

CASE T-##/18

ARMANDO FERRÃO CARVALHO and others

Applicants

AND

**THE EUROPEAN PARLIAMENT
THE COUNCIL**

Defendants

**APPLICATION FOR ANNULMENT
PURSUANT TO ARTICLE 263 TFEU**

AND

**APPLICATION / CLAIM FOR NON-CONTRACTUAL LIABILITY
PURSUANT TO ARTICLES 268 AND 340 TFEU**

AND

**APPLICATION FOR MEASURES OF INQUIRY
PURSUANT TO ARTICLES 88 AND 91 OF
THE RULES OF PROCEDURE OF THE GENERAL COURT**

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¹ As a university professor holding the qualifications for judicial office Professor Winter is entitled to represent parties in cases brought before administrative courts, including the Federal Administrative Court of Germany and seeks to exercise rights of audience before this Court (Article 19 (7) Statute of the CJFEU; Article 67 (2) and (4) (Verwaltungsgerichtsordnung - Administrative Court Act).

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A. INTRODUCTION AND SUMMARY

1. This case is brought by children and their parents, working in agriculture and tourism in the EU and abroad who are and will increasingly be adversely affected in their livelihoods and their physical well-being by climate change effects such as droughts, flooding, heat waves, sea level rise and the disappearance of cold seasons. They are supported and joined by an association of indigenous Sami youth.

2. The applicants bring two related applications concerning the responsibility of the Union for emissions of greenhouse gases ('GHGs'), leading to dangerous climate change. They contend that the Union has failed and continues to fail to meet its urgent responsibilities to limit the emission of GHGs, in breach of its binding obligations. This breach currently manifests in three recently adopted legal acts of the European Parliament and the Council, which cover different sectors of the economy. These comprise:
 - the 2018 amendment of Directive 2003/87/EC (the "ETS Directive");²
 - Regulation [...] 2018/EU (the "Effort Sharing Regulation" or "CAR Regulation")³, and
 - Regulation [...] 2018/EU (the "LULUCF Regulation")⁴;
 - collectively, the "GHG Emissions Acts".

The latter two are pending publication. The application can be lodged without waiting for official publication because the contested legal acts were duly adopted according to the legislative procedure.⁵

3. The applicants' case is that the Union is obliged under higher rank legal norms to avoid harm caused by climate change and associated infringements of fundamental human rights. Given that climate change is already causing damage and that further emissions will add to its dangers, any target set for the reduction of emissions must be based on an assessment of capability, in light of the EU's legal obligations and the grave threat posed by climate change. The GHG Emissions Acts fail to meet this standard and the target set for reducing GHG emissions is grossly inadequate:

² Directive (EU) 2018/410 of the European Parliament and the of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814 [Annex 1] pp.1 ff., as published in the Official Journal 2018 L 76/3.

³ Regulation 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, [Annex 2 p.26 ff.] The Regulation will in the following be cited as ESR and is annexed in the current form of Council Conclusions, COD 2016/0231, dated 26. April 2018, adopted 14. May 2018, publication is still pending.

⁴ Regulation of the European Parliament and of the Council on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) 525/2013 and Decision 529/2013/EU, [Annex 3, p. 81 ff.] annexed in the current form of Council Conclusions, COD 2016/0230, dated 26. April 2018, adopted 14. May 2018, publication is still pending.

⁵ See ECJ decision of 26 September 2013, Case C 626/11 P (Polyelectrolyte Producers Group), ECLI:EU:C:2013:595, para. 35.

- a. The GHG Emissions Acts collectively set a target that, if followed, would lead to GHG emissions from the EU decreasing over the period 2021-2030, such that by 2030 emissions would be 40% lower than their level in 1990; i.e, allowing as much as 60% of the 1990 level of emissions.
 - b. These emissions will accumulate in the atmosphere and cause serious damage to the life conditions of the applicants and the public at large. This damage infringes higher rank norms and will be a breach of the law unless the Union can establish a well-founded justification.
 - c. No such justification is available here. The EU has set the 40% reduction target without seeking to inquire into the feasibility of requiring more, so as to avoid the harm prohibited by higher rank law, and so as to fulfil the commitments made most recently in the international Paris Agreement⁶ to limit any temperature increase to a specified level.
 - d. Moreover, had the Defendants and the Commission made proper inquiries into capability, the overwhelming official, scientific, engineering and economic evidence shows that the Union can feasibly and economically go considerably further than a 40% reduction. While it is not for the Applicants to define the precise figure, the evidence shows that the Union's discretion would be limited such that, at the least, a reduction in a range of 50-60% below 1990 levels would be required by 2030.
4. The applicants accordingly seek the annulment of the emissions targets (which in aggregate comprise an overall reduction of 40%) in the GHG Emissions Acts.
 5. Further, the Union's past and continuing failure to adopt sufficient measures to reduce emissions as required by higher rank law has caused, is continuing to cause, and will cause the applicants damage, engaging the non-contractual liability of the Union. The applicants accordingly seek an injunction requiring the Union to set deeper emissions reduction targets at the level required by law.
 6. As set out below and in the supporting Annexes to this application, the applicants adduce a significant volume of evidence supporting their case, including as to the effects of climate change both generally and in their specific circumstances, and the feasibility of adopting deeper emissions reductions. This evidence is drawn from official documents, and scientific and economic studies, mostly from the universally accepted Intergovernmental Panel on Climate Change, IPCC. It is submitted that, in so doing, the applicants have established their case.
 7. Nonetheless, in the event that the Court has any concerns whatsoever about the standard or depth of evidence supplied, the applicants invite the Court to consider whether it is appropriate in this case (and indeed necessary pursuant to the principle of effective judicial protection) to commission an expert's report pursuant to Article 88(1) and 91(e) of the General Court's Rules of Procedure. In particular, in the event that the Court has any concerns as to, for example:

⁶ See Council Decision (EU) 2016/1841 of 5 October 2016 on the conclusion, on behalf of the European Union, of the Paris Agreement adopted under the United Nations Framework Convention on Climate Change, OJ 2016, L 282/1.

- a. The damage caused by climate change to the applicants or otherwise;
- b. The measures that the Union could feasibly adopt to reduce GHG emissions; or
- c. The total budget of emissions available for use by the Union within its legal responsibilities,

– the applicants submit that it should consider the commission of an expert report or reports. Such a report(s) could be provided by an independent scientist specialising in climate change, or an economist or engineer with expertise in emissions abatement, or such other expert as the Court would find useful. To this extent the applicants hereby make a contingent Application for Measures of Inquiry.

- 8. Aside from this contingent application, the applicants seek the following final relief from this Honourable Court:
 - a. Declare the contested three GHG Emission Acts void insofar as they allow the emission between 2021 and 2030 of a quantity of greenhouse gases corresponding to 80% of the 1990 emissions in 2021, decreasing to 60% of the 1990 emissions in 2030.
 - b. Annul the GHG Emission Acts insofar as they provide for a reduction by 2030 of greenhouse gas emissions by 40% compared to 1990 levels.
 - c. Order that the contested provisions shall remain in force for such limited period as the Court determines appropriate, until they are replaced with emissions target levels compliant with the norms of high rank law.
 - d. Order the Defendants to adopt measures under the three GHG Emissions Acts such as to reduce the level emissions of greenhouse gases covered by those Acts by at least between 50% and 60% of 1990 levels by 2030.

B. THE PARTIES

- 9. The applicants include individuals in families from countries across the EU and the world. They include adults of working age, retired persons, and younger people and children. They are engaged in a range of economic activities, including the cultivation of crops, forestry management, animal herding, and eco-tourism. In summary:
 - a. Armando Ferrão **Carvalho** and his son Diogo Carvalho live in Portugal. Mr Carvalho senior owns a tract of forest, which will in time pass to his son, and which is worked and harvested using sustainable methods.
 - b. Mr Alfredo **Sendin** owns agricultural land in Portugal, which is committed to the use of a cooperative which produces a range of agricultural products. Joaquim and Ana Cristina **Caixeiro** live near to this cooperative, where Mr Caxeiro works as a butcher. They (and their two daughters Beatriz Cristina and Vera Cristina Caxeiro) depend on the cooperative for their livelihood.

- c. Ildebrando and Maria Clotilde Sousa Godinho Ferreira da **Conceição** are beekeepers in Portugal, extracting honey and other products. Their son Ricardo João Godinho Ferreira also works in the family beekeeping business.
 - d. Guylaine and Renaud **Feschet** own a tract of land in southern France, where they grow lavender. They have one son (Gabriel Feschet), whose grandparents (Maurice Feschet and Geneviève Gasson) work and live on the farm, which thus supports five people.
 - e. Roba Waqo **Guyo** and Fadhe Hussein Tache live with their five small children – Sado, Issa, Jibril, Adanoor, and Mohammed – in northern Kenya. The family earn their living from herding cattle and goats.
 - f. Petru **Vlad** and Ana Tricu live with their children in Romania, where they own land used for farming crops and raising livestock.
 - g. Giorgio Davide **Elter** and Sara Burland work a parcel of land in the Italian Alps, harvesting and processing fruits, vegetables and regional herbs. They run this business and a bed and breakfast with their four daughters: Soulail, Alice, Rosa and Maria Elter.
 - h. Michael and Maike **Recktenwald** live with their son Lueke Recktenwald on Langeoog, an island in the North Sea, where Mrs Recktenwald’s family have lived for 4 generations. They depend on their family-owned hotel and restaurant business for their livelihood.
 - i. Petero **Qaloibau** lives with his mother, Melania Cironiceva, and his three children – Katarina Dimoto, Petero Qaloibau Jr., and Elisabeta Tokalau – in Fiji. The family depend on subsistence farming and fishing and on Mr Qaloibau’s work as an eco-tourism guide.
10. The individual applicants are joined by an association of young Sami people, **Sáminuorra**. The members of the organization, in the tradition of the indigenous Sami people, live and work around reindeer husbandry, which provides employment and produce for sale.
 11. As developed below, climate change has in some cases already curtailed the applicants’ activities and livelihoods; as time goes on it will continue to do so. Changes in the climate have also exposed some of the applicants to physical harm; the risks to physical well-being will increase as climate change worsens. These matters are addressed further in relation to the particular applicants in Section D below, by reference to detailed Annexes provided for each family and for Sáminuorra.
 12. The Defendants are the Parliament and Council. These are the institutions of the Union responsible for the adoption of the GHG Emissions Acts, which authorise the continued emission of GHGs at levels which, in the applicants’ submission, cannot be justified.

C. FACTUAL CONTEXT: CLIMATE CHANGE AND ITS EFFECTS

13. There is a broad scientific consensus as to the direct causal link between the emission of GHGs, increases in average temperatures, and changes in the climate. As set out below, the EU has accepted the fundamental conclusions of this scientific research. The volume of the learned scientific research is enormous; what follows here is a high-level summary of key points most relevant to these applications. The plaintiffs submit as overall evidence of climate change, the corresponding science and findings the two most recent synthesis reports of the universally accepted Intergovernmental Panel on Climate Change (the ‘IPCC’).⁷ These are from the 4th Assessment Report 2007⁸ and 5th Assessment Report 2014⁹. It is assumed that the defendants do not challenge these findings and facts. Scientific findings apart from the IPCC reports are only referred to in as much as they were not taken into account by the IPCC or / and reflect more recent or more detailed findings.

C1. The general effects of an increase in temperature

14. The IPCC, using an analysis of four data sets, finds the average global surface temperature was 0.61°C warmer in the period 1986-2005 than in 1850-1900, and is predicted to be 0.5°C warmer in the period 2016-2035 than in 1968-2005.¹⁰ According to this analysis, it is not unlikely that by 2021 – the year in which the EU GHG measures the subject of this action take effect – global temperatures will have increased by 1.5°C as compared with pre-industrial times.
15. The IPCC has summarized the risks of temperature increases:¹¹
- a. Risk of death, injury, ill-health, or disrupted livelihoods in low-lying coastal zones and small island developing states and other small islands, due to storm surges, coastal flooding, and sea level rise.
 - b. Risk of severe ill-health and disrupted livelihoods for large urban populations due to inland flooding in some regions.
 - c. Systemic risks due to extreme weather events leading to breakdown of infrastructure networks and critical services such as electricity, water supply, and health and emergency services.

⁷ The IPCC is the world’s leading international body for the assessment of climate change. It is established under the United Nations Environment Programme and the World Meteorological Organisation in 1988. It reviews the range of research on climate change and periodically publishes reports. Thousands of scientists around the world contribute to the IPCC. The EU as well as its institutions such as the EEA have endorsed the IPCC’s findings throughout its history. It submitted its first Assessment Report in 1990. The most recent is the 5th Assessment Report (2013/2014). It works in Working Groups, roughly as follows: WG I: Science, WG II: Impacts, WG III: Mitigation.

⁸ [Annex 4], IPCC Synthesis Report 2007

⁹ [Annex 5], IPCC Synthesis Report 2014

¹⁰ See IPCC (2014) Climate Change 2014. Synthesis Report [Annex 5], p. 58. See also figure 2.14 in IPCC (2013) 5th Assessment Report Working Group (WG) I Chapter 2.4.1.1, [Annex 6], p. 187.

¹¹ IPCC (2014) 5th Assessment Report Working Group (WG II), [Annex 7], p.13.

- d. Risk of mortality and morbidity during periods of extreme heat, particularly for vulnerable urban populations and those working outdoors in urban or rural areas.
 - e. Risk of food insecurity and the breakdown of food systems linked to warming, drought, flooding, and precipitation variability and extremes, particularly for poorer populations in urban and rural settings.
 - f. Risk of loss of rural livelihoods and income due to insufficient access to drinking and irrigation water and reduced agricultural productivity, particularly for farmers and pastoralists with minimal capital in semi-arid regions.
 - g. Risk of loss of marine and coastal ecosystems, biodiversity, and the ecosystem goods, functions, and services they provide for coastal livelihoods, especially for fishing communities in the tropics and the Arctic.
 - h. Risk of loss of terrestrial and inland water ecosystems, biodiversity, and the ecosystem goods, functions, and services they provide for livelihoods.
16. The EEA has recently modelled the impacts of climate change in the main regions of Europe. These are set out in tabular form in [**Annex 8**],¹² the key impacts include:
- a. The frequency of heat extremes, ie, the frequency of warm days and the heat wave magnitude index, will increase in most areas of every region in Europe (row 3.2.3);
 - b. The absolute sea level is projected to rise in all areas of northern and temperate Europe, and in substantial parts of southern Europe (row 4.2.2);
 - c. Snow cover is projects to reduce throughout Europe, on average (row 3.3.5);
 - d. Economic costs from climate related extremes are projected to increase across Europe (row 5.1.3).
17. The severity of risks increases significantly as greater increases in temperature are assumed. The IPCC illustrates this graphically in its report,¹³ and states:¹⁴
- “Increasing magnitudes of warming increase the likelihood of severe, pervasive and irreversible impacts.”
- “The overall risks of climate change impacts can be reduced by limiting the rate and magnitude of climate change.”
18. The IPCC in its 2007 and 2014 reports, moreover, modelled the risks arising from a range of temperature increases. These are set out in tabular form in its 2014 report on

¹² See EEA (2017) Report No 1/2017: Climate change, impacts and vulnerability in Europe 2016. An indicator-based report, Luxembourg (Publications Office of the European Union) [**Annex 8**] p. 25. This study will be referred to in multiple places, including in the specific plaintiff [**Annexes 22-32**].

¹³ See the diagrams set out in IPCC (2014) 5th Assessment Report, WG II, p.13 [**Annex 7**].

¹⁴ IPCC (2014) 5th Assessment Report, Working Group II, Summary for Policy Makers, p.14 [**Annex 7**].

impacts¹⁵, which the Court is respectfully invited to read. This analysis makes clear the intuitively obvious point that the dangerous effects of temperature increases are made more severe, the greater the increase. For example, as regards the issue of *water*:

- a. A temperature increase of 3-4°C will result in: “Sea level rise will extend areas of salinization of ground water, decreasing freshwater availability in coastal areas.” (very high degree of confidence)
 - b. A temperature increase of 2-3°C will have the consequence of: “Hundreds of millions people would face reduced water supplies.” (high degree of confidence)
 - c. By contrast, a temperature increase limited to 1-2°C will mean “Increased flooding and drought severity” (high degree of confidence), but by comparison with the higher temperature scenarios that this “*Lowers risks of floods, droughts, deteriorating water quality and reduced water supply for hundreds of millions of people.*”
19. More recent research confirms the IPCC’s overall assessment, comparing the modelled effects arising from different increases in temperature, of 1.5°C and 2.0°C.¹⁶ For example:
- a. An overall temperature rise of 1.5°C would lengthen the duration of heat waves by 10%, whereas an increase of 2.0°C would lengthen the duration by 60%.
 - b. Under a temperature increase of 1.5°C, water availability in the Mediterranean region is expected to reduce by 9%, whereas a temperature increase of 2.0°C would lead to a reduction in water availability of 16%.
20. The weight of scientific research also indicates that the damage caused by increased temperatures will reach ‘tipping points’, where major and irreversible changes to the Earth system are triggered. These are illustrated graphically in a paper published in *Nature* in 2016,¹⁷ and include the following:
- a. The West Antarctic Ice Sheet (WAIS) has likely already been destabilized, committing the world to at least three meters of global sea-level rise in coming

¹⁵ IPCC (2014) WG II, [Annex 7]

¹⁶ See Schleussner, C.-F. et.a. (2016) Differential climate impacts for policy-relevant limits to global warming: the case of 1.5 °C and 2 °C, *Earth Syst. Dynam.*, 7, 327-351, 2016 [Annex 9]. This study is referenced in the plaintiff [Annexes 22-32].

¹⁷ Schellnhuber, H. J. e.a. (2016) Why the right climate target was agreed in Paris. *Nature Climate Change* 6, 649-653 (2016) [Annex 10].

centuries.¹⁸ The Greenland Ice Sheet – holding enough ice to eventually raise global sea levels by seven meters – may likewise be destabilised below 2 °C.¹⁹

- b. Coral reefs have suffered pan-tropical mass bleaching in 2016 and have done so again in 2017 as a result of warming oceans, and only if global temperature stays well below 2 °C some remnants of the world’s coral reefs can be saved.²⁰
- c. The Gulf Stream system appears to be already slowing and recent research indicates it is far more unstable than previously thought.²¹

C2. Specific consequences of increased temperatures

21. The adverse effects described above extend to almost all human life and to almost the entire biosphere of the globe. It is also well-established that dangerous climate change will also have direct and specific harmful consequences of the sort that will directly affect the applicants in these proceedings through heat waves, flooding, droughts and desertification, and the retreat of snow and ice.

a. Heat waves

22. Research by the World Bank explains that heat waves cause damage to human health and professions that depend on moderate temperature such as agriculture and tourism.²²

23. As set out in the preceding section, heat spells are projected to increase throughout Europe if temperatures overall increase, and to be more intense and longer with greater increases in temperature. The IPCC also finds the research to indicate that North Africa will particularly be affected.²³

24. The risks of heat waves are particularly serious for children, as explained by UNICEF:²⁴

“Infants and small children are more likely to die or suffer from heatstroke because they are unable or lack agency to regulate their body temperature and control their surrounding environment. In addition, heat stress can be especially challenging in cold chain management, as certain microbes multiply faster and more efficiently under higher temperatures. Exposure to abnormal or prolonged amounts of heat and humidity without relief or adequate fluids can

¹⁸ Feldmann, J. & Levermann, A. (2015) Collapse of the West Antarctic Ice Sheet after local destabilization of the Amundsen Basin. *Proc.Natl.Acad.Sci USA* 112, 14191-6 [**Annex 11**]. This study will be referenced in the plaintiff [**Annexes 22-32**].

¹⁹ Robinson, A. e.a. (2012) Multistability and critical thresholds of the Greenland ice sheet. *Nature Climate Change* 2, 429-432 (2012). doi:10.1038/nclimate1449 see [**Annex 12**].

²⁰ Frieler, K. e.a. (2013) Limiting global warming to 2 degrees C is unlikely to save most coral reefs. *Nature Climate Change* 3, 165-170 [**Annex 13**].

²¹ Rahmstorf, S. e.a. (2015) Exceptional twentieth-century slowdown in Atlantic Ocean overturning circulation. *Nature Climate Change* 5, 475-480 [**Annex 14**]

²² The World Bank (2014) (ed.) Turn Down the Heat. Confronting the New Climate Normal [**Annex 15**].

²³ See IPCC (2014) 5th Assessment Report WG II p. 1210, No. 22.2.3 [**Annex 7**].

²⁴ United Nations Children’s Panel (2015) Unless we act now. The impact of climate change on children, UNICEF p. 40 – [**Annex 16**].

cause various types of heat-related illnesses. The health effects of heatwaves include heat rash, which are prevalent in young children, as well as heat-related cramps, exhaustion and stroke. Children and adolescents with chronic health conditions, such as respiratory conditions and those who take certain medications, may be even more susceptible to heat-related illnesses. Other risk factors include whether a child is poor, has access to adequate nutrition, water and sanitation, or is orphaned and/or homeless. Extreme heat stress can result in dehydration, which slows the sweating rate. This is a common cause of hyperthermia and death in infants, young children and the elderly. Factors that promote excessive fluid loss, such as diarrhoea, may increase the risk of heat-related injury and death. ...During El Niño in the late 1990s when temperatures were 5°C above normal in Lima, Peru, one study found that there was a 200 per cent increase in the hospitalization of children compared to the normal rate. Extreme heat is a real threat to children's well-being, not just in countries around the equator but also in many temperate climates. Extreme heat does not only affect children directly, but also affects them through a variety of heat-related illnesses.”

b. Flooding

25. On the North Sea coast, where a number of the applicants live, the IPCC predicts an increase in extreme sea level events, driven by an increase in the global mean sea level. Storm surges are expected to increase significantly in the eastern North Sea, and with a volume of research indicating greater storm surges also for the south coast of the North Sea and the Dutch coast.²⁵ A warming of northern European seas, including the North Sea, is also forecast, at a much higher increase than the global norm.²⁶
26. The IPCC anticipates a loss of coastal land arising from storm surges and sea level rises along the North Sea coast.²⁷ Unsurprisingly, danger to life, property and infrastructure of coastal settlements is a direct consequence of extreme sea level events:²⁸

“As the risk of extreme sea level events increases with climate change, coastal flood risk will remain a key challenge for several European cities, port facilities, and other infrastructure. With no adaptation, coastal flooding in the 2080s is projected to affect an additional 775,000 and 5.5 million people per year in the EU27 (B2 and A2 scenarios, respectively). The Atlantic, Northern, and Southern European regions are projected to be most affected. Direct costs from sea level rise in the EU27 without adaptation could reach €17 billion per year by 2100, with indirect costs also estimated for land-locked countries. Countries with high absolute damage costs include Netherlands, Germany, France, Belgium, Denmark, Spain, and Italy.”
27. A UNICEF report on climate change finds floods to be a particular danger for children, through: higher risk of injuries and death by drowning, compromising safe water supplies and sanitation, impacts on family livelihoods and food production, displacement of persons from flooded areas and post-traumatic stress disorder.²⁹

²⁵ IPCC (2014) 5th Assessment Report WG II p. 1279 Nr. 23.2.2.3. - [Annex 7].

²⁶ IPCC (2014) 5th Assessment Report WG II p. 1295 Nr. 23.6.5. - [Annex 7].

²⁷ IPCC (2014) 5th Assessment Report WG II p. 1280 Nr. 23.1.1.1. - [Annex 7].

²⁸ IPCC (2014) 5th Assessment Report WG II p. 1295 Nr. 23.6.5.- [Annex 7].

²⁹ UNICEF, Unless we act now. , [Annex 16 pp. 33, 32].

c. Droughts and desertification

28. The IPCC's analysis finds that Southern Europe and North Africa will be affected by dry spells of increasing duration.³⁰ The IPCC's analysis is that (unsurprisingly) droughts will affect agricultural production, and that,³¹ "Southern Europe would experience the largest yield losses ... with increased risks of rainfed summer crop failure..." It finds in particular that the productivity of wheat cultivation will decrease.³² Its assessment is that changes in irrigation techniques appear not to be feasible.³³

29. The IPCC also anticipates that reduced rainfall associated with climate change will be a significant problem in North Africa:³⁴

"A reduction in rainfall over northern Africa is very likely by the end of the 21st century. The annual and seasonal drying/warming signal over the northern African region (including North of Morocco, Algeria, Libya, Egypt, and Tunisia) is a consistent feature in the global and the regional climate change projections for the 21st century under the A1B and A2 scenarios.

"There is high agreement that continuing changes in precipitation, temperature, and carbon dioxide (CO₂) associated with climate change are very likely to drive important future changes in terrestrial ecosystems throughout Africa"

30. In consequence, the IPCC projects desertification in the north and south of the Sahara.³⁵ Recent research is consistent with the IPCC's conclusions, and finds that GHG emissions beyond the level anticipated by the Paris Agreement will very likely lead to substantial desertification in North Africa and elsewhere.³⁶

31. UNICEF has again analysed the effects of drought and desertification on children in particular. It found that drought leads to nutritional deprivation, to which children are more vulnerable, with immediate and lifelong impacts. This can affect physical and cognitive development over the child's life. Deprivation caused by drought can force children into hazardous work, disruption of family units, and interference with attendance at school. The incidence of communicable diseases may increase, and overcrowding caused by drought conditions may result in worsened sanitation, unsafe

³⁰ As shown graphically in IPCC (2014) 5th Assessment Report WG II Figure 23-2 d), p. 1278 - [Annex 7]. In that document, 'RCP' means Representative Concentration Pathways and relates to model calculations that work on different parameters. RCP4.5 assumes stable temperature until 2100 and RCP8.5 an increasing temperature. Dry spell means drought at least for 5 days.

³¹ IPCC (2014) 5th Assessment Report WG II p. 1284- [Annex 7].

³² IPCC (2014) 5th Assessment Report WG II p. 1265 Figure 23-4 - [Annex 7].

³³ IPCC (2014) 5th Assessment Report WG II p. 1286- [Annex 7].

³⁴ IPCC (2014) 5th Assessment Report WG II Africa, p. 1215 - [Annex 7].

³⁵ See the maps set out in IPCC (2014) 5th Assessment Report WG II, p. 1215 - [Annex 7].

³⁶ J. Guit, W. Cramer (2016) Climate change: The 2015 Paris Agreement thresholds and Mediterranean basin ecosystems, Science Magazine vol. 384 Issue 6311 p. 465-468 (468) - [Annex 17].

water supplies, and disruption of health services. All these issues contribute to significant emotional distress among affected children.³⁷

d. Retreat of snow and ice

32. The European Environment Agency ('the EEA') has projected a decrease of snow mass in various European regions, including the Alps, Switzerland, the Pyrenees, and the Turkish and Balkan mountains, and less frequent winters of heavy snowfall.³⁸
33. Further research indicates that a disruption to snow and ice patterns in the Arctic region will cause an increasing risk of starving of reindeer and subsequent socio-economic loss for reindeer herders. This occurs through so-called rain on snow (ROS) events when early winter rain creates ice layers that hinders reindeer to feed on the underlying lichen, as well as a loss of sea ice. Catastrophic events of this kind are likely to occur in the Norwegian and Finnish Arctic regions. A major event during autumn/winter 2013/14 led to the starvation of 61.000 out of a population of 275 000 animals on the Yamal Peninsula.³⁹ This has obvious serious risks for migratory herders, the indigenous Nenets.
34. One effect of cultural and social significance is that in Northern Europe the winter as a season in the form currently known is about to disappear. Winter as a season is a high valued good inspiring arts, enabling leisure activities, bringing economic revenue, regulating natural cycles and providing a wealth of other services as a natural resource. The winter season can be conceived as a world cultural and natural heritage qualifying as an asset protected by the related UNESCO Convention.

C3. The causal connection between GHG emissions, higher temperatures, and dangerous climate change

35. The EU has accepted – through its participation in international agreements and in its legislative acts – the essential connection between the emission of greenhouse gases, increases in temperature, and dangerous climate change:
 - a. Recital 3 to the EU ETS – which sets out the basis for the adoption of GHG emissions cuts – recognises that the overall objective of the United Nations Framework Convention on Climate Change (the 'UNFCCC') is:

“...to achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level which prevents dangerous anthropogenic interference with the climate system.”
 - b. The basic logic of the Paris Agreement and other instruments is that reductions in GHG emissions will, “*significantly reduce the risks and impacts of climate change*”.⁴⁰

³⁷ UNICEF, Unless we act now - [Annex 16] p. 22-23.

³⁸ EEA (2017) Climate Change, Impacts and Vulnerability in Europe 2016 - [Annex 8].p. 103.

³⁹Forbes, B. C. e.a. (2016) Sea ice, rain-on-snow and tundra reindeer nomadism in Arctic Russia. Biol. Lett. 12:2016.0466 - [Annex 18]. This Annex will be referred in [Annex 31] (Saminuorra).

⁴⁰ Paris Agreement, Article 2(1)(a).

- c. Article 1 of the EU ETS Directive likewise affirms the need, “for the reductions of greenhouse gas emissions to be increased so as to contribute to the levels of reductions that are considered scientifically necessary to avoid dangerous climate change.”
36. Should confirmation of the causal connection between GHG emissions, increases in temperature, and dangerous changes in the climate be required, it is provided by the overwhelming volume of objective scientific analysis. The basic physical dynamic is as follows:
- a. GHG concentration in the atmosphere has increased over the industrial period⁴¹ and concentrations of CO₂ and CH₄ are projected to continue to increase.⁴²
 - b. Anthropogenic emissions of GHGs mainly result from fossil fuels and cement and from other land uses.⁴³
 - c. GHGs can be (and to some extent are) removed from the atmosphere by ‘sinks’ such as forests and oceans.
 - d. A denser concentration of GHGs in the atmosphere hinders the reflection of solar radiation into space, thus contributing to the warming of the atmosphere.⁴⁴
37. The IPCC produces different models projecting the impact of GHG emissions on climate into the future. Its 5th Assessment Report (‘AR 5’) considers four representative scenarios, (Representative Concentration Pathways – ‘RCPs’), ascertaining the development of the global emission trend in the future, under which the main drivers of emission growth are population growth and particularly economic growth. These scenarios include the following two:
- a. The **RCP 8.5 scenario** assumes that no or virtually no climate policy will be implemented. This scenario assumes that poor countries, which currently have virtually non-existent emission levels, will experience industrial development and will emit greater levels of greenhouse gases in the future. This scenario will lead to a warming of over 4 °C in the year 2100. When looking at the current situation, global emission levels have been following the RCP 8.5 scenario closest for years, staying just below the level in that scenario.
 - b. The **RCP 2.6 scenario**, on the other hand, assumes an ideal situation in which global reductions begin as soon as possible, in which all countries participate and cooperate intensively to ensure that the reductions will be implemented as cost-effectively as possible. In this idealised RCP 2.6 scenario there is a more than 66% chance that global warming by 2100 will be limited to 2 °C

⁴¹ EEA (2018) Atmospheric greenhouse gas concentrations. [Annex 19]. This EEA study updates the data contained in the IPCC 5th Assessment Report.

⁴² IPCC (2007) 4th Assessment Report, WG I, Fig. 1-05 – see [Annex 20].

⁴³ IPCC (2007) 4th Assessment Report, WG I, Fig 6-08– see [Annex 20].

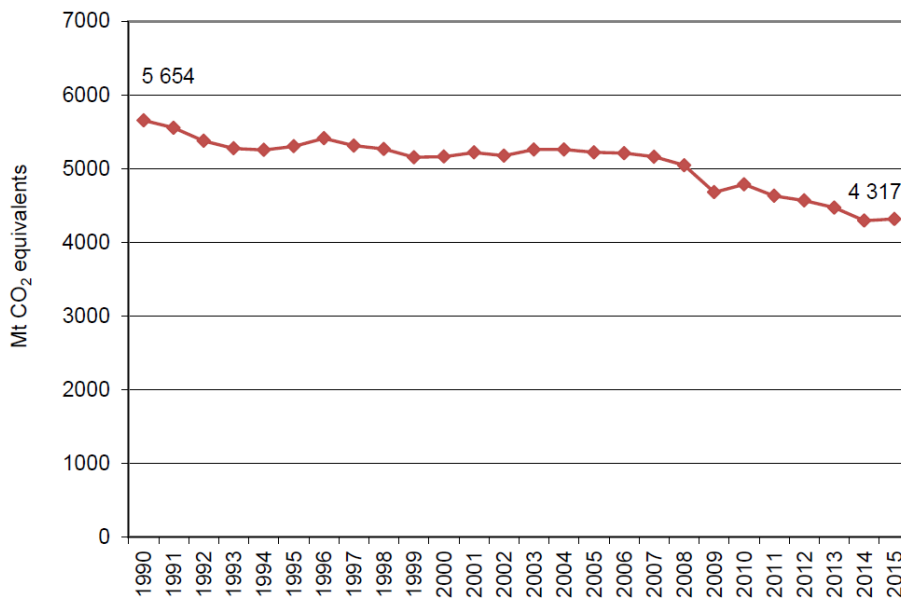
⁴⁴ See IPCC (2014) 5th Assessment Report, WG I, Figure 2-11 - [Annex 6]. EU legislation specifically recognises this through its definition of ‘greenhouse gases’: see Directive 2003/87/EC, Article 3.

(probability is connected to the ranges of scientific (un)certainty about the exact degree of climate sensitivity to atmospheric concentrations of CO₂).

38. Besides RCP 8.5 and RCP 2.6, the IPCC’s AR5 report also describes the scenarios RCP 4.5 and RCP 6, which are intermediate scenarios. In describing the manner and extent of the encroachment of the applicant’s rights, the supporting Annexes on each family of applicants refer to these scenarios, since the real impact will depend on the emission pathway. These Annexes, and the circumstances of each family, are referred to in Section D, below.

C4. Factual context: the GHG emissions and contributions of the EU

39. The annual GHG emissions of the EU have been declining gradually, from 5.654 Gt in 1990 to 4.317 Gt in 2015.⁴⁵



Notes: GHG emissions data for the EU-28 plus Iceland as a whole refer to domestic emissions (i.e. within the territory), include indirect CO₂, and do not include emissions and removals from LULUCF; nor do they include emissions from international aviation and international maritime transport. CO₂ emissions from biomass with energy recovery are reported as a Memorandum item according to UNFCCC guidelines and are not included in national totals. In addition, no adjustments for temperature variations or electricity trade are considered. The global warming potentials are those from the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

Figure 1 – Annual GHG emissions 1990-2015

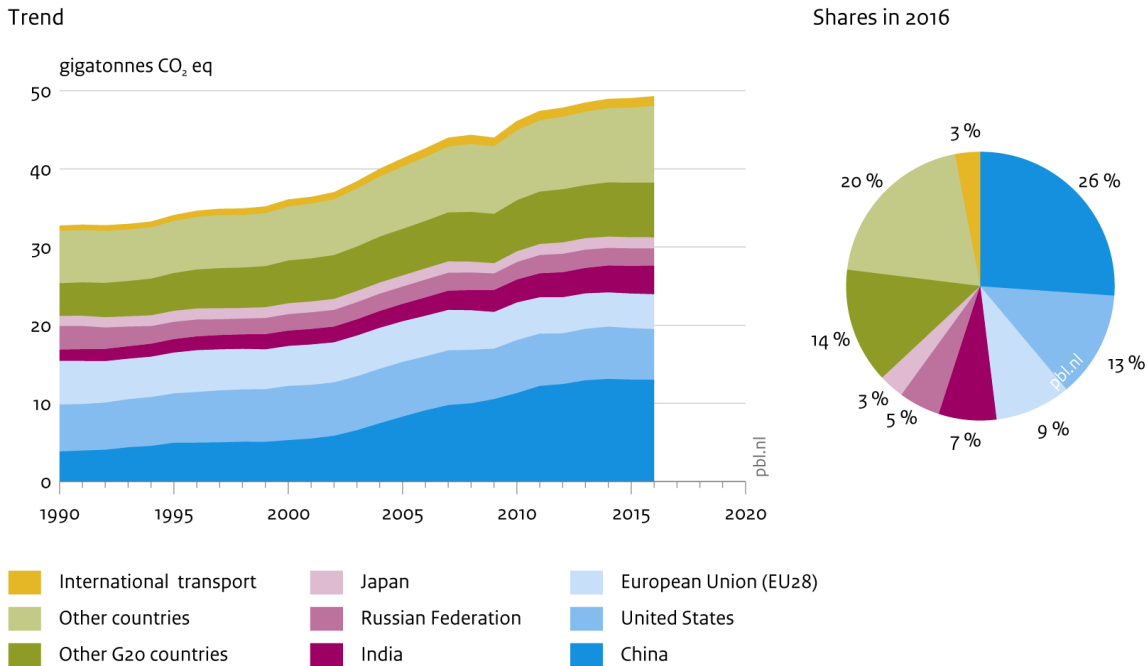
40. The figure shows that the EU’s emissions in 2015 were at 76% of (or 24% lower than) those emitted in 1990. Superficially, these would appear to be on track to meet the current target for emissions reach +80% (or a reduction of 20%) of 1990 levels by 2020, which is established by the GHG emissions regime presently in force. However, it is apparent that the regulatory effect is relatively limited compared to three major non-regulatory factors, warmer winter seasons in general, economic recessions such as in 2008/2009, and structural changes in the economy, with a

⁴⁵ See figure 1 was taken from (EEA (2017) Report No 6/2017: Annual European Union greenhouse gas inventory 1990–2015 and inventory report 2017. Submission to the UNFCCC Secretariat, p. iii. See [Annex 21]

higher share of services and a lower share of more-energy-intensive industry in total GDP.⁴⁶ With renewed economic growth the regulatory framework could more strongly be called to task.

41. As indicated in figure 2 the share of the EU in global GHG emissions in 2016 was 9%.⁴⁷ Given that the EU's actual level of emissions fell between 1990 and 2016, and that global emissions grew over the same period, the EU's share of emissions over that period would necessarily have been larger than the 9% level now reached.

Figure 2
Global greenhouse gas emissions, per country and region



Emissions do not include those from land use, land-use change and forestry and forest and peat fires (LULUCF)

Bron: EDGAR v4.3.2 (EC-JRC/PBL 2017)

42. In comparison the share of the EU population in the global population amounted to 13.5 % in 1960 and 6.9 % in 2015. It is forecast to be 5.1 % in 2060.⁴⁸

⁴⁶EEA (2017) Report No 6/2017 p. iv. [Annex 21 p. 1527].

⁴⁷ J.G.J. Olivier e.a. (2017) Trends in global CO₂ and total greenhouse gas emissions, PBL Netherlands Environmental Assessment Agency, PBL 5 <http://www.pbl.nl/en/publications/trends-in-global-co2-and-total-greenhouse-gas-emissions-2017-report> – Annex omitted.

⁴⁸ Eurostat File. See [http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Share_of_world_population_1960_2015_and_2060_\(%25\)_2.png](http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Share_of_world_population_1960_2015_and_2060_(%25)_2.png) –Annex omitted.

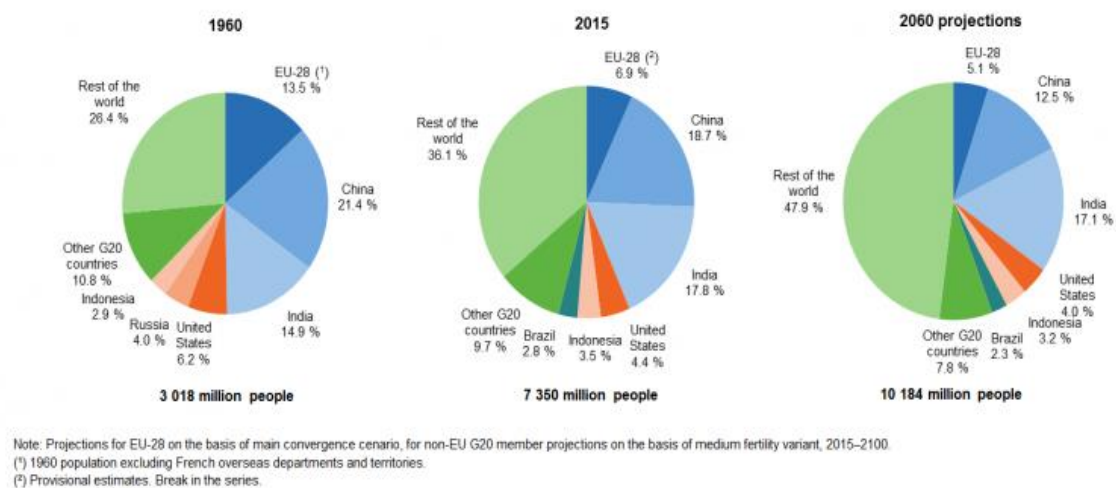


Figure 3: Share of world population, 1960, 2015 and 2060 (%)

D. FACTUAL CONTEXT: CLIMATE CHANGE EFFECTS ON THE APPLICANTS

43. The Applicants include families from across the EU and from other countries, in diverse personal circumstances and pursuing a range of different economic activities. The dangerous consequences of climate change – explored in global and regional terms in the preceding section – pose a threat to each applicant’s livelihood and living conditions, in different ways in each case, while stemming from a common source.
44. The plaintiffs argue that their specific rights are being violated or at risk of violation due to anthropogenic climate change and its impacts. Scientifically, this statement necessitates what is called “detection and attribution” of the “human climate signal”. The IPCC has defined this concept since its 3rd Assessment Report (2001). It essentially allows climate scientists to link an observed phenomenon to man-made greenhouse gas emissions and the resulting increased radiative forcing. There are distinct chapters on this in the 5th AR (Chapter 10, see Annex 26.2) which the plaintiffs rely on, as well as distinct studies on several impacts in different regions. A range of different methodological approaches are applied for detection and attribution, including statistical approaches based on observed changes, distinct climate modelling studies, as well as hybrid approaches. If an impact is attributed to climate change, simply put, it would not occur in the same way without the human climate signal, i.e. anthropogenic emissions.
45. The circumstances of each group of applicants, and the official and scientific literature on the effects of climate change relating to them, are set out in detailed Annexes (referenced below). A summary of the key points is provided in this pleading.
46. The **Carvalho** family⁴⁹ own a section of forest in central Portugal near Vila de Barba (12 ha in total) where they carry on forestry work. As the applicant has observed, the

⁴⁹ See the information provided on the Carvalho family in [Annex 22, pp. 1528-1538].

trend in recent years in this region has been for a general temperature increase, more frequent heatwaves and droughts. This culminated in catastrophic fires in October 2017, which burnt all the forest areas owned by the Carvalho family. These fires started some 60km from the Carvalho land, but reached Vila de Barba in 12 hours. 6 homes in the village were destroyed. As well as burning all the trees on the Carvalho's property, destroying many of them and causing financial loss, a shed and agricultural machinery were also damaged (at a cost of around €15,000).

47. A government inquiry into the disaster found that, “these types of fires (megafires) are reportable to climate change and expected to repeat in a near future”, and warned that, “the scenarios for climate change show these fires might happen more frequently in the future”.
48. At the time of the fire, there had been a total absence of precipitation from April 2017 onwards (to October 2017), and the month of June had the highest temperatures for Portugal on record. The observed data on temperature and rainfall shows a clear recent trend of higher temperatures and lower rainfall runoff in Portugal, both of which contribute to the likelihood and intensity of extreme forest fires. IPCC forecasts indicate that these trends will continue. Projections therefore also predict a higher fire risk.
49. The intensity of the fire was increased by higher wind speeds attributable to tropical storm Ophelia. The risk of tropical storms in the Autumn is also projected to increase as a consequence of climate change. The Carvalho family presents a compelling case of serious harm attributable to climate change.
50. The **Conceicao** family⁵⁰ engages in beekeeping in the Tomar district in central Portugal, and have done so for decades. They own some 350 hives located on land they own or lease. Over decades, the yield of honey from each hive averaged 20kg. In the last five years, extreme weather and events such as a severe drought in 2017 have coincided with a significant reduction in yields. In 2017, production reduced by more than half to an average of 8 kg per hive.
51. The recent reduction in yield has caused the Conceicao family considerable material loss of around €8,000 / year; the family has also been compelled to feed hives artificially at an annual cost of €2,450 for the last six years. The additional costs, lower revenues, and additional work involved in tending to and feeding beehives, has driven the business to the verge of being untenable.
52. The loss of production is attributable to higher temperatures and more extreme heat events, which affect both the bees and the flowers on which they feed. A loss of rainfall also affects the flowers on which bees depend and places beehives under considerable stress. Higher temperatures and drier conditions during the summer have been observed in this region.
53. Higher temperatures in Portugal are confirmed by scientific observation, finding daily minimum and maximum air temperatures to have increased significantly on average in all seasons between 1941 and 2006. The EEA projects that Portugal will experience a trend of higher temperatures caused by climate change. Weather observations also

⁵⁰ See the information provided on the Conceicao family in [Annex 23 pp. 1666-1675].

record a significant decline in precipitation in Portugal between 1960 and 2015, reducing by 60mm in each decade.

54. The plaintiff Alfredo **Sendin** owns and the **Caixeiro** family⁵¹ depend on a 500ha farm in southern Portugal, which is entrusted to a cooperative and on which members of the Caixeiro family work. The cooperative has 35 partners; the productive activities comprise livestock and pasture, fruit orchards and fields, olives, herbs, grain, horticulture.
55. Increases in temperature and reductions in precipitation have affected the productivity of the land and thus the cooperative and are certain to continue doing so. The EEA has identified a trend to date of increasing temperatures and declining and rainfall for Portugal. Weather observations indicate that, between 1940 and 2016, average temperatures at the property have increased by between 0.1 and 0.15°C each decade. As noted above, observations record a significant decline in precipitation in Portugal between 1960 and 2015, reducing by 60mm in each decade. Future projections predict that temperatures will continue to increase, and rainfall and water run-off will continue to decline, driven by climate change. Analysis based on the RCP 8.5 scenario (which assumes current policies) finds that increases in temperature of between 2 and 4°C (depending on the season) will occur by the middle of this century. Also, under RCP 8.5, rainfall levels are predicted to fall by 10% on average annually, and by 40% in the summer months, during this century.
56. The productive capacity of the farm is materially affected by these conditions, which cause higher mortality in the crops and trees grown, and lead to increased costs for irrigation and livestock rearing. In 2017, the severe drought affecting Portugal caused the farm to make an annual loss of €50,000. The farm would also require significant costly investment to adapt to climate change, in the order of €660,000, in addition to some €1 million already invested by the Sendin family.
57. The **Feschet** family⁵² live and work on a farm of 35ha near Grignan in southern France. The family mainly grows lavender, which provides 70% of the farm's income.
58. Climate change has already put the lavender farming at real risk and higher temperatures and lower rainfall have led to falling yields and revenues over the last two decades. Observed temperatures in Montélimar, the commune on the Rhône close to Grignan, show an increase in average temperatures of 0.5C per decade since the early 1980s. This is consistent with published climate models observing an increase in temperatures and a decline in rainfall and runoff for southern France, and projecting the same into the future, as a result of climate change.
59. These changes in the climate have a severe effect on lavender farming. In 1971, lavender plants would last and could be cultivated for, on average, 23 years. Today, on average, the same variety of plant must be uprooted after only 4 years, due to the effects of warmer temperatures and less soil moisture. This imposes a heavy financial burden (in the order of €3,330 on each occasion) on the farm and the family, and the need to replant the lavender reduces the harvest yields in the first and second years.

⁵¹ See the information provided on the Sendin and Caixeiro family in [Annex 24 pp 1760-1772].

⁵² Detailed information on the Feschet family is set out in [Annex 25 pp. 1822-1831].

60. Extreme weather events have also led to losses of plants: in 2005, three years of drought followed by heavy precipitation led to the loss of 27 ha of plants; the 2017 crop was affected by 5½ months without rain, leading to heavy losses of younger plants. The capacity to irrigate the farm is very limited; the viability of the farm will depend on obtaining a supply of fresh water for irrigation from the Rhône or another source, which requires a substantial investment and is not certain in any event.
61. The adverse climactic conditions – and the need to uproot and replace plants more frequently – have led the family to place less of the farm under cultivation, from 33ha in 2008, to between 10 and 14ha in 2014-2016. Yields per hectare are now also materially lower than a decade ago; analysis shows that harvests have declined from an average of 1000-1300kg/hectare of sellable flowers, to a yield of 770 kg/hectare since 2009.
62. The climate trends already observed in this region is projected to continue. A 2018 study projects temperatures to increase by 1.5-2°C by mid-century (depending on the season); emissions scenarios assuming a moderate increase in emissions (but some reduction from the high-end of RCP 8.5) would still find a reduction in rainfall by between 5-15% this century.
63. The **Guyo** family⁵³ live in a village in northern Kenya, where they carry on cattle- and goat-herding. The family includes 5 children aged between 1 and 11 years old.
64. The climate of this region is influenced by the El Nino / La Nina phenomenon, and so farmers are accustomed to variations in the weather. But recent years, exceptionally high temperatures have been experienced, as well as drought, beyond the normal range of variation. These local observations are consistent with analysis of mean annual temperatures in Kenya over the past 30 years, which indicate an increase in annual average temperatures of 0.34°C per decade. This overall increase has been accompanied by an increase in the average length of warm spells, and a shortening of cool periods. The increase in temperature culminated in a severe drought in 2017, requiring 2 million people to seek food aid.
65. Climate change models project temperatures in Kenya – of average temperatures, and of the levels reached during hot spells – to increase by significant amounts even if emissions levels continue at the intermediate RCP 4.5 scenario. By contrast, climate models show that limiting emissions to result in an increase in overall global temperatures to 1.5°C as required by the Paris Agreement would directly reduce the number of extreme heat days that would otherwise be expected to occur. The climate models for Kenya show that the frequency and intensity of hot spells would be significantly higher if overall global temperatures were to increase by 2°C as compared with 1.5°C.
66. The higher temperatures, lower rainfall, and drought conditions of recent years directly threaten the survival of the livestock herded by the Guyo family. Of greater concern is the effect of heat wave conditions on the children in the family. When temperatures rise above 33/34°C, the children are unable to walk to or attend school, or work during the day. High temperatures continue at night, preventing the children from sleeping. The higher temperatures also cause heat rashes and dizzy spells

⁵³ Detailed information on the Guyo family is set out in [Annex 26 pp.1952 -1958].

among the children. The children are thus already affected in their right to a decent education.

67. The **Vlad** family⁵⁴ carry out farming in the Carpathian mountains in Romania, comprising livestock, herding and cultivation of fruit and vegetables. The produce yielded from the farm has been affected in recent years by the higher temperatures, reduced water availability, and more frequent extreme weather events that the Vlad family have observed. For example,
 - a. the dairy cattle raised by the family produce 20-30% less milk during periods of higher temperatures (above 35 °C).
 - b. temperatures observed in February now often rise above 20 °C, following which in March, temperatures drop below zero, accompanied by ice and snow. This reduces the yields of potato and corn crops.
 - c. Higher temperatures and lower precipitation reduce the quality and amount of grass available for grazing animals. The family are forced to pay for access to other grazing land and to purchase hay and maize for use as feed.
68. These changing weather conditions are attributable to climate change, induced by increased GHG emissions.
69. The **Elter** family⁵⁵ live in the village of Cogne in the Italian Alps, in the national park, '*Gran Paradiso*'. The family farms 4ha of fields in the mountains at around 1800m above sea level, cultivating plants, fruits and herbs indigenous to that region, and transforming much of their produce into preserves, marmalades and liqueurs, which they sell. The family also runs a bed & breakfast.
70. These activities have been and will continue to be adversely affected by higher temperatures and ecosystem changes caused by climate change. Higher temperatures at the present date arising from climate change are confirmed in the Italian national adaptation strategy for climate change.
71. In Cogne, higher temperatures, and warmer temperatures at earlier points in the seasonal cycle adversely affect the blooming and germination patterns for a range of plants and herbs that grow at higher altitudes. Higher temperatures in recent years have led to a loss in production yields, leading to a reduction in revenue of 20-30%.
72. The revenues of the bed and breakfast business are dependent on visitors to Cogne, attracted by ice climbing. Ice climbing is in turn highly sensitive to changes in temperature or warmer temperatures in winter months, as these bear on the safety of the climbing activity. The Elter family, having lived in the area all their lives, have observed the retreat of snow and ice, and glacial melting. It is very likely that continued increases in temperature, even if only relatively small, will threaten the livelihood earned from the bed and breakfast.

⁵⁴ Detailed information on the Vlad family is set out in [Annex 27 pp. 2138-2145].

⁵⁵ See the information provided on the Elter family in [Annex 28, pp. 2223-2234].

73. The **Recktenwald** family⁵⁶ live on Langeoog, Germany; Langeoog is an island in the North Sea near the border with the Netherlands. The family own and run a restaurant and hotel, which together sustain two families and have about 50 employees (some seasonal).
74. The buildings housing the restaurant are located on a dune, at about 20 metres' elevation above sea level. The hotel is at a lower elevation, behind the dune. Both buildings are at risk from continuous sea level rise and storm surges, and the associated erosion. The beach is continuously washed out and has been lowered over the past 20 years, as shown on photographs provided in the Annex for the Recktenwald family. This facilitated stark storms at high water tides to reach the dunes and erode part of their sand. The beach between the sea and the dunes must periodically be re-filled with sand mechanically which is now necessary to do every 2-3 years, at significant cost, as against longer intervals 20 years ago. Moreover, the island drinking water source and thus the Recktenwald family's water supply is endangered if a storm surge were to inundate the Eastern lower part of the island, where the spring is located.
75. Observations taken over time at a neighbouring island, Norderney, and at other proximate locations, show a sea level rise of 3.6mm – 4.2mm per year. The regional government has recognised that climate change is leading to a risk of storm surges and sea level increases, and is taking steps to adapt to this risk while recognising that it cannot provide a long term solution.
76. Scientific analysis projects substantial sea level rises caused by climate change, of between 33cm-75cm for this region by 2050. The regional government works on an assumption of a rise of between 25-50cm by 2050. Other projections indicate the likelihood of storm surges greater than those levels. Models based on the IPCC scenarios indicate that a sea level rise of 50cm could occur by 2050 under RCP 8.5 (which assumes the continuation of current emissions trends), but lower sea level rises are projected under RCP 2.6 – the ambitious scenario.
77. There is a real likelihood, therefore, that the family's property would be inundated and their livelihood destroyed and well-being put at risk, and that this risk is higher with higher levels of emissions.
78. The **Qaloibau** family⁵⁷ live in the village of Naqaravatu, located on Natewa Bay on the island of Vanua Levu in Fiji. The family live through subsistence farming and fishing, and the head of the family is an eco-tourism guide for a marine protected area and in the area of Naqaravatu. Mr Qaloibau and his family own a house and land under a Fijian law system of native land title.
79. The Qaloibau family have observed a range of climate change impacts over the past decade. Coral bleaching caused by higher water temperatures has become more frequent and devastating to the coral reefs. This has in turn affected the availability of habitat for fish, leading to depletion of fish stocks relied on by the community. It has also had a major negative effect on tourism, which was a key source of livelihood.

⁵⁶ See the information provided on the Recktenwald family in [Annex 29, pp.2289-2297].

⁵⁷ Detailed information on the circumstances of the Qaloibau family is set out in [Annex 30, pp. 2417-2424].

80. Some crops (such as kava, grown as a cash crop) grow poorly due to higher temperatures and drier soil conditions. The family also owned a canteen and a fishing boat, both of which were destroyed in Cyclone Thomas in 2010, and which the family have not been able to replace. A further cyclone in 2016 (Cyclone Winston) again affected the district where the Qaloibau family live, affecting their livelihood.
81. Most alarmingly, the Fijian government anticipates that the village of Naqaravatu is vulnerable to inundation through rising sea levels, and is designated for ‘potential relocation’. Since the 1990s, the observed sea level rise for the region has been 6mm each year, which is double the increase observed globally (3mm per year). The IPCC projects sea level rises of around 40cm by the middle of this century. Material differences would emerge, however, in the level and danger of sea level rises depending on the degree of emissions. A high emissions scenario would result in present-day 50 year extreme high water levels occurring on average every second year by mid-century, so within the lifetime of most of the family, and a 1m sea rise by the end of the century. The younger members of the Qaloibau family would by that stage have lost their home.
82. The risks of a sea level rise would be greatly aggravated by the much higher risk of severe cyclones that would also result from higher temperatures. These projections are particularly serious where overall temperatures increase by 2.5°C, which would lead to a doubling of the probabilities of Categories 4 and 5 cyclones.
83. **Sáminuorra**⁵⁸ is a charitable association of young Sami people, organized under Swedish law. Its members are between 6 and 30 years of age. The Sami people are indigenous people living in the northern part of Sweden, Finland, Norway, and the Kola Peninsula in Russia.
84. Reindeer herding is important culturally, socially and economically for the Sami people; it provides employment and a source of food. The Sami have traditionally lived in reindeer herding groups (*siidat*); today, Sami people in Sweden belong to economic associations (*Sameby*), with reindeer husbandry at their core. The families of the members of Sáminuorra are mostly engaged in reindeer husbandry, making climate change an issue of direct concern for all of them. .
85. The health and size of reindeer herds is critical to the Sami people. Slight increases in temperature in the winter months in particular, however, have had serious effects on the survival of reindeer. Reindeer depend on food such as *lichen*, occurring under the winter snow. However, milder winters (or periods of milder temperatures followed by freezing) cause the melting and then re-freezing of snow, trapping the lichen under ice; rain on snow also has this effect. The reindeer are therefore unable to feed. This phenomenon may occur over large areas, so reindeer cannot easily replace the food source by moving; movement in any event consumes considerable energy, weakening the herd.
86. The loss of food threatens the survival of reindeer herds and the Sami are forced to seek to provide alternative food sources (feed pellets and hay) to the reindeer. This imposes an increasing financial costs on the Sami and is in any event not a sustainable or sufficient means of sustaining herds.

⁵⁸ Detailed information on Sáminuorra is provided in [Annex 31 pp. 2849-2860].

Official data confirm the observations of Sami people that winters have become milder. Almost all winters since 1989 were warmer than the 20th century average and the mean temperature in Sweden was 1°C higher in 1991-2007 than over the period 1961-1990. The intensity and frequency of winter warming events in northern Scandinavia has increased over the last 50 years. Projections show that this warming will continue; under the moderate scenario RCP 4.5, temperatures are projected to rise in Scandinavia by between 3° and 5°C during this century. If global temperatures were to increase by 2°C rather than 1.5°C, the effect in Sweden is projected to be more acute; the average temperature in Sweden would rise by 0.8°C. As a consequence, rain on snow events are also projected to occur more frequently as a consequence of climate change, threatening the survival of the reindeer herds.

E. THE UNION ACTS COMPLAINED OF

a. The Three GHG Emissions Acts

87. The three GHG Emissions Acts address three different categories of GHG emission sources:⁵⁹
- sources from power generation, heavy industry and aviation; these are subjected to the directive concerning the emissions trading system ('**ETS**');
 - sources outside the ETS , such as from buildings, transportation, agriculture, etc.; they are subjected to the effort sharing regulation ('**ESR**');
 - sources and sinks from land use, land use change and forestry ('**LULUCF**'); these are subjected to the LULUCF Regulation.
88. Across the three systems, reduction targets were set by the European Council at its meeting of 23/24 October 2014. The targets provide that the total amount of climate emissions should be reduced by at least 40% of the 1990 level by 2030. The specific targets for the three source categories were set in relation to 2005. A reduction target of 43% was set for sources in the ETS sector, with a 30% reduction in the non-ETS sectors.⁶⁰ The target for the LULUCF sector was left open but later on set at zero counting up emissions and removals.
89. While the focus of this Application is the size of the target set by the EU, it is worth nothing that the target itself does not apply to the full range of activities that entail the emission of GHGs. In particular, the EU's regime does not seek to account for or capture the emissions involved in the production of goods manufactured outside the EU and imported. There are various ways in which the EU's climate change regime could be more ambitious; for reasons of economy the applicants here focus only on one specific metric, namely the size of the reductions proposed.

⁵⁹All three GHG Emissions Acts cover the following greenhouse gases: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).

⁶⁰ European Council (2014) Conclusions of 23/24 October 2014, EUCO 169/14 – Annex omitted.

b. The Emissions Trading System (ETS)

90. The ETS applies to GHG emissions from certain heavy or chemical industries. In addition, it applies, with some qualifications, to emissions from aviation (dealt with separately, at (c) below). The legal regulation of the ETS has developed over three so-called periods in which undertakings were permitted to carry on regulated activities only so long as they held sufficient carbon ‘allowances’ to do so. In an initial period (2005-2007) the EU ETS was established as a carbon market, although the number of allowances provided in the market turned out to be excessive and the price of the allowances fell to zero. In the second period (2008-2012), the number of allowances was reduced, but the economic crisis depressed economic activity and hence also demand for allowances, the price of which continued to be very low. The third, current period (2013-2020) is one of significant reform, with annual reductions being made in permitted emissions, of 1.74% per annum, and allowances are increasingly auctioned rather than allocated for free. This reduction is applied to a baseline set in 2013, determined as the average of yearly emissions of the second allocation period (2008 to 2012).⁶¹
91. The pertinent legal provision was Article 9 (1) of Directive 2003/87 as amended in 2014
- “The Community-wide quantity of allowances issued each year starting in 2013 shall decrease in a linear manner beginning from the mid-point of the period from 2008 to 2012. The quantity shall decrease by a linear factor of 1,74 % compared to the average annual total quantity of allowances issued by Member States in accordance with the Commission Decisions on their national allocation plans for the period from 2008 to 2012...”
92. For the fourth allocation period (years 2021 to 2030), the reduction factor is to be increased to 2.2% annually. Article 9 was amended to include a new short paragraph 2 providing that:⁶²
- “Starting in 2021, the linear factor shall be 2.2%.”
93. Without explicit regulatory command recital (2) calculates the yearly gradual reduction to reach, in relation to the yearly total volume of 2005⁶³, a reduction of the yearly emissions by 43% or a remaining level of 57% by 2030.
94. This target, for the fourth allocation period, is the subject of this application. As explained below, the implied reduction target of 43 % in 2030 relative to 2005 is far too low, or, in other words, the targeted allowable emission quantity of 57% for 2030 relative to 2005 is far too high, in light of the binding rules of higher rank law.

⁶¹ See Art. 9 Directive 2003/87 as amended by 2014.

⁶² Directive (EU) 2018/410 [Annex 1 p.3].

⁶³The year 2005 is the first year of the first allocation period and is therefore chosen as the base year. For a comment see L. Krämer (2010) Klimaschutzrecht der Europäischen Union, Schweizerische Zeitschrift für internationales und europäisches Recht, p. 311-337: „It is highly arbitrary to exchange the base year of 1990 by the year 2005: in this way, preference is given to those countries which, between 1990 and 2005, have not fulfilled their obligations under Decision 2002/358: Spain, for example, was required to increase its emissions by not more than 15% by 2012, Portugal by 27% and Ireland by 13%. In fact, Spain increased emissions by 53 percent by 2005, Portugal by 50 percent and Ireland by 27 percent“.

c. The ETS and aviation

95. In principle, aviation starting or landing within the EEA would be regulated under the ETS scheme. This would require emissions for flights allowances to be obtained, surrendered and cancelled just as for the other emission sources covered by the ETS Directive. Aviation is similarly exposed to the yearly reduction of 2.2 % of the total quantity of allocated emission allowances.
96. However, aviation to and from airports outside the EEA has been repeatedly granted derogations from the ETS. This derogation was previously granted by Article 28a, with effect until 31 December 2016.⁶⁴ The derogation was extended to 31 December 2023 by Article 28a paragraph 1 as amended by Regulation (EU) 2017/2392.⁶⁵ This means that aviation to and from airports outside the EEA is exempted from any emissions restriction or measure until the end of 2023.
97. The purported basis for this exemption is the expectation that an emissions offset system will be adopted by the International Civil Aviation Organisation (ICAO). However, as will be developed below the concept that was recently proposed by the ICAO⁶⁶ is ineffective and less stringent than the concept of the EU Directive 2003/87.
98. This application claims that both the outstanding ICAO offset system and the aviation system of the ETS Directive fail to meet the requirements of higher rank climate protection law. There is even doubt if they will reach the -40% target at all given the low ambition of the ICAO system and the fact that the derogation from ETS until 2023 leaves a significant quantity of emissions unregulated which implies the consumption of a part of the EU's legitimate emissions budget (see below section J).

d. Emissions outside ETS: the Effort Sharing Regulation (ESR) System

99. As regards the emissions from sources outside the ETS, no reduction targets were set by EU law for the 1st and 2nd allocation periods. For the 3rd allocation period (2013-2020) a Decision of the European Parliament and of the Council – the so-called ‘Effort Sharing’ decision – introduced reduction quotas for each Member State.⁶⁷ The decision did not explicitly lay down a summary target for the EU overall but according to the Commission's explanation the aggregate of the individual targets provided an overall reduction of 10% by 2020 as against 2005 levels.⁶⁸
100. That decision was replaced by a Regulation of the European Parliament and Council covering the 4th allocation period from 2021 to 2030. The Regulation was adopted by

⁶⁴ Article 28a, read with Article 12, of Directive 2003/87/EC.

⁶⁵ Regulation (EU) 2017/2392 of 13 December 2017 amending Directive 2003/87/EC to continue current limitations of scope for aviation activities and to prepare to implement a global market-based measure from 2021, OJ of 29.12.2017, L 350/7.

⁶⁶ Resolution A 37-3 of the 39th session of the ICAO Assembly, https://www.icao.int/Meetings/a39/Documents/Resolutions/a39_res_prov_en.pdf.

⁶⁷ Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020, OJ L 140, 5.6.2009, p. 136–148.

⁶⁸ See European Commission (2015) EU ETS Handbook, p. 12 – Annex omitted.

both the European Parliament and the Council and awaits publication in the Official Journal.⁶⁹

101. The Regulation applies to GHG emissions from energy, industrial processes and product use, agriculture and waste excluding emissions covered by the EU ETS and emissions and removals covered by the LULUCF Regulation.⁷⁰ The emissions from the ESR sources account for almost 60% of the total EU emissions.⁷¹
102. The Regulation sets reduction targets overall and for each Member State. The relevant provisions read (emphasis added):

Article 1 Subject matter

This Regulation lays down obligations on Member States with respect to their minimum contributions for the period from 2021 to 2030 to fulfilling the Union's target of reducing its greenhouse gas emissions by 30 % below 2005 levels in 2030 in the sectors covered by Article 2 of this Regulation and contributes to achieving the objectives of the Paris Agreement. **This Regulation also lays down rules on determining annual emission allocations** and for the evaluation of Member States' progress towards meeting their minimum contributions.

Article 4 Annual emission levels for the period from 2021 to 2030

1. **Each Member State shall, in 2030, limit its greenhouse gas emissions at least by the percentage set for that Member State in Annex I** in relation to its greenhouse gas emissions in 2005, determined pursuant to paragraph 3 of this Article.

2. Subject to the flexibilities provided for in Articles 5, 6 and 7 of this Regulation, to the adjustment pursuant to Article 10(2) of this Regulation and taking into account any deduction resulting from the application of Article 7 of Decision No 406/2009/EC, **each Member State shall ensure that its greenhouse gas emissions in each year between 2021 and 2029 do not exceed the limit defined by a linear trajectory, starting on the average of its greenhouse gas emissions during 2016, 2017 and 2018 determined pursuant to paragraph 3 of this Article and ending in 2030 on the limit set for that Member State in Annex I to this Regulation.** The linear trajectory of a Member State shall start either at five-twelfths of the distance from 2019 to 2020 or in 2020, whichever results in a lower allocation for that Member State.

3. **The Commission shall adopt implementing acts setting out the annual emission allocations** for the years from 2021 to 2030 in terms of tonnes of CO₂ equivalent as specified in paragraphs 1 and 2 of this Article. For the purposes of those implementing acts, the Commission shall carry out a comprehensive review of the most recent national inventory data for the years 2005 and 2016 to 2018 submitted by Member States pursuant to Article 7 of Regulation (EU) No 525/2013.

Those implementing acts shall indicate the value for the 2005 greenhouse gas emissions of each Member State used to determine the annual emission allocations specified in paragraphs 1 and 2.

103. This means that pursuant to Article 4 of the Regulation, Member States are required to reduce emissions according to a linear trajectory of 2021 emissions running from the average of the 2016 to 2018 emissions to each Member State's limit set for 2030. In other words, the Member States are allocated yearly emission quantities, from

⁶⁹ See [Annex 2, pp. 26 ff.]

⁷⁰ Article 1 (1) ESR.

⁷¹ See European Commission, information website on the ESR Regulation https://ec.europa.eu/clima/policies/effort/proposal_en. - Annex omitted.

2021 to 2030, that correspond to the emissions permitted by that linear trajectory. These reductions are also subject to measures affording Member States flexibility in compliance.

104. As will be substantiated below the overall quantity of emissions permitted by the ESR is far too high in light of the requirements of higher rank law.

e. Emissions and removals from LULUCF

105. The EU accounts for GHG emissions and sinks from land use, land-use change and forestry activities (LULUCF). As with the ETS and ESR, LULUCF emissions were subject to a ‘learning phase’.⁷² For the time period 2021-2030, the LULUCF Regulation⁷³ revises the accounting system and makes it operative by dealing with it alongside the ETS and non-ETS sources covered by the ESR.

106. The recitals to the initial legislation on LULUCF emissions (Decision 529/2013/EU) recognized the potential of the sector to contribute to climate change mitigation through carbon sequestration:

“(7) The LULUCF sector can contribute to climate change mitigation in several ways in particular by reducing emissions, and maintaining and enhancing sinks and carbon stocks. In order for measures aiming in particular at increasing carbon sequestration to be effective, the long-term stability and adaptability of carbon pools is essential.

“(8) The LULUCF accounting rules should reflect efforts made in the agriculture and forestry sectors to enhance the contribution of changes made to the use of land resources to reducing emissions.[...]”

107. The LULUCF Regulation, however, now substitutes for this goal of a reduction a “Commitment” for no net emissions from the sector, under Article 4:

“For the periods from 2021 to 2025 and from 2026 to 2030, taking into account the flexibilities provided for in Articles 12 and 13, each Member State shall ensure that emissions do not exceed removals, calculated as the sum of total emissions and total removals on its territory in all of the land accounting categories referred to in Article 2 combined, as accounted in accordance with this Regulation.”

108. In other words this article propagates a no net emission target for the territory of each Member State, which is also known as the no-debit rule.⁷⁴

109. The no-debit commitment only applies to those emissions and removals the Member State has to account for under the LULUCF Regulation.⁷⁵ These are emissions and removals from the following land-use categories: afforested land, deforested land,

⁷²Decision No 529/2013/EU of the European Parliament and of the Council of 21 May 2013 on accounting rules on greenhouse gas emissions and removals resulting from activities relating to land use, land-use change and forestry and on information concerning actions relating to those activities, OJ L 165 (2013) p. 80-97, Article 1.

⁷³ See [Annex 3 pp. 81 ff.]

⁷⁴ Commission Proposal for a Regulation of the European Parliament and of the Council on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 [...], COM (2016) 479 final p. 6 – [Annex 32, pp. 2959].

⁷⁵Article 4 LULUCF Regulation, [Annex 3].

managed cropland, managed grassland and managed forest land.⁷⁶ Managed land means land “where human interventions and practices have been applied to perform production, ecological or social functions.”⁷⁷ Hence, only human-induced emissions and removals of GHGs are accounted for.

110. The Regulation applies to emissions and removals of carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O).⁷⁸ In each of the land-use categories the following carbon pools are rated: above-ground biomass, below-ground biomass, litter, dead wood and soil organic carbon. Additionally, harvested wood products are counted as carbon pools for the land-use categories afforested land and managed forest land.⁷⁹ The total emissions and removals counted for each land-use category are assessed according to accounting principles, and then aggregated to reach an overall figure. The sum of total emissions and removals across all land use categories as counted according using these rules provide the overall figures to which the no-debit rule is applied.
111. Somewhat deviating from the no-debit rule, net emission reductions of up to 280 million tonnes of GHGs (across the EU) may be transferred to the non-ETS, sector and thus reduce the burden of a Member State within that system.⁸⁰ More precisely this transfer of net emission reductions allows Member States to protect their agriculture from the demands of additional emissions reductions.⁸¹ This appears to be the reason why the Member States with large agricultural sectors were allocated a larger share in the 280 million tonnes than Member States with smaller agricultural sectors.
112. Moreover, any net emissions reductions of one Member State can also be transferred to other Member States that experience a net increase of emissions in their LULUCF sector.
113. As will be developed below, the ‘no-debit’ principle in the LULUCF Regulation is insufficiently ambitious and therefore incompatible with higher rank law. In summary, the LULUCF sector should rather serve as sink for GHGs and thus produce net reductions of GHG emissions.

⁷⁶Article 2 (1) LULUCF Regulation [**Annex 3**]. Member States may, according to Article 10 with Article 2 (1) No 9 LULUCF Regulation, exclude from their accounts for afforested land and managed forest land emissions resulting from natural disturbances, such as emissions due to wildfires, insect and disease infestations or extreme weather events.

⁷⁷ IPCC (2006) Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use, Chapter 3: Consistent Representation of Land, p. 6 – Annex omitted.

⁷⁸Article 2 (1) LULUCF Regulation in conjunction with Annex I A to the LULUCF Regulation [**Annex 3**].

⁷⁹Annex I B to the LULUCF Regulation [**Annex 3**].

⁸⁰Article 7 [**Annex 3**] together with Annex III Effort Sharing Regulation [**Annex 2**].

⁸¹ European Commission (2016) SWD (2016) 249 Final (Staff Working Document) Impact Assessment accompanying the Proposal for a regulation of the European Parliament and of the Council on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry into the 2030 climate and energy framework and amending Regulation No 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change, sec. 4.2 and 6. [**Annex 33**, pp. 2996 ff.]

F. ADMISSIBILITY OF THE APPLICATIONS

114. The Applications meet the requirements for admissibility, as follows.

F1. Admissibility of the applications for annulment

115. The applicants are each directly and individually concerned by the acts under challenge as required by Art.263 TFEU, fourth paragraph.

a. Direct concern

116. According to settled case law for an applicant to be directly concerned by an EU measure:

“first, that measure must directly affect the legal situation of that individual and, secondly, there must be no discretion left to the addressees of that measure who are responsible for its implementation, that implementation being purely automatic and resulting from European Union rules alone without the application of other intermediate rules.”⁸²

117. **Discretion** The three GHG Emissions Acts all fix targets for emissions reductions while leaving open the way in which they are enforced by the Member States.

118. However, the present action does not allege insufficiency of the individual measures for achieving the prescribed reduction targets. Rather, the applicants’ challenge is to the reduction targets themselves, which are prescribed by the acts under challenge.

119. Similarly, in setting emissions targets, the GHG Emissions Acts are also instruments by which, in practice, a quantities of emissions are allocated to Member States; in total, 60% of the emissions of 1990 are allocated. The ETS Directive, for example, refers explicitly to the allocation of emissions: recital 6, Article 9. Similarly, the ESR refers to quantities allocated to the Member States, that are then subjected to reduction requirements: Article 1. The LULUCF Regulation in effect allocates a quantity of further emission allowances to Member States by reference to the volume of GHG emissions that are removed.

120. As with the reductions targets, the applicants challenge the volume of the allocated emissions permitted and facilitated by these legal acts. The manner in which these emissions are then in turn allocated by Member States to undertakings is immaterial to this challenge.

121. **Directly affects the legal situation** The basis for the application is that the EU Emissions Acts, by imposing an insufficient reduction in emissions and thereby allocating and authorising an excessive volume of emissions, infringe the applicants’ fundamental rights. Further, the EU Emissions Acts are a material cause of harm to the applicants’ legally protected interests.

⁸²GC order of 6 September 2011, Case T-18/10 (Inuit Tapiriit Kanatami), ECLI:EU:T:2011:419, para 71.

122. The factual basis on which this claim is established on the merits is addressed elsewhere in this application. It is submitted that, for this element of the threshold admissibility requirement, the requirement for a direct effect on the legal situation is established.
123. Moreover, it is submitted that the breach of fundamental rights complained of is more readily characterised as having a direct effect on an applicant’s legal situation where an applicant can show a *potential* breach of rights, by reference to reasonable and convincing evidence establishing that a breach is likely. The basis for this submission is the instructive reasoning of the European Court of Human Rights, in the *Senator Lines* case (citations omitted).⁸³
- “In this connection, the Court reiterates that Article 34 requires that an individual applicant may claim actually to have been affected by the violation he alleges. In a number of cases, the Court has accepted that an applicant may be a potential victim..... However, for an applicant to be able to claim to be a victim in such a situation, he must produce reasonable and convincing evidence of the likelihood that a violation affecting him personally will occur; mere suspicion or conjecture is insufficient.”
124. The materials adduced by the applicants in this case – addressed elsewhere in this pleading and summarised below – meet this standard of reasonable and convincing evidence of a likelihood of a violation of individual rights.
125. Some jurisprudence suggests that where an applicant complains of an effect on a legal situation in the future, it is necessary to demonstrate that the prejudice to the applicant is already certain.⁸⁴ To the extent that this is necessary, the applicants have adduced sufficient evidence to meet this standard. Harm in the future is indeed certain if increased GHG emissions accumulate in the atmosphere and contribute to further increase in the temperature and subsequent damage.

b. Individual concern

126. The requirement for the applicants to be “individually concerned” pursuant to Art.263 TFEU, as properly interpreted, is met in this case. The applicants have two submissions in this respect.
127. First, according to the standard set out in the *Plaumann* case for showing “individual concern”, the applicants meet that standard. The *Plaumann* formula defines “individual concern” as follows:
- “by reason of certain attributes peculiar to them, or by reason of a factual situation which differentiates them from all other persons and distinguishes them individually in the same way as the addressee.”
128. Each applicant complains of a breach of fundamental individual rights. While all persons may in principle each enjoy the same right (such as the right to life, or the right to an occupation) the effects of climate change (to which the EU Emissions Acts

⁸³ ECtHR Grand Chamber decision of 10 March 2004, Case no. 56672/00 (*Senator Lines GmbH*), no. 56672/00, sub D.

⁸⁴ CFI decision of 17 September 1992, Case T-138/89 (*NBV v Commission*) ECLI:EU:T:1992:95, para 33.

under challenge contribute) and hence the infringement of rights is distinctive and different for each individual. A farmer who is affected by drought is in a different position from a fisherman affected by a loss of sea ice. Even within the group of farmers affected by drought, each suffers the consequences differently. As set out below, each applicant is affected by climate change (and the breach of legal obligations) idiosyncratically and is therefore distinguished from all other persons.

129. Second, in the alternative, it is submitted that the *Plaumann* formula is inapposite and should not be followed in this case, for the reasons set out below. Rather, the standing requirements of Article 263 TFEU are established if it is shown that the act under challenge does affect the applicant in an individual capacity, even if other persons may also be affected, especially where the harm caused is serious. The applicants clearly meet this alternative standard.
130. The basis for the applicants' submission that the *Plaumann* formula should not be applied is as follows.
131. First, the *Plaumann* formula is not itself based in the text of Article 263 TFEU; it is a judicial gloss originally applied to the differently worded predecessor treaty provision. The earlier version referred to "decisions" as the object of an action, the later to "acts" which also includes legislative acts. Legislative acts of their nature may affect the public generally in a way that decisions do not; it is not at all clear why a test devised to control admissibility for challenging an act that is addressed to a discrete set of persons should be correct in challenging an act that may affect (and is meant to affect) a much larger group. In particular, legislative acts do not have addressees other than the general public. The *Plaumann* formula refers, however, to applicants being distinguished in the same way as an addressee. This is obviously inapposite. A legislative act may raise individual concerns, but the application of the admissibility criterion must reflect the general character of legislative acts.
132. Second, the *Plaumann* formula has perverse results: the more widespread the damaging effects of a measure, the more restrictive the access to courts will be. This leads to an obvious gap in judicial protection. A concrete illustration of the perversity in outcomes is provided by the order of President of the General Court in *Danielsson v Commission*, where an order to suppress the third French Atomic bomb test was sought, and refused on account of the *Plaumann* test.⁸⁵

"Even on the assumption that the applicants might suffer personal damage linked to the alleged harmful effects of the nuclear tests in question on the environment or on the health of the general public, that circumstance alone would not be sufficient to distinguish them individually in the same way as a person to whom the contested decision is addressed, as is required by the fourth paragraph of Article 146 of the Treaty, since damage of the kind they cite could affect, in the same way, any person residing in the area in question (see Case T-5 85/93 Greenpeace International, cited above, paragraphs 49 to 55)."

133. The result of this approach has often been criticized as a scandalous refusal of legal protection, because it leads to the intolerable paradox that the more serious the harm

⁸⁵CFI order of 22.12.1995, Case T-219/95 (*Danielsson v Commission*) ECLI:EU:T:1995:219, para.71.

and thus the higher the number of affected persons is, the less legal protection is available.⁸⁶

134. The present case is a further clear illustration: climate change threatens (albeit in different ways) enormous numbers of people, everywhere, and the EU's obligations to respond to that threat require very broad action across the economy and society of the Union as a whole. Standing should therefore be afforded to persons who are affected.⁸⁷
135. The *Plaumann* formula may have sought to ensure that an *actio popularis* – brought by persons with a political or altruistic interest, but without any direct material interest in a matter - would not be available in the EU judicature; its effect, however, has been to bar access to the courts even by persons who are gravely affected by a wrongful act.⁸⁸
136. Third, it is instructive that standing has in practice been more readily granted in cases alleging economic loss in the procurement, competition and State aid contexts, where a Union act is said to disadvantage a competitor operating in the same market. Such a competitor may be directly and materially affected by the Union act, but each other competitor in the market would be also. The Court has nevertheless been willing to afford standing.⁸⁹
137. Fourth, the applicants draw support for their submission from jurisprudence acknowledging an infringement of fundamental rights as a basis for individual concern.⁹⁰ The General Court in *Jégo-Qéré* addressed the point most lucidly, following the opinion by Advocate-General Jacobs in *Unión de Pequeños Agricultores*:

“In the light of the foregoing, and in order to ensure effective judicial protection for individuals, a natural or legal person is to be regarded as individually concerned by a Community measure of general application that concerns him directly if the measure in question affects his legal position, in a manner which is both definite and immediate, by

⁸⁶ J. H. Jans, H.H.B. Vedder (2012) *European Environmental Law*, Groningen (Europa Law Publishing) 4th ed., p. 241 – Annex omitted.

⁸⁷ Such understanding would also concur up with the related jurisprudence of the US Supreme Court. See the concurrent opinion of Justice Kennedy in *Lujan vs Defenders of Wildlife*, 504 U.S. (1992) at 581, cited in *Mass vs EPA*, U.S. 549 U.S. (2007), at 14: “While it does not matter how many persons have been injured by the challenged action, the party bringing suit must show that the action injures him in a concrete and personal way. This requirement is not just an empty formality. It preserves the vitality of the adversarial process by assuring both that the parties before the court have an actual, as opposed to pro-fessed, stake in the outcome, and that the legal questions presented . . . will be resolved, not in the rarified atmosphere of a debating society, but in a concrete factual context conducive to a realistic appreciation of the consequences of judicial action.” 504 U. S., at 581 (internal quotation marks omitted).

⁸⁸ The distinction between an *actio popularis* and the interests of numerous persons who are materially affected by an act is recognised in domestic legal systems: see A. Aragão, Alexandra, A. C. Carvalho (2017) Taking access to justice seriously: diffuse interests and *actio popularis*. Why not? in: *ELNI Review, Environmental Law Network International*, n°.2/2017, pp. 42-48, [Annex 34] pp. 3135 ff.

⁸⁹ See analysis of cases by J. H. Jans, H.H.B. Vedder (2012) *European Environmental Law*, 4th ed. 2012, p. 239.

⁹⁰ See further W. Cremer (2016) in Callies/Ruffert, *AEUV* 5th ed., Article 263 para. 45 suggesting a combined reading of ECJ Case C- 309/89 (Codorniu) ECLI:EU:C:1994:197, para. 21 together with ECJ Case C-10/95 (Asocarne) ECLI:EU:C:1995:406, para. 43 – Annex omitted due to language. Callies/Ruffert is the leading legal commentary on the EU Treaties in Germany.

restricting his rights or by imposing obligations on him. The number and position of other persons who are likewise affected by the measure, or who may be so, are of no relevance in that regard.”⁹¹

138. Although the ECJ rejected this approach⁹², it is the preferable interpretation of Art.263.

139. Fifth, the stringency of the *Plaumann* approach is not sustainable in light of the CJEU’s insistence that all questions of EU law – including those arising under the Charter – are reserved to its jurisdiction. The CJEU’s opinion in this respect means that plaintiffs cannot look for remedies against the impairment by EU measures of their fundamental rights before the European Court of Human Rights (ECtHR). The CJEU has observed:

“In so far as Article 53 of the ECHR essentially reserves the power of the Contracting Parties to lay down higher standards of protection of fundamental rights than those guaranteed by the ECHR, that provision should be coordinated with Article 53 of the Charter, as interpreted by the Court of Justice, so that the power granted to Member States by Article 53 of the ECHR is limited — with respect to the rights recognized by the Charter that correspond to those guaranteed by the ECHR — to that which is necessary to ensure that the level of protection provided for by the Charter and the primacy, unity and effectiveness of EU law are not compromised.”⁹³

140. If the CJEU is to be the sole arbiter of the reconciliation of EU measures and fundamental rights, it must follow that an individual whose fundamental rights are at stake necessarily has a right of access to the EU judiciary. In consequence, it should be held that a person is “individually concerned” where the person is “affected in a fundamental right”.

141. Sixth, the narrow *Plaumann* reading of “individual concern” also raises an inconsistency with actions for damage, as Advocate General Jacobs has observed:⁹⁴

“A further anomaly in this area arises from the fact that under Community law there are no restrictions on the standing of individuals to bring actions for damages under Articles 235 EC and 288 EC. The class of individuals capable of seeking damages for loss caused by Community measures is thus unlimited. In the context of the strict standing rules applied under the fourth paragraph of Article 230 EC, that seems paradoxical since damages actions will often involve, or effectively involve, challenges to the legality of general Community measures. Thus the Court of First Instance already has jurisdiction to review the legality of general measures in claims for damages (or on a plea of illegality under Article 241 EC) at the suit of an unlimited class of individuals.

The Court recalls that it is entitled under Article 34 of the Convention to receive application from persons, non-governmental organisations or groups of individuals

⁹¹ CFI Case decision of 25 July 2002, Case T-177/01 (*Jégo-Quééré*) ECLI:EU:T:2002:112, para. 51.

⁹² Cf ECJ decision of 25 July 2002, Case C-50/00 P (*Unión de Pequeños Agricultores*) ECLI:EU:C:2002:462 , para. 37; ECJ Case decision of 1 April 2004, C-263/02 P (*Jégo-Quééré*) para. 33.

⁹³ ECJ Opinion 2/13 of 18.12.2014, Case C-2/13 (*Adhésión de l’Union à la CEDH*) ECLI:EU:2014:2425 para. 189.

⁹⁴ Opinion GA Jacobs of 21 March 2002, Case C-50/00 (*Unión de Pequeños Agricultores*), ECLI:EU:C:2002:197 para. 72.

“claiming to be the victim of a violation” by a High Contracting Party of the rights contained in the Convention and its Protocols.”

142. The General Court judgment in *FIAMM* provides an example. FIAMM, an Italian accumulator manufacturer, claimed that the EU had infringed WTO law thereby provoking US countermeasures imposing customs on accumulator imports. FIAMM requested compensation. Although the application was denied in substance it was found admissible without the Court as well as the ECJ on appeal even mentioning the question of standing.⁹⁵ This is notable because many other manufacturers of accumulators may also have been affected by the US customs.
143. Seventh, relaxation of the narrow *Plaumann* standard in this case would bring about a situation more in line with the standing requirements of the Aarhus Convention, Article 9(3).
144. Finally, the *Plaumann* test – when applied in the context of rights under the Charter – is inconsistent with the guarantee for effective remedies of rights conferred by Article 47 of the Charter. While Article 47 of the Charter “is not intended to change the system of judicial review laid down by the Treaties, and particularly the rules relating to the admissibility of direct actions”⁹⁶, the conditions of admissibility must nevertheless “be interpreted in the light of the fundamental right to effective judicial protection”. The CJEU has also held that there must be “a complete system of legal remedies and procedures designed to ensure judicial review of the legality of European Union acts”.⁹⁷ The CJEU considers that this complete system is provided on the premise that there is coordination of remedies before national and EU courts⁹⁸, including through the availability of preliminary reference.⁹⁹ As the CJEU has held, this all depends on the availability of appropriate remedies in national law:
- “The position would be otherwise only if the structure of the domestic legal system concerned were such that there was no remedy making it possible, even indirectly, to ensure respect for the rights which individuals derive from European Union law ...”¹⁰⁰
145. Such a gap in legal protection is clear in the present case. This action is not directed against implementing measures of either Member States or EU institutions but rather against the fundamental legal basis for climate action; more precisely the allocation by the GHG Emissions Acts of an excessive and unlawful quantity of emissions. That allocation is dictated by the Emissions Acts themselves, and requires no implementing measures which could be the subject of a challenge.
146. If an action were brought before a national court in respect of implementing measures, the court may propose to submit a reference to the CJEU of the preliminary question as to whether the reductions target in the three GHG Emissions Acts infringes higher ranking law. However, the CJEU would have to reject such a

⁹⁵ CFI decision of 14 December 2005, Case T-69/00 (*FIAMM*), ECLI:EU:T:2005:449; ECJ Cases C-120/06 P and C-121/06 P (*FIAMM*) ECLI:EU:C:2008:476, paras. 120-124.

⁹⁶ ECJ decision of 3.10.2013, Case C-583/11 P, ECLI:EU:C:2013:625 (*Inuit Tapiriit Kanatami*) para. 97.

⁹⁷ ECJ decision of 3.10.2013, Case C-583/11 P, ECLI:EU:C:2013:625 (*Inuit Tapiriit Kanatami*) para. 92.

⁹⁸ ECJ decision of 3.10.2013, Case C-583/11 P, ECLI:EU:C:2013:625 (*Inuit Tapiriit Kanatami*) para. 93.

⁹⁹ ECJ decision of 3.10.2013, Case C-583/11 P, ECLI:EU:C:2013:625 (*Inuit Tapiriit Kanatami*) para. 102.

¹⁰⁰ ECJ decision of 3.10.2013, Case C-583/11 P ECLI:EU:C:2013:625 (*Inuit Tapiriit Kanatami*) para. 104.

reference as inadmissible because the challenged legal acts do not at all affect the question of whether the national government must go further, and make deeper cuts. That question must be answered by national law, not EU law.

147. There is, moreover, no realistic possibility of national courts ordering national governments to make deeper cuts for the following reasons:
- a. First, and fundamentally, even assuming a national court could make such an order, its practical utility is negligible compared with the effectiveness of an order covering the entire EU. Moreover, the effect of one Member State making further reductions may simply be to re-allocate any additional saved emissions to other Member States. These problems could only be addressed by simultaneous proceedings being brought in all Member States, which is onerous, impractical and inefficient.
 - b. Under the ETS, Member States have no powers to reduce the allocated emissions allowances any further, as the ETS Directive only allows the cancellation of emission allowances in the event of closures of electricity generation capacity in their territory.¹⁰¹ Any further cancellations would encroach on the “predictability for operators and market participants” the Directive emphasizes as a major concern of the ETS.¹⁰²
 - c. Under the ESR, Member States are discouraged from going further by flexible mechanisms such as the possibility to borrow emission quantities from a Member State’s annual emission allocation for the following year, the unlimited ability to bank excess parts of an annual emission allocation to subsequent years, and the transfer of excess parts of annual emission allocations to other MS.¹⁰³
 - d. Likewise, the LULUCF system has disincentives to go further such as the possibility of banking of excess removals from the period 2021-2025 to the period 2026-2030, the transfer of excess removals of one MS to another MS which may book them as credits in its own account, and the use of net credits from managed forest land to offset excess emissions in other land categories.¹⁰⁴
 - e. Only a few Member States provide any legal means of commanding the state to set overall emission reduction targets.¹⁰⁵ Any national court would be likely to find that the state has a broad discretion as to how emissions targets are to be increased, and across what sectors. Although Member States are obliged

¹⁰¹ Article 12 para. 4 last sentence ETS Directive.

¹⁰² Cf. ETS Directive, preamble, consideration No. 9.

¹⁰³ Article 5 (1), (3) and (4) ESR.

¹⁰⁴ Article 11 LULUCF Regulation.

¹⁰⁵ A rare (but still pending) example is Dutch law where in the Urgenda case tort law was used to order the state to increase the GHG emissions reduction by 2020 from 15% to 25%. See the first instance judgement of the Hague District Court, ECLI:NL:RBDHA:2015:7196. The appeal is ongoing.

under Article 47 of the Charter to introduce mandamus remedies¹⁰⁶, there is hardly an individual remedy against a Member State for failing to do so.

- f. Lastly, and most importantly, if the plaintiffs were referred to national legal protection each individual applicant would have to bring actions in all of the 28 Member States. This would be an excessive burden on him/her and thus deprive him/her of effective legal protection.

c. Individual concern of the Sáminuorra

148. Concerning the Sáminuorra association CJEU case law is pertinent insofar as it grants an association locus standi if the individuals forming it or at least part of them have standing themselves. In *Polyelectrolyte Producers Group GETE (PPG) and SNF SASs v ECHA* the GC held¹⁰⁷:

“[...] it has already been held that an association responsible for defending the collective interests of its members, was, as a rule, entitled to bring an action for annulment only if the undertakings that it represented or some of these undertakings themselves had locus standi or if it could prove an interest of its own (see, to that effect, judgment of 22 June 2006 in *Belgium and Forum 187 v Commission*, C-182/03 and C-217/03, ECR, EU:C:2006:416, paragraph 56 and the case-law cited). That rule also applies to a European economic interest grouping which, like the first applicant, was created in order to defend the interests of a category of undertakings (see order of 24 June 2014 in *PPG and SNF v ECHA*, T-1/10 RENV, EU:T:2014:616, paragraph 30 and the case-law cited).”

149. All of the members of the Sáminuorra are individually concerned and therefore would have individual standing.

d. The Applicants' locus standi

150. Each of the applicants meets the requirements for showing a direct and individual concern. This is submitted on the basis of the causal connection between GHG emissions from the EU, and climate change (addressed elsewhere in this pleading), and the specific evidence of damage to the Applicants caused by climate change summarised section D above, and the supporting Annexes for each family of applicants. The EU's failure to adopt deeper reductions in GHG emissions also entails an infringement of each applicant's fundamental legal rights (see Section H2, below).
151. It is submitted that, on the basis of the pleaded substantive claim of infringement of rights – supported by cogent evidence – the applicants will meet the standard for admissibility. In other words, if the substance of the applicants' claims is well-

¹⁰⁶ See in that respect ECJ order of 10 October 2017, Case C-614/16 P (*Greenpeace Energy v Commission*) ECLI:EU:C:2017:752, para 63.

¹⁰⁷ GC judgment of 25.09.2015, Case T-268/10 RENV (*Polyelectrolyte Producers Group GETE (PPG) and SNF SASs v ECHA* para. 32. See also ECJ judgment of 07.12.1993, case C-6/92, para. 15 f. (*Federmineraria v Commission*) ECLI:EU:C:1993:913; GC judgment of 13.12.1995, Joined cases T-481/93 und 484/93, para. 64 (*Vereniging van Exporteurs in Levende Varkens and Others v Commission*) ECLI:EU:T:1995:209; GC judgment of 06.07.1995, Joined cases T-447-449/93, para. 60 (*AITEC and Others v Commission*) ECLI:EU:T:1995:130; GC judgment of 11.02.1999, case T-86/96, para. 55 f. (*Arbeitsgemeinschaft Deutscher Luftfahrt-Unternehmen and Hapag-Lloyd v Commission*) ECLI:EU:T:1999:25; GC judgment of 04.06.2012, case T-381/11, para. 18 (*Eurofer v Commission*) ECLI:EU:T:2012:273.

founded, a direct and individual concern in the GHG Emissions Acts will have been shown:

- a. An infringement of fundamental rights manifestly directly affects the legal position of each applicant. The infringement of rights entails an intrusion into the sphere that is protected by such rights.
- b. An infringement of fundamental rights also constitutes an ‘individual concern’ for each applicant. As set out above (section G1(b)), the applicants’ alternative case is that an individual concern ought to be established where a person’s fundamental rights are affected. Even applying the conventional *Plaumann* standard, however, each applicant is affected in a different way by the breach of rights:
 - (a) Each applicant enjoys, on an individual and subjective basis, fundamental legal rights that protect his or her unique personal interests, circumstances and activities;
 - (b) Any infringement of fundamental rights will therefore, by definition, affect each applicant in a distinct and idiosyncratic manner. For example:
 - 1) Climate change may affect farmers by increasing temperatures and reducing rainfall, as is the case for the Sendim, Feschet and Vlad families (discussed in Section D above). Each family is affected by this subjectively, and differently. Each family has a different and unique land-holding; the livelihood each earns is different; the personal circumstances of each applicant are different.
 - 2) Likewise, sea level rises induced by climate change may affect many people living in coastal areas. These effects will differ in each case given differences in proximity to the coast, timing of a rise, and the circumstances of the individuals. The Recktenwald and Qaloibau families, for instance, are both threatened with a sea level rise but in a manner that is obviously different, given the differences in their respective situations.

F2. Admissibility of claims under Article 340 TFEU

a. Locus standi

152. Claims based on Article 340 TFEU need only to show that the plaintiff has suffered damage caused by EU action. Causation of loss is addressed in detail below; on the basis of the facts there alleged, it is submitted that the claims are admissible.

b. Timing

153. The Claimants seek redress based on the non-contractual liability of the Union for conduct that has caused and continues to cause the same damage, and which will

cause damage in the future. The requirement for proceedings to be commenced within 5 years of damage being sustained is therefore satisfied.

G. STRUCTURE OF THE APPLICANTS' LEGAL CASE

154. The structure of the applicants' case on annulment is as follows:
- a. The Union is bound by higher rank norms to avoid harm caused by climate change and to take steps to avoid violations of human rights caused by climate change;
 - b. By reason of those norms, the Union is obliged to adopt measures for the reduction of GHG emissions to the full extent of its technical and economic capacity;
 - c. The GHG Emissions Acts fall short of this obligation and should therefore be nullified.
155. The Applicants moreover contend that the Union's non-contractual liability is engaged by its failure to adhere to the same higher rank norms, causing damage to the applicants. The Applicants accordingly seek relief in kind from the Court in the form of injunctive relief ordering the Union to adopt measures sufficient to comply with the higher rank norms.

H. THE UNION'S HIGHER RANK LEGAL OBLIGATIONS

156. The applicants submit that subjective (ie individual) rights and objective principles established by higher rank law are applicable in this case.
157. As set out below, the subjective rights include the rights to life and health, the right of children to such protection and care as is necessary for their well-being, the right to engage in work and to pursue a freely chosen or accepted occupation, the right to own, use, dispose of and bequeath lawfully acquired possessions, and the right of equal treatment.
158. The objective principles embrace those of the Treaty on the European Union, the Treaty on the Functioning of the European Union, international customary law as well as international treaty law such as the Framework Convention on Climate Change, the Kyoto Protocol, the Paris Agreement, the 1994 UN Convention to Combat Desertification, the 1991 Alpine Convention, the 1992 Convention on Biodiversity, and the UNESCO Convention concerning the World Cultural and Natural Heritage.
159. The invocation of objective obligations is admissible in proceedings brought by individuals once standing under Article 263 (4) TFEU has been affirmed.¹⁰⁸ For

¹⁰⁸ Cf. W. Cremer (2016), in C. Calliess, M. Ruffert, AEUUV, 5th ed., Art. 263 para. 86: „If the preconditions of Article 263 para 4 TFEU are fulfilled, the plaintiff can expect that the Union judge examines all of the grounds for nullification the plaintiff has submitted, that the judge even checks grounds ex officio, and that he in any

instance, in *Roquette Frères* the ECJ declared a Regulation void because the European Parliament had not properly been consulted. Consultation of the Parliament was an objective requirement of EC legislation, not a subjective right of individual citizens. Without even discussing this circumstance the Court implicitly acknowledged that a plaintiff such as the company *Roquette Frères* could invoke the violation of that requirement, once having shown a substantial individual concern.¹⁰⁹

160. In doctrinal terms this means that a law must be declared void in an individual case if it violates higher rank law of any kind, subjective or objective.

H1. Duties on the EU arising from fundamental rights

161. The EU is obliged to ensure respect for fundamental rights protected by the Charter.
162. It is undeniable that climate change poses a serious threat to the enjoyment of several fundamental rights, namely the right to life (Article 2 of the Charter), the right to physical integrity (Article 3), the rights of children (Article 24), the right to engage in a work and to pursue a freely chosen or accepted occupation (Article 15), the right to conduct a business (Article 16) and the right to property (Article 17). As set out below, this engages the legal duties of the EU.
163. The legal duty may be construed “negatively” as one of avoidance of interference with rights, or “positively” as one of protection of rights against interference of private actors.
164. In “negative” terms the three GHG Emissions Acts empower the Commission to allocate emission allowances to the Member States which then distribute them to individual actors. The language of allocation is widely used in the text of the three Acts, as set out above. The allocation by the EU is the first step in a chain that finally encroaches on the pertinent fundamental right. The fundamental rights invoked by the applicants then require the EU to reduce the quantity of allocated emission allowances.
165. In “positive” terms, fundamental rights require the EU to adopt positive steps to reduce emissions even if these are attributed to private actors. The Court of Justice imposed such positive obligations on the French State in the case of French farmers who obstructed the supply of agricultural products from other Member States, thereby infringing the freedoms of other persons:¹¹⁰

“The fact that a Member State abstains from taking action or, as the case may be, fails to adopt adequate measures to prevent obstacles to the free movement of goods that are created, in particular, by actions by private individuals on its territory aimed at products originating in other Member States is just as likely to obstruct intra-Community trade as is a positive act.”

case does not confine his examination to breaches of those legal provisions which aim at protecting the individual plaintiffs.” [Translation provided by legal counsel]

¹⁰⁹ ECJ decision of 29 October 1980, Case 138/79 (*Roquette Frères*) ECLI:EU:C:1980:249 paras 32 et seq.

¹¹⁰ ECJ decision of 9 December 1997, Case C-265/95 (*Commission v France*), ECLI:EU:C:1997:595, para. 31. See likewise ECJ decision of 12 June 2003, Case C-112/00 (*Schmidtberger*), ECLI:EU:C:2003:333, para. 59, concerning the blocking by environmental activists of the Brenner motorway.

166. The CJEU when enforcing obligations may consider by analogy the pertinent jurisprudence of the ECtHR, described in the Manual on Human Rights and the Environment as follows:

“While the objective of Article 8 is essentially that of protecting the individual against arbitrary interference by public authorities, it may also imply in some cases an obligation on public authorities to adopt positive measures designed to secure the rights enshrined in this article. This obligation does not only apply in cases where environmental harm is directly caused by State activities but also when it results from private sector activities. Public authorities must make sure that such measures are implemented so as to guarantee rights protected under Article 8. The Court has furthermore explicitly recognized that public authorities may have a duty to inform the public about environmental risks. Moreover, the Court has stated with regard to the scope of the positive obligation that it is generally irrelevant of whether a situation is assessed from the perspective of paragraph 1 of Article 8 which, inter alia, relates to the positive obligations of State authorities, or paragraph 2 asking whether a State interference was justified, as the principles applied are almost identical.”¹¹¹

167. In specific ECtHR jurisprudence such as *Lopez Ostra v. Spain*, the Court deduced from Article 8 ECHR¹¹² the contracting state’s positive obligation to protect its citizens from harm by environmental pollution, irrespective of whether the harm is life-threatening or not.¹¹³ The state’s positive obligation is also triggered by non-state actions, which result in harmful environmental pollution.¹¹⁴

168. This reasoning is particularly apt in the case of climate change, a threat which the EU and other governments have recognised requires coordinated action by States. The EU Member States – through membership of the UNFCCC – recognise the need for action and their responsibility to bring about reductions in emissions (UNFCCC, 6th recital):

“Acknowledging that the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response, in accordance with their common but differentiated responsibilities and respective capabilities and their social and economic conditions”

169. The EU has, moreover, made commitments to reduce emissions to a level agreed with other States. As recital 5 to the ETS Directive states:

“The Community and its Member States have agreed to fulfil their commitments to reduce anthropogenic greenhouse gas emissions under the Kyoto Protocol jointly, in accordance with Decision 2002/358/EC. This Directive aims to contribute to fulfilling the commitments of the European Community and its Member States”

170. The EU has by making these commitments and by recognising their rationale accepted that its action is necessary to avoid the damaging effects of climate change;

¹¹¹ In order to fulfil its positive obligation under Article 8 of the ECHR the State has to take reasonable and appropriate measures which effectively secure the enjoyment of the Convention right. Council of Europe (2012), Manual on Human Rights and the Environment, 2nd ed. Ch. II 15 (d). [Annex 35 pp. 3149 ff.]

¹¹² ECtHR decision of 9.11.2010, Application no. 2345/06 (CASE OF DEÉS v. HUNGARY), para. 21..

¹¹³ ECtHR decision of 9.12.1994, Application no. 16798/90 (CASE OF LÓPEZ OSTRA v. SPAIN), para. 51.

¹¹⁴ ECtHR decision of 27.01.2009, Application no. 67021/01 (CASE OF TĂȚAR v. ROMANIA), para. 87.

it logically follows that its failure to take sufficient action will set a causal chain into motion, contributing to more dangerous climate change and hence infringements of these human rights.

171. It is indeed obvious that fundamental rights are not only endangered by the final ends of a causal chain such as a communicable disease, parched crops, or a washed away house but also by the complex interrelationships by which the end points are influenced. The life and health of the individual is dependent on the preservation of an environment which allows human life to exist; agriculture depends on the availability of arable land and favourable weather; the safety of living in a building in a coastal zone depends on the sea level and its possible rise and complex climatic interactions, etc. If the legislation shapes those conditions so that they become unlikely to “sustain” life, work and property, it is inappropriate to inflict on the affected persons the burden to wait for the damage to take effect. In more general terms the enjoyment of freedoms depends on the existence of certain preconditions, or of *Freiheitsvoraussetzungen* (preconditions of freedoms) as it has been proposed in German law.¹¹⁵
172. Similarly, if the EU authorises (within a general framework of GHG regulation) excessive emissions, liable to cause harm, the EU bears responsibility given that this result was entirely predictable and well-known to the Union.
173. This submission is more broadly consistent with the EU’s obligations under human rights protections as a matter of law. The EctHR has held, in line with the precautionary principle, explicitly referred to in *Tatar v. Romania* that neither scientific uncertainty nor distant future occurrence of damages hinder the existence of a positive obligation.¹¹⁶ Thus, an increased risk for the enjoyment of the right to respect for private and family life (Article 8) or the right to life (Article 2) engages the State’s obligation to protect.¹¹⁷

a. Right to life and health (Articles 2 (1), 3 (1) ChFR)

174. Article 2 (1) ChFR establishes:

“Everyone has the right to life.”

175. Article 3 (1) provides:

“Everyone has the right to respect for his physical and mental integrity.”

176. Climate change infringes the enjoyment of these rights. As set out above (Sections C and D), climate change brings with it an increase in the incidence of flooding, heat

¹¹⁵ As phrased by F. Ekardt (2015) *Menschenrechte und Umweltschutz – deutsche und internationale Debatte im Vergleich*, ZUR 11, p. 579 (580). Annex omitted due to language.

¹¹⁶ ECtHR decision of 10.01.2012, Application no. 30765/08 (CASE OF DI SARNO AND OTHERS v. ITALY), para. 108.

¹¹⁷ ECtHR decision of 27.01.2009, Application no. 67021/01 (CASE OF TĂȚAR v. ROMANIA), para. 107; ECtHR decision of 16.06.2005, Application no. 61603/00 (CASE OF STORCK v. GERMANY); ECtHR decision of 30.11.2004, Application no. 48939/99 (CASE OF ÖNERIYILDIZ v. TURKEY).

waves, and drought, which expert assessment identifies as direct threats to life, physical and mental integrity, particularly on the part of children.

177. As a matter of law, the EU is obliged to adopt positive measures that are legally sufficient to respond to, reduce and prevent these threats.

b. Rights of children (Article 24 ChFR)

178. Article 24 (1) and (2) ChFR read:

“Children shall have the right to such protection and care as is necessary for their well-being. They may express their views freely. Such views shall be taken into consideration on matters which concern them in accordance with their age and maturity.

“In all actions relating to children, whether taken by public authorities or private institutions, the child’s best interests must be a primary consideration.”

179. Article 24 comprises both substantive (para (1)) and procedural (para (2)) protections. Both are applicable in the context of climate change and the EU’s decisions over the regulation of emissions. As set out above (in Sections C and D), children (including several of the applicants) are especially vulnerable to physical and mental harm, and economic and material deprivation, as a consequence of climate change. It therefore follows that the EU:

- a. Has positive duties to ensure that sufficient steps are taken to provide children with protection from these threats; and
- b. Has duties to take account of the best interests of children as a primary consideration when deciding on the level of emissions reductions to make.

c. Right to an occupation (Article 15 ChFR)

180. Article 15 (1) ChFR reads:

“Everyone has the right to engage in work and to pursue a freely chosen and accepted occupation.”

181. This right includes that children shall be able to develop their skills within the business of their parents. Article 15 can also be invoked by non EU citizens insofar as their right to occupation in their home country is impaired by EU legal acts and their de facto effects.

182. Clearly, as set out in Sections C and D above, the enjoyment of these rights to pursue an occupation on the part of the applicants is threatened by climate change. As with the rights protected by Articles 2 and 3 above, the EU bears positive duties to ensure the enjoyment of these rights.

d. Right to Property (Article 17 ChFR)

183. Article 17 (1) ChFR reads:

“Everyone has the right to own, use, dispose of and bequeath his or her lawfully acquired possessions. No one may be deprived of his or her possessions, except in the public interest and in the cases and under the conditions provided for by law, subject to fair compensation being paid in goodtime for their loss. The use of property may be regulated by law in so far as is necessary for the general interest.”

184. The property guarantee extends to the physical assets of an agricultural or tourism business, such as houses, barns, stables and machinery, as well as to the use of the soil for agricultural and other purposes.
185. Encroachments on their continued existence and use will occur if those assets¹¹⁸ are endangered by the recognised impacts of climate change such as increased incidence of floods, catastrophic fires, degradation of the soil, loss of feed for livestock animals, et cetera. As with the other Charter rights analysed above, the EU bears positive obligations to ensure that sufficient measures are taken for their protection.

e. Right to equal treatment

186. Article 20 ChFR states, “Everyone is equal before the law.”
187. Further, Article 21 ChFR excludes certain concerns from consideration as a ground for legitimizing unequal treatment:

“1. Any discrimination based on any ground such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation shall be prohibited.

“2. Within the scope of application of the Treaties and without prejudice to any of their specific provisions, any discrimination on grounds of nationality shall be prohibited.”

188. Articles 20 and 21 ChFR confirm and develop the principle of equal treatment that is enshrined in Article 26 of the International Covenant on Civil and Political Rights.¹¹⁹
189. The test of equal treatment has been formulated by the CJEU as follows:

“The principle of equality and non-discrimination requires that comparable situations must not be treated differently and that different situations must not be treated in the same way unless such treatment is objectively justified.”¹²⁰

190. These protections embrace equality of treatment in two respects relevant in this case.

¹¹⁸ Apart from physical impacts the possibility to profitably utilize the property is also endangered. In that sense, the ECJ in *Flughafen Hannover-Langenhagen* can be understood to imply that the rentability of a business is part of the property guarantee: see ECJ decision of 16 October 2003, Case C-363/01 (*Flughafen Hannover-Langenhagen*), ECLI:EU:C:2003:548, paras. 55-58.

¹¹⁹ All persons are equal before the law and are entitled without any discrimination to the equal protection of the law. In this respect, the law shall prohibit any discrimination and guarantee to all persons equal and effective protection against discrimination on any ground such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.

¹²⁰ ECJ decision of 3 May 2007, Case C-303/05 (*Advocatenvoor de Wereld*) ECLI:EU:C:2007:261, para. 56.

191. First, Article 21 of the Charter prohibits any discrimination based on age. This principle of equal treatment should clearly be applicable in respect of equality between children and young people, and older people, and requires broader intergenerational justice.
192. These principles squarely apply to the question of climate change and to the steps needed from governments to limit its effects. Indeed, unless drastic action is taken now, today's children will face environmental conditions in their future lives that are far worse than those enjoyed by present day adults. The present adult generation consumes environmental resources at the expense of the life chances of today's and tomorrow's younger generations. The present adult generation consumes the capacity of the Earth's atmosphere, forests and oceans to absorb GHG emissions at an excessive rate that will leave them significantly impaired in the future. This is particularly evident when the necessary emission reductions are deliberately postponed to a later date when less or no emissions will anymore be possible.
193. Concerning future generations the principle of sustainable development enshrined in Article 3 (3) (1) TEU and Article 11 TFEU reiterates, in the classical definition of the 1987 Brundtland Report "Our Common Future", the duty to protect the interests of future generations. Future generations as a concern are highlighted in Article 3 (3) (2) TEU, and the preamble and Article 37 of the EU Charter of Fundamental Rights. They are also mentioned in constitutions of various Member States, such as in Article 7bis of the Belgian Constitution, Article 20a of the German Basic Law, the Preamble and Article 6 of the French Charter for the Environment, the Preamble of the Latvian Constitution, Article 11bis of the Luxemburg Constitution, the preamble of the Polish Constitution, Article 66 II of the Portuguese Constitution, Article 2 of the Swedish Instrument of Government, Article 38 of the Hungarian Constitution. It can be concluded from this growing concern for future generations that a common proposition to that effect has emerged as a fundamental principle of EU primary law.
194. By the same token, the 1992 FCCC establishes in Article 3 (1) that "the Parties should protect the climate system for the benefit of present and future generations of humankind"; and the UN International Law Commission's 2017 Draft Guidelines on Protection of the Atmosphere note "that the interests of future generations of humankind in the long-term conservation of the atmosphere should be fully taken into account".
195. The second dimension of equality applicable here is equality between persons in the developed States of the EU, and persons living in less developed countries. It is submitted that the right to equal treatment is not limited by nationality and hence is enjoyed by non-EU citizens.¹²¹ It must also be understood to extend to all persons adversely affected by EU law, including by the allocation and allowed use of emission rights. This allocation must not discriminate against persons living in foreign countries in favour of EU nationals.
196. This obligation is fortified by other international law principles. A principle of equitable utilization of shared resources has emerged in respect of the utilization of scarce shared resources, and in particular in international water law. This principle

¹²¹Cf. ECtHR decision of 16 September 1996, Application no.17371/90 (*Gayagusuz v. Austria*) para. 46.

applies and has been recognized by the EU within the specific context of climate change.

a. International law has developed a principle of equitable utilization of natural resources shared by two or more states¹²² which applies to the absorption capacity for GHG of the atmosphere as well.

b. Similarly, Article 3(1) of the UNFCCC puts the parties' obligation to protect the climate system,

“on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities....

“Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.”

c. This is confirmed in the principles laid out in the preamble of the Paris Agreement para. (3), “including the principle of equity and common but differentiated responsibilities and respective capabilities, in the light of different national circumstances”.

d. Reference to equity, development and best effort is also made in Article 4 (1) Paris Agreement. The reference to national circumstances is a new element that distinguishes the Paris Agreement from the FCCC and the Kyoto Protocol in that it also demands developing states to contribute to emission reduction.¹²³

197. In summary, equal treatment requires (as developed further below on the specific facts here):

a. An intergenerational dimension, warning against the postponement of measures to later years when today's children will be adults and dangerous climate change (avoidable by earlier action) will already have occurred; and

b. A geographical dimension, as equal treatment suggests the sharing of any available global GHG emissions budget between states on an equal *per capita* basis.

¹²² See Principles 1 and 3 of the Principles of Conduct in the Field of the Environment for the Guidance of States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States, adopted without vote by the UN General Assembly at its 107th plenary meeting of 18 November 1979. For the text see ILM 17 (1978), p. 1091 (1098) [**Annex 36**, pp. 3345 ff.] For the resolution see D. Rauschnig e.a., Key Resolutions of the United Nations General Assembly, Cambridge (CUP) 1997, 10.00 Environment, No 34/186. (Annex omitted) The principle has been invoked by the ICJ's rulings in Gabcikovo-Nagymaros ((197) ICJ Reports 7, at 56) and Pulp Mills ((2010) ICJ Reports 18, at 177).

¹²³ D. Bodansky, J. Brunnè, L. Rajamani (2017) International climate change law, Oxford (OUP) 2017, p. 221 – [**Annex 37** pp. 3355 ff.]

f. Subjects of fundamental rights

198. EU fundamental rights are in principle also granted to non-EU citizens and persons living outside the EU territory unless the text of a provision specifies otherwise. No such exception applies to the basic rights invoked by the present action.
199. EU environmental laws as well have a formulation that is geographically neutral.¹²⁴ There is no reason why they should not be interpreted to extend their protection beyond the EU borders.
200. A parallel can be drawn with the application of EU competition law. If a foreign company's trade in the EU is affected by a cartel or misuse of a dominant position of a competitor or by a subsidy paid by a Member State to a competitor the foreign company is entitled to ask the Commission to intervene under Art. 101, 102 and 108 TFEU, respectively. In such cases the distortion of competition that occurs within the EU produces adverse effects in the state of residence of the company, such as reducing the quantity of products exported from the foreign country to the EU, causing loss of revenue and impairing the profitability of the firm where the company is registered, and putting employment in foreign factories at risk. For instance, Advanced Micro Devices (AMD) which is seated in California applied to the Commission under Article 3 Regulation (EEC) No. 17/62 of the Council to intervene against Intel Corporation, situated in Delaware, alleging that Intel had misused its dominant market position concerning certain computer products. The Commission recognized allowed AMD's participation in the proceedings and examined any competitive disadvantage occurring to AMD, without even pondering the fact that AMD was located outside the EU.¹²⁵ In doing this it implicitly recognized a right of persons residing outside the EU to fair competition. Likewise, foreign companies seated outside the EU are entitled to challenge trade restrictions by EU product regulation. For instance, Monsanto, a company existing under the laws of Delaware was admitted to challenge a Commission decision not to include Monsanto's pharmaceutical Sometribove in the list of acceptable veterinary medicinal products.¹²⁶ The Court did not specify what Monsanto's affected right is but it can be inferred that it was the basic freedom under Article 34 TFEU.
201. Considering therefore that persons living outside the EU can invoke rights of EU primary law arguing that their business is harmed by EU public action or its omission it is submitted that the plaintiffs in Kenya and Fidschi are in a comparable situation. They are affected by the allocation by the EU of emission allowances. Just as in the competition and trade related cases the harm materializes outside the EU, and the EU is causing it through action or omission of protective regulation. It is true that the pertinent primary law rights are different: right to competition and freedom of trade

¹²⁴ See for instance Articles 6-8 Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment and Articles 7 and 8 Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.

¹²⁵ Commission Decision of 13 May 2009 relating to a proceeding under Article 82 of the EC Treaty and Article 54 of the EEA Agreement (COMP/C-3 /37.990 - Intel), D (2009)3256 final http://ec.europa.eu/competition/sectors/ICT/intel_provisional_decision.pdf.

¹²⁶ CFI decision of 22 April 1999, Case T-112/97 (Monsanto v Commission) ECLI:EU:T:1999:83, paras 48-66.

on the one side, and fundamental rights to health, occupation and property on the other. But there is no reason why large companies that suffer from restrictions to free international trade and competition should be better treated than actors in the small and medium scale farming and tourism business who suffer from the destruction of the natural conditions of their livelihoods.

H2. Objective obligations to prevent damage

202. This action claims that the three GHG Emissions Acts violate objective obligations to prevent damage. Such objective obligations are laid out in international customary and treaty law as well as in EU primary law.

a. Binding effect of international law on EU secondary law

203. International law is in principle of higher rank than EU legal acts and can render EU legal acts inapplicable. This is settled case law in relation to international treaties¹²⁷ as well as international customary law.¹²⁸ For international obligations to be applicable in this sense, three conditions must be met:

- a. The EU must be bound by those rules;
- b. The nature and broad logic of a treaty rule does not preclude the examination of the validity of the EU act in view of the rule;
- c. The provisions of the treaty are, as regards their content, unconditional and sufficiently precise, this being the case if the provision is not subject, in its implementation of effects, to the adoption of any subsequent measure.¹²⁹

204. It is submitted that the EU is clearly bound by the rules addressed in sections (b) and (c) below and that these rules do not suggest that they do not provide a basis for examining EU acts.

205. As to the third condition, the CJEU qualifies the requirement for obligations to be unconditional and precise in the case of customary law, which need may not have the same degree of precision as a provision of an international agreement. If that is the case judicial review must be limited to the question whether the EU institutions “made manifest errors of assessment concerning the conditions for applying those principles”¹³⁰.

¹²⁷ECJ decision of 21 December 2011, Case C-366/10 (Air Transport Association of America) ECLI:EU:C:2011:864, paras 50, 51

¹²⁸ECJ decision of 16 June 1998, Case C-162/96 (A. Racke GmbH) ECLI:EU:1998:293, paras 45, 46.

¹²⁹ ECJ decision of 21 December 2011, case C-366/10 (Air Transport Association of America) ECLI:EU:C:2011:864, paras 52-55.

¹³⁰ ECJ decision of 21 December 2011, Case C-366/10 (Air Transport Association of America) ECLI:EU:C:2011:864, para 110. See also Allan Rosas (2013) International Responsibility of the EU and the European Court of Justice, in M. Evans & P. Koutrakos, The International Responsibility of the European Union Oxford (Hart) p. 139 (144); J. Kokott (2013) International Law: A Neglected 'Integral' Part of the EU Legal Order?, in V. Kronenberger et al., De Rome à Lisbonne: Les juridictions de l'Union européenne à la croisée des chemins: Mélanges Mengozzi (Bruylant) p. 61 ff. – Annex omitted.

As will be explained below, the customary no-harm rule as well as the pertinent provisions of the relevant international agreements meet the standard of precision.

b. The customary no-harm rule

206. The EU Member States, like all States, have an obligation to prevent significant harm to the population and environment of other States or of areas beyond their national jurisdiction. That duty is now well established in international customary law¹³¹, confirmed by international jurisprudence as applicable *erga omnes* and regardless of geographical propinquity.
207. Responsibility to prevent harm presupposes that an activity can be attributed to a state, and that there is a causal link between the activity or its omission and significant harm. For the reasons set out above in the context of fundamental rights, the EU has recognised its responsibility to prevent harm caused by climate change through adopting sufficient GHG abatement measures. On this basis, and by analogy with rules of attribution applicable in some domestic legal systems,¹³² it is submitted that the customary obligation to prevent harm entails a positive obligation to adopt measures sufficient to reduce GHG emissions that cause harm in areas beyond the EU's national jurisdiction.

c. The Paris Agreement

208. Article 2(1) of the 2015 Paris Agreement defines the objective of the Agreement as holding the warming at “well below 2°C” combined with the pursuit of efforts to limit that warming to 1.5°C. It reads as follows:

“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.”

209. The wording “aims to strengthen the global response ... including by (a) Holding the increase...” formulates a clear upper limit of maximally 2°C that must be regarded as binding hard law and an obligation of result, not only of conduct.

¹³¹ ICJ decision of 20 April 2010, *Pulp Mills on the river Uruguay (ARGENTINA v. URUGUAY)*, accessible www.ilc-cij.org.

¹³² In the context of a series of climate-related actions brought on behalf of children before courts in the United States and in other countries, the obligations so affirmed have been characterized as “fiduciary”, reflecting a concept of “public trusteeship” that holds governments (as public trustees) accountable to citizens (as beneficiaries) for the diligent management of the Earth’s atmosphere (as the corpus of the natural resource held in trust): See further P. Sand (2006) *Global environmental change and the nation state: sovereignty bounded?* In G. Winter (ed.) *Multilevel governance of global environmental change*, Cambridge (CUP) 2006, pp. 519-538. – [Annex 38] pp. 3359 ff.

210. The threshold of “well below 2°C” should not be misunderstood to be an entitlement for states to fully exploit the space up to 2°C. It is a maximum limit that shall not be reached. Rather, States shall pursue “efforts to limit the temperature increase to 1.5°C”.
211. The Paris Agreement has not superseded the no-harm rule.¹³³ The no-harm rule remains as a free-standing customary international law obligation. It follows that it may impose obligations further than those reflected in the Paris Agreement.
212. The obligations established by the Paris Agreement are binding upon the EU as a member of the same. The threshold “well below 2°C” is unconditional and sufficiently precise in order to be directly applicable within the EU legal order. Its nature and logic in no way suggests that it cannot be a basis for examining the validity of EU acts.
213. The EU’s obligations, moreover, are to be interpreted in light of Article 2 para. 2 which reads:
- “This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances.”
214. The EU’s obligations to make emissions reductions are therefore to be applied by reference to: the EU’s disproportionately large share of global emissions, both historically and in the present day; and the EU’s capacity, given its wealth and resources, to adopt more ambitious reductions in pursuit of the shared commitment.

d. EU Primary Law: Prevention of damage according to Article 191 TFEU

215. Article 191 TFEU exhibits the following requirements:

Union policy on the environment shall contribute to pursuit of the following objectives:

- preserving, protecting and improving the quality of the environment,
- protecting human health,
- prudent and rational utilisation of natural resources,
- promoting measures at international level to deal with regional or worldwide environmental problems, and in particular combating climate change.

Union policy on the environment shall aim at a high level of protection taking into account the diversity of situations in the various regions of the Union. It shall be based on the precautionary principle and on the principles that preventive action should be taken, that

¹³³This was stressed by the governments of Nauru, Tuvalu, Kiribati, Fiji and Papua-New Guinea when they made declarations on signature or ratification stating that the FCCC did not constitute a renunciation of any rights under international law concerning state responsibility for adverse effects of climate change or a derogation from the principles of general international law. Cf. P. Birnie, A. Boyle, C. Redgwell (2009) *International Law & the Environment*, Oxford (OUP) 3rd ed., p. 371 Fn. 187; [Annex 39], pp. 3370 ff. see also R. Verheyen (2005) *Climate Change Damage and International Law*, Leiden (Martinus Nijhoff), pp. 142-145.[Annex 40, pp. 3376 ff.].

environmental damage should as a priority be rectified at source and that the polluter should pay.

216. The standard of “high level of protection” commands the Union to adopt effective and immediate measures to reduce the damaging effects of climate change to the greatest extent possible. These obligations take effect immediately, particularly in light of the potential for climate change damage to be caused if the “well below 2°C” threshold of the Paris Agreement was to be reached. The precautionary principle would firmly indicate that the damage is “likely” or “highly likely” to be caused by GHG emissions.

H3. Precaution and confidence of factual allegations

217. The obligations set out above are to be applied in light of the commonly accepted ‘precautionary’ approach. This approach – which in addition to being codified in Article 191(2) TFEU is developing into a customary rule¹³⁴ – maintains that some leeway in descriptions and predictions must be granted where adverse effects are examined and evaluated. If for example the likelihood of an adverse effect is based on a 30% scientific confidence, that should be sufficient as proof.
218. Similarly, precaution also governs predictions as to the utility of risk abatement measures, requiring that a high degree of confidence in safety should be attained. For instance, the IPCC’s suggestions for emission reduction have been based on a 66% likelihood of staying within the limits of 2°C increase, and on a 50% likelihood of staying within the limits of 1.5°C. This very low level of certainty should not be regarded as sufficiently precautionary because it implies that there is a 34 % or 50%, respectively, likelihood of overshooting the 2°C and 1.5°C limits. Therefore, where the necessary level of emissions reductions is implied from these predictions, the IPCC’s reasoning should be regarded as indicating a minimal (or even sub-minimal) level of reductions required. This point is developed further below, in section J2.
219. Where – as is usual in climate sciences – different models are employed and doubts arise as to which one to choose, precaution suggests that the choice should be “conservative”, meaning that the worse (but not necessarily the worst) case shall be assumed. The importance of these points is developed further below in the specific factual context.

¹³⁴ITLOS Advisory Opinion, Order of 1 February 2011, ITLOS Reports 2011, para 135 (Responsibilities in the Area) – Annex omitted, available at www.itlos.org; D. Bodansky et.al. (2017) p. 4, 221 [Annex 37] p. 3356 and. 3357; P. Birnie, A. Boyle, C. Redgwell (2009) International Law & the Environment, Oxford (OUP), p. 160-163 [Annex 39 pp. 3373-3375].

I. WEIGHING OBLIGATIONS UP WITH OTHER CONCERNS – THE OBLIGATION TO ACT ACCORDING TO TECHNICAL AND ECONOMIC CAPABILITY

II. Legal basis for balancing

220. The strict application of the subjective rights and objective obligations set out above may come at the expense of other public and private interests. The applicants submit that while it may be permissible for the Union legislature to weigh up the competing interests, this may only do so within strict limits. This methodology of weighing up within such limits is embedded in all of the higher rank rules pertinent in this application, including the EU fundamental rights, the international no-harm rule, and the Paris Agreement. It requires the EU to ensure that, where harm or an infringement of rights occurs, it has ensured that it has fully taken the steps that are feasible and of which it is capable, to minimize those consequences.
221. Concerning interferences with fundamental rights, Article 52(1) ChFR reads:
- “1. Any limitation on the exercise of the rights and freedoms recognised by this Charter must be provided for by law and respect the essence of those rights and freedoms. Subject to the principle of proportionality, limitations may be made only if they are necessary and genuinely meet objectives of general interest recognised by the Union or the need to protect the rights and freedoms of others.”
222. This means that limitations on climate protection rights are permissible only if they pursue a general interest recognized by the Union, and only to the extent that limitations on or derogations from those rights are necessary. These qualifications apply both to rights prohibiting damage and rights of equal treatment.
223. In the context of this application, legitimate general interests may include the need to provide the population with essential goods, services and employment; this would justify emissions of GHG and some flexibility in the observance of the subjective rights and objective obligations discussed above. This justification only exists, however, where the means chosen are *necessary* to realise those objectives. This means that fundamental rights may only be encroached upon if emissions of GHG are reduced to the extent of what the EU is technically and economically capable of achieving.
224. The position is the same as regards the no-harm rule in international law. The obligation to prevent damage is qualified as requiring due diligence. In *Pulp Mills* the International Court of Justice¹³⁵ has framed this standard as follows:
- “A State is thus obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State. This Court has established that this obligation “is now part of the corpus of international law relating to the environment [reference omitted].”

¹³⁵ ICJ decision of 20 April 2010, *Pulp Mills on the river Uruguay* (ARGENTINA v. URUGUAY), p. 38.

225. In its commentary to the Draft Articles on Prevention of Harm the ILC stated that “the required degree of care is proportional to the degree of hazard involved.”¹³⁶ This means that in a case of a severe and even catastrophic hazard – which is alleged in the present application – the duty of care is particularly demanding. It requires as a minimum that states must take all measures of which they are technically and economically capable.¹³⁷
226. This general principle in international law is specifically recognised in international climate change law. The Paris Agreement in Article 2 para. 1 (a) sets a strict ceiling for global emissions. Moreover, Article 4 para. 3 provides that each party’s nationally determined contribution will “reflect its highest possible ambition” and “its respective capabilities”. The provision reads:
- “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.”
227. Adopting measures according to capability is therefore supported by the principle of common but differentiated responsibility, expressly recognized in the UNFCCC, which should also be recognised as a general principle of law.
228. In addition, as regards the objective principles of EU primary law the standard of capability is also present in Article 191 TFEU which requires institutions to “take account of available scientific and technical data and of the economic and social development of the Union.” Use of the best available technology (BAT) is moreover a standard requirement of many sectoral EU legal acts, such as BAT concerning industrial pollution, benchmarking concerning GHG emissions, safety requirements in product safety law, etc. The frequent establishment of this requirement makes it a general principle of EU environmental law, a category of legal norm accepted as higher ranking EU law.¹³⁸

12. The nature of legitimate other concerns

229. There are less and more weighty other concerns. Less weighty is the current life style of the affluent societies of the EU, and in particular the better off among their populations who tend to emit relatively more than the poorer strata. If affluent lifestyles are compromised by emission reduction measures this cannot count as justifying the deprivation of the applicants of their fundamental rights, nor the impairment of human health and the environment at large.
230. More weighty is the provision of the population with essential goods, services and employment. The applicants submit that as regards these legitimate interests, the Union would need to establish that a certain level of emissions was necessary for their

¹³⁶ International Law Commission (2001) Draft articles on Prevention of Transboundary Harm from Hazardous Activities, with commentaries, Art. 3 para (18). available www.ilc.org

¹³⁷ R. Verheyen (2005) Climate Change Damage and International Law, Leiden (Martinus Nijhoff), p. 185. [Annex 40 p. 3384].

¹³⁸ K. Lenaerts, I. Maselis, K. Gutmann (2015) EU Procedural Law, Oxford (OUP) p. 384. [Annex 41 p. 3388].

realisation. It follows that the EU is obliged to take those measures which the Member States are capable of doing, consistent with those objectives.

I3. The nature of capability

231. Capability may be construed to have a socio-political dimension, meaning that states may point to the reluctance of their population to take action to respond to climate change. In this regard, according to the Special Eurobarometer survey 459 dated from September 2017 on attitudes towards fighting climate change, “92% of EU citizens see climate change as a serious problem” and 74% see it as a "very serious" problem.
232. The core of the criterion however is capacity in the technical and economical sense:
- a. Technical capability refers to the best available techniques and practices.
 - b. Economic capability does not mean that all actors, public and private ones, must come out profitably, i.e. that the initial capital investment must be recovered by savings on costs and new revenue. It rather means that the costs caused by climate protection measures shall be bearable. This implies that old employment lost in one sector can be made good by new employment in other sectors, that the costs of climate change avoided by emission reduction measures should be counted as a benefit, that promotional subsidies from public budgets may intervene but should stay within a reasonable margin of public debt, etc.
233. Early action is also a major demand of capability because the later that action is taken, the more costly will it become. The most important arguments in this relation have been put together by the UNEP in its well accepted Emission Gap-Report¹³⁹:
- Delaying action implies that significantly higher rates of global emission reductions are required in the medium- and long-term to meet the well below 2°C target. The order of magnitude of these rates is without historic precedent.
 - Delaying action reduces the ‘solution space’ and options available to society to achieve stringent emission reductions.
 - Delaying action will result in greater lock-in of carbon- and energy-intensive infrastructure in the energy system and society, as a whole. It will also be a disincentive for near-term learning and technology development that will be essential in the long-term.
 - Delaying action translates into greater dependence on negative emissions technologies in the medium term – technologies that so far are unproven on a larger scale.
 - Delaying action increases the costs of mitigation in the medium- and long-term, and implies greater risks of economic disruption.

¹³⁹ UNEP (2016). The Emissions Gap Report 2016, p. 9. [Annex 42] p. 3421.

- Importantly, delaying action is associated with greater risks of failing to meet the well below 2°C target and is likely to be incompatible with meeting a 1.5°C target.
234. Capability has further procedural and substantive components.
235. The procedural element demands that the responsible state (here the EU) is obliged to proactively search for solutions for which capability exists. The state may not only study capability in a reactive sense, meaning that it checks whether a predetermined or assumed target is feasible. It must undertake a search for the best feasible solutions, and any target must then be determined on that basis. It follows that the obligation to act according to capability is already breached if the activity of the state in assessing capability was reactive rather than proactive. As set out below in Section J4, the Commission (undertaking the analysis of impact for the GHG Emissions Acts) fell into precisely this error, leading it to overlook a mass of highly relevant evidence on capability.
236. The substantive component is that the end result reached must reflect the state of best knowledge, and draw the most reasonable conclusions. All relevant parameters must be factored in and evaluated according to their importance. Such analysis would concentrate on publications by experts or expert organizations.
237. A further, final element of capability is the requirement to ensure that the measures identified for adoption will be implemented effectively, and to ensure that they are not undermined or hollowed out by exceptions and flexibilities.

J. THE INCOMPATIBILITY OF THE THREE GHG EMISSIONS ACTS WITH HIGHER RANK LAW

238. The Applicants' case is that the GHG emissions that would be allocated and permitted under the +60% target (or -40 %, respectively) enshrined in the three GHG Emissions Acts under challenge are incompatible with higher rank law, as follows:
- a. First, any further emissions of GHG gases will contribute to the ongoing warming of the Earth system and to dangerous climate change. Permitting any further emissions will result in harm and will encroach on the enjoyment of the EU's duties to respect fundamental rights (see **Section J1**).
 - b. Second, moreover, the GHG Emissions Acts would permit the continued emission of dangerous GHGs at levels that materially exceed the maximum permissible levels of emissions that are implied by the Paris Agreement. Scientific analysis can estimate the maximum quantity of emissions that can be released globally into the atmosphere so as to result in a likelihood of temperature increases being kept within the defined levels to which the EU has committed itself. The EU cannot consume more than its *per capita* share of those global emissions, yet the GHG Emissions Acts will result in it doing so. The Paris Agreement therefore can provide no justification for the EU's policies; rather, those policies are in direct conflict with its requirements (**Section J2**).

- c. Third, the infringement of norms entailed in the GHG Emissions Acts is unlawful, unless the Union establishes a well-founded justification. Any such justification would need to show that the Union had acted proportionately and had infringed the duties and rights only to the extent that was necessary. To make good such a justification, the EU would need to identify and adopt measures for emissions reduction to the extent of its technical and economic capability (**Section J3**).
 - d. Fourth, insofar as the EU legislature contends that its conduct in permitting the level of emissions it proposes in the GHG Emissions Acts is justified in the light of other, competing interests, the legislative record is to the contrary. The evidence shows that the EU's analysis of its 2030 targets impermissibly pursued an outdated objective of achieving an 80% reduction in emissions by 2050. That policy is contrary to law and in particular to the Paris Agreement. As the EU began its analysis from the wrong starting point, it failed to consider the feasibility of more ambitious reduction options. (**Section J4**).
239. As will be shown at Section J4, the technical and economical capacity of the EU clearly extends to making emissions reductions of 50-60%. It is submitted that the GHG Emissions Acts must therefore be declared void insofar as they will allow in 2030 the emission of more than 40%-50% of the 1990 levels of emissions (**Section J5**).

J1. Failure to prevent harm and to avoid infringements of rights

240. As set out above in Section H, the EU has positive international law duties not to allow the harm that is caused by the emission of GHGs from Member States, leading to climate change. It also bears positive duties to prevent an infringement of fundamental rights. In practical terms, it also becomes responsible for emissions from its territory, by allocating emissions rights to Member States, which permits undertakings to emit GHGs, contributing to climate change.
241. As summarized in Sections C and D, anthropogenic GHG emissions are already leading to an increase in temperatures and to dangerous changes in weather and climactic conditions. In some instances, these changes have already caused damage to the applicants. Serious damage to the applicants is the very likely consequence of continued GHG emissions, and climate change, as is harm to persons across the world, more generally.
242. In specific terms, the emission of GHGs, leading to climate change, has the following legal consequences.
243. First, the fundamental rights of each applicant are infringed in several respects.
244. The **physical well-being** of each applicant, and in particular of those applicants who are children, will be threatened as climate change worsens. This may be due to overall changes in climate conditions that increase the risks of, for example, crop failure, communicable diseases or the displacement of persons. It may also be due to more sudden and violent occurrences such as fires, storms, sea level rises and floods. The overwhelming scientific and official assessment (as set out in Section C above) is

that further negative changes in climate, and more rapidly occurring disasters, are the likely consequence of continued GHG emissions.

245. In some instances, these dangers to life and health have already manifested among the applicants. The forest fires in Portugal in 2017 obviously posed a real risk to the Carvalho family, had they not left their property before the fire encroached. The Guyo family in Kenya have also already experienced the effects of longer and more intense heat waves, particularly on their children, leading to heat rashes and dizzy spells. The severe cyclone in Fiji leading to the loss of the Qaloibau family's boat and shed was also capable of posing a serious threat to life and limb.
246. Continued GHG emissions attributable to the EU accordingly constitute an infringement of the rights to life and health contrary to Articles 2 and 3 of the Charter.
247. **Occupation** Further GHG emissions pose a direct threat to the livelihoods of the applicants. In some instances, a loss of income has already been incurred: this is so for the Feschet, Vlad, Carvalho, Conceicao, Sendin, Caixero, Guyo, and Elter families, as well as for members of the Sáminourra. Continued GHG emissions are thus an infringement of Article 15(1) of the Charter.
248. **Property** Climate change will affect the use and enjoyment of property, and in some cases the continued existence of the property itself. Changes in the climate and extreme weather have already caused property damage in some instances, notably the destruction of the forest owned by the Carvalho family through fire. In other cases, climate change will directly affect the use of property, notably the land and other property worked by the Vlad, Conceicao, Sendin, Caixero, Guyo, and Elter families, and loss of animals owned and herded by members of the Sáminourra. The Recktenwald and Qaloibau families also faces the loss of their property through more severe flooding and storm surges.
249. The continued emission of GHGs therefore constitutes an infringement of the applicants' rights under Article 17(1) of the Charter.
250. **Children** Each of these infringements is also, in turn, a failure to provide protection and care for children as necessary for their well-being, contrary to Article 24(1) of the Charter. As will be developed below, the EU in adopting emissions targets failed to give regard to the best interests of children as a primary consideration, contrary to Article 24(2).
251. **Equality** Climate change causes damage that tends to be more severe for children and for future generations, in two respects. First, as set out in Section C above and catalogued by UNICEF and other bodies, children are more susceptible than adults to risks from the higher incidence of disease, malnutrition, fires, floods and displacement that may result from climate change. Second, climate change will progressively worsen over time, affecting children and the succeeding generations with increasing severity. A failure to abate climate change therefore violates equality of treatment based on age.
252. Climate change also tends to affect persons in less developed countries more severely than in developed countries. Less-developed countries have fewer resources with which to adapt to and mitigate the effects of climate change; the economic losses caused by climate change would also be more serious for persons in less developed

countries, starting with fewer resources and lower living standards, than in richer countries.

253. In these two respects, the continued emission of GHGs leading to climate change is therefore contrary to the principles of equality of treatment reflected in Articles 20 and 21 of the Charter, and the principle of sustainable development reflected in Article 3 TEU, Article 11 TFEU, Article 37 of the Charter, Article 3 UNFCCC, and fundamental principles of EU law as reflected in domestic constitutions (as set out above).
254. Second, climate change caused by further GHG emissions violates other objective legal standards, notably the no harm principle in international law, the UNESCO Convention concerning World and Cultural Heritage, and Article 191 TFEU.
255. The harm that has already resulted and which will continue to be caused by further emissions of GHGs is *prima facie* an infringement of these higher rank law duties on the EU. It is obvious that the level of emissions reductions required under the GHG Emissions Acts would lead to an infringement, as they would allow emissions to continue, and even by 2030 would only reduce total emissions to 60% of their 1990 levels. Unless any sound legal justification can be established, the EU will be in breach of its obligations.

J2. Violation of the duty not to exceed the EU's equitable share in the global budget derived from the Paris Agreement

256. As explained in Section H2 above, the Paris Agreement does not set aside the stricter requirements of EU primary and international law, which would otherwise be breached by an increase in temperature of the level contemplated by the Paris Agreement (ie, of an increase of up to between 1.5°C and 'well below' 2°C).
257. The parties to the Paris Agreement have made commitments to take steps to avoid an increase in temperature beyond the levels it contemplates. Regardless of whether the Paris Agreement supersedes the existing framework of higher rank law (which it does not), the three GHG Emissions Acts violate the requirements of the Paris Agreement, as properly interpreted.
258. As set out in (a)-(d) following, the analysis in this section takes as its starting premise the IPCC's calculations in its 4th and 5th Assessment Reports of the global volume (or 'budget') emissions that can be emitted so as to remain within the maximum temperature increase specified in the Paris Agreement. The analysis then takes that premise and draws conclusions that, it is submitted, follow logically:
 - from the global emissions budget range, a budget range for the EU is calculated on a per capita population basis;
 - calculations are then made as to the time over which that budget would be exhausted, depending on the amount of annual reductions in emissions; and
 - calculations are then in turn made as to the rate at which emissions reductions would be required in order to keep the EU within its budget range (under various scenarios).

The calculations made at each of these steps in the analysis are presented below, which have been prepared with assistance from expert climate science advisers, Climate Analytics.

a. Deriving a global budget from the Paris Agreement

259. The IPCC has set out a global budget for emissions, which calculates the level of emissions that could be maintained while keeping increases in temperature within defined limits (with varying levels of certainty). The budgets calculated by the IPCC consider a temperature increase of 1.5°C and 2.0°C (notwithstanding that the Paris Agreement calls for a maximum that is ‘well below’ 2.0°C). The salient calculations are set out below, concentrating (as does the IPCC) on CO₂ emissions, which represent 85% of all GHG emissions at present.
260. The IPCC’s assessment is that, as at 2011, the global budget of emissions to align with a 66% chance of staying below a temperature increase of 2°C was 750 to 1400 GtCO₂. A 50% chance of staying below a temperature increase of 1.5°C allowed a global budget of 550 to 600 GtCO₂. The IPCC’s chart¹⁴⁰ of emissions budgets is included in [Annex 5] and is central to the calculations that follow.

The relevant figures are extracted here:

Cumulative CO ₂ emissions from 1870 in GtCO ₂									
Net anthropogenic warming	< 1.5°C			< 2.0°C			< 3.0°C		
Fraction of scenarios meeting goal	66%	50%	33%	66%	50%	33%	66%	50%	33%
Complex model	2250	2250	2550	2900	3000	3300	4200	4500	4850
Simple model	No data	2300 to 2350	2400 to 2950	2550 to 3150	2900 to 3200	2950 to 3800	n/a	4150 to 5750	5250 to 6000
Cumulative CO ₂ emissions from 2011 in GtCO ₂									
Complex models	400	550	850	1000	1300	1500	2400	2800	3250
Simple model	No data	550 to 600	600 to 1150	750 to 1400	1150 to 1400	1150 to 2050	n/a	2350 to 4000	3500 to 4250

¹⁴⁰ IPCC (2014) 5th Assessment, Synthesis Report, table 2.2, p. 64 [Annex 5 p. 345].

261. While the IPCC calculated a budget available (under different scenarios) as at 2011, that budget has obviously been partially spent in the years following, and will continue to be consumed up until 2021 when the GHG Emissions Acts take effect. The historical emissions from 2011 to 2016 range from 39.6 to 41.6 GtCO₂/year, with **an average of 40.77 Gt CO₂/year**. The trend is approximately flat, a yearly average of 40.77 Gt CO₂/year may be assumed over the period 2011-2020. Multiplied by the 10 years from 2011 to 2020 this reduces the budget that would remain in 2021 to produce, for example, a 66% chance of keeping a temperature increase within 2°C to a range from 342 Gt CO₂ to 992 GtCO₂.
262. The global budget can also be calculated by starting in 1992 (the year of the adoption of the UNFCCC, by which time anthropogenic climate change was clearly recognised and foreseeable, with the first IPCC Report already published in 1990), by adding the historical emissions from 1992 to 2010 which amount to 595 Gt CO₂,¹⁴¹ up to the budget calculated for 2011. This results in a global budget available in 1992 of 1345 to 1995 Gt CO₂ to align with a 66% chance of staying below a temperature increase of 2°C, and 1145 to 1195 GtCO₂ for a 50% chance of staying below 1.5°C.
263. It should be stressed that the budgets calculated in this way only reflect probabilities of 66% or 50% that the temperature will be kept within 2°C and 1.5°C, respectively. In view of the no harm rule, the precautionary principle and the requirement of a high level of protection, the degree of risk of the temperature rising beyond these levels are (by legal standards) too high. The budgets that these calculations have produced should therefore be regarded as overly generous: either allowing too many emissions, or alternatively as the absolute maximum that can be tolerated.

b. Sharing the global budget among states

264. The EU is not entitled to emit more than its justified share of the emissions budget calculated according to the Paris Agreement temperature targets.
265. An emissions budget could be allocated by reference to the resources available to different states, or by reference to cost effectiveness. The Paris Agreement itself expounds a bundle of principles used as criteria of budget sharing, including equity, common but differentiated responsibility and respective capability, the right to development, and respective capacities.
266. It is submitted that the guiding legal principle is equality of treatment, as reflected in the Charter (Articles 20 and 21), and binding under international law.¹⁴² That principle dictates that the EU can use no more than its share of emissions, in accordance with its proportionate share of the world's population.

¹⁴¹ Historical CO₂ data 1992-2010 incl. Land-Use Change from the Global Carbon budget: https://data.icos-cp.eu/licence_accept?ids=%5B%22-OrQ3afxWEwG-LMJdyfVRot%22%5D. Every year the GCP completes a global carbon budget by compiling historical emissions from different sources. For fossil fuels and industry GCP uses data from three main sources: 1) CDIAC (the only emissions dataset to go back to 1750), 2) UNFCCC GHG inventory reports, and 3) the BP statistical review of World Energy.

¹⁴² See ECJ decision of 3 September 2008, Joined Cases C-402/05 P and C-415/05 P (Kadi, Al Barakaat), ECLI:EU:C:2008:461, para. 285.

267. The global budget can be calculated based on two different base years: 1992 was the year of the Rio Conference leading to the UNFCCC, presaging global awareness of the climate problem; 2021 is a further reference point, as it is the starting year of the challenged three GHG Emissions Acts.

c. Determining the EU budget

268. Applying the per capita criterion, the EU share of the global budget is calculated using the population ratio of the EU as projected for 2020, which will be 6.55% of the global population.¹⁴³ The per capita criterion results in different remaining budgets depending on the year from which they are counted, and the earlier the starting date (1992, vs 2021) the more of the EU's share will already have been spent.

269. Taking 1992 as the starting point, the budgets that would then remain in 2021 are between negative 18.5 GtCO₂, to positive 24.1 GtCO₂¹⁴⁴ to align with a 66% chance of staying below 2°C throughout the century. If the target is to have a 50% chance of remaining below 1.5°C, the budget by 2021 (using 1992 as the baseline) will already be exhausted.¹⁴⁵

270. If 2021 is taken as the baseline, the budgets remaining are between 22.4 GtCO₂ to 65.0 GtCO₂¹⁴⁶ to align with a 66% chance of staying below 2°C, and between 9.3 GtCO₂ and 12.6 GtCO₂¹⁴⁷ for a 50% chance of staying below 1.5°C.

271. These budgets can be illustrated in table form as follows.

¹⁴³ The factoring in of a future relative diminution of the EU population would further reduce the EU budget.

¹⁴⁴ The -18.5 GtCO₂ figure is derived as: 750 Gt plus global historical emissions 1992-2011 * 6.5 % population share, minus EU historical emissions 1992-2014 minus EU projected emissions linearly projected from 2016 to reach 3.234 GtCO₂ in 2020. The 24.1 GtCO₂ figure is derived as: 1400 Gt plus global historical emissions 1992-2011 * 6.5% (the EU share of global emissions is taken to be 6,5 %, which is its population share in 2020), minus EU historical emissions 1992-2014 minus EU linearly-projected emissions 2016-2020. Global historical emissions are taken from the Global Carbon Project: https://data.icos-cp.eu/licence_accept?ids=%5B%22-OrQ3afxxWEwG-LMJdyfVRot%22%5D. EU historical emissions are taken from the EEA, Table ES 4p viii: <https://www.eea.europa.eu/publications/european-union-greenhouse-gas-inventory-2017/european-union-greenhouse-gas-inventory-2017/viewfile#pdfjs.action=download>. EU CO₂ projection for 2020 is from the European Commission (2016) EU Reference Scenario 2016. Energy, transport and GHG emissions -Trends to 2050, Luxemburg: Publications Office of the EU, 2016, p. 137 and page 87 for LULUCF projection. [Annex 57].

¹⁴⁵ The minus indicates that the budget is already exhausted by the indicated amount.

¹⁴⁶ The 22.4 GtCO₂ is derived as: 750 Gt minus 10 years of the average annual emissions over the 2011-2016 period (40.77 Gt) * 6,5 % population share ; the 65.0 GtCO₂ is derived as: 1400 Gt minus 10 years * 40.77 Gt * 6,5 % population share = 65.0 Gt.

¹⁴⁷ 550 Gt minus 10 years * 40.77 Gt/a * 6,5 % population share = 9.3; 600 Gt minus 10 years * 40.77 Gt/a * 6,5 % = 12.6.

Range of CO2 emissions in Gt available to the EU according to a per capita allocation of the global emissions budget		
Baseline year for assessing the budget available in 2021 ¹⁴⁸	1992	2021
1.5°C (50% likelihood)	-31.6 to -28.3	9.3 to 12.6
2°C (66% likelihood)	-18.5 to 24.1	22.4 to 65.0

272. The dramatic conclusion is that if 1992 is taken as the baseline (and EU emissions since that time are counted in determining any emissions budget now remaining), and the target is to reach a 50% chance of aligning with a 1.5°C increase, **no budget** remains available to the EU. Even if the target is to have a 66% chance of staying below 2°C, the lower range of the available budget to the EU is negative and the mean value between the lowest and highest range (i.e. negative 18.5 and positive 24.1) is only 3.25 GtCO₂.
273. If the baseline for the budget is taken to be 2021 (ie. the EU’s emissions up until 2021 are not counted against its budget over time, and the EU is essentially allowed to start in 2021 with a clean slate), the range of budgets appropriate for staying below 1.5°C or 2°C are still relatively small.
274. The implications of these budget calculations for the level of emissions reductions pursued by the EU are developed in the following section.

d. Implications of any EU budget for the level of emissions reductions

275. The EU’s policy in the current ETS period (and the period 2021-2030) is to impose reductions in emissions on a linear basis, applying a fixed percentage annual reduction over a period of years. It would of course be open to the EU to adopt a policy of adopting deeper cuts at an earlier stage, and there would be much to commend such an approach (often referred to as a “concave” curve); more ambitious preventive measures adopted earlier in time are more likely to avoid damage and are more consistent with principles of inter-generational equity, and would have a much better chance of meeting the EU’s longer-term target for reducing emissions to 20% of 1990 levels by 2050.
276. It would certainly not be appropriate for the EU to adopt the regressive pathway of emissions reductions, of deferring reductions in earlier years on the promise that deeper cuts will be made later (a “convex” curve). The later that action is deferred, the more dangerous the climate change that will occur (especially as, for example, tipping points are reached), and the more technically and economically demanding to

¹⁴⁸ Where 1992 is taken as the baseline, the budget is calculated by calculating the share of global emissions (according to population) available to EU Member States from 1992 onwards, subtracting from that figure the emissions actually made (and projected to be made) from the EU from 1992 to 2020. The resulting figure is the budget available to the EU from 2021 onwards, on a 1992 baseline. When 2021 is used as a baseline, the EU budget is calculated by ascertaining the total emissions available on a global basis in 2021, and then calculating the EU’s share of that budget on a proportionate (per capita) basis.

take measures in order to stay within the allowable budget. In legal terms the deferral of stringent measures would violate the prevention principle (Article 191 (2) (2) TFEU) and discriminate against younger generations in favour of older generations.

277. Therefore, for the purposes of analysis in this application the applicants work on the assumption that the linear reduction approach taken by the EU is appropriate.
278. The EU's climate policy requires emissions to fall by 2020 to 80% of 1990 levels; ie, to 3.38 GtCO₂ / annum. The rate at which the EU would need to reduce (by a linear annual reduction) its emissions from 2021 onwards to ensure that its budget was not exceeded can be calculated by taking this figure of 3.38 GtCO₂ as the starting point, and then utilizing the various budget figures to calculate the annual rate of reduction that would be needed. In simple terms, the calculation can be explained graphically:

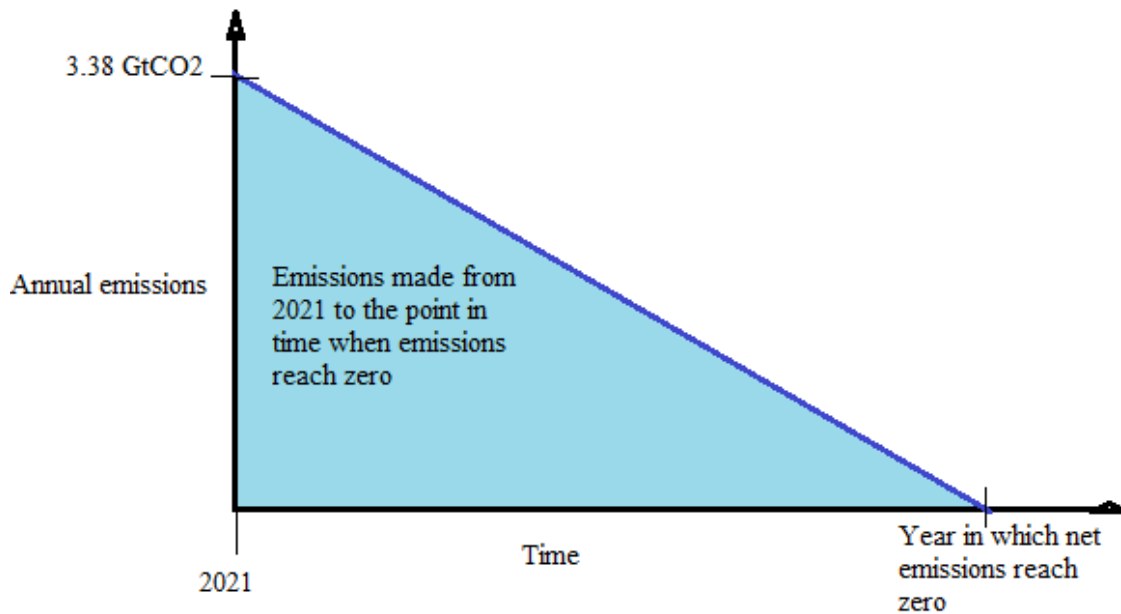


Figure 4, Source: Climate Analytics gGmbH

279. The point in time at which net emissions would need to reach zero to ensure that the EU's budget is not exceeded can be calculated by dividing the total emissions budget by the dimensions of the x-axis (i.e, by 3.38), and then multiplying the figure reached by 2.¹⁴⁹ This will give a figure in years, beginning in 2021.
280. The rate of linear reduction implied by these calculations can then be used to indicate the emissions reductions that the EU would need to make, within this budget, by 2030 (the final year covered by the GHG Emissions Acts), as compared with 1990 levels (4.22 Gt CO₂ per year).
281. By way of illustration: taking, first, the upper end of the estimate for the EU's budget for keeping the temperature increase to 1.5°C with 50% likelihood, using 2021 as the baseline for the budget (ie, 12.6GtCO₂), the calculations are as follows:

¹⁴⁹ The formula for the area (A) of a rectangular triangle is $A = (x * y) / 2$. X is then $(A/y) * 2$.

Time within which net emissions reach zero =

$$[12.6\text{GtCO}_2 \text{ (budget)} / 3.38 \text{ GtCO}_2 \text{ p.a. (emissions in 2021)}] * 2 = \mathbf{7.46 \text{ years}}$$

On this calculation, the EU's budget would be consumed before 2030.

282. Figure 5 shows - for the 2°C and 1.5°C budgets - when the upper, lower and middle ranges of the available budgets will be consumed. The 2°C budget is exhausted in 2027 (or 2034 or 2041, respectively) if emissions remain constant after 2020, and exhausted in 2034 (or 2048 or 2061, respectively) where linear emissions reductions are made. The 1.5°C budget is exhausted in 2024 (or 2023 or 2024, respectively) if emissions remain constant after 2020, and exhausted in 2027 (or 2026 or 2028, respectively), where linear emissions reductions are made.

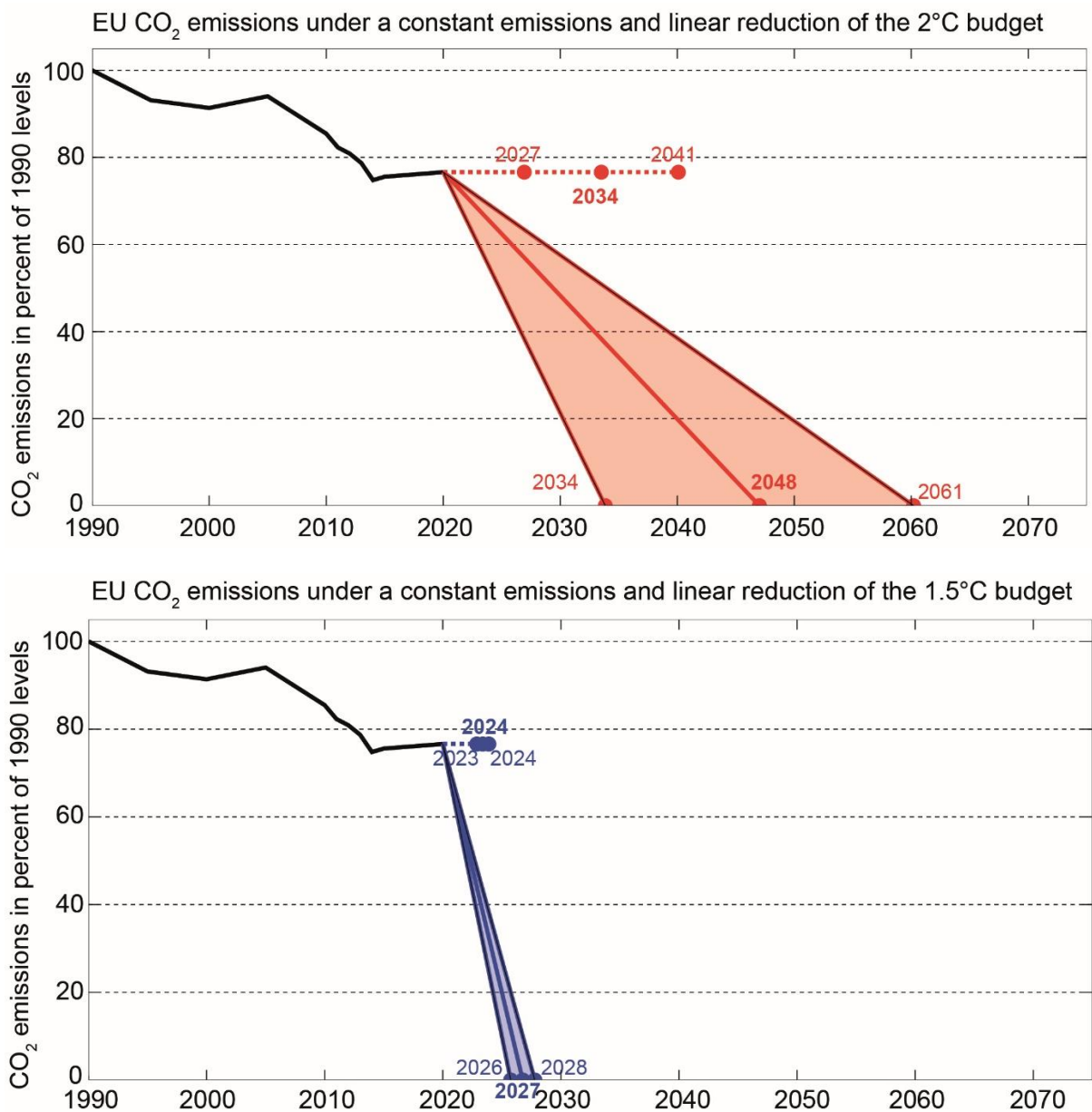


Figure 5: CO₂ emissions scenarios, including land-use, for the EU from 2021 following an equal per capita approach based on 2020 population percentage of the EU. The top panel (red lines) shows a utilisation of the 2°C carbon budgets (>66% chance) starting in 2021, and the lower panel (blue lines) shows similar utilisation

of the 1.5°C budget (>50% chance, no overshoot). The disks represent when the various budgets are used up, following either constant CO₂ emissions (dotted lines), or linearly reducing CO₂ emissions (solid lines). The range of budget-exhaustion-dates (coloured disks) reflect the budget range (extreme values) and the middle of budget range (central value in bold).

Figure source: Climate Analytics gGmbH, own calculation.

283. The calculations based on positive figures set out in the table of EU budget figures (as set out above in section J 2 (c)) are as follows:

A. Climate emissions target	B. Assumed budget (GtCO ₂)	C. Time after which budget would be consumed (assuming a linear reduction)	D. Emissions available in 2030 (assuming a linear reduction)	E. Emissions available in 2030 as a proportion of 1990 levels
1.5°C at 50% likelihood, lower estimate for emissions using 2021 as baseline	9.3	5.50 years	Zero	Zero
1.5°C at 50% likelihood, upper estimate for emissions using 2021 as baseline	12.6	7.46 years	Zero	Zero
2°C at 66% likelihood, upper estimate for emissions using 1992 as baseline	26.6	15.74 years	1.233 GtCO ₂ ¹⁵⁰	29.2%
2°C at 66% likelihood, lower estimate for emissions using 2021 as baseline	22.4	13.25 years	0.83 GtCO ₂	19.7%
2°C at 66% likelihood, mid-point of estimate for emissions using 2021 as baseline	43.7	25.86 years	2.07 GtCO ₂	49.1%
2°C at 66% likelihood, upper estimate for emissions using 2021 as baseline	65.0	38.46 years	2.50 GtCO ₂	59.3%

Source: Climate Analytics, own calculations based on IPCC (2014)

¹⁵⁰ The number in this column is obtained by subtracting 10 (ie, the period 2021 to 2030 over which the EU Emissions Acts would operate) from the total period of time calculated in column C, and then dividing this by the figure in column C. This produces a figure equal to the proportion of emissions left available in 2030, which is multiplied by 3.38 (the figure where the emissions levels start in 2021).

284. These calculations indicate that for **every** emissions budget assumption based on limiting temperature increases to 1.5°C or 2.0°C, the EU would be required to make deeper emissions cuts than the 40% reduction it has adopted in the GHG Emissions Acts. This is all the more striking given that:
- a. The budgets for a 1.5°C and 2.0°C increase are based a relatively modest likelihood (50% and 66%, respectively) that the temperature would in fact be kept within those limits. Prudence and the precautionary principle would strongly dictate that still deeper cuts are necessary to reduce the likelihood of temperatures increasing beyond those limits.
 - b. The budget that is calculated for the higher temperature increase of 2.0°C is in fact at odds with the Paris Agreement itself, which requires any temperature increase to be kept ‘well below’ 2.0°C. The EU has thus failed to lay down emissions reductions consistent with meeting a figure that is actually unacceptable by the Paris Agreement’s own terms.
 - c. There are strong reasons in law and policy to find that the EU’s share of emissions should be calculated on the 1992 baseline. The basic causal chain between GHG emissions, temperature increases and dangerous climate change was established at that date and reflected in the UNFCCC. It was clear to any government from that point on that further emissions posed a serious risk to humankind, and that deep emissions cuts were necessary. The EU made some reductions (albeit connected with broader changes in the economy) but continued and continues to emit GHGs at a higher level than its proportion of the world’s population would merit.
 - d. There are also strong reasons in law to use the lower end of emissions budget estimates as the meaningful estimate, and to disregard the higher end of each estimate. The precautionary principle prohibits governments from accepting (or requiring their populations to accept) higher levels of risk.
285. **Conclusion:** It follows that according to the standards following from the Paris Agreement – to which the EU has bound itself – the emissions reduction targets are manifestly inadequate and unjustifiable. The difference between the targets set by the EU and the targets implied from the Paris Agreement are very significant:
- a. The targets implied by a temperature increase limited to 1.5°C (at a 50% likelihood) require the EU to reduce its net emissions to zero even before 2030.
 - b. If the option of seeking (with 66% likelihood) to limit the temperature increase to 2°C is used, the lower end of the estimate (even using 2021 as a baseline) would require a reduction by 2030 to around 20% of 1990 levels.
286. As noted in Section D, the adverse effects of climate change are materially worse for the applicants if overall temperatures rise by 2°C rather than 1.5°C; an overall rise higher than 2°C, while damaging, would be less dangerous than the climate change occurring with a temperature increase higher than this. Assessed in the round, the budgets imply that deeper emissions cuts, in the order of at least the 80% reduction calculated from a 2°C increase, are called for.

J3. The breaches of duty and infringements of rights cannot be justified

287. As set out above, the obligations to make deep reductions in GHG emissions in accordance with fundamental rights, the international no-harm rule and the Paris Agreement, may be weighed up against other concerns provided such concerns are legitimate and the reductions that would otherwise be required are adjusted only to the extent that is necessary.
288. Insofar as the EU may contend that any infringement of these higher rank rules was justified by other policy concern, the EU would therefore first need to establish that it was in fact motivated by legitimate objectives. It would then need to establish that, to the extent it adopted targets that fell short of the requirements of the higher rank norms, it was necessary to do so to realize those objectives.
289. As developed in Section J4 below, the applicants submit that the EU, in adopting the GHG Emissions Acts, failed to identify the legitimate concerns in such a way as to provide a sufficient basis to justify the serious risks of continued GHG emissions.
290. Moreover, if legitimate concerns (such as preserving employment) are to be weighed against the need to reduce emissions, the EU would be obliged to ensure that the best available means of reducing emissions, within technical and economic capability, were used. The EU failed to take account of several critical factors, which clearly indicate that deeper reductions in emissions were technically and economically feasible. This is shown in the following section, in particular drawing on the scope, methods and results of the various (five) impact assessments conducted by the European Commission. This includes the impact assessment for the 2030-Framework (2014) as well as the proposals for the sectoral legal acts (2016 and 2017).
291. The defendants similarly failed to take account of the economic advantages that could follow from deeper emissions reductions, and therefore would necessarily have approached the weighing up of competing concerns on an incorrect premise.

J4. Failure to take account of technical and economical capability

292. The core document that underpinned the choice of the 40% reduction target was the Impact Assessment of the Commission of January 2014 (hereafter, “**2030-Impact Assessment**”).¹⁵¹ This document considered scenarios that represented different pathways to different reduction targets in the decade 2021 - 2030.
293. The 2030-Impact Assessment designed a reference scenario that is based on the continuance of the 2020 conditions, and seven other scenarios with increasing ambition from 35% to 45% reductions to be achieved in 2030. It is clear from the Impact Assessment itself, however, that the Commission’s working assumption was that the scenarios aiming at 40 % reduction were preferable, and so significantly less consideration (if any) was given to other, more ambitious, reduction targets.

¹⁵¹ European Commission (2014) Impact Assessment – A policy framework for climate and energy in the period from 2020 up to 2030, SWD(2014) 15 final, [**Annex 43** pp. 3475 ff.].
(in the following: 2030-Impact Assessment).

294. The -40% target has its roots¹⁵² in a conclusion of the European Council of 2009 and the 2050 Roadmap of 2011 which aimed at a reduction of the 1990 emissions by 80% to 95% in 2050¹⁵³, following the related recommendation of the IPCC 4th Assessment Report.¹⁵⁴ In its green paper of 2013 the Commission suggested a trajectory of emissions reductions by 20% in 2020, 40% in 2030, 60% in 2040 and 80% in 2050, finding the -40% target to be ‘cost-effective’.¹⁵⁵ After public consultations this led to the Commission Communication in January 2014 proposing a -40% target, accompanied by the 2030-Impact Assessment. It is patent from the face of the 2030-Impact Assessment that the analysis was explicitly based on finding the most “cost-effective” pathway to an ultimate target of an 80% reduction by 2050, as set in the earlier “Roadmap” policy (emphasis added):¹⁵⁶

“All scenarios based on GHG reductions in the EU below 35% and above 45% were discarded at an early stage. The Reference scenario itself results in a 32% reduction. **A 45% reduction domestically is assessed as an upper range taking into account reduction pathways assessed in the Commission's Low-carbon Roadmap as regards the cost-efficient trajectory towards meeting the 2050 objectives.**”

295. The fatal legal flaws in seeking (as the Commission did) a cost-effective means of implementing the Roadmap arise from the reality that the Roadmap setting the 2050 target:

- a. is not legally justified, given the overriding duties in higher rank law binding on the EU;
- b. lowered its ambition from 95% to 80% in 2050;
- c. was clearly superseded (indeed, repudiated) as soon as the Paris Agreement set a commitment for States party to pursue a specific temperature goal. The critical significance of that commitment was that, a temperature goal having been set, a specific budget for emissions was then implied. Previously, under the Roadmap policy and other policies, the EU (and some other States) had set emissions reductions targets for particular dates, but without having had reference to any specific temperature goal. Those earlier targets were, while arguably laudable, not attached to any specific outcome and did no more than point in the direction of movement. The Paris Agreement totally changed the legal landscape by committing the parties to a specified result;
- d. searched for justification for a politically predetermined target rather than proactively studying the best technical and economic means.

¹⁵² See the separate Annex: “The history of the 40% target” [Annex 44, pp. 3710 ff.].

¹⁵³ See European Commission (2011) A Roadmap for moving to a competitive low carbon economy in 2050, COM (2011) 112, p. 4, [Annex 45] pp. 3495 ff.

¹⁵⁴ IPCC (2007) 4th Assessment Report WG III, p. 776, Box 13.7. [Annex 46] pp. 3728 ff.

¹⁵⁵ European Commission (2013) Green Paper: A 2030 framework for climate and energy policies, COM (2013) 169, p. 8. [Annex 47], pp. 3739 ff.

¹⁵⁶ 2030-Impact Assessment, section 4.1.2.3, p. 47. [Annex 43, p. 3522]

296. The Applicants' case therefore is that the EU's institutions undertook the legislative process with a preference or assumption that the 40% target was appropriate, because it was seen as the cost-effective way of meeting the long term Roadmap target. The consequence is that the EU failed to take account of the range of key legal, scientific, diplomatic and economic considerations actually relevant to its task. In particular, the Impact Assessment adopted a position broadly supportive of the 40% target without having had reference to a range of evidence as to the feasibility of adopting the deeper reductions that would otherwise be required by the Union's obligations and the Paris Agreement.
297. The Impact Assessment and hence the target itself as reflected in the GHG Emissions Acts are therefore both unfit for purpose, because:
- The analysis ignored several key factors showing the economic advantages of more ambitious emissions reductions, which would be material to any assessment that seeks to balance competing factors (**section a**, below).
 - It ignored the possibility of changing consumption patterns (**section b**)
 - Insofar as it takes relevant factors into account it commits errors in fact or evaluation concerning the sectoral emission sources(**section c**).
 - It discarded realizable scenarios that are more ambitious (**section d**).

a. Disregarding evidence of economic benefits from deeper reductions

298. The 2030-Impact Assessment ignored several important means by which more ambitious emissions mitigation would prove more beneficial, and thus offset the costs of deeper reductions, as follows.
299. **Employment and economic output** The 2030-Impact Assessment provides analysis of the potential positive economic consequences, and the possibility of increased employment, for the 40% emissions reduction target.¹⁵⁷ As the Impact Assessment notes, “The analysis focusses on the GHG40 reduction scenario”.¹⁵⁸ Very little attention was given to analyzing the economic consequences of deeper emissions reductions; this can be seen from, in particular:
- a. Table 4 in the Impact Assessment (at p.56), which sets out the different options analysed. All but one involved reductions of 40%.
 - b. The Impact Assessment itself accepts that the option of a 45% reduction is “not evaluated in full” in the section dealing with impacts;¹⁵⁹ no other options received any evaluation.
 - c. The 45% target received lip service, at most. The clear focus of the analysis in section 5 of the 2030-Impact Assessment was on the 40% reduction target.

¹⁵⁷ 2030-Impact Assessment, sections 5.1.4 and 5.1.5.1 – 5.1.5.2. [Annex 43, p. 3550 ff.].

¹⁵⁸ 2030-Impact Assessment, para 5.1.4.2, p. 82. [Annex 43, p 3557].

¹⁵⁹ 2030-Impact Assessment, para 4.1.2.3, p.47. [Annex 43, p. 3522].

300. It follows that the Commission's analysis gave negligible consideration to the economic and employment outcomes of a possible 45% target, and no weight at all to any more ambitious targets. This is a manifest failure of decision-making given that, as set out above, the EU's legal obligations require it either to cease its emissions immediately, or (per the Paris Agreement) at the least to bring about a much more dramatic reduction in emissions than 40% or 45% by 2030.
301. Had the Impact Assessment considered more ambitious targets, the analysis would have pointed strongly towards deeper reductions. Analysis conducted in 2015 using the very same economic modelling used by the Commission (referred to as 'GEM-E3'), showed that an investment oriented climate policy aiming at a reduction by 50% of 1990 levels would lead to an *increase* in economic growth and employment.¹⁶⁰
302. **Costs of adaptation** The 2030-Impact Assessment gave no consideration to the costs of adaptation to climate change (such as, eg, irrigation or dike construction). Including these costs in the account could make more ambitious scenarios relatively cheaper compared to less ambitious ones because, with deeper reductions (particularly where more ambitious action by the EU in turn encourages deeper reductions by other countries), some adaptation measures could be foregone. This effect would be reinforced under the assumption that global ambition is influenced by pioneering action of the EU.¹⁶¹
303. **Avoided costs of global warming** The Commission's Impact Assessment failed to take account of the avoided impact of global warming. The EU Joint Research Centre (JRC) in 2014 estimated that the costs of climate change impacts in the EU would reach around EUR 120 billion per year by the 2080s (equivalent to 1.2% of GDP in 2017) in a 2°C world (without public adaptation). These costs would be substantially higher at greater levels of warming, such as e.g. ~EUR 190 billion, or 1.8% of 2017 GDP, for a scenario leading to global average warming of 3.5°C.¹⁶² This finding was cited in the European Commission's 2013 Impact Assessment for an EU strategy on adaptation to climate change.
304. Moreover, a more recent report by the European Environment Agency of 2017 noted that the JRC's assessment itself only covered a limited number of sectors and impacts.
305. **Fossil fuel costs** The economic impact of lower demand for fossil fuels in the context of a more ambitious reductions target was not accounted for in the 2030-Impact Assessment. A more ambitious reductions target would lower consumption of fossil fuels, reduce the cost of their purchase and reduce the need for imported quantities.¹⁶³

¹⁶⁰ Global Climate Forum (2015) Investment-oriented climate policy: An opportunity for Europe, p. 10, [Annex 48 pp. 3755 ff. / p. 3761].

¹⁶¹ Delft (2014), Review of the Impact Assessment for a 2030 climate and energy policy framework, p. 16, (hereafter: Delft (2014)). [Annex 49 pp. 3880 ff./ p. 3895].

¹⁶² JRC (2014) Climate Impacts in Europe – the JRC PESETA II Project, pp. 19-20,. [Annex 50], 3924 ff. /3944 f.

¹⁶³ Delft (2014), p. 17 [Annex 49, p. 3896].

b. Ignoring the sufficiency factor

306. Sufficiency is a concept concerning the consumers of products and services which explores how less consumption, and more considerate consumption can contribute to reducing the exploitation of natural resources.
307. Less, and more considerate, consumption would in various ways indirectly reduce GHG emissions because energy would be saved if less and sustainable products were purchased and used.
308. The Commission in its 2030-Impact Assessment largely disregarded the potential of measures steering consumer behavior towards sufficiency. When addressing the different sources of emissions, the 2030-Impact Assessment rather focuses on the design of some products, such as of the CO₂ emissions of automobiles but leaves out the potential of guiding consumption behavior towards public transportation, cycling, electric cars, etc.

c. Flaws regarding the reduction potential of various emission sectors

309. Examination of the ETS, ESR and LULUCF sectors reveals that the Commission's analyses – both in the 2030-Impact Assessment and subsequent impact assessments for sectoral policies– significantly underestimated the feasibility of the EU achieving more.

1. Emissions Trading Sector

a) Possibility of further restricting free allowances

310. The Commission failed to give consideration to a significant (and obvious) means of correcting distortions in the emissions allowances market. As noted in Section E above, in the initial stages of the ETS, large quantities of emissions allowances were allocated for free, leading to an excess of allowances in the market that has persisted despite some reductions in their numbers. This excess, and the admission of Clean Development Mechanism ('CDM') credits into EU ETS flooded the European carbon market and led in consequence to the collapse of carbon prices.
311. The step now proposed to address this is to transfer allowances in circulation to the carbon market stability reserve. Even then, however, this mechanism will still guarantee a supply of 400 million tonnes of allowances per year.¹⁶⁴ This means that within the decade 2021-2030, 400 million tonnes per year, or 4Gt over the decade, may be emitted regardless of whether this is really necessary. Moreover, the share of the oversupply that will be taken off the market will be, initially, only 24% of the proportion of free allowances earlier allocated. After 2023, the number of allowances to be removed will fall to only 12%.

¹⁶⁴ European Parliament and Council (6 October 2015) Article Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and amending Directive 2003/87/EC, OJ L 264/ 2015 p. 4, Article 1 para 6.

312. It would clearly be possible to take more decisive steps to reverse the disruption to the carbon allowances market that this free allocation caused, yet the Commission did not address this possibility.

b) Possibility of a higher target for renewables

313. The performance of the ETS is highly dependent on the availability of renewable energy sources. At present, the EU's assumption is that by 2030, renewables would account for 27% of energy consumption.¹⁶⁵

314. The Applicants submit that recent research shows an increase in the generation of renewables to 35% (at least) of the total would be feasible. The Commission failed to seriously consider this possibility.

315. The Parliament endorsed a target of 35% renewables in 2017, in a resolution that directed:¹⁶⁶

“that a binding EU-wide target be set whereby renewables would have to account for 35% of gross final energy consumption by 2030. This minimum target should be met through a joint effort by all the Member States, which should set new binding national targets, also covering the transport sector.”

316. The feasibility and economic logic of renewables contributing 35% of total energy generation (or still higher levels) is supported by research:

- a. Bogdanov et al. (2016) considered a 100% renewable electricity scenario in Europe, Eurasia and the Middle East and North Africa. They conclude that “such a system can be built using already existing energy generation, storage and transmission technologies”, and find that “a regional integration of Europe, Eurasia and MENA energy systems will facilitate access to lower cost energy sources in neighbouring regions, provide additional flexibility in the system and decrease the need in energy storage and increase the system stability because of more distributed generation” (page 1).¹⁶⁷
- b. One reason for higher levels of renewables penetration than may earlier have been expected is that renewable energy costs have dropped dramatically. As a result of falling prices, European investment in renewables is expected to grow “by 2.6% per year on average out to 2040, averaging \$40 billion per year”, and by 2040 half of electricity supply will come from variable renewable.¹⁶⁸
- c. An assessment by Agora Energiewende (2017) of the Commission's Impact Assessment therefore concludes that, given falling costs, a cost-effective

¹⁶⁵ See [Annex 44, p. 3710] on the history of this assumption in the context of the 40% target.

¹⁶⁶ European Parliament (2017) Report on the proposal for a directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources, A8-0392/2017, p. 149, <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+REPORT+A8-2017-0392+0+DOC+PDF+V0//EN>.

¹⁶⁷ D. Bogdanov, e.a. (2016) Integrated renewable energy based power system for Europe, Eurasia and MENA regions [Annex 51 pp. 4079 ff.]

¹⁶⁸ Bloomberg New Energy Finance (2017), New Energy Outlook 2017, p. 3, [Annex 52] 4122 ff. / 4125.

energy mix would be one in which renewables account for significantly more than 27% of the total:

“The necessary downward correction in cost assumptions for renewables implies that the 27 percent share of renewable energies cannot be the cost-optimal contribution of renewable energy towards the 40 percent greenhouse gas reduction target. The cost-effective share needs to be significantly higher.”¹⁶⁹

317. An increase in the level of renewables to 35% by 2030 would itself result in the target for GHG emissions reductions being increased to:

- a. A reduction of 47.5 % as compared with 1990 levels overall; and
- b. A reduction of 50.1% of 2005 levels in the ETS sector and a reduction of 37.7% of 2005 levels in the ESR sector.¹⁷⁰

c) *Feasibility of reducing coal power generation*

318. As of 2015, around 18% of EU emissions arose from the combustion of coal. There is, however, a wide range of levels of coal consumption across the EU.¹⁷¹

In 2015, 18% of the EU's greenhouse gas emissions came from the chimneys of just 284 coal power plants.

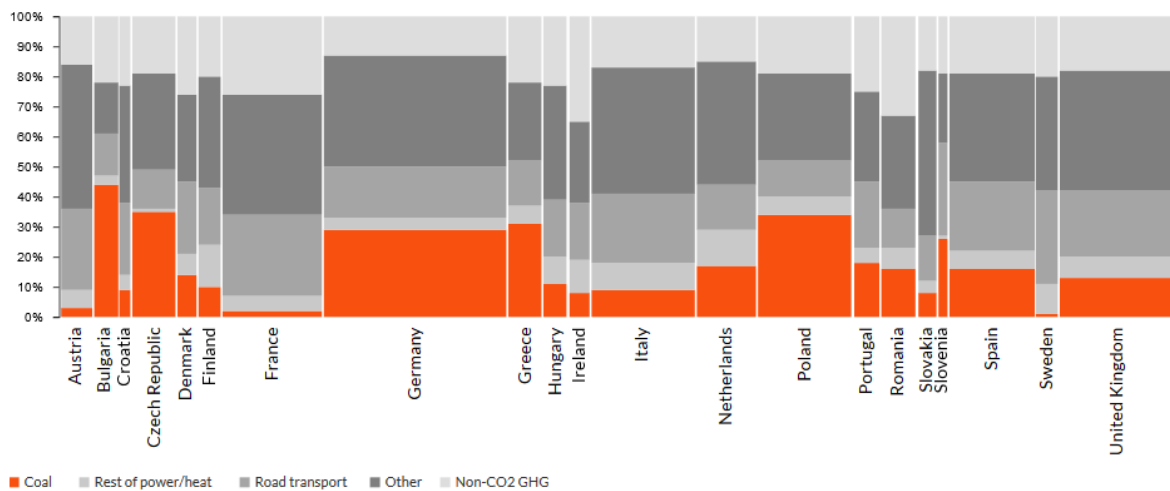


Figure 6 – Source: Annex 55.

319. The 2030-Impact Assessment does not consider any phasing out of fossil fuels other than by reference to their competitiveness, affordability and supply security.¹⁷² The failure to give consideration to the possibility of an accelerated phase-out is a significant omission:

¹⁶⁹ Agora Energiewende (2017) The cost of renewable energy: A critical assessment of the Impact Assessments underlying the Clean Energy for All Europeans-Package, p. 16, [Annex 53] pp. 4128 ff. / p. 4143.

¹⁷⁰ F. Simon (2 March 2018, updated 8 March 2018) Fresh EU analysis makes case for higher renewable, energy saving goals, EURACTIV [Annex 54 , pp. 4147 ff.].

¹⁷¹ Europe Beyond Coal (2017) No. 3/ Their CO2 Impact [Annex 55].

¹⁷² 2030-Impact Assessment, pp. 10-11 [Annex 43, p. 3485].

- a. To meet the Paris Agreement, analysis by Climate Analytics¹⁷³ shows that coal phase-out is needed by no later than 2030, in countries that are part of the Organisation for Economic Co-operation and Development and the European Union, and by no later than 2050, in the rest of the world.
 - b. The Commission's 'Reference Scenario 2016' report,¹⁷⁴ however, assumes that coal will continue to account for 16% of electricity generation in the EU in 2030, and will not be phased-out of the electricity mix until the second half in the century.
320. The feasibility of pursuing an accelerated phasing out of coal is evident from the conduct of individual Member States. As the graph above shows, several Member States already have very low levels of coal usage. A significant number have also committed to phasing out coal by 2030: including Austria, Belgium, Denmark, Finland, France, Ireland, Italy, the Netherlands, Portugal, Sweden and the UK. Others – Cyprus, Estonia, Lithuania, Luxemburg and Malta – do not have coal power plants at all.¹⁷⁵ Leadership by the European Union would assist other Member States that may wish to phase out coal (such as Germany) in doing so. It could also restrain efforts of some Member State governments (such as Poland) to support coal despite its increasing lack of market competitiveness.
321. There is a compelling economic case for accelerating the closure of coal power plants:
- a. The average global economic and technical lifetime of a coal power plant is 40 years. Most of the coal power plants operating in the EU exceed or are approaching the end of this lifetime.¹⁷⁶ Investing in those plants to extend their lifetime is unreasonable from almost any point of view, including climate change and air pollution.¹⁷⁷
 - b. Nearly all coal power plants will be loss-making in Europe by 2030 because of additional investments required for plant retrofitting to meet new emissions standards¹⁷⁸ (Best Available Techniques Reference Document¹⁷⁹, BREF). According to Carbon Tracker, fifty four per cent of European coal-fired power plants are currently cashflow negative and this could increase to 97% by 2030

¹⁷³ Climate Analytics (2016) Implications of the Paris Agreement for Coal Use in the Power Sector, [Annex 56 pp. 4158 ff.].

¹⁷⁴ European Commission: The EU Reference Scenario 2016 – [Annex 57 pp. 4200 ff.]. This Reference Scenario is comparable with the projection for the With Existing Measures (WEM) scenario.

¹⁷⁵ Europe Beyond Coal (2018) Overview: National coal phase-out announcements in Europe, 2018, [Annex 58, pp. 4421 ff.].

¹⁷⁶ Climate Analytics (2017) A Stress Test for Coal in Europe under the Paris Agreement: Scientific Goalposts for a coordinated Phase-Out and Divestment, p. 11. [Annex 59, pp. 4427 ff./ p. 4446].

¹⁷⁷ CAN Europe (2016) Europe's Dark Cloud: How Coal-Burning Countries are making their Neighbours sick. <http://www.caneurope.org/docman/coal-phase-out/2913-dark-cloud-report/file>. Annex omitted.

¹⁷⁸ DNVGL (2016) Fact-based scenario to meet commitments under the LCP BREF, pp. 21-23. [Annex 60], pp. 4489 ff. /p. 4512-4515

¹⁷⁹ EU Science Hub (14 September 2017) New EU environmental standards for large combustion plants, [Annex 61] pp. 4519 f.

due to rising carbon prices and stricter air quality rules.¹⁸⁰ European energy undertakings would save billions of Euros by accelerating the closure of coal-fired power plants.

- c. If these plants are kept open, massive cross-subsidies by electricity consumers (or governments) would be required. Such a subsidy cannot be justified given that – apart from the cost – coal has such deleterious effects on the climate.

322. The Commission has in effect proposed to contribute to such a subsidy. Its proposal for the internal electricity market¹⁸¹ would permit so-called capacity payments to be made to coal power undertakings.

d) *Possibility of integrating international aviation into the ETS*

323. International aviation emissions are projected to incessantly increase. The EU has elected not to include international flights to and from EEA airports within the scope of the ETS. This policy was initially pursued under the 2012 “stop the clock” decision, postponing the application of the ETS to international flights on a short-term basis. That exemption was extended until 2016, and has not been re-extended until 2023. This decision means that some 75 % of the EEA-borne aviation emissions will escape the ETS.¹⁸²

324. The putative basis for this exemption is the hope that international aviation emissions will be covered by a scheme initiated by the International Civil Aviation Organisation (‘ICAO’).

325. It is telling that, even more than five years after the first “stop the clock” decision in 2012, no ICAO scheme is actually in place. Moreover, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) that was recently published by the ICAO¹⁸³ is by its design clearly bound to be ineffective because it:

- does not introduce a cap of emissions;
- requires the purchase of emission allowances only for those emissions which exceed each carrier’s emissions as of 2019-2020 as a baseline;
- is designed to enter into force on a voluntary basis before it becomes binding for all ICAO members in 2027; and
- does not explain how the price of the emission allowances will have to be fixed.

¹⁸⁰ M. Gray, W. Laurence (2017) Lignite of the living dead: Below 2°C scenario and strategy analysis for EU coal power investors, Carbon Tracker [Annex 62 pp. 4521 ff.].

¹⁸¹ European Commission (2016) Proposal for a regulation on the internal market for electricity, COM (2016) 861 final, p. 58, Article 23 para 4 [Annex 63 p. 4591.]

¹⁸² L. De Bruyckere, F. Abbasov (2016) Aviation ETS - gaining altitude. An analysis of the aviation EU ETS 2013-2015, European Federation for Transport and Environment, p. 9, [Annex 64, pp. 4624 ff.]

¹⁸³ Resolution A39-3 of the 39th session of the ICAO Assembly, https://www.icao.int/Meetings/a39/Documents/Resolutions/a39_res_prov_en.pdf. (Annex omitted)

326. The ICAO proposal is manifestly less effective than the controls on aviation emissions that the EU ETS would (absent the “stop the clock” decisions) required, because the ETS:
- Operates with emission caps, namely 95% of the 2004-2006 emissions as a baseline;
 - Requires the acquisition of emission allowances for all emissions by flights to and from EEA airports; and
 - Gradually transfers free into auctioned allocations.
327. The EU ought to have re-considered whether the exclusion of international aviation emissions could continue to be justified, given the slow and unsatisfactory progress of the ICAO alternative.
- e) *Maritime emissions must be included in the ETS*
328. As of 2017, EU-related maritime emissions had grown by 22% since 1990.¹⁸⁴The pace of emissions growth has been reduced by recent improvements in efficiency, and it is expected that rising fuel prices will lead to further efficiency improvements.¹⁸⁵ However, overall emissions will continue to increase.
329. Emissions from maritime transport within the EU are covered by the EU’s climate targets, and the Commission’s White Paper¹⁸⁶ on transport suggests that these emissions should be reduced by at least 40% below 2005 levels by 2050. However, international maritime transport is not currently covered by EU commitments, and the EU has largely been relying on a global approach for reducing emissions led by the International Maritime Organisation (‘the IMO’).
330. The EU institutions have repeatedly postponed their own action and waited for the IMO to take action. As early as the 6th Environmental Action Plan in 2002 the EU declared that it would act in the absence of progress towards an international agreement. The 2009 Effort Sharing Decision¹⁸⁷ stated that if the IMO did not approve an international agreement including international maritime emissions by 31 December 2011, the Commission should make a proposal to include international maritime emissions in the Community reduction commitments, with the aim of the proposed act entering into force by 2013.¹⁸⁸
331. While the EU called for 70-100% emissions reduction, progress on a global agreement has been very slow, and to the extent its outline is visible, the concept is utterly unambitious. In 2016 a Roadmap for developing an IMO strategy was adopted

¹⁸⁴ European Environment Agency (2017) Aviation and shipping: impacts on Europe’s environment, p. 5, (hereafter: ‘EEA 2017’), [Annex 65, pp. 4662 ff./ p. 4668].

¹⁸⁵ EEA (2017), p.39 [Annex 65, p. 4702].

¹⁸⁶ European Commission (2011) White Paper – Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, COM (2011) 144 final, <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0144&from=EN>. Annex omitted.

¹⁸⁷ See above note 67.

¹⁸⁸ European Commission (2018) MEMO – 72nd session of the Marine Environment Protection Committee (MEPC 70) at the International Maritime Organization (IMO), [Annex 66, pp. 4732 f.].

by the Marine Environment Protection Committee of IMO and an initial strategy was agreed in April 2018. This includes an envisaged reduction in greenhouse gas emissions of 50% below 2008 levels by 2050. The initial strategy is set to be concretised by 2023.¹⁸⁹

332. As a highly industrialized region of the world, the EU's emissions reduction target from the maritime sector should be more ambitious than the 50% by 2050 goal adopted in the IMO's strategy. In 2016 the EU-28 controlled 37 % of the world's merchant fleet.¹⁹⁰ Therefore the EU has a significant impact on the overall emissions from the sector, which by 2050 could represent 17% of all CO2 emissions in no further action is taken.¹⁹¹
333. While maritime is highly internationalized sector, by fostering energy efficiency of the ships and facilitating deployment of already available carbon neutral modes of propulsion, with an initial focus on short distances¹⁹², the EU could contribute to much faster decarbonisation of this sector than agreed upon in the IMO strategy

2. Effort Sharing Regulation sectors

334. The target for emissions reductions in the non-ETS or effort sharing sector has been set at -30% from 2005 levels by the European Council. It is clear from the Commission's Impact Assessment that this target *followed from* the overall target of a 40% reduction in GHG emissions. The Commission took the 40% reduction and then modelled scenarios in the non-ETS sector that would be necessary to achieve that reduction.¹⁹³

“The scenarios achieving 40% GHG reductions compared to 1990 show that an EU-wide reduction of 30% to 35% will be required in non-ETS sectors compared to 2005.”

335. The Commission's own analysis therefore makes plain that the overall target was **not** determined at based on an assessment of feasibility across different sectors. Rather, the analysis was undertaken to ensure that an overall target of 40% could be met, without determining the extent of the contribution that the non-ETS sectors *could* have made to the overall target. There simply is no “bottom up” analysis of the reduction capability of the ESR sectors.

¹⁸⁹International Marine Organization (IMO) (28 October 2016) Marine Environment Protection Committee (MEPC), 70th session, 24-28 October 2016, <http://www.imo.org/en/MediaCentre/MeetingSummaries/MEPC/Pages/MEPC-70th-session.aspx>;

IMO (28 October 2016) New requirements for international shipping as UN body continues to address greenhouse gas emission, <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/28-MEPC-data-collection-.aspx>; IMO (13 April 2018) UN body adopts climate change strategy for shipping <http://www.imo.org/en/MediaCentre/PressBriefings/Pages/06GHGinitialstrategy.aspx>. Annex omitted.

¹⁹⁰EEA (2017), p. 32 [Annex 65, p.4695].

¹⁹¹ EEA (2017), p.32 [Annex 65, p. 4695].

¹⁹²F. Lambert (5 March 2018) A new fleet of all-electric ferries with massive battery packs is going into production, electrek, <https://electrek.co/2018/03/05/all-electric-ferries-battery-packs/>. Annex omitted.

¹⁹³2030-Impact Assessment, p.129 [Annex 43, p.3604].

a) *Transport*

336. As regards transport, the Commission's Impact Assessment takes as its premise an existing target for transport sector reductions set in a 2011 Commission White Paper. That *Roadmap to a single European Transport Area* sets a 2030 target for the transport sector of 20% emission reduction below 2008. The White Paper acknowledged that given the substantial increase in transport emissions over the past decades this would still put the emissions 8% above the 1990 level.¹⁹⁴
337. The 2030-Impact Assessment referred with approval to the 2011 White Paper,¹⁹⁵ and put forward no proposals for making any further reductions in the transport sector.
338. This is a significant failing by the Commission, undermining its analysis and the GHG emissions targets, given the clear evidence that more significant reductions were feasible.
- a. The Commission itself had stated in its Communication concerning the 2030 targets that deeper reductions from the transport sector were achievable:
- “Further reduction of emissions from transport will require a gradual transformation of the entire transport system towards a better integration between modes, greater exploitation of the non-road alternatives, improved management of traffic flows through intelligent transport systems, and extensive innovation in and deployment of new propulsion and navigation technologies and alternative fuels. This will need to be supported by a modern and coherent infrastructure design and smarter pricing of infrastructure usage. Member States should also consider how fuel and vehicle taxation can be used to support greenhouse gas reductions in the transport sector in line with the Commission's proposal on the taxation of energy products.”¹⁹⁶
- b. The Commission could have more closely explored the margin of capability and factored it into a more ambitious calculation of the overall -40% target.
- c. A key example is fuel efficiency. The 2030-Impact Assessment assumed, in all of the modelling for a 40% reduction in 2030, that CO₂ standards for passenger cars would reach 70g of CO₂/km in 2030.¹⁹⁷ This is only 26% below the CO₂ standard assumed for 2020, 95 g CO₂/km. In the meantime, the Commission has considered reductions by 2030 of up to 40% of the 2021 emissions¹⁹⁸, but decided to propose a reduction of only 30%.¹⁹⁹ The Commission's own analysis identifies benefits offsetting the additional costs:

¹⁹⁴European Commission (2011) White Paper – Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system, COM (2011) 144 final, para 6 at p.3, <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0144&from=EN>. Annex omitted.

¹⁹⁵ 2030-Impact Assessment, p.14 [Annex 43, p.3489].

¹⁹⁶ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2014) 15 final, §4.1, p.14.

¹⁹⁷ 2030-Impact-Assessment, at p.45. [Annex 43, p.3520].

¹⁹⁸European Commission (2017) Impact Assessment. Accompanying the document “Proposal for a Regulation [...] setting performance standards for new passenger cars and for new light commercial vehicles [...] SWD (2017) 676 final (part 1/2), pp. 35-36. [Annex 67 pp. 4740 ff./ p. 4774].

- (a) Its modelling found that a reduction in CO2 levels by 40% would by 2030 create 68,000 more jobs than a 30% reduction scenario.²⁰⁰
- (b) The Commission also found that, because more efficient cars retain more value, low income groups would gain greater benefits under a scenario in which CO2 levels were reduced by 40%, as compared with 30%.²⁰¹
- (c) Overall GDP would be expected to increase over time (in 2035 and 2040) by greater amounts in the scenario of a 40% reduction in CO2 levels, than in the case of a 30% reduction.²⁰²
- (d) In terms of emissions, the 40% target would lead to cumulative reductions over the period 2020-2040 of more than 1.3 GtCO₂ vs. about 0.83 GtCO₂ for a 30% target.²⁰³ Emissions of NO_x and particulate matter would also be reduced.

b) Agriculture

- 339. GHG emissions from agriculture currently account for 10% of total EU GHG emissions.²⁰⁴ The main sources are nitrous oxide emissions from application of mineral nitrogen fertilizer and from application and storage of manure, and methane emissions from enteric fermentation from cattle and sheep. Reductions of emissions have occurred from 1990 to 2001 but since then slowed down significantly.²⁰⁵
- 340. The scenarios used by the European Commission during its analysis for the Effort Sharing Regulation impact assessment (2016) assumed little abatement effort in the agricultural sector. As figure 33 in the Impact Assessment for the ESR Regulation

¹⁹⁹European Commission (2017) Proposal for a Regulation of the European Parliament and of the Council setting emission performance standards for new passenger cars and for light commercial vehicles as part of the Union's integrated approach to reduce CO2 emissions [...], COM (2017) 676 final 2, Article 1. [Annex 68] pp. 4909 ff.

²⁰⁰ European Commission (2017) Impact Assessment (Cars), Table 26, p.95 [Annex 67, p.4834]. Analysis under different economic models confirmed that overall employment in 2030 would rise under the 40% scenario as compared with the 30% scenario. Table 27, p. 96 (Annex 67, p. 4835) predicts that employment in 2030 would increase from the baseline under both scenarios, but the amount of the increase under the 40% scenario (0.04%) would be double that of the 30% scenario (0.02%). Table 28 (pp. 96-97) (Annex 67, 4836) breaks down employment across different sectors, showing increases in some and losses in others. Overall, in aggregate net employment is estimated to be higher under the 40% scenario than under the 30% scenario.

²⁰¹ European Commission (2017) Impact Assessment (Cars). Figure 22, and section 6.3.2.3.1. p.100, [Annex 67, p. 4839].

²⁰² European Commission (2017) Impact Assessment, Table 20, p.91, [Annex 67, p. 4830]. Table 24 (p.94) [Annex 67, p. 4833] breaks down changes in output across different sectors. The level of output in 2030 is higher in aggregate for the 40% scenario than for the 30% scenario.

²⁰³ European Commission (2017) Impact Assessment. (part 1/2), figure 25, p. 103, [Annex 67, p. 4842].

²⁰⁴ JRC Technical Reports (2015) An economic assessment of GHG mitigation policy options for EU agriculture, p.3 [Annex 69], pp. 4979 ff. / p. 4983

²⁰⁵ JRC Technical Reports (2015), An economic assessment of GHG mitigation policy options for EU agriculture, p.3-4. [Annex 69], p. 4984.

shows, the Commission did not expect any reduction of non-CO2 emissions in this sector.²⁰⁶

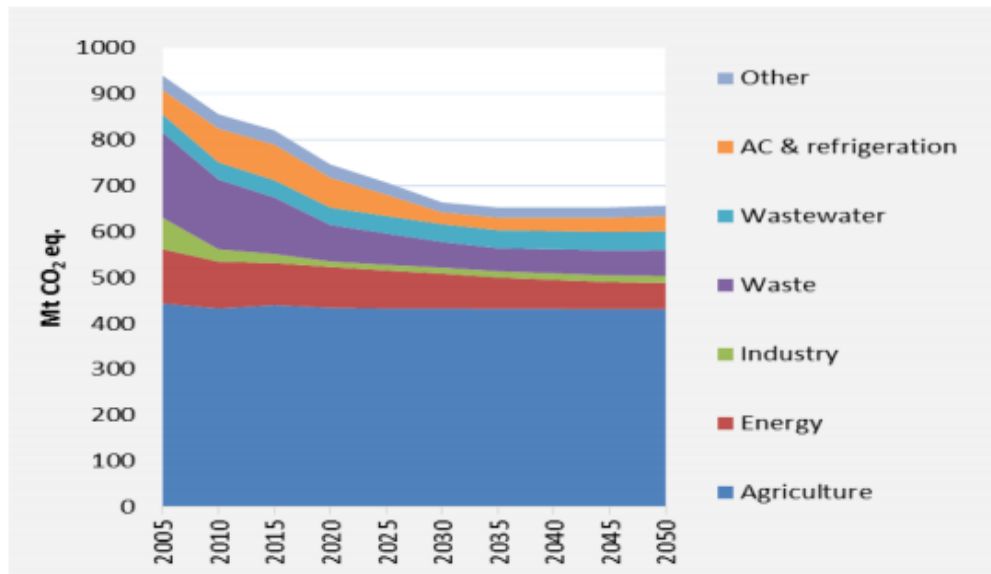


Figure 7: Non-Co2 GHG emissions by sector – Source: Annex 70.

341. Compelling evidence shows that reductions in emissions from agriculture are feasible. The 2016 report of the Commission’s in-house science service, the Joint Research Centre (JRC) considered a reference scenario based on existing policies and 4 scenarios of a 20% reduction in 1990 GHG emissions by 2030 for agriculture.²⁰⁷ Setting out the overall finding the JRC confirms that a 20% reduction target would be feasible.²⁰⁸
342. The report sets out the pathways to emissions reduction considering changes in agricultural technology (such as, for instance, precision farming, genetic improvements and feed additives) and reductions in production through decreasing livestock and decreasing the utilisable agricultural area.²⁰⁹
343. The potential for emissions reductions is primarily sought in technology improvements. The possibility of reducing livestock and cropland is only taken as an option that must be avoided by all means rather than as a chance towards a more holistic agricultural production, including also a change in consumption patterns.
344. Disregarding the options demonstrated by the JRC the Commission did not propose a mitigation target of any substantial amount, still less one aiming at -20% or even further reductions.

²⁰⁶ European Commission (2016) Impact Assessment, SWD (2016) 247 final, Impact Assessment - Accompanying the document Proposal for a Regulation ... on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 (ESR), p. 131, [Annex 70, pp. 5101 ff./p. 5231].

²⁰⁷ See JRC Science for Policy Report (2016) An economic assessment of GHG mitigation policy options for EU agriculture, p.3 Table A. [Annex 71] pp. 5257 ff./ p 5261]

²⁰⁸JRC Science for Policy Report, p. 4 [Annex 71, p 5262].

²⁰⁹JRC Science for Policy Report, p.7, Figure B [Annex 71, p 5265].

345. In addition to the lack of a substantial target to *reduce* emissions, the EU GHG Emissions Acts will in fact allow additional emissions to be produced in the agricultural sector through ‘flexibility’ mechanisms. These mechanisms authorise Member States to use allowances from the EU ETS sector (up to an EU-wide total of 100 MtCO₂ over 2021–2030) and credits from the LULUCF sector (up to 280 million credits over 2021–2030), allowing (indeed encouraging) a lack of ambition in the agricultural sector to be offset with action elsewhere. The practical consequence is that net emissions reductions from those two other sectors that would otherwise have been realised will in fact be made from the agricultural sector. There is no rational justification for such an approach given in particular the JRC’s finding that, under existing policies (ie without any further policies or targets being adopted), agricultural emissions should fall slightly due to policy, technological and market reasons.²¹⁰

c) Buildings

346. Energy savings measures for buildings in the EU are covered by two pieces of legislation: First, the Energy Efficiency Directive (EED) requires EU member states to make energy efficiency renovations to at least 3% of buildings owned and occupied by central government per year. The current rate of renovation, however, remains too low (~1% of stock renovated per year).²¹¹ Second, the Energy Performance of Buildings Directive (EPBD), which requires that all new buildings are “nearly zero-energy” by the end of 2020 (or 2018 for all new public buildings). It also requires that advertisements for the sale or rental of buildings include energy performance certificates, that Member states must establish inspection schemes for heating and air conditioning systems, and that they set minimum energy performance requirements for new buildings, major renovations, and the replacement or retrofitting of building elements.

347. The Commission’s 2030-Impact Assessment considered several possible scenarios, and the scenario considered that is closest to the actual 2030 targets adopted (“GHG40/EE”) includes in its energy efficiency policies “measures speeding up the building renovation rate which attains on average (2020-2050) 1.69%”.²¹² This action was said to be based on “enabling conditions”, including the “vigorous implementation” of both the EED and the EPBD.²¹³

348. While the Commission proposed that the currently existing legislation (the EED and EPBD) should be properly enforced, it did not consider whether the objectives of that legislation were sufficient, or whether more ambitious measures for buildings were feasible. The evidence again clearly shows that more ambitious measures were indeed feasible and would realise significant reductions in emissions:

- a. The European Parliament has resolved that “energy demand in buildings ‘could be reduced by up to three quarters if the renovation of buildings is speeded up’, and that deep renovation is particularly important because ‘75%

²¹⁰JRC Science for Policy Report, p.4. [Annex 71, p. 5262]

²¹¹S. Sterl, e.a. (2017) Faster and Cleaner 2 – kick-starting global decarbonisation: it only takes a few actors to get the ball rolling, [Annex 72 pp. 5267 ff.]

²¹² 2030-Impact Assessment (2014), pp.44-45 [Annex 43, p. 3519 f.].

²¹³ 2030-Impact Assessment (2014), p.40. [Annex 43, p. 3515].

of the existing European building stock is energy inefficient, and estimates show that 90% of these buildings will still be in use by 2050”.²¹⁴

- b. The evidence shows that steps beyond the existing EPBD framework were clearly feasible and would bring a range of environmental, economic and social benefits. The EPBD was adopted in 2010, and in 2016 proposals were made for its revision. The Impact Assessment accompanying the proposal for legislative changes considered three options, among them an “Option III”, which proposed enhanced implementation and fundamental legislative revision of the EPBD, with a view to further harmonisation and higher ambition. Ultimately, “Option II” was chosen; it provided for enhanced implementation of the EPBD and targeted legislative changes and discarded Option III on the ground of cost, subsidiarity and proportionality (as it would require the mandatory renovation of thousands of buildings). However, the Commission’s own impact assessment found that Option III:²¹⁵

(a) “would lead to two and half times the energy savings of Option II by 2030 (72 Mtoe as opposed to 28 Mtoe)”;

(b) “would result in more than double the additional construction activity, roughly double the economic growth and jobs created, and almost treble the number of households no longer in energy poverty, as compared with Option II. (at least 0.5 million under Option II, at least 1.5 million under Option III)”;

(c) was a “cost-effective policy option considering the economic impacts...”

- c. Analysis by the Buildings Performance Institute of Europe in 2011 considered options for renovating the EU’s building stock by 2050 and showed that achieving a 90% reduction in CO₂ from buildings by 2050 (relative to 2010 levels) could be possible while providing net savings to consumers of EUR 474 billion and generating 0.8 million jobs.²¹⁶ Such a scenario would mean a CO₂ reduction of 939 Mt CO₂/yr.

d) Non-ETS Industry

349. Industrial production processes are a source of GHG emissions insofar as it consumes fossil energy, such as through production processes. Heavy industry is covered by the ETS, but smaller industry not. It is another lacuna of the ESR Impact Assessment not to have explored the emissions reduction potential of this source insofar as industry is not already covered by the ETS.

²¹⁴European Parliament Resolution of 13 September 2016 on an EU Strategy on Heating and Cooling (2016/2058(INI)), paragraphs 14, and 50. Annex omitted.

²¹⁵ Commission Staff Working Document Impact Assessment, SWD (2016) 414 - Impact Assessment accompanying the document Proposal for a Directive of the European Parliament and of the Council amending Directive 2010/31/EU on the energy performance of buildings, pp.41-42: section 6.1.3 “Impacts of Option III”. [Annex 73, pp. 5315 ff. /p 5355 f.]

²¹⁶ Buildings Performance Institute Europe (2011) Europe’s buildings under the microscope: p. 12-16, [Annex 74, pp. 5436 ff/p. 5447 f.].

e) *Products*

350. Products that consume electricity produced from fossil fuels are an indirect source of GHG emissions. While the emissions from electricity production are already covered by the ETS the saving of electricity use by products would reduce the quantity of electricity that must be produced. There is a broad scope of other electricity consuming products, such as electronic and electric devices.
351. The contribution of energy saving product design has not been factored into the calculation of the -30% target. The core legal basis would be the Ecodesign Directive but the 2016 Impact Assessment for the ESR regulation²¹⁷ only mentions this directive when putting together the parameters for the reference scenario, i.e. the scenario which describes business as usual.
352. The progress of regulating products on this basis is still very modest.²¹⁸ It could be much accelerated. Nothing in this regard has been explored by the ESR Impact Analysis.

3. *Land Use, Land Use Change and Forestry (LULUCF)*

353. The EU has agreed that the LULUCF sector is included in the 2030 emissions reduction target, and the LULUCF regulation provides rules for how this is to be done. The sector has traditionally provided net removals of GHG. The sink is currently around 300 MtCO₂/yr.²¹⁹
354. By contrast, the core component of the LULUCF Regulation is the 'no debit rule', which means that any emissions from the LULUCF sector must be compensated for by removals (at Member State level).²²⁰ Rather than continuing to require net removals of GHGs in any significant quantities, the LULUCF sector will be expected simply to lead to no net increase in GHGs.
355. The no debit rule manifestly displays an absence of ambition for the LULUCF sector. In no sense does it utilise what is technically and economical feasible. Countries with large sinks will be able to increase harvest rates without the associated emissions being counted towards the 2030 target. There is no incentive for the EU as a whole to increase the size of its sink, and the incentive to reduce deforestation and increase reforestation is weak given that the LULUCF sector is already a net sink for the EU. The evidence clearly indicates that the LULUCF Regulation could have required net removals:

²¹⁷ See [Annex 70].

²¹⁸ Bundgaard, A. M. e.a. (2017) From energy efficiency towards resource efficiency within the Ecodesign Directive", Journal of Cleaner Production 144, p. 358-374 [Annex 75 pp. 5454 ff.].

²¹⁹ European Commission (2016) Impact Assessment (LULUCF), SWD (2016) 249 final, p.10, Figure 2. [Annex 76, pp. 5471 ff. /5490].

²²⁰ European Commission (2016) Impact Assessment, (LUUCF) p.8. [Annex 76, p. 5488].

- a. The Parliament proposed amendments under which the EU would go beyond the no debit rule and strive for net negative removals.²²¹
- b. The objective of negative net removals proposal is supported by studies showing that the EU could increase removals of GHGs through a ‘land sink’: a European Forestry Institute report found that by 2030 climate smart forestry could yield more than an extra 200 MtCO₂/year in removals by forests, on top of the existing sink.²²²
- c. For its part the Commission has pointed to the possibility of enhancing the removal capacity by afforestation, a decrease of deforestation and increasing carbon storage in harvested wood products which have a lifespan of many years.²²³
- d. Member States have submitted information to the Commission indicating an “additional” mitigation potential in 2030 of 82.3 MtCO₂.²²⁴

356. There are further material deficiencies in the LULUCF Regulation regime:

- a. In the period 2026-2030, Member States would be permitted to utilise emissions reductions that occurred in the period 2021-2025 in order to offset emissions that occur in the second half of the decade. This dilutes the principle that no net emissions should occur from LULUCF in any particular year, and would also mean that emissions removals – having been achieved and therefore having been shown to be feasible – can be given up at a later stage.
- b. Emissions reductions can be transferred between the LULUCF and the ESR sectors, diluting the target for each sector.
 - (a) Given that the target for LULUCF of no net additional emissions is, as set out above, clearly feasible within the sector given that at present the sector actually achieves net removals, there should be no need for any additional emissions allowances to be provided to the LULUCF sector from the ESR sector.
 - (b) Up to 280 million tonnes of reductions achieved in the LULUCF sector may be credited to the ESR sector, which in practice will principally

²²¹ European Parliament, Report of 17 July 2010 on the proposal for a regulation of the European Parliament and of the Council on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry into the 2030 climate and energy framework and amending Regulation No 525/2013 of the European Parliament and the Council on a mechanism for monitoring and reporting greenhouse gas emissions and other information relevant to climate change (COM(2016)0479 – C8-0330/2016 – 2016/0230(COD)), A8-0262/2017, Amendments 4 (Recital 4) and 6 (Recital 4b), calling for negative levels of emissions and for the LULUCF Regulation to reflect this ambition:

<http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&reference=A8-2017-0262&language=EN>. Annex omitted.

²²²G.-J. Nabuurs, e.a. (2015) A new role for forests and the forest sector in the EU post-2020 climate targets, p. 17, [Annex 77 pp. 5610 ff.].

²²³European Commission (2016) Agriculture and LULUCF in the 2030 - Final Report, p. 29, [Annex 78 pp. 5642 ff.].

²²⁴European Union JRC’s AFOLU Technical Paper <http://afoludata.jrc.ec.europa.eu/>. Annex omitted.

allow continued high emissions from agriculture. Any net removals that are achieved from the LULUCF sector should be utilised as removals for the benefit of the climate system, rather than used to weaken the target set in the ESR sector.

- c. The rules for bioenergy allow emissions to go unaccounted. The LULUCF Regulation states that biomass used for energy must be accounted for under the LULUCF regulation. However, there is no accounting procedure for pellets brought in from outside the EU, meaning that emissions from EU bioenergy fuelled by non-domestic wood would not be accounted for (indeed, in the EU, the energy would be accounted for as carbon neutral).
- d. For the sub-sector of forest management, the method of measurement would allow some emissions to go unaccounted for, in the “no debit” analysis. For forest management, emissions and removals are counted not by reference to the actual levels, but rather by reference to a *change* in the level as compared with a particular year, chosen as a reference point. This is described as “net-net” accounting.²²⁵ If a significant volume of emissions actually occurred in, say, 2022, those emissions would not be counted unless (and to the extent that) the volume of emissions increased as compared with the reference year. Indeed, it could be the case that forest management (using the “net-net” system) could be counted as making net removals even if, in absolute terms, the sector was actually adding substantial emissions.

d. Unreasonable treatment of more ambitious targets

357. The analysis underpinning the 40% target failed to identify or to consider more ambitious targets as preferable, and in doing so was manifestly flawed, vitiating the legal basis for the target in the GHG Emissions Acts.

1. Failure to identify the -45 % scenario as the cost-optimal scenario in the IA

358. The basis for the Commission’s assessment of economic impacts is a modelling exercise investigating a reference scenario (assuming no additional policies), and then seven policy scenarios of various stringency.²²⁶ The Commission undertook modelling of *inter alia* environmental, energy and economic impacts.²²⁷ The PRIMES model developed at the Technical University Athens is the principal tool used for a detailed assessment of the energy sector whereas additional macro-economic models are used to investigate economy-wide effects of the different low-carbon development pathways studied.²²⁸
359. The Commission’s own modelling indicated that a scenario of reducing emissions by 45% produced comparable or better results in key areas as compared with a scenario

²²⁵ Article 8 para 1 with Article 3 para 1 no (7) LULUCF Regulation [Annex 3, pp. 81 ff.]. For the terminology see Impact Assessment 2016 (LULUCF) p. ix [Annex 76 p. 5479].

²²⁶ 2030-Impact Assessment, pp. 41-47 [Annex 43, p. 3516-3522].

²²⁷ 2030-Impact Assessment, pp. 50-51 [Annex 43, p. 3525 f.].

²²⁸ P. Capros et.al. (2014) Description of models and scenarios used to assess European decarbonisation pathways, Elsevier, Energy Strategy Reviews, Volume 2, pp. 220-230, [Annex 79, pp 5768 ff.].

based on a reduction of 40%. These two scenarios are closely approximated in the Impact Assessment by the options described as “GHG40/EE” (ie, a reduction of GHG emissions by 40%, with energy efficiency mechanisms²²⁹) and “GHG45/EE (ie, a reduction of GHG emissions by 45%, with energy efficiency mechanisms).

360. As compared with the 40% target, a reductions target of 45% would require additional effort that would almost entirely be met through stronger emissions decreases in the ETS sectors, in particular the power system, where the lowest-cost mitigation options are available.²³⁰ In contrast, the non-ETS sectors emissions are virtually identical in both scenarios (with the consequence that the potential of further reductions of this sector are not investigated for the purposes of this analysis).
361. The Commission study indicates but does not take into account important air quality benefits that stand to be reaped under a 45% target. These benefits principally accrue from a much cleaner power system:²³¹
- a. In 2030, emissions of sulfur dioxide would be 126,000 tons lower than under a scenario of a 40% reduction in GHGs, and nitrous oxides emissions would also decrease by 43,000 tons, EU-wide.
 - b. Air pollution control costs would therefore be reduced by €2.9 billion per year.
 - c. Lower air pollution control costs, combined with the lower cost of damage from air pollution, would be €4.5-€6.7 billion per year lower as compared with the 40% scenario.
362. The impact assessment finds that average annual net fossil fuel imports would be €7 billion lower in a scenario of a 45% GHG emissions reduction, as compared with a 40% reduction.²³²
363. The Commission’s modelling of overall GDP under different circumstances found a very similar effect on GDP of a 40% and a 45% reduction target. For the E3ME model, GDP was modelled to increase (over the reference scenario) by 0.55% for the 40% target, and by 0.53% over the reference scenario for the 45% target.²³³ The Commission moreover noted that GDP was far more sensitive to other aspects of climate policy, such as the use of revenues, than it was to the specific target set.²³⁴ It clearly follows that a higher EU emissions reduction target for the year 2030 does not carry prohibitive economic costs, but that, on the contrary, positive economic effects stand to be reaped if corresponding policies are properly designed and implemented.

²²⁹ See 2030-Impact Assessment, footnote 52. [Annex 43, p. 3516].

²³⁰ 2030-Impact Assessment, pp. 56, 60, Table 4 and 6. [Annex 43, p. 3531 and p. 3535].

²³¹ 2030-Impact Assessment, p. 66, Table 11. [Annex 43 p. 3541].

²³² 2030-Impact Assessment, pp. 69-72, Table 12. [Annex 43 p. 3544 ff.]. The figures are shown in the last row on p.70; under the GHG40/EE scenario, average annual fuel import costs would be €441 billion (for the period 2011-2030).

²³³ 2030-Impact Assessment, p. 84, Table 18. [Annex 43 p. 3559].

²³⁴ 2030-Impact Assessment, pp. 82-85. [Annex 43 p. 3557 ff.].

Similar conclusions as to the affordability of climate policies have been found by other studies.²³⁵

364. As with the GDP effects discussed above, aggregate employment effects are (slightly) positive under both the 40% and the 45% target scenarios: job losses in extraction industries, such as coal and oil, are projected to be more than offset by job creation in other parts of the economy across many sectors, such as construction, or the manufacture of engineering and transport equipment.²³⁶ The results between the two scenarios are very similar, on the Commission's modelling.
365. In sum, from the Commission's own analysis, the most ambitious scenario selected for full analysis – entailing a reduction in GHG emissions of 45% – presents a number of clear advantages over a target of 40%.
- a. Additional relatively low-cost mitigation options exist in the power sector, which, if tapped, unlock important co-benefits in terms of avoided pollution, improved health, as well as lower pollution control costs. The EU's import bill for energy would decrease in lockstep by several billion euros per year, adding up to triple digit billion euros savings in the time frame up to 2030.
 - b. Comparable aggregate effects on GDP and employment in the two scenarios highlighted underscore that a higher-ambition mitigation target is not linked to negative repercussions in either of these critical domains. In addition, investments in energy efficiency coupled with adequate social policies can counter electricity price increases and stabilize household expenditures for energy, an important measure of affordability.

2. Discarding a -50% scenario from examination

366. Importantly, only scenarios with GHG reduction targets in the range of 35 to 45% for the year 2030 were explicitly assessed by the Commission, and scenarios with a stringency of more than 45% largely discarded.²³⁷ The Commission explained that a 45 target was the upper end of the range, on the basis that it sought to follow the “Low-carbon Roadmap” towards an objective of lowering overall emissions to 80% in 2050:²³⁸

“A 45% reduction domestically is assessed as an upper range taking into account reduction pathways assessed in the Commission's Low-carbon Roadmap as regards the cost-efficient trajectory towards meeting the 2050 objectives.”

367. The explicit framework for the analysis of options for climate change targets, therefore, was the Low-carbon Roadmap. The fundamental flaw in this approach (as also addressed above) is that the 2050 EU climate target, as set out in the Roadmap, is

²³⁵ B. Knopf, et.al. (2013) Beyond 2020 – Strategies and costs for transforming the European energy system, Climate Change Economics, Volume 4, Suppl. 1 (2013) 134001 (38 pages), [Annex 80, pp. 5779 ff.]

E. Kriegler, et.al. (2014) Assessing Pathways toward Ambitious Climate Targets at the Global and European Levels - A synthesis of results from the AMPERE project, [Annex 81, pp. 5817 ff].

²³⁶2030-Impact Assessment, p. 89, Tables 21 and 22 [Annex 43, p. 3564].

²³⁷2030-Impact Assessment, pp. 47-48 [Annex 43, p. 3522].

²³⁸2030-Impact Assessment, p.47 [Annex 43, p. 3522].

manifestly inadequate, and incompatible with the long-term temperature goal (well below 2°C and efforts to limit to 1.5°C) more recently set under the Paris Agreement and a corresponding fair distribution of the remaining global carbon budget among the countries around the world. This overarching issue has been dealt with above.

368. The Commission therefore asked itself the wrong question when identifying the appropriate range of options for consideration.
369. The Commission’s impact assessment contains some limited, incidental analysis of a 50% scenario, in the specific context of a discussion of potential increased international climate action. This is the only place within the 2030-Impact Assessment where a 50% emissions reduction target for the EU for the year 2030 is considered and its effects on GDP analyzed.²³⁹ The Commission noted that, using the “GEM E-3” economic model, a 50% target would result in a loss of GDP of 3.4%.²⁴⁰
370. The Applicants’ main submission is that the Commission (and the Union) was obliged to undertake a comprehensive analysis of the 50% target, taking account of its costs and benefits and the overriding obligations under international law and fundamental rights and the commitments in the Paris Agreement. However, even the Commission’s limited analysis is telling, in two respects:
- a. First, the economic model used by the Commission to show a reduction in GDP of 3.4% was the “GEM E-3” model.²⁴¹ The Commission did not use the E3ME model employed in the assessment of the -40% and -45% scenarios.²⁴²
 - b. A look into the scientific literature reveals that assessing decarbonisation cost projections is sensitive to the model used.²⁴³ Capros et al. have shown that in contrast to the PRIMES model, GEM E-3 tends to project significantly higher costs – as compared with other models – for transforming the energy system away from fossil fuels to low-carbon energy sources, as is shown in the figure below. They illustrate the differences in results provided by different economic models graphically.²⁴⁴

²³⁹2030-Impact Assessment, pp. 99-103. [Annex 43, p. 3574].

²⁴⁰2030-Impact Assessment, pp. 101-102, Table 27 [Annex 43, p. 3576].

²⁴¹For a description of the GEM E-3 model: P. Capros et.al. (2014) Description of models and scenarios used to assess European decarbonisation pathways, Elsevier, Energy Strategy Reviews, Volume 2 (2014) pp. 220-230 [Annex 79].

²⁴² 2030-Impact Assessment, p. 84, Table 18 [Annex 43, p. 3559].

²⁴³V. J. Schwanitz (2013) Evaluating integrated assessment models of global climate change, Environmental Modelling & Software 50 pp. 120-131 [Annex 82, pp. 5849].

²⁴⁴ P. Capros et.al. (2014) European decarbonisation pathways under alternative technological and policy choices: A multi-model analysis, Energy Strategy Reviews 2 pp. 231 (240). [Annex 83 pp. 5861 ff.].

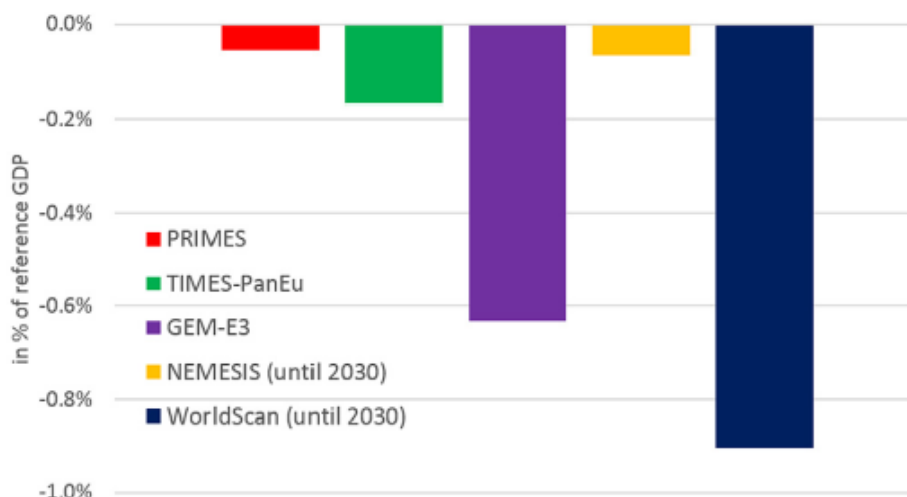


Figure 8: Cumulative EU Decarbonisation cost 2015-2050, Source: Annex 83.

- c. On this basis, it can be inferred that the Commission's analysis of the 50% option was incomplete given that it cited only one model, when several (including those it used to analyse its preferred scenarios) are available and likely to give quite different estimates.
- d. If the PRIMES model, otherwise commonly-used in the Commission analysis, were employed to calculate a 50% greenhouse gas emissions mitigation pathway for the year 2030, the resulting decarbonisation cost estimates would likely have been significantly lower than the estimate given in the Commission's brief analysis.

3. Feasibility of more ambitious scenarios

371. As set out above, the scope of the Commission's analysis was incorrectly premised on finding the emissions target suited to realizing the Roadmap to the 2050 emissions target.
372. Had the Commission (and the Union) not misdirected itself in this way and incorrectly fettered its discretion, it could have considered a range of different, more ambitious scenarios. A range of compelling evidence provided by scientific and economic studies shows these scenarios to be feasible.
373. A report from Delft highlights that the most ambitious scenario of the COM2030-Impact Assessment - the one with a 45% reduction in 2030 - is the most in line with a cost-optimal achievement of the 2050-Roadmap.²⁴⁵ Drawing on an analysis of the added benefits of higher ambition, the Delft report recommends a **49%** reduction target over the period 1990-2030.

²⁴⁵Delft (2014) p. 24, Table 7 [Annex 49, p. 3903].

374. A report from ECOlogic seeks to find a target steering to a reduction of 95% over 1990-2050.²⁴⁶ This leads to a recommendation of a target of “**at least minus 45%** below 1990 levels in domestic emissions and around **50% if offsets are included**”.²⁴⁷
375. A report from The Global Climate Forum used, amongst others, the same model used by the European Commission and found benefits of a more ambitious target for economic growth and employment: “The results of the simulations using GEM-E3 show that even with a **50% GHG emission reduction target**, an investment-oriented climate policy can lead to an increase in economic growth and employment. Even if the order of magnitude of the positive effect cannot be stated for certain at this point, it is worth opening up the debate towards this possibility in both economic and climate policy.”²⁴⁸
376. A report from Ecofys shows that if the resolution of the European Parliament – 30% share of renewables in final energy consumption by 2030 and a 40% energy savings target²⁴⁹ – is implemented, the emissions reductions that will be achieved will reach at least **45%, and up to 54% by 2030**. If the non-energy emissions reduction pathway follows the overall GHG emissions reduction trends, the reduction exceeds 50%.²⁵⁰
377. A report from WWF/Ecofys identifies a 2030 target of **50% reduction**.²⁵¹ By 2030 this would involve a 41% share of renewable energy in total consumption. Compared with the Commission’s 2050 low carbon Roadmap this 50% reduction scenario requires a larger decline in primary energy (1169 Mtoe in 2030 for the WWF/Ecofys scenario, compared with 1330 Mtoe in the Roadmap’s high efficiency scenario) and a higher proportion of renewables in final energy consumption (41% for WWF/Ecofys vs. 28-31% for the Commission’s Roadmap). The report suggests that such changes could be achieved through energy savings in industry, in buildings and transport (e.g. passenger transport is 40% less energy intensive than 2000 levels), and 65% of electricity comes from renewable sources. The Commission’s analyses do not consider such ambitious changes.
378. A report from Öko-Institut examines various realistic initiatives of GHG emission reduction in a range of emissions sectors in terms of achievable emission reduction (below, figure 9). Minimum values (blue) indicate maximum overlaps and maximum values (brown) indicate the highest possible additionality of reductions.²⁵² The study concludes that the EU can reach, by 2030, **a reduction** of over 60% of the level of

²⁴⁶Ecologic (2014) The Next EU Climate and Energy Package – EU Climate Policies after 2020, pp. 24-26 and Table 3, [Annex 84, pp. 5876 ff. p.5908 ff].

²⁴⁷Ecologic (2014) p. 24, [Annex 84, pp. 5876 ff.]

²⁴⁸Global Climate Forum (2015) p. 10, [Annex 48, p. 3766].

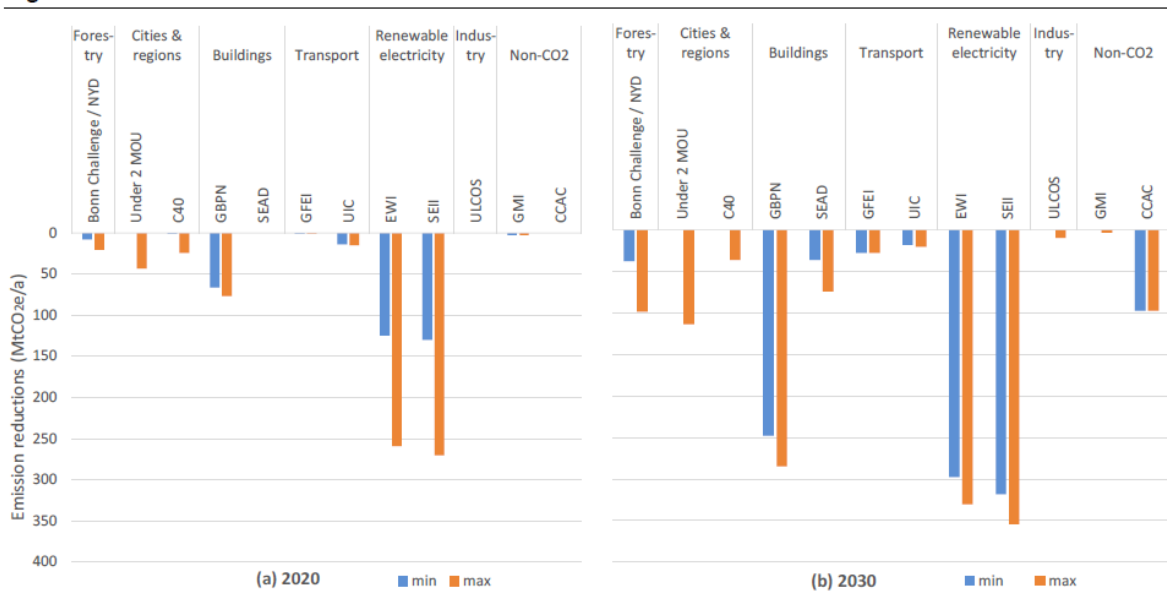
²⁴⁹European Parliament (2014) A 2030 framework for climate and energy policies - European Parliament resolution of 5 February 2014 on a 2030 framework for climate and energy policies (2013/2135(INI)), Target 8, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014IP0094&from=DE>.

²⁵⁰Ecofys (2014) The EU Parliament’s 2030 resolution could achieve emissions reductions of up to 54%, p. 2, Table 1 [Annex 85, pp. 5981 ff./ 5982].

²⁵¹WWF/Ecofys (2013) Re-energising Europe - Putting the EU on track for 100% renewable energy, p. 11 [Annex 86, pp. 5948 ff./p. 5994].

²⁵²J. Graichen, e.a. (2017) International Climate Initiatives - A way forward to close the emissions gap? Initiatives’ potential and role under the Paris Agreement. Final Report, Umweltbundesamt, Climate Change 22/2017, p. 37-38, [Annex 87, pp. 6016 ff. /p.6052]

1990.²⁵³ The inclusion of the sink initiatives of LULUCF would add even more, namely ca.100 Million tonnes CO₂, to this.



Note: Potential impact (compared to INDC levels) of initiatives in the EU up to 2020 (a) and 2030 (b), with minimum numbers assuming maximum overlap with other initiatives.

Source: Author's own calculations

Figure 9, Potential of Initiatives in the EU. Source: Öko Institut/Graichen et.al. Annex 87.

379. The JRC GECO Report (2016) shows that the GDP costs of emission reductions are very low in the EU. The report concludes:²⁵⁴

“In general terms, the size of the abatement cost is relatively small: below 1% of global GDP. In terms of annual growth rates, this would mean an impact of less than 0.1% of annual growth as a global average (from nearly 3% per year in the Reference to 2.9% per year in the 2°C scenario over the 2020-2030 period).”

380. A recent report by NewClimate studies how adoption of policies that have been implemented in some Member States could be spread among all EU Member States. According to this study, the EU would then reduce its emissions by 55-62% below 1990.²⁵⁵

²⁵³J. Graichen, e.a. (2017), p. 38. [Annex 87, p.6053].

²⁵⁴JRC (2016). Global Energy and Climate Outlook. Road from Paris. Impact of climate policies on global energy markets in the context of the UNFCCC Paris Agreement, Science for Policy Report, EU 2016, p. 87, [Annex 88, pp. 6081 ff./ p. 6094].

²⁵⁵M. Cornet, e.a. (2018) The EU can increase its climate targets to be in line with a global 1.5 °C target. The key is to apply proven best practice policies from member states across the EU, p. 4, [Annex 89, pp. 6100 ff. /p. 6103].

J5. Conclusion

381. The fundamental error in the Commission's analysis, on which the Union acts are based, is that the range of targets for reducing GHGs was based on an incorrect appreciation of the overall objective and of the law, which led to more appropriate and effective options being excluded:
- a. The explicit premise for the Commission's analysis was to find a target that was the most cost-effective pathway to the long-term emissions target for 2050 (of an 80% reduction) set in the Roadmap policy.
 - b. That policy does not take account of the Union's international, human rights, and treaty legal obligations, or the long term temperature goal set by the Paris Agreement and the emissions budget implied from it. The emissions target set in the Roadmap is in reality incompatible with these obligations and the budget.
 - c. The Commission's analysis was on its own terms focussed on finding cost-effective means of delivering a 40% reduction, without giving any or adequate consideration to the practicability of using additional means to make the deeper cuts in emissions that are required by those obligations and the budget.
 - d. Had the Commission and the Union made the inquiries actually required of it, a range of compelling evidence – from scientific studies and from the Union's own expert analysis – shows that materially deeper reductions in emissions were indeed feasible.
382. The Applicants submit that, had the correct legal framework been used and had the relevant evidence been taken into account, a target of a reduction by 2030 of at least 50-60% (and likely deeper reductions) from 1990 levels would have been irresistible.
- a. The 'top-down' analysis of budgets set out in section J2 demonstrates the significance of the changes required in emissions to limit the temperature increase to defined levels. Even if temperature increases can be held within the maximum level set by the Paris Agreement, dangerous climate change and significant damage to the applicants will still occur, as explained in Section D above.
 - b. This is the context against which assessments of the appropriate level of reductions, and analysis of feasibility, must be made.
 - c. It is not necessary for the applicants to place a precise number on the level of reductions that would be required. The applicants and their advisers have done their best to identify key areas overlooked by the Union; it is the responsibility of the Defendants to undertake a comprehensive assessment. Even the (necessarily constrained) analysis summarised above, however, shows that any rational assessment would find a range of feasible options for deeper reductions. Many of these are difficult for the applicants to quantify, but the following key examples are noted:

- (a) The adoption of a renewables target of 35% would itself allow total emissions to be reduced by 47.5% rather than 40% (see J4(c)(1)(b) above);
- (b) Cancelling the ‘free’ allowances provided in the earlier ETS periods would reduce the quantity of allowances in circulation by up to 400 million tonnes per year – more than 10% of the EU’s projected emissions in 2021;
- (c) Steps to reduce coal combustion (or even to reduce the cross-subsidy given to coal) offer the possibility of eliminating up to 18% of the EU’s emissions (as at 2015);
- (d) Agricultural emission, which are between 400 and 500 million tonnes of GHG emissions annually, could be reduced by 20% through technological measures alone, which would alone constitute a reduction in the order of 2.5% of the emissions projected for 2021;
- (e) Net reductions that may be achieved in the LULUCF sector should be banked (and the climate improved to that extent), rather than permitting transfers of up to 280 million tonnes / year to allow higher emissions in the ESR sector. This figure represents more than 8% of the emissions that are projected for 2021.

383. The applicants therefore submit that the Union’s binding obligations require a reduction of **at least 50%-60%** from 1990 levels.
384. In any event, the target actually set by the three GHG Emissions Acts, of a 40% reduction, is grossly inadequate and based on a fundamentally flawed analysis and so should be declared void, with revision required.

K. THE UNION’S NON-CONTRACTUAL LIABILITY

385. Further to the Applicants’ case that the targets in the GHG Emissions Acts are incompatible with the Union’s legal obligations and must therefore be annulled, the Applicants also contend that the non-contractual liability of the Union is established, entitling them to seek relief under Article 340 TFEU.
386. In overview, the Applicants’ case is as follows:
- a. First, the EU has failed to take sufficient steps required by law to reduce emissions from within the Union. It has been in breach of its obligations to take these steps since 1992 (when the UNFCCC was adopted), alternatively since 2009. It continues to be in breach of this obligation today.
 - b. Second, these failures have made and are continuing to make a material contribution to dangerous climate change that has already occurred, is occurring, and will occur, and for which the EU therefore bears a significant degree of responsibility.

- c. Third, this dangerous climate change has caused, is causing, or will cause the Applicants material loss.

387. It follows that the Applicants seek injunctive relief from this Court requiring the Union swiftly to adopt measures to bring its wrongful and damaging conduct into compliance with the law. Such relief may be granted in response to a claim for non-contractual liability; the Applicants do not seek pecuniary compensation for their individual losses. Rather, they seek to reduce and to the extent possible prevent the further damage that may occur.
388. The specific elements of this claim – unlawful act, entailing a sufficiently serious breach of rights conferred on individuals, causing damage – are addressed below.

K1. Unlawful act

389. As set out above, higher rank law establishes obligations on the Union to avoid inflicting harm (under international law), to prevent damage (Article 191, TFEU) and to avoid or prevent infringements of fundamental human rights (under the Charter). The first source of these obligations has been binding on the EU at all material times; the latter two sources have progressively come into force, in December 2009 (the Lisbon Treaty) and in 2000 (under the Charter).
390. The Applicants submit that the Union has been in breach of such of these duties as have been in effect, since 1992, and continues to be in breach, as follows.
391. Since 1992 at the latest it had become general knowledge that serious action had to be undertaken in order to prevent damage from climate change. In 1990 the IPCC issued its first assessment report which already included, *inter alia*, statements calling for immediate drastic reduction of CO₂ and methane emissions. Importantly, in 1992 the EU Member States and the EU became parties to the UNFCCC which accepts the essential mechanism between GHG emissions and dangerous climate change, as well as the collective responsibility of the parties to pursue the objective of preventing dangerous climate change (Art.2).
392. The Union's breach of the law was compounded from 2009 onwards. At that point, the obligations binding on the EU became more extensive, and the EU's responsibility for emissions became clearer still:
 - a. the Charter and Article 191 TFEU were in force as primary rank law;
 - b. the ETS entered the post-experimental phase through the adoption of the minus 20 % target and the amendment of Dir 2003/87 by Dir 2009/29;
 - c. the effort sharing was made binding through EP/Council Decision 406/2009; and
 - d. the language of the pertinent legislation accepted that emissions were *allocated*, thus confirming the Union's legal responsibility for such emissions as emanated from its territory.
393. Despite the requirements of these legal obligations, EU institutions throughout this period continued to authorize the emission of GHGs and to allocate rights to do so,

despite the scientifically established link between the emission of GHGs and dangerous climate change; a link which the EU had accepted through participation in the UNFCCC.

394. The EU's conduct in this regard was not justified. The EU has not and cannot credibly suggest that the steps it took in that period represented the extent of its technical and economic capacity, such that the continued emission of GHGs leading to climate change could be justified.
395. This unlawful conduct continues today and its gravity is compounded by the ever-strengthening legal obligations, the immense scientific literature on the subject, and the emerging factual evidence of climate change, already occurring. As set out in detail in Sections H, I and J above, the EU is compelled by higher rank law to adopt measures to reduce GHG emissions and thus abate climate change to the extent of its technical and economic capability. The measures that the EU has to date put forward (as embodied in the GHG Emissions Acts) are inadequate to discharge this obligation. It follows that the EU is in continuing breach of its obligations.

K2. Sufficiently serious breach of a rule conferring rights on individuals

396. It is settled case law that the requirement for a 'sufficiently serious breach' is satisfied where the institution has manifestly and gravely disregarded the limits of its discretion.²⁵⁶ If the institution in question has considerably reduced discretion, or no discretion, the mere infringement of law may be sufficient to establish a sufficiently serious breach.²⁵⁷
397. In this case, the obligations of higher rank law leave the Union with limited or no discretion as to the minimum reductions in emissions that must be made.
- a. The Union may have discretion as to the manner in which those reductions are achieved and the economic burden distributed. As to the depth of the reductions, however, the institutions do not enjoy a discretion. It is obliged to identify emissions reductions to the extent of its technical and economic capability.
 - b. The defendant institutions, moreover, have no discretion to refuse to give due consideration to plainly relevant means for achieving reductions in GHG emissions, as set out in Section J above.
398. The Union has exceeded its discretion in these respects, as set out in full above in Section J. Its failure to consider and adopt the range of feasible means for making deeper reductions stemmed from its fundamental error as to the applicable legal framework; in particular its adherence to a long term emissions reduction target for 2050 set in the Roadmap, which is incompatible both with its higher rank legal obligations and with the implied budget in the Paris Agreement. The Union had no discretion to determine the appropriate depth of emissions cuts in this way.

²⁵⁶ ECJ decision of 4 July 2000, Case C-352/98 P (Bergaderm and Goupil), ECLI:EU:C:2000:361, para. 43.

²⁵⁷ ECJ decision of 4 July 2000, Case C-352/98 P (Bergaderm and Goupil), ECLI:EU:C:2000:361, para. 44.

399. The legal rules invoked by the applicants, moreover, are intended to confer rights on individuals in the sense required by the case law.
- a. The express purpose of human rights norms is to confer rights protection on individuals; these self-evidently meet the test.
 - b. Moreover, it is established that even where legal rules in the main concern interests of a general nature, those rules will meet the required standard if they also protect the individual interests of the person concerned.²⁵⁸ The rationale of the broader international law rules on which the applicants rely is to prevent and/or provide redress for harm caused by a State, whether to individuals, firms, or other States.

K3. Causation of harm

400. In general, non-contractual liability requires proof of damage to be actual and certain.²⁵⁹ This condition must be applied, however, in light of the principle by which an applicant may seek relief in respect of future losses, provided that these can be shown with sufficient certainty in the circumstances.²⁶⁰
401. An applicant must also establish that the damage complained of is a sufficiently direct consequence of the breach of duty.²⁶¹
402. The Applicants submit that these conditions as to causations are satisfied; their case is in two parts.
403. **First**, the Union accepts and the scientific and legal consensus holds that a failure to adopt measures to reduce GHG emissions – in breach of fundamental human rights and other higher-ranking norms – will cause a variety of material damage to many people, including persons such as the applicants.
404. It is accepted that the emission of greenhouse gases causes climate change and that the purpose of adopting measures to reduce GHG emissions is to prevent dangerous anthropogenic interference with the climate system. See, eg, Directive 2003/87/EC recital 3, and UNFCCC, Article 2.
405. The EU and non-EU States then also recognise that they have the capacity, and bear the responsibility, to reduce greenhouse gas emissions. States party to the UNFCCC have assumed multilateral obligations to reduce emissions,
406. Further, it is recognised that the efforts of various States should be coordinated. States have plainly recognised that uncoordinated action, or isolated action, will be ineffective, whereas more ambitious action led by large developed economies such as the EU will

²⁵⁸ ECJ decision of 14 July 1967, Cases 5/66, 7/66, 13/66 and 24/66 (Kampffmeyer v Commission) [1967] ECR 245, at 263; GC decision of 23 November 2011, Case T-341/07 (Sison v Council) ECLI:EU:T:2011:687, para 47.

²⁵⁹ ECJ decision of 9 November 2006, Case C-243/05 P (Agrazand Others), ECLI:EU:C:2006:708, para 27; ;GC order of 4 May 2018, Case T-197/17 (Mar Abel v Commission), ECLI:EU:T:2018:258, paras. 26 and 31.

²⁶⁰ ECJ decision of 2 June 1976, Joined Cases 56-60/74 (Kampffmeyer), ECLI:EU:C:1976:78, paras 6-8.

²⁶¹ See eg ECJ order of 31 March 2011, Case C-433/10 P (Mauerhofer), ECLI:EU:C:2011:204, para 127.

encourage, and be indispensable to, emissions reductions by other States. See for example:

- a. The UNFCCC, 6th recital, ‘Acknowledging the global nature of climate change’, and calling ‘for the widest possible cooperation by all countries... in accordance with their common but differentiated responsibilities...’
- b. The link between actions taken internationally on actions within the EU are acknowledged in EU legislation: see Directive 2003/87/EC, article 30(2).
- c. A key mechanism in the Paris Agreement is the ‘global stocktake’, as provided for under Article 14.

407. The intrinsic logic of these legal instruments – and the basis for the Union adopting measures to reduce GHG emissions – is that reductions in emissions by the EU is essential to reduce harmful anthropogenic climate change. It must therefore follow that the *absence* of sufficient emissions reductions by the EU will *worsen* climate change and its effects.

408. **Second**, the scientific consensus has established that climate change will very likely result in a range of harmful consequences as set out in Section C. By way of particular example:²⁶²

- a. The IPCC projects that higher temperatures will occur throughout Europe, and elsewhere (including East Africa).
- b. It also forecasts decreased precipitation in Southern Europe and an increase in drought conditions there and in other regions, such as East Africa.
- c. Crop yields in southern Europe are also forecast to decline.
- d. The IPCC also anticipates that a rise in sea levels will lead to an increase in coastal and river flooding risks.

409. Taken together, these elements of the evidence indicate that a failure by the EU to adopt sufficient reductions in GHG emissions will both worsen the effects of climate change overall; it must necessarily follow that the negative consequences of climate change for the applicants would also be materially worsened.

410. As set out in detail in Section D above, these general indications of harmful effects on a regional or sub-regional basis are confirmed by and support the individual Applicants’ appreciation of individual harm. Reference is made to that section and to the Annexes. The following is a summary of the damage complained of.

- a. Many of the Applicants have already incurred direct, quantifiable harm:
 - (a) The Carvalho family in Portugal experienced a devastating fire, of an intensity attributable to the high temperatures and low rainfall causally linked by the scientific analysis to climate change.

²⁶² See IPCC (2014) 5th Assessment, WG II, Chapter 23, p.1270, 1271[Annex 7], p. 533 f.

- (b) The Conceicao family (also in Portugal) have experienced a significant reductions in the yields of their beehives, attributable to higher temperatures, more extreme heat events, and lower precipitation.
 - (c) The Sendin and Caixeiro families (again in Portugal) have a significant loss of agricultural and horticultural yields from their collective farm, and have had to invest in irrigation systems due to the same phenomena.
 - (d) The Feschet family in France have experienced a significant decline in the productivity and yields of their lavender farm in France, arising from the higher average temperatures and declining rainfall, as well as extreme weather events (flooding). These are, the scientific studies show, the result of climate change.
 - (e) The Guyo family in Kenya have found their agricultural and animal herding activities to be affected by higher temperatures and lower rainfall. Their children are also exposed to dangerously hot conditions, leading to health problems. These climactic conditions are as predicted by the scientific literature on climate change.
 - (f) The Vlad family in Romania's Carpathian mountains have had a decline in agricultural production caused by increases in temperature (affecting dairy production), and as well by more extreme temperature variations in late winter and early spring leading to loss of crops. Higher temperatures and lower precipitation have led to a need for importing animal feed, and to the loss of productive orchards.
 - (g) The Elter family in Italy have experienced a decline in the yields of their fields due to higher temperatures occurring earlier in the year. The Italian authorities attribute the change in temperature conditions to climate change.
 - (h) The Qaloibau family in Fiji have already lost their fishing boat and shed in a cyclone, and the loss of income from tourism due to coral bleaching. More intense cyclones, and higher water temperatures leading to coral bleaching, as well as possibly the relocation of the entire village are the consequence of climate change.
 - (i) Members of the Sáminourra have already found that the viability of reindeer husbandry has become risky due to higher winter temperatures affecting the ability of reindeer to feed. Many families have incurred increased costs for winter fodder, as set out in [Annex 31].
- b. Damage of this sort will continue to occur and will worsen in consequence of climate change.
 - c. Still further damage will occur as time goes on as a consequence of climate change:

- (a) The Carvalho family would face physical danger from further uncontrollable forest fires in the future.
- (b) The Elter family's bed and breakfast and tourism business will be directly adversely affected by higher temperatures leading to a decline in ice climbing and other winter sports in the Gran Paradiso national park.
- (c) The Recktenwald family face the loss of their home and business, and direct threats to their physical well-being, as a result of sea level rises and storm surges inundating the island of Langeoog.
- (d) The Qaloibau family similarly face sea level rises and storms that would inundate their home in Naqaravatu, destroying their property and exposing them to physical danger.
- (e) Reindeer husbandry in Sweden might become wholly untenable.

411. This is confirmed by the simple logic of increased adverse effects on the climate driven by higher temperatures, as set out in Section C. The analysis of the IPCC there set out illustrates the substantially more severe adverse effect on ecology and economic activities that result from incremental increases in temperature.
412. The incontrovertible basis for the Union's participation in the UNFCCC, and for the adoption of GHG emissions reductions of any degree, is that anthropogenic climate change will lead to serious material harm and that reducing emissions is the indispensable means for reducing or minimising that harm. The Union's climate change policy itself, read with the world-standard analysis provided by the IPCC, clearly establishes a direct causal link between a failure by the Union to act adequately, and harm.

K4. Relief claimed

413. The applicants in this case do not seek damages, but rather an injunction to compel the EU to do or not to do something. The basis for such an injunction is well-established in the legal systems of Member States, as recognized in the case law of the General Court.²⁶³ In *Galileo* the court noted:²⁶⁴

“In that regard, it must be noted that, under the second paragraph of Article 288 EC, ‘[i]n the case of non-contractual liability, the Community shall, in accordance with the general principles common to the laws of the Member States, make good any damage caused by its institutions or by its servants in the performance of their duties’. That provision covers the conditions of non-contractual liability as well as the detailed rules and scope of the right to compensation. Furthermore, Article 235 EC gives the Court of Justice ‘jurisdiction in disputes relating to compensation for damage provided for in the second paragraph of Article 288’.

²⁶³See CFI decision of 10 May 2006, Case T-279/03 (*Galileo International Technology and Others*), ECLI:EU:T:2006:121, paras 62-63, 71-73; GC decision of 8 November 2011, Case T-88/09 (*Idromacchine and Others*), ECLI:EU:T:2011:641, paras 81-83.

²⁶⁴ CFI decision of 10 May 2006, Case T-279/03 (*Galileo International Technology and Others*), ECLI:EU:T:2006:121, paras 62-63.

“It follows from those two provisions that the Community Courts have the power to impose on the Community any form of reparation that accords with the general principles of non-contractual liability common to the laws of the Member States, including, if it accords with those principles, compensation in kind, if necessary in the form of an injunction to do or not to do something.”

414. The present case is particularly appropriate for the grant of an injunction, given the very serious and irreversible harm that would arise from unchecked climate change, which an award of damages would be unlikely to remedy, and which it would be difficult fully to quantify. As many domestic legal systems recognize, the grant of an injunction is particularly appropriate where it is apparent that pecuniary compensation may not be adequate or could not be fully assessed; so it is here.
415. The relief sought is an order requiring the EU to adopt emissions reduction targets through the existing framework of the ETS, ESR and LULUCF regimes that are sufficient to bring the EU into compliance with its legal obligations. Based on the analysis of the emissions budget and of feasibility set out in Section K above, the Court can be confident that the minimum that the EU is obliged to is to adopt targets to the full extent of its capability.
416. The Applicants submit that this requires emissions reductions of at least 50%-60% by 2030, or such other level as the Court finds appropriate.

L. OVERALL CONCLUSION

417. The emissions quantities allocated by the three GHG Emissions Acts – decreasing from 2021 to 60% of the 1990 emissions by 2030 – exceed the emissions allowed by higher rank law. This breach of higher rank law causes and will continue to cause damage to the applicants.
418. Higher rank law demands that the emissions are reduced by at least 50% to 60% below the level of 1990 emissions, by 2030.
419. The three GHG Emissions Acts must therefore be declared void insofar as they allow the Commission to allocate emission allowances to Member States at quantities that exceed this demand.
420. The declaration of nullity if made relatively soon (such as even in 2019) would allow time for the EU institutions to adapt the relevant provisions to the higher rank requirements before the fourth allocation period starts in 2021.
421. Should the decision of this Court take additional time, the consequence of the declaration of nullity would be subject to the interpretation of the remaining provisions of the three GHG emissions acts. The consequence could either be that from the date of the abrogation no emission allowances could be allocated, or that no restriction to emissions applies. In that case the Court is asked to introduce some intermediate solution based on Article 264 sec. 2 TFEU.²⁶⁵ In any event, the

²⁶⁵ For an example of an application for intermediary measures see AG Reischl in ECJ opinion of 29 October 1980, Case 138/79 (Roquette Frères), ECLI:EU:C:1980:213 (p. 3391). The case concerned the allocation of

applicants would seek an injunction pursuant to Art. 340 TFEU requiring the adoption of emissions reduction targets of at least 50%-60% from 1990 levels.

422. The applicants request that this Honourable Court:
- a. Declare the GHG Emissions Acts unlawful insofar as they allow the emission between 2021 and 2030 of a quantity of greenhouse gases corresponding to 80% of the 1990 emissions in 2021 and decreasing to 60% of the 1990 emissions in 2030.
 - b. Annul the GHG Emissions Acts insofar as they set targets to reduce GHG emissions by 2030 by 40% of 1990 levels, and in particular: Art. 9 para 2 ETS Directive; Art. 4 para 2, and Annex I, ESR; and Art. 4 LULUCF Regulation.
 - c. Order the Defendants to adopt measures under the GHG Emissions Acts requiring a reduction in greenhouse gas emissions by 2030 by 50%-60% of 1990 levels, or such higher level of reduction as the Court thinks fit.
 - d. In the alternative, if the Court is not minded to grant an injunction and its decision to annul the reduction targets comes too late to allow for a modification of the relevant provisions before 2021, the applicants claim that the Court should order that the contested provisions of the GHG Emissions Acts shall remain in force until a defined date, by when they must be modified in accordance with the higher rank legal requirements.
 - e. Order the Defendants to bear the costs of the proceedings.

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production quota for isoglucose. The plaintiff had argued that it had received smaller quota than claimed. The declaration of nullity would have resulted in no allocation at all.