the investor would have been but-for the challenged measures.

654. Indeed, putting the investor in a better situation than but-for the measures would violate the prohibition of over-compensation. In its official commentary to the Articles on State Responsibility, the ILC confirms that damages can only be compensatory, not over-compensatory:

> "the function of Article 36 is purely compensatory as its title indicates. Compensation corresponds to the financially assessable damage suffered by the injured State or its nationals. It is not concerned to punish the

[724] **CLA-0106**, *Factory at Chorzów (Merits)*, PCIJ Series A. No 17, Judgment, 13 September 1928, p. 47.

> responsible State […]. Monetary compensation is intended to offset, as far as may be, the damage suffered as a result of the breach."[725]

655. Therefore, if the relevant act itself reduces the damage, less compensation will be required to offset the remaining (if any) damage.

656. Jurisprudence on the treatment of beneficial effects of challenged measures is limited. The reason may be that only few measures have beneficial effects. However, in those cases in which potentially beneficial effects were at issue, the tribunals clearly stated that such beneficial effects must be assessed.

657. In the 2004 *GAMI v. Mexico* award, the tribunal of Jan Paulsson, Professor Reisman and Julio Lacarte-Muró even denied the claims altogether in light of, *inter alia*, the beneficial effects of the challenged measures on the claimant's industry (the sugar industry).[726]

658. In *HEP v. Slovenia*, Slovenia raised the defense that but-for the measures, HEP (a utility company) would have charged lower prices from the consumers. That is, whereas in the present case, it is undisputed that the electricity market (*i.e.* not a voluntary decision of Claimant) increased the electricity prices as a consequence of the 2020 Act, Slovenia invoked voluntary acts of HEP which are more difficult to prove. Yet, even for Slovakia's defense, the tribunal of David Williams, Judge Brower and Jan Paulsson noted in the 2015 award:

> "[T]he Tribunal does not find the Claimant's arguments that pass-on has never been applied under international law to be apposite. The correct approach is that of the Respondent; namely, to consider the defence within the framework of compensation in international law. While these concepts of compensation are more fully discussed below, it is trite to observe that the Claimant can only recover in compensation the loss that it has actually suffered. The purpose of damages is to compensate the injured party, not to punish the wrong-doer. The pass-on defence thus raises an essentially

[725] **CLA-0055**, ILC Draft Articles on Responsibility of States for Internationally Wrongful Acts, with commentaries, 2001, Article 36 para. 4.

[726] **RL-0059**, *GAMI Invs. Inc. v. United Mexican States*, UNCITRAL, Final Award, 15 November 2004, ¶¶ 85, 87: "GAMI's approach seems to be all or nothing. But no credible cause-and-effect analysis can lay the totality of GAMI's disappointments as an investor at the feet of the Mexican Government. Both sides agree that the economics of sugar are highly distorted and subject to powerful international market forces. […] Recent developments have apparently been positive. GAMI presumably benefits from them. […] The present Tribunal does not doubt that the fulfilment of the overarching regulatory objectives in question (reference price/export requirements/production controls) would in a very significant way have improved GAM's prospects and those of its shareholders. The Sugar Program has more recently been implemented with considerable success. The industry as a whole has enjoyed a revival even without the desired access to the US market."

factual question: has the Claimant suffered no loss because it recovered any increase in costs through an increase in revenue?"[727]

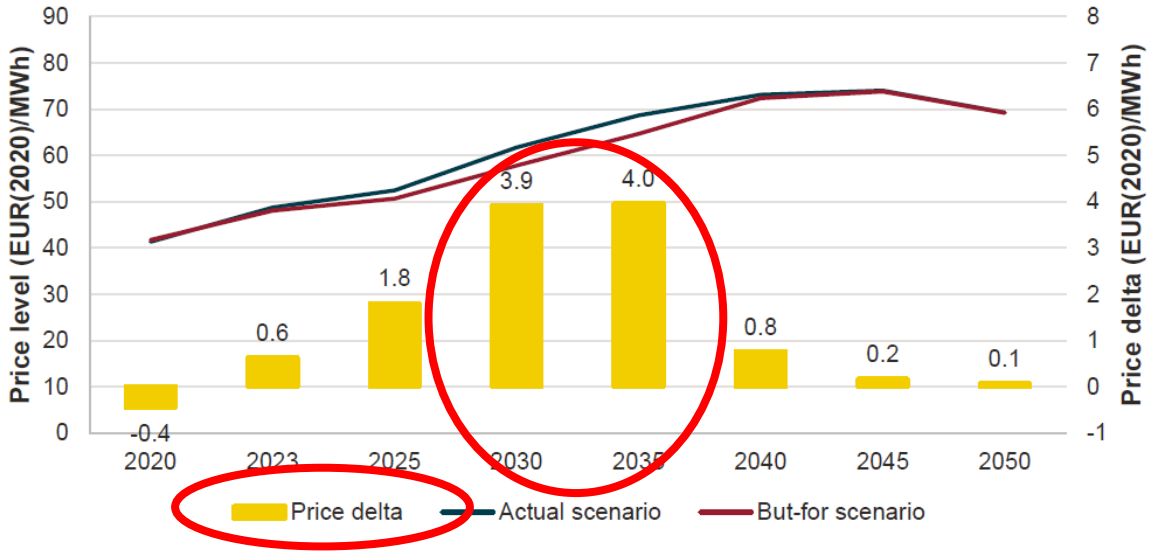
659. In conclusion, the decisive question what an investor has "*recovered […] through an increase in revenue*" is a necessary element of the required assessment whether an investor has suffered any losses.

b. Undisputed increase in electricity prices through 2020 Act

660. In the present case, Claimant has been and will be able to recover a significant amount through an increase in revenues causes by the 2020 Act. The driver behind this benefit is that it is undisputed that the 2020 Act increased electricity prices.

661. *First*, Claimant's experts from Frontier confirm that the electricity prices in the Actual scenario are lower than in the But-for scenario because of hard-coal fired power plants closing under the 2020 Act. For example, in 2030-2035, the electricity prices in the Actual scenario are approximately 4 EUR/MWh higher because of the closure of hard-coal plants under the 2020 Act:

Figure 14 Development of base electricity prices for Germany in the actual and but-for scenario



Source: Frontier ER I.

[727] **CLA-0126**, *Hrvatska Elektroprivreda d.d. v. Republic of Slovenia*, ICSID Case No. ARB/05/24, Award, 17 December 2015, ¶ 238.

662. Claimant's experts confirm several times that the phase-out of hard-coal power plants under the 2020 Act is the driver behind the difference in electricity prices in the Actual and But-for scenarios.

> "In 2030, electricity wholesale prices in Germany are expected to increase to 62 EUR/MWh (real, 2020 prices) in the actual and 58 EUR/MWh (real, 2020 prices) in the but-for scenario. This is the result of increasing coal, gas and EU-ETS prices, which drive the short-run generation cost of dispatchable fossil-fuelled power generation. The price increase is further explained by the mandatory closure of nuclear and lignite power plants (and coal-fired power plants in the actual scenario)."[728]

663. One paragraph afterwards, Claimant's experts confirm:

> "While the actual scenario considers a phase-out of all lignite and coal-fired electricity generation capacities until 2038, the but-for scenario assumes that coal-fired power plants can operate until the end of their technical or economic lifetime. Therefore, electricity prices in the but-for scenario tend to be at or below the level of prices in the actual scenario (see Figure 14). Prices in the actual scenario need to be high enough to incentivise more new plant investments."[729]

664. In the next paragraph, Claimant's experts confirm again:

> "As a result, the difference in wholesale electricity prices between the actual and the but-for scenario increase during the coal phase out and peaks around 2030. After that, wholesale electricity prices in both scenarios converge again as coal-fired power generation in the but-for scenario is decommissioned due to reaching the end of their technical or economic lifetime."[730]

665. As a consequence, it is undisputed that the phase-out of hard-coal plants under the 2020 Act increases electricity prices.

666. *Second*, Claimant's experts do not quantify the increase in electricity prices caused by the phase-out of lignite (not: hard-coal) plants. The reason is that they phase-out lignite power plants in the Actual and But-for scenarios identically.[731] However, in principle, Claimant's experts already confirm that the lignite phase-out increased the electricity prices even further: "*The price increase is further explained by the mandatory closure of nuclear and lignite power plants*."[732]

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[728] Frontier ER I, ¶ 183.a.

[729] *Id*., ¶ 184.

[730] *Id*., ¶ 185.

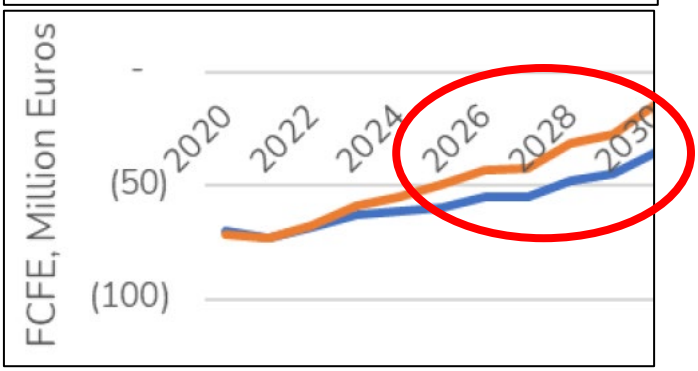
[731] Cf. *Id*., ¶ 108.

[732] *Id*., ¶ 183.a

That is, the increase in electricity prices caused by both the lignite and the hard-coal phase-out will be even greater than the increase already conceded by Claimant and its experts.

667. *Third*, as consequence of the higher electricity prices in the Actual scenario, Claimant's valuation experts confirm that until 2030, the Lünen Plant benefitted from the 2020 Act. Claimant's experts from Secretariat confirm that in their model, the free cash-flows for equity shareholders after debt services until 2030 are higher in the Actual scenario than in the But-for scenario as a result of the higher electricity prices:

Figure 10: Comparison of But-For and Actual Cash Flows[132]



Source: Secretariat ER I.

c. Benefits for AET's non-hard-coal portfolio

668. While Claimant's experts agree on the beneficial effects of the 2020 Act for the Lünen Plant in the 2020s, they failed to address the beneficial effects on Claimant's remaining power plant portfolio. Already based on the publicly available evidence, it is clear that the benefit for AET is substantial.

669. AET's share in the Lünen Plant is only a fraction of AET's portfolio. Claimant's remaining portfolio includes wind power plants in Germany and, especially, a large fleet of hydro power plants in Switzerland and nuclear power plants in Switzerland as well as France.[733] In light of the German, French and Swiss electricity markets' interconnectivities, the 2020 Act not only increased the electricity prices in Germany, but also in France and Switzerland.

670. Given the size of Claimant's remaining power plant fleet, increases in wholesale electricity prices will have a significant effect on the revenues generated by Claimant's fleet on

[733] Compass Lexecon ER I, sect. III.2.

the wholesale market. Pending Claimant producing the further details on the remaining power plant fleets, Mr. Koenig makes the following calculation in his expert report:

- Mr. Koenig applies the differentials of the electricity prices in the Actual and But-for scenarios of Claimant's experts from Frontier; and
- multiples this differential with the electricity hours generated by Claimant's remaining portfolio until 2053.[734]

671. Applying his results from the power market modelling, Mr. Delamer and Mr. Rozenberg calculate that applying Claimant's own electricity-price differential caused by the 2020 Act created a benefit of EUR 31.7 mil. for Claimant's remaining portfolio.[735]

672. The calculation is made under the assumption that 100% of Claimant's portfolio would generate its revenues on the wholesale electricity market (as opposed to PPAs). The assumption is necessary because Claimant did not submit any PPA of its plants other than the Lünen Plant with the Memorial.[736] Until Claimant produced the PPAs or other revenue documents for these plants, extrapolating the wholesale effects to the entire portfolio is the only feasible option. The assumption is also reasonable because AET's annual reports show that at least 85 % of AET's electricity is sold on the wholesale market.[737] Respondent stands ready to update the portfolio effect analysis regarding the 15% non-wholesale electricity sales of Claimant's portfolio once Claimant produced the PPAs or other revenue documents for these plants. Depending on whether *e.g.* the PPAs work with cap-and-floor mechanisms, the effect may be the same even after disclosure of the PPA.

673. In conclusion, the 2020 Act caused a substantial benefit for Claimant's non-hard-coal portfolio. Based on the information available, EUR 31.7 mil. must be deducted from damages.

[734] Aurora ER I, sect. 6.

[735] Compass Lexecon ER I, ¶ 165.

[736] Aurora ER I, ¶ 245.

[737] Compass Lexecon ER I, footnote 173: "While AET has not provided the information required to confirm this, we consider this assumption to be reasonable given that AET's annual reports indicate that at least 85% of AET's electricity is sold on the market, i.e. only a small share of its revenues (if any) is based on power purchase agreements (PPAs)."

4. Failure to account for Ticino hard-coal levy

674. A further benefit created by the 2020 Act (but ignored in the valuation of Claimant's experts) concerns the Ticino hard-coal levy. As set out above, following the public initiative against AET's participation in the Lünen Plant, the Canton of Ticino introduced a law requiring AET to pay a levy on its hard-coal based revenues, funding the development of renewable energy. Since 2015, this levy has been consistently at 0.6 cEUR/kWh (= 6 EUR/MWh).[738]

675. In the model of Claimant's experts, the Lünen Plant produces a total of 21,930,738 MWh more in the But-for scenario until the year 2035 (the year in which Claimant would have had to exit the Lünen Plant in any case as set out above) than in the Actual scenario.[739] Multiplied by Claimant's share of 15,84 % and 6 EUR/MWh, this means that, in Claimant's own valuation, but-for the 2020 Act, Claimant would have been required to pay EUR 20.8 mil. in nominal terms for the levy under Ticino law.[740] This sum must be subtracted from any claim.

[738] **R-0171-ENG**, Law amending the Cantonal Energy Law of 8 February 1994 and the Law establishing the Azienda Elettrica Ticinese of 25 June 1958, Article 8b(2) lit. a and Legislative Decree concerning the definition of the levy on the production and consumption of electricity to be used to finance the cantonal fund to encourage the construction of new renewable energy installations pursuant to the Federal Energy Act of 26 June 1998 (LEne), Article 1, both of 19 December 2013 in: Official Sheet 103-104/2013 (**R-0171-ITA**, adobe pp. 3,5); **R-0172-ENG**, Report 2018 on Legislative Decree concerning the definition of the levy on the production and consumption of electricity to be used to finance the fund cantonal to encourage the construction of new renewable energy installations pursuant to the Federal Energy Act of 26 June 1998 (LEne), May 2019, adobe p. 2 (**R-0172-ITA**, adobe p. 4); **R-0173-ENG**, Report 2019 on Legislative Decree concerning the definition of the levy on the production and consumption of electricity to be used to finance the fund cantonal to encourage the construction of new renewable energy installations pursuant to the Federal Energy Act of 26 June 1998 (LEne), March 2020, adobe p. 2 (**R-0173-ITA**, adobe p. 4); **R-0174-ENG**, Report 2020 on Legislative Decree concerning the definition of the levy on the production and consumption of electricity to be used to finance the fund cantonal to encourage the construction of new renewable energy installations pursuant to the Federal Energy Act of 26 June 1998 (LEne), June 2021, adobe p. 2 (**R-0174-ITA**, adobe p. 4); **R-0175-ENG**, Report 2021 on Legislative Decree concerning the definition of the levy on the production and consumption of electricity to be used to finance the fund cantonal to encourage the construction of new renewable energy installations pursuant to the Federal Energy Act of 26 June 1998 (LEne), June 2022, adobe p. 2 (**R-0175-ITA**, adobe p. 4); **R-0176-ENG**, Report 2022 on Legislative Decree concerning the definition of the levy on the production and consumption of electricity to be used to finance the fund cantonal to encourage the construction of new renewable energy installations pursuant to the Federal Energy Act of 26 June 1998 (LEne), August 2023, adobe p. 2 (**R-0176-ITA**, adobe p. 3); **R-0177-ENG**, Report 2023 on Legislative Decree concerning the definition of the levy on the production and consumption of electricity to be used to finance the fund cantonal to encourage the construction of new renewable energy installations pursuant to the Federal Energy Act of 26 June 1998 (LEne), June 2024, adobe p. 2 (**R-0177-ITA**, adobe p. 5); **R-0178-ENG**, Legislative Decree concerning the production levy and the levy on electricity consumption to finance the cantonal renewable energy fund of 21 January 2025 in Official Sheet of 23 January 2025, Article 1, adobe p. 2 (**R-0178-ITA**, adobe p. 33).

[739] Cf. FE-35, Tab "Model results", lines 95 (Actual scenario production) and 112 (But-for scenario production). Formula: =[SUM(D112:S112)-SUM(D95:S95)].

[740] Calculation: 21,930,738 MWh * 0.1584 (AET share) * 6 EUR/MWh = 20,842,973.15 EUR.

5. Flexible demand (e.g. heat pumps and electricity vehicles)

676. Another flaw in the power market model of Claimant's experts is that they do not account properly for future flexibility of electricity demand. Examples are heat pumps or electric vehicles which can shift their consumption according to price or other signals. In contrast to Claimant's power market model, the model of Mr. Koenig from Aurora is more sophisticated on these expectations of future flexible demand.[741]

6. Treatment of Scandinavian and Baltic regions

677. The next flaw in the power market modelling of Claimant's experts is that they do not model the dispatch of power plants in the Scandinavian and Baltic countries individually. Instead, this region is a "*Satellite region*" in Claimant's model, for which Claimant's experts only present the marginal costs of generation in the entire country. By contrast, Mr. Koenig from Aurora highlights that these regions most be captured in a more granular way (which his Aurora model does) for the following reason:

> "Flexible generation assets in the Nord Pool region (such as hydropower in Norway and Sweden) are regularly dispatched before hard-coal plants in the merit order, thus putting hard-coal plants at a competitive disadvantage and lowering their operating hours. This dynamic will get stronger in the future, as the share of intermittent renewables in the European electricity system rises."[742]

7. Negative price hours

678. The next flaw in Claimant's power market model is that it does not account for negative electricity price hours. However, in 2024, for example, 457 negative price hours were observed in Germany as Mr. Koenig sets out in his report. Reasons are, for example, that conventional power plants cannot pause electricity production quick enough at a period when renewable energy plants would already suffice to meet the electricity demand. In such scenario, conventional power plants must pay for providing electricity (rather than receiving money) because renewable energy plants enjoy priority of dispatch.[743]

[741] Aurora ER I, ¶¶ 49-51.

[742] *Id.*, ¶ 53.

[743] *Id.*, ¶¶ 55-56.

8. Timing of annual maintenance

679. A further incorrect assumption of Claimant and its experts concerns the timing of the Lünen Plant's annual maintenance. They assume that looking-forward, the Lünen Plant would always undergo annual maintenance during the period in which the electricity prices are the lowest of the entire year. This assumption is implausible for the following reasons:

680. *First*, as set out in the report of Mr. Wünsch and Mr. Dambeck, annual maintenance cannot be scheduled on short notice. Instead, annual maintenance has a lead time of approximately one year because the maintenance requires the services of numerous contractors.[744]

681. *Second*, it is implausible that the Lünen Plant would always be able to determine the lowest electricity prices one year ahead. Due to the high share of renewables, the annual flow of electricity prices will be weather-driven. Above all, given Germany's strong share of wind power plants, the windy periods will drive electricity prices down. These windy periods, however, cannot be forecasted with sufficient precision. In the past twelve years, for example, the periods with the highest amount of electricity generated by wind have been: October, December, January, February, and March.[745]

682. *Third*, Claimant's assumption is not reliable for the Tribunal because the model of Claimant's experts foresees the same weather on every calendar day. That is, Claimant's experts assume that wind and solar radiation would be identical on 1 April 2025, 1 April 2032, 1 April 2046, and 1 April 2050. This is implausible.

683. Notably, even with this weather data, the annual low of electricity prices in Claimant's model shifts between April and summer. Claimant's experts assume that the Lünen Plant would always anticipate these shifts, scheduling the annual maintenance one year ahead.[746] This is also implausible.

684. *Fourth*, even assuming *arguendo* the Lünen Plant had perfect, one-year foresight regarding the weather and electricity-price developments, it would remain implausible that the Lünen Plant could always undergo annual maintenance during the annual low of electricity prices. Claimant would have to show that the Lünen Plant not only had sufficient, but *better* foresight

[744] Prognos ER I, ¶¶ 117-118.
[745] Cf. Aurora ER I, ¶ 59.
[746] *Id*., figure 3 (p. 21).

than the other power plants on the market. Switching off a power plant for annual maintenance requires regulatory permission. If all power plants applied to undergo annual maintenance during the same time, the regulator might not give these permissions. The permission requires that the grid stability is secured.[747]

685. In conclusion, the assumption of Claimant and its experts that the Lünen Plant always schedules the annual maintenance during the annual low of electricity prices is implausible and must be corrected.

9. Increase of fixed OPEX after 2019

686. Claimant's economic experts from Frontier apply the implausible technical assumption that the operating expenses (OPEX) of the Lünen Plant recorded in its 2019 accounts would remain the same until the 2050s (only adjusted for inflation). In contrast, as set out in detail in the expert report of the engineers Mr. Wünsch and Mr. Dambeck, the OPEX must be higher than assumed by Claimant's economic experts for two reasons.

687. *First*, 2019 was a year in which the Lünen Plant did not have any irregular maintenance incident. However, the OPEX projections must account for years in which irregular maintenance events occur. For example, already in 2020 the OPEX were more than twice the OPEX of 2019 because of an irregular maintenance event. In the experience of Mr. Wünsch and Mr. Dambeck, such events happen, on average, every five years. Therefore, the OPEX projections must be increased so as to reflect that such events happen regularly.

688. *Second*, Mr. Wünsch and Mr. Dambeck conclude that, from an engineering perspective, it is implausible that the OPEX baseline stays the same until 2050. Instead, as the plant ages, OPEX increase. Simply put, parts age and require increasing maintenance. This is another reason why the OPEX must be increased.[748]

10. Variable OPEX

689. In addition to the fixed OPEX, Mr. Wünsch and Mr. Dambeck also conclude that the variable OPEX (*i.e.* the OPEX which are proportional to the electricity production) assumed by

[747] Cf. **R-0185-ENG/GER**, Energy Industry Law (*Energiewirtschaftsgesetz*), sect. 13bis(1) sentence 2 No. 1; **R-0186-ENG/GER**, TAB Tennet (*Netzanschlussregeln*), sect. 8.6.

[748] Prognos ER I, ¶¶ 84-87.

Claimant's experts from Frontier are unreasonably low and need to be increased because they are not in line with industry experiences. They also conclude that one explanation for Frontier's unreasonably low variable OPEX may be a confusion between MWh and thermal and electricity in Frontier's model.[749]

11. Planned availability

690. In addition to projecting implausibly low OPEX, the downtimes of the Lünen Plant in the projections of Claimant's economic experts from Frontier are unrealistic too. More downtime (unavailability) leads to less electricity production and, thereby, lower profits. In their expert report, Mr. Wünsch and Mr. Dambeck conclude that the availability in the model of Frontier is unrealistic. Mr. Wünsch and Mr. Dambeck differentiate between planned unavailability (*i.e.* per regular maintenance schedules) and unplanned unavailability (*i.e.* due to unforeseen events).

691. For planned availability, the assumptions of Claimant's experts are particularly unrealistic. Plans must be made based on past experience. However, Claimant's planned availability contradicts past experience. Claimant's experts assume that during the 2020s, the Lünen Plant would have a planned unavailability of 9-10% and from 2030 onwards only 3% or 6% (depending on the respective year of Frontier's model). Mr. Wünsch and Mr. Dambeck conclude that these assumptions are unrealistic for the following reason:

> "Historic values from ENTSO-E [European Network of Transmission System Operators for Electricity] show that between 2015 and 2025 the Lünen Plant has medium planned unavailability of 12,2 %. The ENTSO-E data is reliable because it has been submitted by the Lünen itself. Operators of power plants are obligated to submit their availability data to ENTSO-E."[750]

12. Unplanned unavailability

692. The unplanned unavailability projected by Claimant's economic experts from Frontier is also unrealistic because it is not in line with historical values. Claimant's experts assume that from 2020 onwards, there will be an annual unplanned unavailability of only 4%. However, Mr. Wünsch and Mr. Dambeck concluded that the medium historical unavailability of the Lünen Plant

[749] Prognos ER I, ¶ 90.

[750] *Id.*, ¶ 94.

is 8.9%, *i.e.* more than twice the rate assumed by Claimant's experts. Therefore, their assumption must be corrected.[751]

13. Load ramp time

693. The next assumption of Claimant's economic experts which contradicts real, historical data concerns the load ramp time. The load ramp time means the time a hard-coal fired power plant needs to increase its electricity production. The lower the load ramp time, the better the ability of the plant to increase profits in times of higher electricity prices and lower renewables production.

694. Claimant's experts assume that the Lünen Plant could increase its production by 256 MW within 15 minutes. However, the historical data submitted by the Lünen Plant to ENTSO-E shows that in 2015-2024, the median load ramp was only 105 MW within 15 minutes, *i.e.* less than half of the flexibility Claimant's experts assume. Therefore, their assumption must be corrected.[752]

14. Cold start costs

695. The unrealistic assumptions of Claimant's experts regarding availability also lead to unrealistically low values for another cost factor, *i.e.* cold start costs. A cold start means, in non-technical terms, switching-on the hard-coal plant after a total downtime. The cold start costs reflect the fuel costs needed for this process during which the hard-coal plant burns fuel in order to heat up but does not produce electricity.

696. Claimant's experts assume than the cold-start costs would need to reflect only 1 cold start per year. The historical data submitted by the Lünen Plant to ENTSO-E, however, shows that the Plant had, on average, 4.4 cold starts per year. Any valuation must reflect the increasing cold-start costs as Mr. Wünsch and Mr. Dambeck set out in further detail in their report.[753]

[751] *Id*., ¶ 102.
[752] *Id*., sect. 6.5.
[753] *Id*., sect. 6.6.

15. Degeneration

697. The final technical assumption of Claimant's economic experts from Frontier that needs to be corrected concerns degeneration. Degeneration means the loss in electrical output of a hard-coal fired power plant due to its aging. Mr. Wünsch and Mr. Dambeck conclude in their expert report that that the projection should account for the risk of degeneration due to, for example, residues, slagging, fouling, corrosion and erosion.[754]

16. Discount factor of future cash-flows

698. Secretariat's discount factor of 6.0% is understated. It fails to account for the negative impact that the risk associated with the energy transition has on the value of a hard-coal power plant in Germany. This shortcoming is particularly significant as, according to Secretariat's own calculations, the Lünen Plant becomes profitable only 13 years after the valuation date.

699. Mr. Delamer and Mr. Rozenberg detected multiple flaws in Secretariat's discount factor calculation. Secretariat's discount factor (i) has internal inconsistencies, (ii) has been calculated with a *backward*-looking approach (considering only historical financial data) which does not account for *future* risk, (iii) uses data from companies and assets that are not comparable to the Lünen Plant, and (iv) is rebutted by market evidence covering hard-coal power generation in Germany.[755]

700. Mr. Delamer and Mr. Rozenberg conclude that accounting for the future risks faced by hard-coal properly decreases Secretariat's alleged damages as of January 2020 from EUR 85.5 mil. to EUR 44.1 mil. on a standalone basis.[756] For further facts and evidence, Respondent refers to the expert report of Mr. Delamer and Mr. Rozenberg.

17. Minority Discount

701. In addition, Mr. Delamer and Mr. Rozenberg conclude that a minority discount of 19% should be applied to AET's minority interest in Trianel because:

> "All else equal, a willing buyer would assign a greater value to a majority stake in a business as compared to a minority ownership, reflecting the additional rights granted for controlling stakes, such as deciding on

[754] *Id*., sect. 6.7.

[755] Compass Lexecon ER I, sect. V.2.

[756] *Id*., ¶ 121.

> corporate strategy, appointing management and setting the dividend policy. […] Inversely, from the controlling shareholder's perspective, the value to a minority shareholder would be subject to a minority discount."[757]

18. Trade tax

702. A further flaw of Claimant's alleged valuation concerns the treatment of the 17.15% trade tax. Claimant states in the Memorial:

> "[T]he trade tax […] accrues at the level of TKL. However, TKL operates essentially as a break-even company since it sells the electricity generated by the Lünen plant at cost to the shareholders. Therefore, Secretariat projects no trade tax payments."[758]

703. Claimant's approach is flawed. Claimant's experts assume that Trianel as the operator of the Lünen Plant would violate German tax law.

704. *First*, in the valuation of Claimant's experts, the Lünen Plant is no longer a breakeven entity once the loan is repaid and the PPA is terminated. From that moment onwards, Claimant's experts model that the Lünen Plant sells electricity on the wholesale market and, hence, makes profits which would be subject to trade tax.[759]

705. *Second*, even if *arguendo* Trianel would continue to sell electricity to AET at a 'cost-only' basis once the loan is repaid, trade tax will be due. The reason is that under the applicable German tax law, such 'cost-only' sale will be below the wholesale market price. In such scenario, the so-called 'profit reduction' (*Mindererlös*) of Trianel will be subject to taxes.[760]

19. Tax-gross up

706. At the end of its Memorial, Claimant makes the following request:

> "Given that the exact amount of taxes can likely only be determined once tax authorities have assessed taxes after an award in favour of Claimant has been rendered, Claimants only request a declaratory award from the

[757] *Id*., ¶¶ 139-150

[758] Claimant's Memorial, ¶ 570.

[759] Compass Lexecon ER I, ¶ 136.

[760] Cf. **R-0179-ENG/GER**, Trade Tax Act (*Gewerbesteuergesetz*), sect. 7 sentence 1; **R-0187-ENG/GER**, Income Tax Act (*Einkommensteuergesetz*), sect. 6(1) No. 4 sentence 1; **R-0188-ENG/GER**, Foreign Tax Act (*Außensteuergesetz*), sect. 1.

> Tribunal finding that, in principal, Claimant is entitled to compensation for damages resulting from additional taxes."[761]

707. Claimant's request for a declaratory tax gross-up award must be rejected for the following reasons.

708. *First*, jurisprudence is clear that an investor is not entitled to claim for taxes it has to pay on an award. Investor claims for 'tax gross-ups' were rejected in numerous arbitral awards.[762] The tribunal in *Mobil v. Canada*, for example, stated:

> "The Majority sees little basis for incorporating the Claimants' request for a 38% 'gross up' for tax reasons. The Claimants did not justify why compensation could not remain with the Canadian enterprises, nor why it had to be taxed in the United States, nor what the tax rate was, nor why this is a necessary part of any resulting compensation. Moreover, we are not aware of a requirement under international law to gross up compensation as a result of tax considerations."[763]

709. *Second*, if *arguendo* taxes of Claimant's home State could conceivably be added to the claim, Claimant did not substantiate these claims. In particular:

- Claimant did not provide proof that these Swiss taxes would indeed apply;
- Claimant did not put a single source regarding Swiss tax law on record;
- Claimant did not put evidence on record that it makes a net profit;
- Claimant did not explain whether arbitral awards are even taxed in Switzerland; and
- Claimant did not put any evidence on record that it pays any taxes in Switzerland.

710. Above all, there is no evidence on record that even if Swiss taxes were due for the Award (which Claimant has not proven), these Swiss taxes would be caused by Respondent's

[761] Claimant's Memorial, ¶ 594.

[762] **RL-0065**, *Venezuela Holdings, B.V., et al (case formerly known as Mobil Corporation, Venezuela Holdings, B.V., et al.) v. Bolivarian Republic of Venezuela,* ICSID Case No. ARB/07/27, Award, 9 October 2014, ¶ 388; **CLA-0059**, *Infrastructure Services Luxembourg S.à.r.l. and Energia Termosolar B.V. (formerly Antin Infrastructure Services Luxembourg S.à.r.l. and Antin Energia Termosolar B.V.) v. Kingdom of Spain*, ICSID Case No. ARB/13/31, Award, 15 June 2018, ¶ 673; **CLA-0064**, *Eiser Infrastructure Limited and Energía Solar Luxembourg S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/13/36, Award, 4 May 2017, ¶¶ 455-456; **CLA-0068**, *Masdar Solar & Wind Cooperatief U.A. v. Kingdom of Spain*, ICSID Case No. ARB/14/1, Award, 16 May 2018, ¶ 660; **RL-0111**, *Crystallex International Corporation v. Bolivarian Republic of Venezuela*, ICSID Case No. ARB(AF)/11/2, Award, 4 April 2016, ¶¶ 946-947; **CLA-0063**, *Occidental Petroleum Corporation and Occidental Exploration and Production Company v. Republic of Ecuador (II)*, ICSID Case No. ARB/06/11, Award, 5 October 2012, ¶¶ 851-853.

[763] **RL-0112**, *Mobil Investments Canada Inc. and Murphy Oil Corporation v. Government of Canada (I)*, ICSID Case No. ARB(AF)/07/4, Decision on Liability and Principles of Quantum, 22 May 2012, ¶ 485.

alleged Measures. All available factual information indicates that the Swiss taxes would also have been due but-for the measures.

711. *Third*, Claimant's attempt to escape their burden of proof through a declaratory award undermines the above rules. Claimant does not explain how such a declaratory award should work in practice. Since Claimant bears the burden of proof for its claim, it must be rejected.

20. Pre-award interest

712. Finally, the pre-award interest of EURIBOR + 4% points that Claimant claims from January 2020 onwards is exaggerated. Instead, pre-award interest (if any) can only be the risk-free rate or Respondent's cost of borrowing (which, in this case with Germany as Respondent, is identical). The legal authorities from recent years stating that pre-award interest should not be higher than the host State's cost of borrowing or the risk-free-rate, are numerous.[764]

713. In this context, Respondent highlights that Claimant's experts also fail to provide the swap agreements on which they rely when calculating interest expense and pre-award interest. Furthermore, without any explanation, Claimant's experts propose a pre-award interest that is more than twice the interest rate on Trianel's financing facility. Claimant cannot claim damages without submitting the complete documentation on the very bank loan that, in Claimant's own case, would be relevant. For further details, Respondent refers to the expert report of Mr. Delamer and Mr. Rozenberg.[765]

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[764] **RL-0100**, *Sevilla Beheer B.V. and others v. Kingdom of Spain*, ICSID Case No. ARB/16/27, Award, 22 May 2023, ¶¶ 197, 200; **CLA-0031**, *RENERGY S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/14/18, Award, 6 May 2022, ¶ 1048; **RL-0013**, *Infracapital F1 S.à r.l. and Infracapital Solar B.V. v. Kingdom of Spain*, ICSID Case No. ARB/16/18, Award, 2 May 2023, ¶ 190; **RL-0114**, *PACC Offshore Services Holdings Ltd v. United Mexican States*, ICSID Case No. UNCT/18/5, Award, 11 January 2022, ¶ 277; **RL-0032**, *Bank Melli Iran and Bank Saderat Iran v. The Kingdom of Bahrain*, PCA Case No. 2017-25, Final Award, 9 November 2021, ¶ 802; **RL-0115**, *JGC Holdings Corporation (formerly JGC Corporation) v. Kingdom of Spain*, ICSID Case No. ARB/15/27, Decision on Jurisdiction, Liability, and Certain Issues of Quantum, 21 May 2021, ¶ 1343; **RL-0116**, *InfraRed Environmental Infrastructure GP Limited and others v. Kingdom of Spain*, ICSID Case No. ARB/14/12, Award, 2 August 2019, ¶¶ 601, 604-605; **CLA-0059**, *Infrastructure Services Luxembourg S.à.r.l. and Energia Termosolar B.V. (formerly Antin Infrastructure Services Luxembourg S.à.r.l. and Antin Energia Termosolar B.V.) v. Kingdom of Spain*, ICSID Case No. ARB/13/31, Award, 15 June 2018, ¶ 733; **RL-0068**, *Novenergia II - Energy & Environment (SCA) (Grand Duchy of Luxembourg), SICAR v. The Kingdom of Spain*, SCC Case No. 2015/063, Final Award, 15 February 2018, ¶ 846; **CLA-0126**, *Hrvatska Elektroprivreda d.d. v. Republic of Slovenia*, ICSID Case No. ARB/05/24, Award, 17 December 2015, ¶¶ 547, 553; **RL-0110**, *EDF International S.A., SAUR International S.A. and León Participaciones Argentinas S.A. v. Argentine Republic*, ICSID Case No. ARB/03/23, Award, 11 June 2012, ¶¶ 1324-1325; **RL-0117**, *Archer Daniels Midland and Tate & Lyle Ingredients Americas, Inc. v. United Mexican States*, ICSID Case No. ARB(AF)/04/5, Award, 21 November 2007, ¶ 296.

[765] Compass Lexecon ER I, ¶¶ 181-183.

21. Reservation of rights regarding impact of reductions in Claimant's valuation

714. To show the impact of the necessary corrections set out in this sect. B.1., B.3., B.5.-B.8., and B.10.-B.15., Respondent instructed Mr. Koenig from Aurora to change the relevant assumptions in the power-market model of Claimant's experts from Frontier.

715. However, as set out in detail in section 3 of Mr. Koenig's report, Claimant's experts did not provide sufficient information and data on their model for Mr. Koenig to replicate their model. For context, Exhibit FE-35 only contains the results of Frontier's power market model, but not the model as such. Mr. Koenig tried to replicate Frontier's model based on Frontier's results. However, Frontier's results have too many inconsistencies and uncertainties for Mr. Koenig to replicate Frontier's model as set out above, at sect. A.6.

716. Therefore, Respondent stands ready to show the impacts of the necessary adjustments set out in this sect. B once Claimant produced enough information on the power-market model of Frontier in document-production. Respondent will raise the relevant requests in document-production and submit the results of Mr. Koenig with the Rejoinder. For the sake of good order, Respondent confirms that it reserves the right to submit the impact of the adjustments of further assumptions that can only be revealed once Frontier submitted its data.

717. In conclusion, already before these updates, for the reasons above, Claimant's claims must also be dismissed in their entirety on quantum.

VI. REQUEST FOR RELIEF

718. Respondent requests that the Tribunal render an Award:

(i) declaring that the Tribunal has no jurisdiction *ratione personae* of the claims raised by Claimant and, therefore, dismissing these claims with prejudice;

(ii) in the event that the Tribunal accepts jurisdiction (*quod non*) dismissing all of Claimant's claims with prejudice;

(iii) ordering Claimant to reimburse Respondent for the costs of this arbitration, including its legal fees, inhouse-cost and expenses, the fees and expenses of the Tribunal as well as the ICSID Secretariat, and interest on these costs.

Respectfully submitted,

Frankfurt am Main, 26 March 2025

[signed]

Dr. Sabine Konrad

Dr. Maximilian Pika

VII. ANNEX: 2014 AND 2018 UN IPCC REPORTS

A. CALIBRATED LANGUAGE OF THE UN IPCC

719. UN IPCC Assessment Reports use calibrated certainty language to evaluate and communicate their key findings. The level of confidence expresses how valid findings are based on the type, amount, quality, and consistency of evidence and the level of agreement among experts in the scientific, technical, and socioeconomic literature. The level of confidence is expressed using five qualifiers: *very low, low, medium, high, and very high*.[766] The probabilistic estimate of an outcome or an event occurring is measured using a likelihood scale. The following terms are used:[767]

virtually certain	very likely	likely	about as likely as not	unlikely	very unlikely	exceptionally unlikely
= 99-100 %	90-100%	66-100%	33-66%	0-33%	0-10%	< 1 % probability

720. The UN IPCC is divided into three working groups: Working Group I – The Physical Science Basis; Working Group II – Impacts, Adaptation and Vulnerability; and Working Group III: Mitigation of Climate. Each of the groups issues their own assessment report. A synthesis report summarizes the findings of all three working groups at the end of each review period.[768]

721. In the following, Respondent addresses the UN IPCC's Assessment Reports in chronological order. For each of these reports, Respondent will address the key conclusions in three steps:

- regarding the <u>likelihood</u> of climate change;
- regarding the <u>consequences</u> of climate change; and
- regarding the <u>mitigation</u> of climate change (climate action).

[766] **R-0180**, Guidance Note for Lead Authors of the UN IPCC Fifth Assessment Report on Consistent Treatment of Uncertainties, adobe p. 3; **R-0085**, UN IPCC Special Report on Global Warming of 1.5°C, Summary for Policymakers Fn. 3, adobe p. 4; **R-0123**, UN IPPC, Climate Change 2023: Synthesis Report, Summary for Policymakers Fn 4, adobe p. 3.

[767] *Id*., adobe p. 4; *Id*., Fn. 3, adobe p. 4; *Id*., Fn. 4, adobe p. 3.

[768] **R-0066**, UN IPCC Factsheet, What is the IPCC?, adobe p. 2.

B. THE 5TH UN IPCC ASSESSMENT REPORT OF 2014

722. From September 2013 to April 2014, the three Working Groups issued their contributions to AR5. In October 2014, the UN IPCC issued the Synthesis Report.[769] AR5 was the first report since 2007. Further, AR5 was the latest report before the Paris Agreement and the 2020 Act. Therefore, Respondent will address AR5 in detail.

723. AR5 concluded that probabilities (see below, at a.) and the consequences (at b.) of climate change would be more drastic and severe than previously anticipated for every level of global warming. In summary, AR5 concludes that the effects of global warming of 2°C compared to pre-industrial levels are unsustainable for the earth. It also finds that the efforts of the international community as of 2014 were insufficient to even reach the objective of limiting global warming to 2°C. Against this background, AR5 provided specific CO_2 budgets so that policy makers have a clear basis to mitigate climate change (at c.).

(i) Likelihood: AR5 saw a much stronger trend of global warming

724. Regarding the status and likely developments of climate change, AR5 published the following new key conclusions:

725. *First*, AR5 observed that global warming accelerated at a pace that surpassed previous projections. The linear trend compared to pre-industrial levels shows a global warming of 0.85°C. By contrast, AR4 had observed only 0.74°C.[770]

726. In this context, the upper ocean temperature data has been refined since AR4 enhancing confidence in the assessment of temperature change. It is virtually certain that upper 75m warmed by 0.11 degrees per decade over the 1971 to 2010 period.[771] Ocean warming accounts for more than 90% of the energy stored between 1971 and 2010 (*high confidence*), which is 10% higher than estimated in AR4.[772] AR5 refined estimates of sea levels rise to 0.19m by

[769] **R-0074**, UN IPCC Climate Change 2014: Synthesis Report.

[770] **R-0181**, UN IPCC Climate Change 2007, The Physical Science Basis: Summary for Policymakers, adobe p. 5 for the period 1906 to 2005; **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 3 for the period from 1880 to 2012.

[771] **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 6.

[772] **R-0181**, UN IPCC Climate Change 2007: The Physical Science Basis, Summary for Policymakers, adobe p. 5; **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 6.

2010. AR4 had previously calculated sea level rise at 0.17m.[773] Confidence in the projections of sea level rise increased from AR4 to AR5.[774]

727. Regarding the arctic sea in particular, AR4 found the annual average arctic sea ice extent had shrunk by 2.7% per decade since 1978 with larger decreases of 7.4% in summer.[775] AR5 updated this assessment to a *very likely* annual decline of 3.5 to 4.1% with decreases in the summer in the range of 9.4% to 13.6%.[776] There is robust evidence that this downward trend in the Arctic summer sea ice extent is simulated by more models than in AR4.[777] There is *high confidence* in the following observations:

- From 1992 to 2011, the Greenland and Antarctic ice sheets have experienced mass loss, likely accelerating from 2002 (*very likely*).
- Glacier ice has retreated on a global scale (*very likely*).
- The extent of spring snow in the Northern Hemisphere has consistently diminished (*very high confidence*).
- Permafrost temperatures have risen across most region due to increasing surface temperature (*high confidence*).[778]

728. *Second*, AR5 updated its assessment that human influence caused these developments. According to AR5, it is *very likely* that human influence contributed to changes in frequency and intensity of temperature extremes on a global scale. By contrast, AR4 saw human influence only as a *likely* cause. Moreover, AR5 concludes that human influence is the *likely* cause of the increase in sea levels. By contrast, AR4 regarded this only as *more likely than not*.[779]

729. *Third*, AR5 concluded that anthropogenic climate change caused by CO_2 emissions will be irreversible over centuries to millennia, unless large quantities of CO_2 are permanently removed from the atmosphere over a longer period. But even if CO_2 emissions are stopped completely, global temperatures will remain largely constant for centuries:

[773] **R-0181**, UN IPCC Climate Change 2007: The Physical Science Basis, Summary for Policymakers, adobe p. 7; **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 9.
[774] **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 23.
[775] **R-0181**, UN IPCC Climate Change 2007: The Physical Science Basis, Summary for Policymakers, adobe p. 7.
[776] **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 7.
[777] *Id*., adobe p. 23.
[778] *Id*., adobe p. 7.
[779] *Id*., adobe p. 5.

> "Warming will continue beyond 2100 under all RCP scenarios except RCP2.6. Surface temperatures will remain approximately constant at elevated levels for many centuries after a complete cessation of net anthropogenic CO_2 emissions. A large fraction of anthropogenic climate change resulting from CO_2 emissions is irreversible on a multi-century to millennial timescale, except in the case of a large net removal of CO_2 from the atmosphere over a sustained period."[780]

730. Even if the increase in global surface temperature is halted, this would not result in the stabilization of all aspects of the climate system:

> "Shifting biomes, soil carbon, ice sheets, ocean temperatures and associated sea level rise all have their own intrinsic long timescales which will result in changes lasting hundreds to thousands of years after global surface temperature is stabilized."[781]

731. For example, global sea level rise will continue beyond 2100, as the thermal expansion of the ocean will continue for centuries. A permanent loss of mass of the ice sheets may further contribute to partly irreversible rise in sea level. With warming above a critical threshold, an almost complete loss of the Greenland ice sheet within more than 1000 years is *very likely*:

> "It is *virtually certain* that global mean sea level rise will continue for many centuries beyond 2100, with the amount of rise dependent on future emissions. The threshold for the loss of the Greenland ice sheet over a millennium or more, and an associated sea level rise of up to 7 m, is greater than about 1°C (low confidence) but less than about 4°C (medium confidence) of global warming with respect to pre-industrial temperatures."[782]

732. *Fourth*, AR5 introduced the so-called Representative Concentration Pathways ("**RCPs**") for future projections. RCPs provide a set of standardized, future climate scenarios that reflect different trajectories of GHG emissions and atmospheric concentrations. AR5 encompasses four RCP scenarios:

- RCP 2.6 is representative of a mitigation scenario with low emissions that aims to keep global warming likely below 2°C compared to pre-industrialisation levels;
- RCP 4.5 and RCP 6.0 represent intermediate emission pathways;

[780] **R-0182**, UN IPCC Climate Change 2014: Synthesis Report, Summary for Policymakers, adobe p. 16. For an explanation of the term "RCP" see below at ¶ 732.

[781] *Id*., adobe p. 16.

[782] *Ibid*.

– RCP 8.5 models a pathway with very high GHG emissions, *i.e.* without implementing additional efforts to constrain emissions.[783]

733. Compared to the projections in AR4, the projections for higher RCPs in AR5 show a narrower range. The reason is that, as concentration pathways, RCPs also account for carbon cycle feedbacks and atmospheric chemistry. The projections in AR4 did not account for these aspects.[784]

734. With much greater certainty than under the 2007 AR4, AR5 projected the following developments of global warming compared to pre-industrial levels. For each RCP, AR5 provides a likely range:

> "Relative to the average from year 1850 to 1900, global surface temperature change by the end of the 21st century is projected to *likely* exceed 1.5°C for RCP4.5, RCP6.0 and RCP8.5 (*high confidence*). Warming is *likely* to exceed 2°C for RCP6.0 and RCP8.5 (*high confidence*), *more likely than not* to exceed 2°C for RCP4.5 (*high confidence*), but *unlikely* to exceed 2°C for RCP2.6 (*medium confidence*)."[785]

735. Also, regarding the rise of the global sea level, AR5 concludes that the past estimates were too low. Indeed, the estimates for the *likely* rise of the global sea level until 2100 almost doubled between the 2007 AR4 and the 2014 AR5:

	AR5[786]	**AR4**[787]
Highest emission scenario	450-820 cm	260-590 cm
Lowest emission scenario	260-550 cm	180-380 cm

736. In terms of projections, AR5 presented a more precise timeline for the decline in Arctic Sea Ice. Even in RCP2.5, the Arctic Sea ice is halved by the end of the century. In RCP6.0 and RCP8.5, the Arctic Sea ice will completely vanish.[788] The global glacier volume is projected to decrease by a minimum of 55% and up to 85% (*medium confidence*). The Northern Hemisphere's spring snow cover is projected to decrease by at least 7% and up to 25% (*medium*

[783] **R-0182**, UN IPCC Climate Change 2014: Synthesis Report, Summary for Policymakers, adobe p. 8.

[784] **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe pp. 18, 27.

[785] *Id*., adobe p. 18.

[786] *Id*., adobe p. 23. Sea level rise is projected for 2081-2100 relative to 1986-2005.

[787] **R-0181**, UN IPCC Climate Change 2007: The Physical Science Basis, Summary for Policymakers, adobe p. 13. Sea level rise is projected for 2090-2099 relative to 1980-1999.

[788] **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, Figure SPM.7 lit. b, adobe p. 19.

confidence). The area of permafrost near the surface (upper 3.5 m) is projected to decrease by at least 37% and up to 81% (*medium confidence*).[789]

737. In summary, AR5 concluded that global warming and the rise of sea temperatures proceeds at a much stronger level than previously concluded, that warming is irreversible, and that human influence is the *very likely* cause for global warming.

(ii) Consequences: AR5 acknowledged risks of the utmost severity

738. While already the prior UN IPCC Assessment Report analysed the risks of climate change, AR5 focused on these risks with an unprecedented focus. The reason was that AR5 had the purpose to support political decision-making:

> "A focus on risk, which is new in this report, supports decision making in the context of climate change and complements other elements of the report."[790]

739. The risks that the UN IPCC concluded in AR5 surpass prior conclusions in the following aspects:

740. *First*, AR5 is the first UN IPCC Assessment Report to explicitly name the risk of so-called tipping points. A tipping point is a critical threshold in the global or regional climate system beyond which certain negative environmental changes become self-perpetuating and even potentially irreversible.[791] Tipping points are for example the melting of the Arctic, Greenland, and Antarctic ice sheets or the methane release from subsea hydrates. Tipping points can involve sudden, rapid changes in a system. These changes are not linear to global warming but triggered once a certain threshold is surpassed. Some tipping points can also include cascade effects which will trigger feedback loops or chain reactions that amplify the negative impacts.[792]

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[789] *Id*., adobe p. 23.

[790] **R-0072**, UN IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 4.

[791] AR5 defines irreversibility as a perturbed state of a dynamical system on a given timescale, if the recovery timescale from this state due to natural processes is significantly longer than the time it takes for the system to reach this perturbed state. See **R-0184**, UN IPCC Climate Change 2013: The Physical Science Basis, Glossary, p. 1456 (adobe p. 10).

[792] For ice sheets see **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe pp. 7, 9, 17, 23, 27 and **R-0182**, UN IPCC Climate Change 2014: Synthesis Report, Summary for Policymakers, adobe pp. 4, 12 and 16. For release of GHG from carbon sinks see **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers adobe pp. 24-25.

741. The concept of tipping points dates to 1993-1995. In 2008, the terminology was established by Professor Schellnhuber and fellow colleagues in the article "*Tipping elements in the Earth's climate system*".[793] Professor Schellnhuber also provided an expert report in this arbitration to which Respondent refers in its entirety.

742. *Second*, AR5 was the first UN IPCC report to specifically evaluate the implications of climate change for human security. This provided for a strengthened understanding on how climate change affects societal stability:

> "Climate change over the 21st century is projected to increase displacement of people (*medium evidence, high agreement*). […]
>
> Climate change can indirectly increase risks of violent conflicts in the form of civil war and inter-group violence by amplifying well-documented drivers of these conflicts such as poverty and economic shocks (*medium confidence*). […]
>
> The impacts of climate change on the critical infrastructure and territorial integrity of many states are expected to influence national security policies (*medium evidence, medium agreement*)."[794]

743. Risk will be increasingly unevenly distributed with each degree of temperature rise. However, climate change impacts will generally be greater for people who face social, economic, political, or cultural forms of marginalization (*medium evidence, high agreement*). [795] Climate hazards affect the lives of poorer people through impacts on livelihoods and reductions in crop yields and destruction of homes (*high confidence*).[796]

744. *Third*, AR5 specified the specific so-called Reasons for Concern ("**RFCs**").[797] The RFCs as such had already been introduced in AR3. [798] There are five RFCs. These are:

- threatened systems (including extinctions);
- extreme weather events;
- distribution of impacts (*i.e* regionally differentiated decreases in crop yields and water);

[793] **R-0073**, *Professor Schellnhuber et.al*., Tipping elements in the Earth's climate system in: Proceedings of the National Academy of Science Vol. 105 No. 16, 12 February 2008.

[794] **R-0072**, UN IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 21.

[795] *Id*., adobe p. 7

[796] *Id*., adobe pp. 7, 9.

[797] *Id*., Assessment Box SPM.1, adobe p. 13.

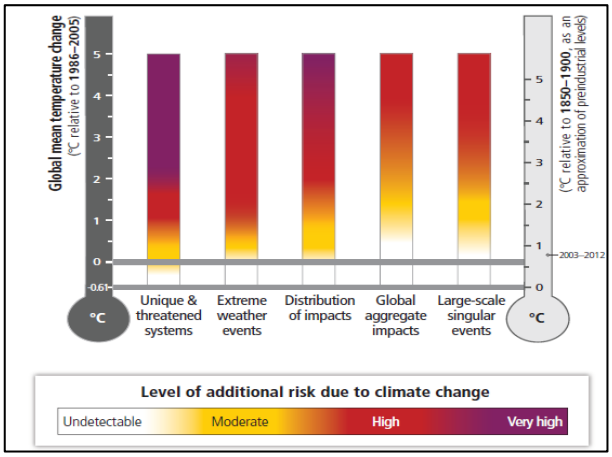
[798] **R-0181**, UN IPCC Climate Change 2007: Synthesis Report, pp. 64-65.

– global aggregate impacts (*i.e.* economic damages];
– and large-scale singular events.

745. AR5 concluded that the RFCs include ill health, flooding, infrastructure breakdown, heat mortality and morbidity, food insecurity, limited access to drinking water, loss of income and reduced agriculture productivity, loss of biodiversity, terrestrial and maritime ecosystems and the services they provide for livelihoods.[799]

746. AR5 concludes that the risks for these RFCs are significant and increase depending on the level of global warming. Even at 1°C to 2°C above pre-industrialization levels, some risks associated with climate change become significant. At 4°C or more above pre-industrialization levels, risks are categorized as high to very high across all reasons for concern, highlighting the profound consequences of unstopped temperature rise:

Risks associated with reasons for concern are shown at right for increasing levels of climate change



Source: **R-0072**, IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 14.

747. Transferring these risks to the RCP emission scenarios, AR5 concludes that all four RCP Scenarios project an increased extinction risk for unique and threatened systems. The number is higher with additional warming of 1°C. Risks became very high with an additional warming of 2°C:

> "Extinction risk is increased under all RCP scenarios, with risk increasing with both magnitude and rate of climate change. Many species will be unable to track suitable climates under mid- and high-range rates of climate change (i.e., RCP4.5, 6.0, and 8.5) during the 21st century

[799] **R-0072**, UN IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 14.

(*medium confidence*). Lower rates of change (i.e., RCP2.6) will pose fewer problems."[800]

748. The three intermediate to high emission scenarios RCP4.6, RCP6.0 and RCP8.5 pose a *high risk* across various ecosystems. The scenarios risk abrupt and irreversible regional scale change in terrestrial and freshwater ecosystems (*medium confidence*).[801] Storage capabilities of carbon sinks will significantly decline due to deforestation, forest dieback and ecosystem degradation (*high confidence*).[802] Coastal regions face adverse effects like submergence, flooding, and erosion (*very high confidence*) and ocean acidification poses risk to the existence of individual marine species (*medium to high confidence*).[803]

749. Ecosystems and human systems are significantly vulnerable to climate change impacts (*very high confidence*). Impacts include the disruption of food production and water supply, morbidity, mortality, ill health and damage to infrastructure and settlements.[804] Climate change is projected to reduce surface water and groundwater resources especially in dry and subtropical regions (*robust evidence, high agreement*), intensifying competition for water among sectors (*limited evidence, medium agreement*).[805] The global population will experience water scarcity and river floods with the level of warming in the 21st century (*robust evidence, high agreement*).[806] AR5 emphasizes that there is a significant lack of preparedness for countries at all levels of development.[807]

750. *Fourth*, in AR5, there has been substantial progress in the assessment of extreme weather and climate events compared to AR4.[808] An extreme weather or climate event is an event that is rare at a particular place and time of year.[809] Extreme weather events such as heat waves, extreme precipitation, coastal flooding, droughts, and wildfire remain moderate in a 1.5°C scenario compared to high in a 2°C scenario. [810] The following table illustrates the probability of

[800] *Id*., adobe p. 16.
[801] *Ibid.*
[802] *Ibid*.
[803] *Id*., adobe p. 18.
[804] *Id*., adobe p. 7.
[805] *Id*., adobe p. 15.
[806] *Ibid*.
[807] *Id*., adobe p. 7.
[808] **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 13.
[809] **R-0184**, UN IPCC Climate Change 2013: The Physical Science Basis, Glossary, p. 1454 (adobe p. 8).
[810] **R-0072**, UN IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 14.

extreme weather and climate events for the 21st century. The 2014 AR5's updated assessment is shown in **black** with bold entries showing an updated compared to the UN IPCC 2012 and 2007 reports. The 2012 Special Report for Managing the Risks of Extreme Events and Disasters's assessment is shown in **blue**. The 2007 AR4's assessment is shown in **red**:

Extreme weather and climate events: Global scale assessment of recent observed changes

Phenomenon and direction of trend	Likelihood of further changes	
	Early 21st century	Late 21st century
Warmer and/or fewer cold days and nights over most land areas	*Likely* {11.3}	*Virtually certain* {12.4}
		Virtually certain *Virtually certain*
Warmer and/or more frequent hot days and nights over most land areas	*Likely* {11.3}	*Virtually certain* {12.4}
		Virtually certain *Virtually certain*
Warm spells/heat waves. Frequency and/or duration increases over most land areas	Not formally assessed[b] {11.3}	*Very likely* {12.4}
		Very likely *Very likely*
Heavy precipitation events. Increase in the frequency, intensity, and/or amount of heavy precipitation	*Likely* over many land areas {11.3}	***Very likely*** over most of the mid-latitude land masses and over wet tropical regions {12.4}
		Likely over many areas *Very likely* over most land areas
Increases in intensity and/or duration of drought	*Low confidence*[g] {11.3}	***Likely*** *(medium confidence)* on a regional to global scale[h] {12.4}
		Medium confidence in some regions *Likely*[e]
Increases in intense tropical cyclone activity	*Low confidence* {11.3}	***More likely than not*** in the Western North Pacific and North Atlantic[i] {14.6}
		More likely than not in some basins *Likely*
Increased incidence and/or magnitude of extreme high sea level	*Likely*[l] {13.7}	***Very likely***[l] {13.7}
		Very likely[m] *Likely*

Source: **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 5.

751. *Fifth* AR5 also conducted a more comprehensive evaluation of key regional risks than AR4. This provided for a better understanding of unique challenges on a regional scale and raised awareness for the differences in vulnerability. Risks are assessed as very low to very high across various timeframes, for the longer term (2080–2100) under two scenarios of global temperature increase: 2°C and 4°C above pre-industrial levels.[811] The following paragraphs provide an overview of climate change impacts associated with a global mean temperature increase of 2°C compared to pre-industrial levels at current levels of adaptation:

752. In Africa, the risks for reduced crop productivity with severe effects on regional, national, household livelihood and food security remain very high. The probability for vector and

[811] **R-0072**, UN IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 22.

water borne diseases continues to be very high. There is also a high risk for increased pressure on water resources already under significant strain from overexploitation (*high confidence*).[812]

753. In Europe, the 2°C scenario leads to a high risk of increased economic losses due to flooding (*high confidence*), increased water restrictions (*high confidence*) and extreme heat events causing negative effects on health and labour productivity (*medium confidence*).[813]

754. Asia will be subject to a high-risk of increase in flooding resulting in large damage to infrastructure and livelihoods (*medium confidence*). Moreover, there remains a very high risk of increased heat mortality and medium risk of drought related water and food shortages (*high confidence*) under a 2°C scenario.[814]

755. North America stays under high to very high risk of wildfire and flood induced loss of ecosystem, property and infrastructure, heat related mortality, public health impacts and extreme precipitation (*high confidence*).[815]

756. Central and South America is under very high risk of reduced water availability, flooding and landslides due to extreme precipitation (*high confidence*), decreased food production and quality (*medium confidence*) and spread of vector diseases (*high confidence*).[816]

757. Communities in the Polar regions face high risks for health and well-being resulting from injuries and illness from the changing physical environment, food insecurity, a lack of reliable drinking water and damage to infrastructure (*high confidence*).[817]

758. Small Islands face high risk of loss of livelihoods, coastal settlements, infrastructure, and economic stability (*high confidence*).[818]

759. In conclusion, AR5 highlights, the risks of grave consequences of climate change. These include extinctions of species, famines, poverty and conflicts. AR5 also acknowledges the risks of tipping points leading to self-perpetuating, potentially cascading effects of climate change.

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[812] **R-0072**, UN IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 22.

[813] *Id*., adobe p. 23.

[814] *Ibid*.

[815] *Id*., adobe p. 24.

[816] *Id*., adobe p. 25.

[817] *Ibid*.

[818] *Ibid*.

(iii) Mitigation: AR5 introduced CO_2 budgets

760. AR5 concludes that mitigating the risks of climate change and its consequences requires reducing and, ultimately, eliminating CO_2 emissions.

> "Limiting risks across RFCs would imply a limit for cumulative emissions of CO_2. Such a limit would require that global net emissions of CO_2 eventually decrease to zero and would constrain annual emissions over the next few decades."[819]

761. In terms of specific targets, AR5 finds that risks and impacts associated with climate change may be significantly reduced if warming is limited to below 2°C:

> "The overall risks of climate change impacts can be reduced by limiting the rate and magnitude of climate change. Risks are reduced substantially under the assessed scenario with the lowest temperature projections (RCP2.6 – low emissions) compared to the highest temperature projections (RCP8.5 – high emissions), particularly in the second half of the 21st century (*very high confidence*)."[820]

762. AR5 emphasized the necessity for an "*urgent and fundamental departure from business as usual*"[821] to limit global warming to below 2°C. With regard to electricity generation in particular, AR5 made clear, GHG emission scenarios that limit global mean surface temperature increase to below 2°C require the decarbonization of electricity generation.[822]

763. AR5 emphasized that the commitments under the Cancún Pledges do not align with limiting temperature rise to 2°C. Instead, they would lead to 3°C increase:

> "Estimated global GHG emissions levels in 2020 based on the Cancún Pledges are not consistent with cost-effective long-term mitigation trajectories that are at least about as likely as not to limit temperature change to 2 °C relative to pre-industrial levels (2100 concentrations of about 450 to about 500 ppm CO_2eq), but they do not preclude the option to meet that goal (high confidence). Meeting this goal would require further substantial reductions beyond 2020. The Cancún Pledges are broadly consistent with cost-effective scenarios that are likely to keep temperature change below 3 °C relative to preindustrial levels."[823]

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[819] **R-0182**, UN IPCC Climate Change 2014: Synthesis Report, Summary for Policymaker, adobe p. 19.

[820] **R-0072**, UN IPCC Climate Change 2014: Impacts, Adaptation, and Vulnerability, Summary for Policymakers, adobe p. 15.

[821] **R-0074**, UN IPCC Climate Change 2014: Synthesis Report, Foreword, p. v.

[822] **R-0075**, UN IPCC Climate Change 2014: Mitigation of Climate Change, Summary for Policymakers, adobe p. 22.

[823] *Id*., adobe p. 14.

764. Based on a better understanding of the climate response to cumulative carbon emission, AR5 introduced specific CO_2 budgets. Limiting global temperature increase to a specific level implies cumulative CO_2 emissions to stay within a carbon budget.[824] The carbon budget concept is intended to enable policymakers to implement informed and effective strategies for reducing emissions to keep global warming within critical thresholds. The budgets had not been included in prior Assessment Reports of the UN IPCC:

765. To limit warming from anthropogenic CO_2 emissions alone to below 2°C since the period 1861-1880 with probabilities exceeding 33%, 50%, and 66%, AR5 estimated cumulative CO_2 emissions from all sources had to remain below 5760 $GtCO_2$, 4440 $GtCO_2$, and 3670 $GtCO_2$ respectively since that period.[825] The thresholds are significantly reduced when accounting for radiative forcing of non CO_2-factors: 3300 $GtCO_2$, 3010 $GtCO_2$, and 2900 $GtCO_2$. Until 2011 an amount of approximately 1890 $GtCO_2$ had already been emitted.[826]

766. To *likely* limit global warming to 2°C requires change in CO_2-eq emissions of -41% to -72% by 2050 and -78% to -118% emissions by 2100. The same reduction renders limiting global warming to below 1.5°C *more unlikely than likely*:[827]

[824] The reason is: "Cumulative total emissions of CO_2 and global mean surface temperature response are approximately linearly related": **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 25.

[825] *Ibid*.

[826] **R-0071**, UN IPCC Climate Change 2013: The Physical Science Basis, Summary for Policymakers, adobe p. 25.

[827] *Ibid*.

Table SPM. 1 - Key characteristics of the scenarios collected and assessed for WGIII AR5

Change in CO_2-eq emissions compared to 2010 (in %) [c]		Likelihood of staying below a specific temperature level over the 21st century (relative to 1850–1900) [d, e]			
2050	2100	1.5°C	2°C	3°C	4°C
r of individual model studies have explored levels below 430 ppm CO_2-eq [l]					
–72 to –41	–118 to –78	*More unlikely than likely*	*Likely*	*Likely*	*Likely*
–57 to –42	–107 to –73	*Unlikely*	*More likely than not*		
–55 to –25	–114 to –90		*About as likely as not*		
–47 to –19	–81 to –59		*More unlikely than likely* [i]		
–16 to 7	–183 to –86				
–38 to 24	–134 to –50				
–11 to 17	–54 to –21		*Unlikely*	*More likely than not*	
18 to 54	–7 to 72	*Unlikely* [h]		*More unlikely than likely*	
52 to 95	74 to 178		*Unlikely* [h]	*Unlikely*	*More unlikely than likely*

Source: **R-0074**, UN IPCC Climate Change 2014: Synthesis Report, adobe p. 22.

767. In conclusion, AR5 summarized that CO_2 emissions must be reduced and ultimately eliminated to limit the risks of climate change and its consequences. For policymakers, AR5 provided specific CO_2 budgets. The remaining CO_2 budgets are low.

C. THE UN IPCC SPECIAL REPORT OF 2018

768. In 2018, the UN IPCC issued the UN IPCC Special Report.[828] The report offers a comprehensive comparison between global warming of 1.5°C and 2°C above pre-industrial levels. The scientific consensus provided in the report shows that the current pathway will lead to global warming of more than 1.5°C (see below, at a.), that the difference between 1.5°C and 2.0°C will be crucial for *e.g.* the existence of species and the lives of hundreds of millions of people (at b.), and that net zero GHG emissions would have to be achieved by 2050 (at c.).

[828] **R-0085**, UN IPCC Special Report on Global Warming of 1.5°C, Summary for Policymakers.

(i) Likelihood: the trend of global warming exceeds 1.5°C

769. The UN IPCC Special Report concluded that global warming is likely to reach 1.5°C between 2030 and 2052.[829]

770. As to the timeframe afterwards, the Report concluded that the mitigation ambitions under the Paris Agreement at that time would not suffice for limiting global warming to 1.5°C.[830] Instead, the current ambitions may still lead to global warming of even 3.0°C.[831]

(ii) Consequences: the difference between 1.5 and 2°C warming is significant

771. The UN IPCC Special Report is unequivocal about the risks associated with the 0.5°C difference in temperature rise between 1,5°C and 2°C:

> "Climate-related risks for natural and human systems are higher for global warming of 1.5°C than at present, but lower than at 2°C (high confidence). These risks depend on the magnitude and rate of warming, geographic location, levels of development and vulnerability, and on the choices and implementation of adaptation and mitigation options (high confidence)."[832]

772. The evidence provided in the UN IPCC Special Report demonstrates that an additional 0.5°C of global warming will cause further change in climate and extreme weather events:

> "Climate models project robust differences in regional climate characteristics between present-day and global warming of 1.5°C and between 1.5°C and 2°C. These differences include increases in: mean temperature in most land and ocean regions (high confidence), hot extremes in most inhabited regions (high confidence), heavy precipitation in several regions (medium confidence), and the probability of drought and precipitation deficits in some regions (medium confidence)."[833]

[829] *Id*., A.1, adobe p. 4.

[830] *Id*., D.1, adobe p. 18: "Estimates of the global emissions outcome of current nationally stated mitigation ambitions as submitted under the Paris Agreement would lead to global greenhouse gas emissions in 2030 of 52–58 $GtCO_2eq$ yr^{-1} (*medium confidence*). Pathways reflecting these ambitions would not limit global warming to 1.5°C, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030 (*high confidence*)."

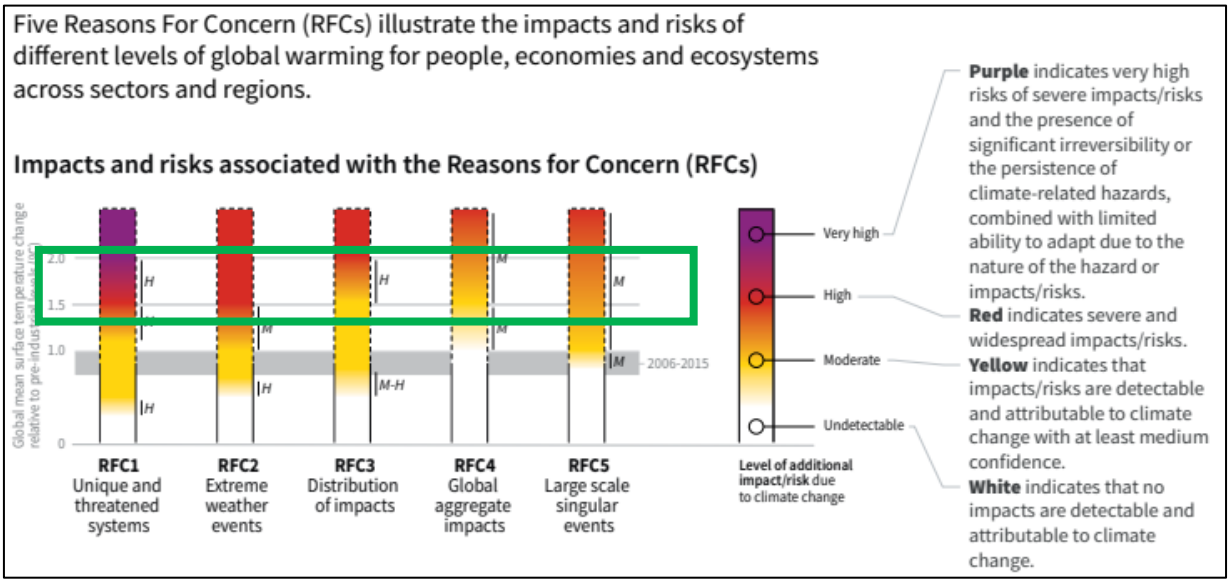
[831] *Id*., D.1.1, adobe p. 18: "Pathways reflecting current nationally stated mitigation ambition until 2030 are broadly consistent with cost-effective pathways that result in a global warming of about 3°C by 2100, with warming continuing afterwards (*medium confidence*)."

[832] *Id*., A.3, adobe p. 5.

[833] *Id*., B.1, adobe p. 7.

773. Since AR5 the assessed levels of risk associated with 2°C have increased for four out of the five of the Reasons for Concern (*high confidence*).[834] The following table illustrates the risk transition between 1.5°C and 2°C global warming. In this table, Respondent highlighted through a box in **green** the area between 1.5°C and 2°C, *i.e.* the risk that can be avoided by limited global warming to 1.5°C:

How the level of global warming affects impacts and/or risks associated with the Reasons for Concern (RFCs) and selected natural, managed and human systems



Source: **R-0085**, UN IPCC Special Report Global Warming of 1.5°C, Summary for Policymakers, Figure SPM.2, adobe p. 11.

774. The difference is particularly significant for the RFC "*unique and threatened systems*". A global warming of 2.0°C increased the risk to "*very high*" (*high confidence*). This entails the presence of significant irreversibility or persistence of climate-relate hazards with limited ability to adapt.

775. Limiting global warming to 1.5°C also lowers the impact of climate change on terrestrial, marine, freshwater, and coastal ecosystems. The risk of these systems having to undergo transformation is 50% lower at 1.5°C compared to 2°C.[835] Loss in species and threat of extinction doubles in a 2°C-temperature-increase scenario:

> "Of 105,000 species studied, 9.6% of insects, 8% of plants and 4% of vertebrates are projected to lose over half of their climatically determined geographic range for global warming of 1.5°C, compared with 18% of

[834] *Id.*, B.5.7, adobe p. 10.

[835] *Id.*, B.3.2, adobe p. 8.

> insects, 16% of plants and 8% of vertebrates for global warming of 2°C (*medium confidence*)"[836]

776. Regarding human life, limiting global warming to 1.5°C instead of 2°C is expected to mitigate the detrimental effects of global warming on food production, quality, and availability. A global warming of 2.0°C would lead to more drastic declines in yields of key crops like maize, rice, and wheat, especially in developing regions (*high confidence*). Food availability is expected to decrease more at 2°C than at 1.5°C, particularly in regions like the Sahel, southern Africa, the Mediterranean, central Europe, and the Amazon (*medium confidence*). Additionally, livestock are likely to suffer with rising temperatures due to changes in feed quality, disease spread, and water availability (*high confidence*).[837]

777. Furthermore, climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase significantly with 2°C. Indeed, the difference between 1.5°C and 2.0°C global warming may determine for hundreds of millions whether they live in poverty or not:

> "Poverty and disadvantage are expected to increase in some populations as global warming increases; limiting global warming to 1.5°C, compared with 2°C, could reduce the number of people both exposed to climate-related risks and susceptible to poverty by up to several hundred million by 2050 (*medium confidence*)."[838]

778. Finally, the UN IPCC Special Report also highlighted the differences between 1.5°C and 2°C of global warming with regard to tipping points. Global means sea level rise is projected 0.1m lower with global warming of 1.5°C (*medium confidence*).[839] This reduces the number of people exposed to related risks by 10 million (*medium confidence*).[840] Instability of marine ice sheets in Antarctica and irreversible loss of the Greenland ice sheet resulting in multi-metre rise in sea level over hundreds to thousands of years may be prevented following a 1.5°C target (*medium confidence*).[841] Moreover, global warming of 1.5°C significantly reduces ocean temperature and ocean acidification (*high confidence*).[842] The likelihood of an ice-free Arctic

[836] *Id*., B.3.1, adobe p. 8
[837] *Id*., B.5.3, adobe p. 9.
[838] *Id*., B.5.1, adobe p. 9.
[839] *Id*., B.2, adobe p. 7.
[840] *Id*., B.2.1, adobe p. 7.
[841] *Id*., B.2.2, adobe p. 7.
[842] *Id*., B.4, adobe p. 8

Ocean during summer is 10 times lower than under global warming of 2°C (*high confidence*).[843] In conclusion, the 2018 IPCC Special Report shows that the difference between 1.5°C and 2.0°C global warming may determine the extinction of species, the poverty of millions, and the risks of tipping points such as the melting of the marine ice sheets.

(iii) Mitigation: limiting global warming to 1.5°C requires net zero by 2050

779. The Special Report builds on the AR5's findings on the total cumulative global anthropogenic CO_2 emissions and provided an assessment on the remaining carbon budget specifically for staying below 1.5°C.

780. According to the IPCC Special Report, CO_2 emissions had reduced the 1.5°C budget by 2200 ± 320 $GtCO_2$ in 2017 (*medium confidence*) and 42 ± 3 $GtCO_2$ (*high confidence*) were going to be added annually. To achieve a 50% probability of limiting global warming to 1.5°C, the Special Report estimated the remaining carbon budget at 580-770 $GtCO_2$. For a more ambitious probability of 66%, the budget narrows to only 420-570 $GtCO_2$ (*medium confidence*).[844]

781. The Report concludes that limiting global warming to 1.5°C requires reaching net zero around 2050. It also concludes that reductions in CO_2 must happen immediately:

> "In model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO_2 emissions decline by about 45% from 2010 levels by 2030 (40–60% interquartile range), reaching net zero around 2050 (2045–2055 interquartile range)."[845]

[843] *Id*., B.4.1, adobe p. 8.

[844] *Id*., C.1.3, adobe p. 12: "Limiting global warming requires limiting the total cumulative global anthropogenic emissions of CO_2 since the pre-industrial period, that is, staying within a total carbon budget (high confidence). By the end of 2017, anthropogenic CO_2 emissions since the pre-industrial period are estimated to have reduced the total carbon budget for 1.5°C by approximately 2200 ± 320 $GtCO_2$ (*medium confidence*). The associated remaining budget is being depleted by current emissions of 42 ± 3 $GtCO_2$ per year (high confidence). The choice of the measure of global temperature affects the estimated remaining carbon budget. Using global mean surface air temperature, as in AR5, gives an estimate of the remaining carbon budget of 580 $GtCO_2$ for a 50% probability of limiting warming to 1.5°C, and 420 $GtCO_2$ for a 66% probability (*medium confidence*). Alternatively, using GMST gives estimates of 770 and 570 $GtCO_2$, for 50% and 66% probabilities, respectively (*medium confidence*)."

[845] *Ibid*.