

Observations on the Facts

Reply to the Respondent's observations on the facts

“Actually, climate change is really about the wellbeing of people. It is not a very vague concept or a vague problem that is out of our everyday lives. It is actually affecting our everyday lives, and this is the fundamental fact that everybody should keep in mind while working toward a low-carbon society.”

Patricia Espinosa

Table of contents

1.	Introduction.....	3
2.	Complements to the facts presented in the Application and new developments since the submission of the Application	5
2.1.	Human influence has warmed the atmosphere, ocean and land	5
2.2.	Respondents' contribution to global warming	6
2.2.1.	Domestic emissions	6
2.2.2.	All emissions attributable to Switzerland	7
2.3.	One of the main impacts of human-induced global warming: <i>More frequent and more intense heatwaves</i>	9
2.4.	Intensity and frequency of heatwaves increases with every additional increment of global warming	10
2.5.	Climate change-induced heatwaves have caused, are causing and will cause further deaths and illnesses to older women	14
2.6.	Heatwaves are causing and have already caused illnesses and restrictions of wellbeing to the Applicants in the past	18
2.7.	Staying within the 1.5°C limit would significantly reduce the risk of heat-related excess mortality and morbidity	20
2.8.	Knowledge of the Respondent.....	20
2.9.	The Respondent has failed to set any domestically binding climate targets for 2030 and 2050	21
2.10.	Respondents' climate strategy is not in line with the 1.5°C limit.....	23
2.10.1.	No 1.5°C compatible fair share contribution	23
2.10.2.	No 1.5°C compatible <i>domestic</i> emissions reduction	29

¹ Patricia Espinosa, Executive Secretary of the UN Framework Convention on Climate Change (UNFCCC), Interview: 'Climate change is really about the wellbeing of people', 17 August 2016, available at <https://news.un.org/en/story/2016/08/536792-interview-climate-change-really-about-wellbeing-people> (last visited 13 October 2021).

2.10.3.	No effective prevention of emissions occurring abroad directly or indirectly attributable to the Respondent.....	32
2.10.4.	Reliance on Carbon Dioxide Removal is a major risk in the ability to limit warming to 1.5°C	34
2.11.	The Respondent failed to implement and enforce measures to meet its (inadequate) 2020 target	35
2.12.	The Respondent is able to do its share, i.e. to <i>reduce</i> the risk of heat-related excess mortality and morbidity	38
3.	Reply to the Respondent's arguments.....	39
3.1.	Decisions of the national courts	39
3.2.	Climate change in Switzerland.....	40
3.2.1.	One of the main impacts of climate change in Switzerland are heatwaves	40
3.2.2.	The Respondent's contribution to climate change is excessively high	42
3.3.	Switzerland's Climate policy	43
3.3.1.	Respondent's Long-term climate strategy remains without implementation	43
3.3.2.	Current CO ₂ Act remains in force only on a limited basis and remains insufficient, as is the proposed interim solution	43
3.3.3.	New solutions are likely to be too weak and too late	44
3.3.4.	The Respondent's NDC as well as its long-term climate strategy are inadequate to stay on a pathway compatible with the 1.5°C limit.	46
3.3.5.	No concrete idea how to proceed after rejection of the new CO ₂ Act	46
3.3.6.	Mitigation potential remains unused on the justification of high costs.....	47
3.3.7.	The Situation in 2016 different from today.....	49
3.3.8.	Level of climate protection not based on scientific studies but on assumed majority opinions.....	50
3.3.9.	No more time to take the necessary measures	55

1. Introduction

- 1 The Applicants fully uphold the statements of facts made in the Application. In the following, with a view to the Respondent's observations, the new developments since the submission of the Application, and the page limit that had to be complied with in the Application, the Applicants complement and update these statements (section 2). The Applicants then make specific observations on the points in dispute (section 3).
- 2 In the climate change context, the question of cause – whether human-induced climate change (or a specific contribution to climate change attributable to the Respondent) is *virtually certain* the reason for a *specific* weather event or a *specific* harm caused by this weather event – is only answerable in terms of altered probabilities. *This, however, does not alter the fact that the effects of human-made climate change are well known and can be quantified.*²
- 3 Climate models are used to statistically calculate the increased frequency of heatwaves, at a given location, because of climate change. In addition, the relationship between heatwaves and mortality can be statistically quantified. A recent study calculated how many heat-related deaths globally can be attributed to human-induced climate change (see hereto para. 27). This recent study concluded that *already today around one-third of heat-related deaths worldwide can be attributed to climate change.*³ Also, in its recent Sixth Assessment Report (AR6), the Intergovernmental Panel on Climate Change (IPCC) held that "some recent hot extremes observed over the past decade would have been *extremely unlikely* to occur without human influence on the climate system."⁴
- 4 To illustrate this further, the Applicants point to the similar situation that exists in medicine: when someone falls ill, the specific cause may not be certain. Epidemiology can statistically show how strong the risk of disease is influenced by different lifestyles or environmental factors. For example, a smoker has a x-fold increased risk of developing lung cancer. But this does

² As exemplary done in VICEDO-CABRERA/SCOVRONICK/SERA ET AL., The burden of heat-related mortality attributable to recent human-induced climate change, *Nature Climate Change* 11, 492–500 (2021), available at <https://doi.org/10.1038/s41558-021-01058-x> (*doc. 1*).

³ RÖÖSLI, Wer ist schuld? Seetaler Bote, 22 July 2021, p. 17 (*doc. 2*).

⁴ IPCC, Sixth Assessment Report (AR6), *Climate Change 2021: The Physical Science Basis, Summary for Policymakers*, A.3.1, available at https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf (last visited 10 October 2021).

not prove anything in individual cases. Many smokers do not get lung cancer and even if a smoker does get lung cancer, there is *no absolute certainty* that smoking was the cause of the disease. Non-smokers also get lung-cancer, although less frequently. It is a *question of probability*.⁵

- 5 Similarly, the Applicants cannot prove with absolute certainty that *they* are going to die or suffer (further) health problems *because* of the omissions of the Respondent. However, they have an *increased* mortality and morbidity *risk* due to excessive greenhouse gas (GHG) emissions that has already partly materialized. The Respondent has not and does not plan to *prevent that risk*. In contrast to tobacco consumption, where the Respondent Government wants to prevent mortality and morbidity caused by tobacco consumption with regulatory means,⁶ the Applicants have no choice but to be exposed to the risks.
- 6 In the following, the Applicants lay down that:
 - *Human influence* is causing global warming (section 2.1)
 - *The Respondent contributed* and is still *contributing* to global warming (section 2.2)
 - One of the *main impacts* of *human-induced* global warming are *more frequent and more intense heatwaves* (section 2.3)
 - The intensity and frequency of heatwaves *increases with every additional increment of global warming* (section 2.4)
 - Heatwaves have caused, are causing and will cause further *deaths and illnesses for older women* (probability resp. risk, section 2.5)
 - Heatwaves have already caused illnesses to the Applicants in the past (section 2.6)
 - The *risk* of heat-related excess mortality and morbidity could be *significantly reduced by limiting global warming to 1.5°C* above pre-industrial levels (section 2.7)
 - The Respondent *knows* about all these facts (section 2.8)

⁵ RÖÖSLI (n 3).

⁶ Federal Office of Public Health (FOPH), Entwurf zum Tabakproduktegesetz, 2 December 2020, available at <https://www.bag.admin.ch/bag/de/home/strategie-und-politik/politische-auftraege-und-aktionsplaene/politische-auftraege-zur-tabakpraevention/tabakpolitik-schweiz/entwurf-tabakproduktegesetz.html> (last visited 10 October 2021).

- The Respondent *does not do its share to prevent a global temperature increase of more than 1.5°C above pre-industrial levels*
 - It has failed to set any binding climate targets for 2030 and 2050 (section 2.9)
 - Its climate strategy for 2030 and 2050 is not in line with the 1.5° limit (section 2.10)
 - No 1.5°C compatible fair share contribution (section 2.10.1)
 - No 1.5°C compatible *domestic* emissions reduction (section 2.10.2)
 - No effective prevention and reduction of emissions occurring abroad that are directly or indirectly attributable to the Respondent (section 2.10.3)
 - Reliance on Carbon Dioxide Removal ('CDR') major risk in the ability to limit warming to 1.5°C (section 2.10.4)
 - The Respondent's binding climate target for 2020 has neither been in line with the 1.5°C limit nor the (outdated) 2°C limit (see AS para. 17 and 19 ff.)
- It failed to implement and enforce measures to meet its inadequate 2020 target (section 2.11)
- The Respondent is *able* to do its share, i.e. to reduce the risk of heat-related excess mortality and morbidity (section 2.12)

2. Complements to the facts presented in the Application and new developments since the submission of the Application

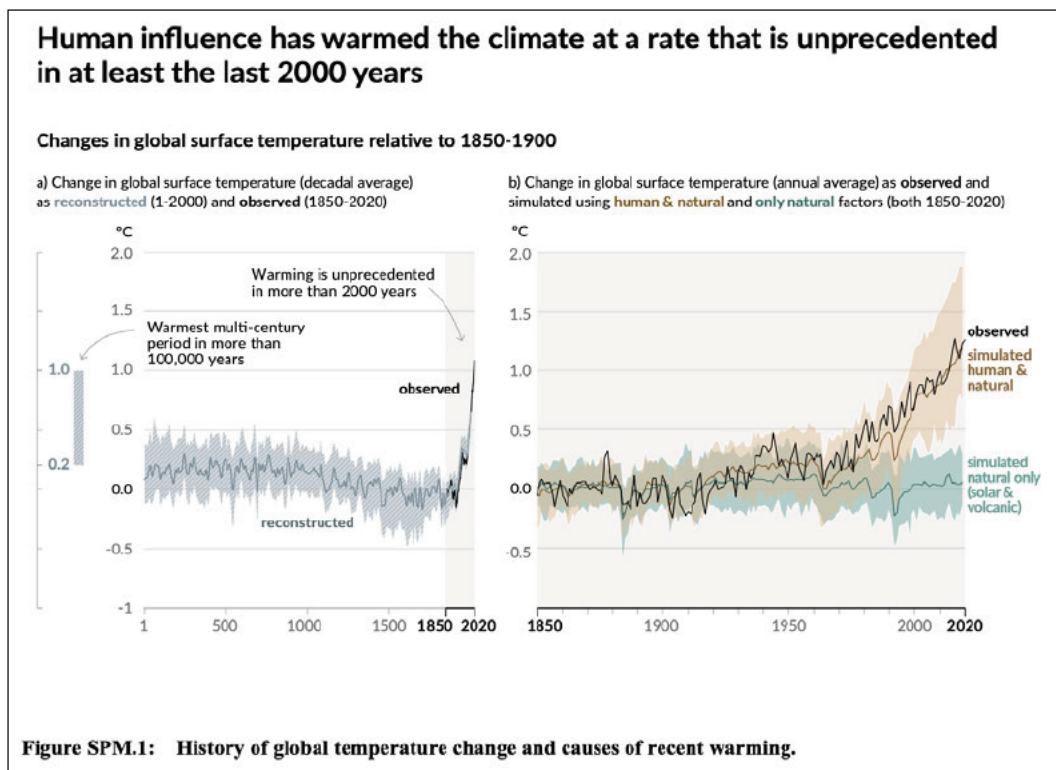
2.1. Human influence has warmed the atmosphere, ocean and land

- 7 Observed increases in GHG concentrations since around 1750 are *unequivocally caused by human activities*. Since 2011, GHG concentrations have continued to increase in the atmosphere, reaching annual averages of 410 ppm for carbon dioxide (CO₂), 1866 ppb for methane (CH₄), and 332 ppb for nitrous oxide (N₂O) in 2019.⁷ The global surface temperature was *1.09°C higher in 2011–2020 than 1850–1900*, with larger increases over land (1.59°C) than over the ocean (0.88°C).⁸ The *likely* range of total *human-*

⁷ IPCC, AR6, Summary for Policymakers (n 4), A.1.1.

⁸ IPCC, AR6, Summary for Policymakers (n 4), A.1.2.

caused global surface temperature increase from 1850–1900 to 2010–2019 is 0.8°C to 1.3°C, with a best estimate of 1.07°C.⁹



Source: IPCC, AR6, Summary for Policymakers (n 4), Figure SPM.1

- 8 In Switzerland, the annual temperature has increased around 2.1°C since 1864 (see Application section 1.1). The rise in the average temperature in Switzerland is thus significantly higher than the global average.

2.2. Respondents' contribution to global warming

2.2.1. Domestic emissions

- 9 In 2018, Switzerland's domestic per capita emissions were 4.2 tonnes of CO₂
- ¹⁰ In terms of GHG emissions (including not only CO₂, but all greenhouse gases, "CO₂eq"), the per capita emissions amounted to 5.41 tonnes of CO₂eq

⁹ IPCC, AR6, Summary for Policymakers (n 4), A.1.3.

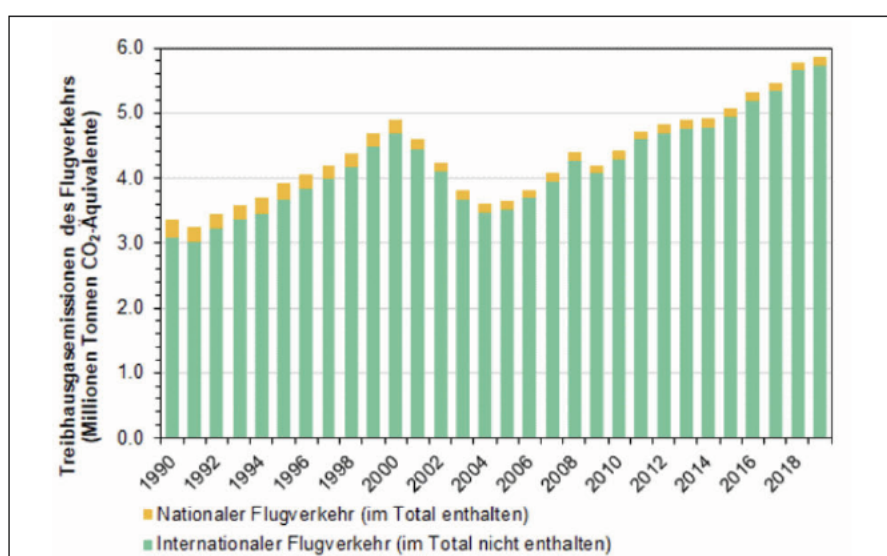
¹⁰ FOEN, Kenngrößen zur Entwicklung der Treibhausgasemissionen in der Schweiz, 1990–2019, aktualisiert im April 2021 (hereinafter "Kenngrößen"), p. 46, available at https://www.bafu.admin.ch/dam/bafu/de/dokumente/klima/fachinfo-daten/kenngrößen_thg_emissionen_schweiz.pdf.download.pdf/Kenngr%C3%B6ssen_2021_D.pdf (last visited 10 October 2021).

in 2019.¹¹ Total domestic GHG emissions in Switzerland in 2019 amounted to 46.22 million tonnes of CO₂eq.¹²

- 10 Since 1750, with its territorial cumulative CO₂ emissions, the Respondent has added 2.92 billion tonnes into the atmosphere.¹³ Its share of global cumulative CO₂ emissions in 2019 was 0.18%.¹⁴

2.2.2. All emissions attributable to Switzerland

- 11 The above calculations take only emissions that *occur on Swiss territory* into account.¹⁵
- 12 They do not include emissions from international aviation, shipping and biogenic¹⁶ CO₂ emissions.¹⁷ Emissions from international aviation attributable to Switzerland amount to 5.74 million tonnes of CO₂eq in 2019¹⁸, which is about 12.5% of total domestic GHG emissions in Switzerland (above para. 9). Remarkably, the emissions from international aviation have nearly doubled since 2004:



Source: FOEN, Treibhausgasemissionen aus dem Flugverkehr (n 18)

¹¹ FOEN, Kenngrößen (n 10), p. 58.

¹² FOEN, Kenngrößen (n 10), p. 40.

¹³ Our world in data, Who has contributed most to global CO₂ emissions? 1 October 2019, Graph available at <https://ourworldindata.org/contributed-most-global-co2> (last visited 10 October 2021).

¹⁴ Our world in data (n 13).

¹⁵ FOEN, Kenngrößen (n 10), p. 4.

¹⁶ Biogenic CO₂ is produced during the combustion of biomass, for example biogas, wood or straw.

¹⁷ FOEN, Kenngrößen (n 10), p. 3.

¹⁸ FOEN, Treibhausgasemissionen aus dem Flugverkehr, last updated 12 April 2021, available at <https://www.bafu.admin.ch/bafu/de/home/themen/klima/zustand/daten/treibhausgasinventar/flugverkehr.html> (last visited 10 October 2021).

- 13 They also do not include consumption-based emissions (in Switzerland so-called “grey emissions”). Consumption-based emissions are defined by the Federal Office for the Environment (FOEN) as follows: When calculating the greenhouse gas emissions caused by consumption in Switzerland, the entire value chain of all goods and services consumed is included. This includes the effort for the extraction, production and transport up to the use and disposal of goods. Consequently, in addition to the emissions caused in Switzerland, the emissions caused abroad are also taken into account. Emissions caused by the production of exported goods, on the other hand, are deducted, as these are not attributable to domestic consumption. The result would be the *GHG footprint of Switzerland*.¹⁹
- 14 According to FOEN, in 2018, Switzerland's GHG footprint amounted to *114 million tonnes of CO₂ equivalents*, with 65% of emissions occurring abroad. Also, in 2018, the GHG footprint per capita was 13 tonnes of CO₂ equivalents,²⁰ which is well over the average of the EU countries.²¹ FOEN states that "Switzerland's greenhouse gas footprint is excessively high in international comparison" and assessed the current state as "poor" and the trend "unsatisfactory".²²
- 15 Against that background, in the 2015 *global ranking of countries*, Switzerland ranked 9th in terms of CO₂ emissions from consumption per capita.²³ And although Switzerland has few inhabitants, it ranked 32nd (of 195) in the ranking of countries of total CO₂ emissions from consumption.²⁴
- 16 Since 1850, in terms of GHG emission footprint, the Respondent added until 2014 approximately 4001 million tonnes of GHGs into the atmosphere, which is about 0.147% of global cumulative emissions.²⁵ The share of global

¹⁹ FOEN, Kenngrößen (n 10), p. 61.

²⁰ FOEN, Kenngrößen (n 10), p. 61.

²¹ FOEN, Indicator Economy and Consumption, Greenhouse gas footprint, last updated 14 June 2021, available at <https://www.bafu.admin.ch/bafu/en/home/themen/thema-wirtschaft-und-konsum/wirtschaft-und-konsum-daten--indikatoren-und-karten/wirtschaft-und-konsum--indikatoren/indikator-wirtschaft-und-konsum.pt.html/aHR0cHM6Ly93d3cuaW5kaWthdG9yZW4uYWRTaW4uY2gyUHVibG/1jL0FlbURLdGFpbD9pbmQ9R1cwMTYmbG5nPWVu1jN1Ymo9Tg%3D%3D.html> (last visited 10 October 2021).

²² FOEN, Indicator Economy and Consumption (n 21).

²³ FOEN, Kenngrößen (n 10), p. 67.

²⁴ FOEN, Kenngrößen (n 10), p. 68.

²⁵ Data from Climatewatch, showing Country Ranks by Total GHG Emissions in a Given Year, 1850-2014, available at <https://www.climatewatchdata.org/key-visualizations?visualization=12> (last visited 11 October 2021). Below the visualization, the crosstab data of the visualization (including the data regarding Switzerland) can be downloaded.

emissions that is caused by Switzerland would approximately double if the emissions caused by goods that are produced abroad but being consumed in Switzerland are also taken into account.

- 17 Also, in all these calculations, *indirect emissions caused by the finance sector are not taken into account*.²⁶ A study published in 2015 commissioned by FOEN has shown that the investments made by the largest equity funds authorised in Switzerland currently tend to *contribute to global warming of 4-6°C*.²⁷

2.3. One of the main impacts of human-induced global warming: *More frequent and more intense heatwaves*

- 18 In the Application, Applicants submitted that human-induced global warming leads to *more frequent and more intense heatwaves* (Additional Submission, hereinafter “AS”, AS para. 29). To underline this statement, the Applicants point to the recently published AR6.

- 19 In its recent AR6, the IPCC states:

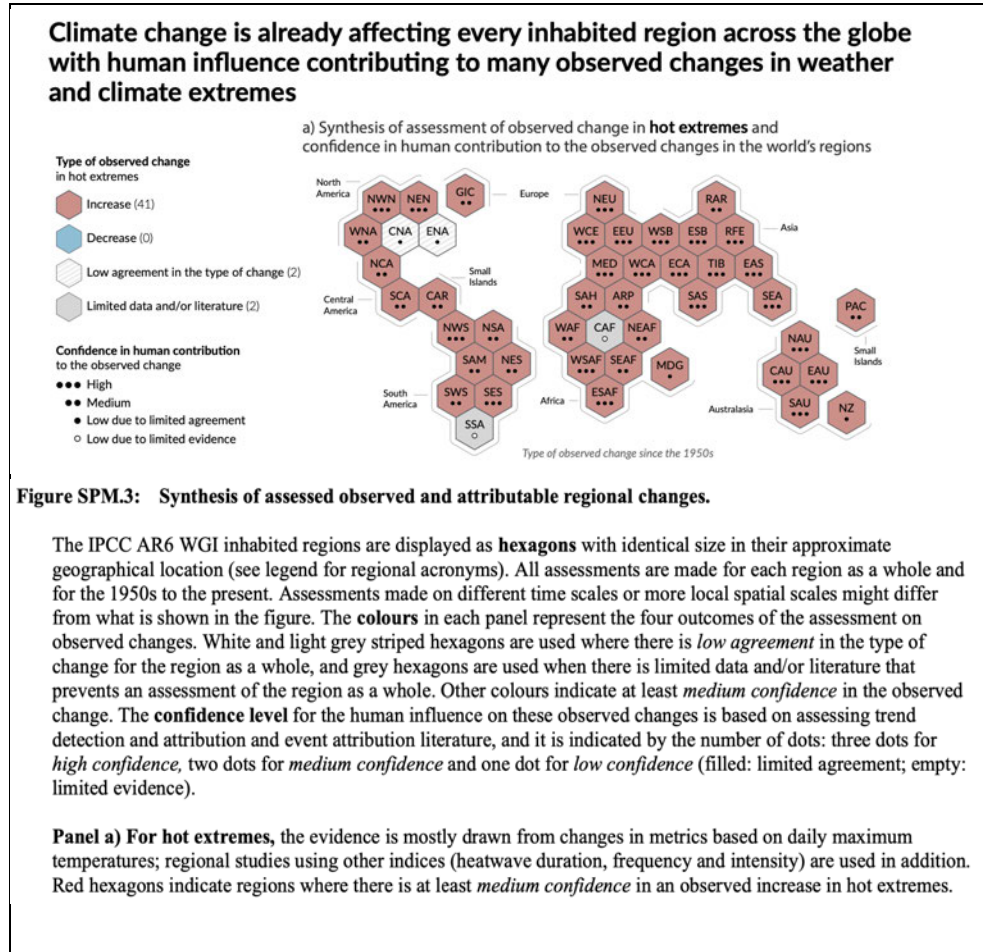
"It is *virtually certain* that hot extremes (including heatwaves) have become more frequent and more intense across most land regions since the 1950s, while cold extremes (including cold waves) have become less frequent and less severe, with *high confidence* that *human-induced climate change is the main driver of these changes*. Some recent hot extremes observed over the past decade would have been *extremely unlikely* to occur without human influence on the climate system"²⁸ (emphasis added).

²⁶ See FOEN, Kenngrößen (n 10), p. 4 and p. 54 *e contrario*.

²⁷ OEHRI ET AL., Kohlenstoffrisiken für den Finanzplatz Schweiz, 23 October 2015, p. 8, available at <https://www.newsd.admin.ch/newsd/message/attachments/41526.pdf> (last visited 10 October 2021).

²⁸ IPCC, AR6, Summary for Policymakers (n 4), A.3.1.

- 20 For Switzerland as part of West & Central Europe (WCE), there is *high confidence* that observed changes in hot extremes are caused by human influence:



Source: IPCC, AR6, Summary for Policymakers (n. 4), Figure SPM.3

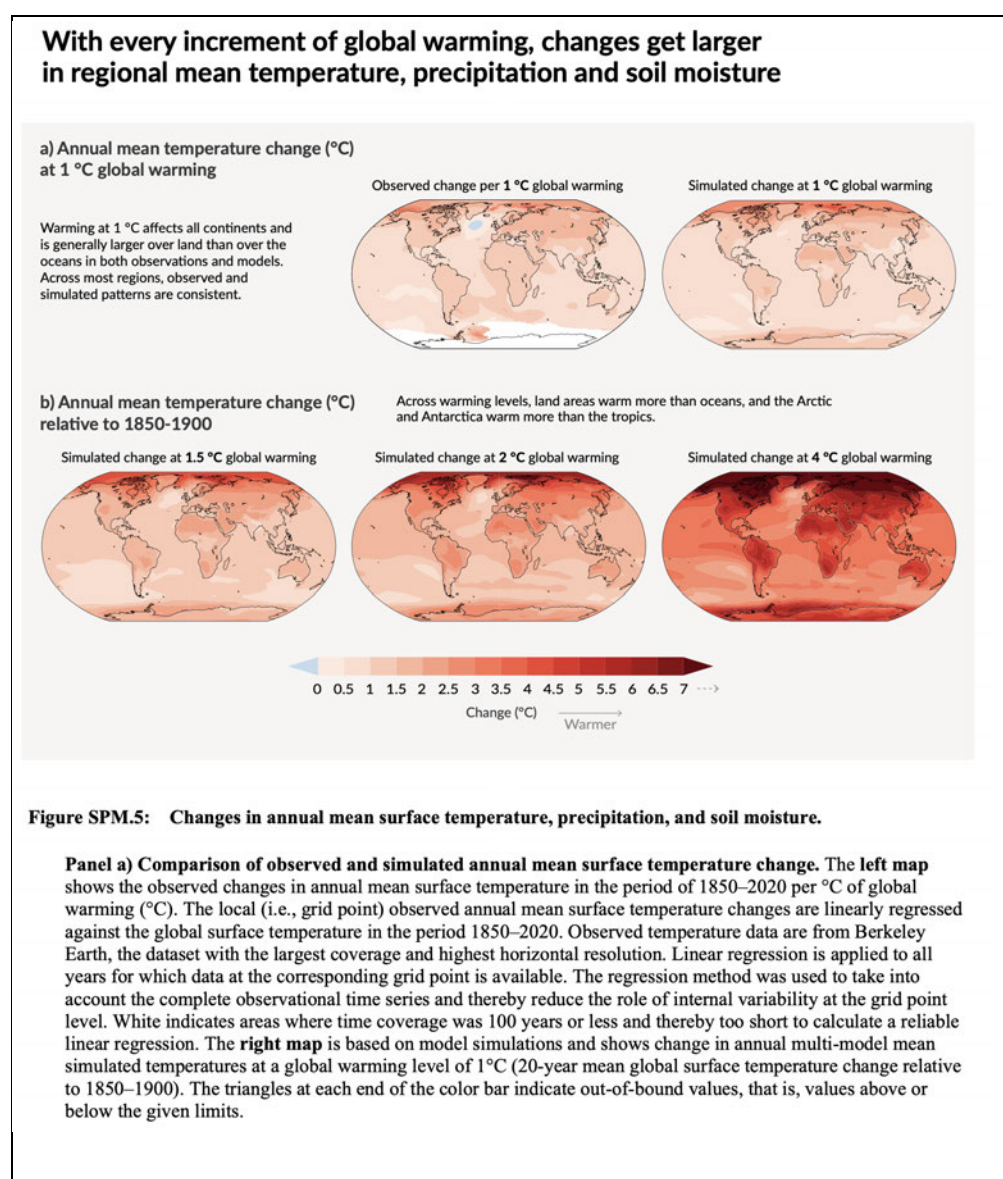
2.4. Intensity and frequency of heatwaves increases with every additional increment of global warming

- 21 In the Application, the Applicants submitted that each additional tonne of CO₂ emitted worsens climate impacts, including the severity and frequency of heatwaves (AS para. 29 and 44). They underline this with findings of the recent AR6.

- 22 In AR6, the IPCC states:

"With *every additional increment* of global warming, changes in extremes continue to become larger. For example, every additional 0.5°C of global warming causes *clearly discernible* increases in the *intensity and frequency of*

*hot extremes, including heatwaves (very likely)" (emphasis added).*²⁹ It visualizes and concretizes this statement with Figure SPM.5 and SPM.6:



Source: IPCC, AR6, Summary for Policymakers (n. 4), Figure SPM.5

²⁹ IPCC, AR6, Summary for Policymakers (n. 4), B.2.2.

Projected changes in extremes are larger in frequency and intensity with every additional increment of global warming

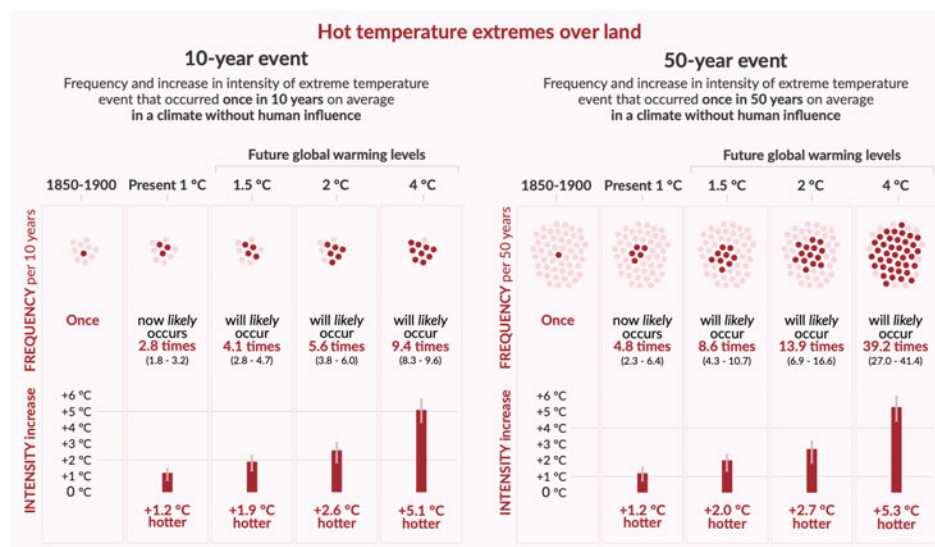


Figure SPM.6: Projected changes in the intensity and frequency of hot temperature extremes over land, extreme precipitation over land, and agricultural and ecological droughts in drying regions.

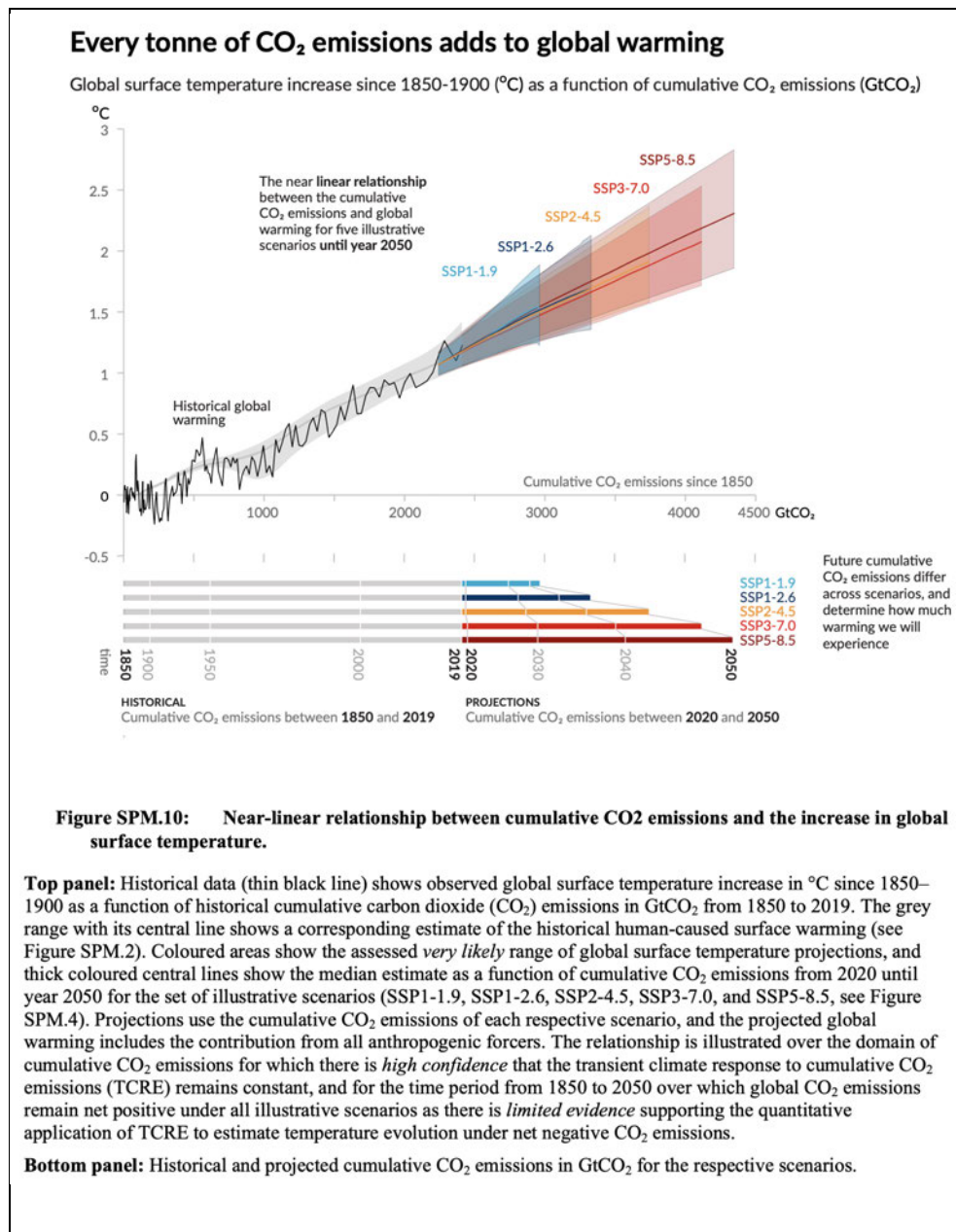
Projected changes are shown at global warming levels of 1°C, 1.5°C, 2°C, and 4°C and are relative to 1850–1900⁹ representing a climate without human influence. The figure depicts frequencies and increases in intensity of 10- or 50-year extreme events from the base period (1850–1900) under different global warming levels.

Hot temperature extremes are defined as the daily maximum temperatures over land that were exceeded on average once in a decade (10-year event) or once in 50 years (50-year event) during the 1850–1900 reference period. **Extreme precipitation events** are defined as the daily precipitation amount over land that was exceeded on average once in a decade during the 1850–1900 reference period. **Agricultural and ecological drought events** are defined as the annual average of total column soil moisture below the 10th percentile of the 1850–1900 base period. These extremes are defined on model grid box scale. For hot temperature extremes and extreme precipitation, results are shown for the global land. For agricultural and ecological drought, results are shown for drying regions only, which correspond to the AR6 regions in which there is at least *medium confidence* in a projected increase in agricultural/ecological drought at the 2°C warming level compared to the 1850–1900 base period in CMIP6. These regions include W. North-America, C. North-America, N. Central-America, S. Central-America, Caribbean, N. South-America, N.E. South-America, South-American-Monsoon, S.W. South-America, S. South-America, West & Central-Europe, Mediterranean, W. Southern-Africa, E. Southern-Africa, Madagascar, E. Australia, S. Australia (Caribbean is not included in the calculation of the figure because of the too small number of full land grid cells). The non-drying regions do not show an overall increase or decrease in drought severity. Projections of changes in agricultural and ecological droughts in the CMIP5 multi-model ensemble differ from those in CMIP6 in some regions, including in part of Africa and Asia. Assessments on projected changes in meteorological and hydrological droughts are provided in Chapter 11. {11.6, 11.9}

In the **‘frequency’** section, each year is represented by a dot. The dark dots indicate years in which the extreme threshold is exceeded, while light dots are years when the threshold is not exceeded. Values correspond to the medians (in bold) and their respective 5–95% range based on the multi-model ensemble from simulations of CMIP6 under different SSP scenarios. For consistency, the number of dark dots is based on the rounded-up median. In the **‘intensity’** section, medians and their 5–95% range, also based on the multi-model ensemble from simulations of CMIP6, are displayed as dark and light bars, respectively. Changes in the intensity of hot temperature extremes and extreme precipitations are expressed as degree Celsius and percentage. As for agricultural and ecological drought, intensity changes are expressed as fractions of standard deviation of annual soil moisture.

Source: IPCC, AR6, Summary for Policymakers (n. 4), Figure SPM.6

- 23 In AR6, the IPCC also "reaffirms with high confidence the AR5 finding that there is a *near-linear relationship between cumulative anthropogenic CO₂ emissions and the global warming* they cause. Each 1000 GtCO₂ of cumulative CO₂ emissions is assessed to likely cause a 0.27°C to 0.63°C increase in global surface temperature with a best estimate of 0.45°C"³⁰ (emphasis added).



Source: IPCC, AR6, Summary for Policymakers (n. 4), Figure SPM.10.

³⁰ IPCC, AR6, Summary for Policymakers (n. 4), D.1.1.

2.5. Climate change-induced heatwaves have caused, are causing and will cause further deaths and illnesses to older women

24 Applicants fully uphold the statements of facts made in the Application, as stated in Additional Submission section 1.1, and fully evidenced by the relevant statements by the IPCC, that climate change-induced heatwaves have caused, are causing and will cause further deaths and illnesses to older people and particularly women. Neither the domestic courts nor the Respondent have ever doubted these facts or the scientific studies on which these facts are based. On the contrary, these facts are an important pillar in the Respondent's Government (FOEN and FOPH) own public communication regarding the public health impacts of climate change (see AS section 1.1 including accompanying documents). This can also be seen in the recent "Management Summary: Climate change in Switzerland, Indicators of driving forces, impact and response" dated 16 November 2020 (hereinafter "Management Summary"), which the Respondent has referenced in its Observations (para. 13–16):

"Climate change also has an impact on society. *Heatwaves place strain on the human body.* They can cause dehydration and the impairment of heart and lung function, leading to an increase in emergency hospital admissions. *Old people* and infants are *particularly at risk*. In Switzerland, 975 more people died during the hot summer of 2003 than in a normal June to August period. *Increased mortality rates* were also recorded in the summers of 2015 and – to a less extreme degree – 2018" (emphasis added).³¹

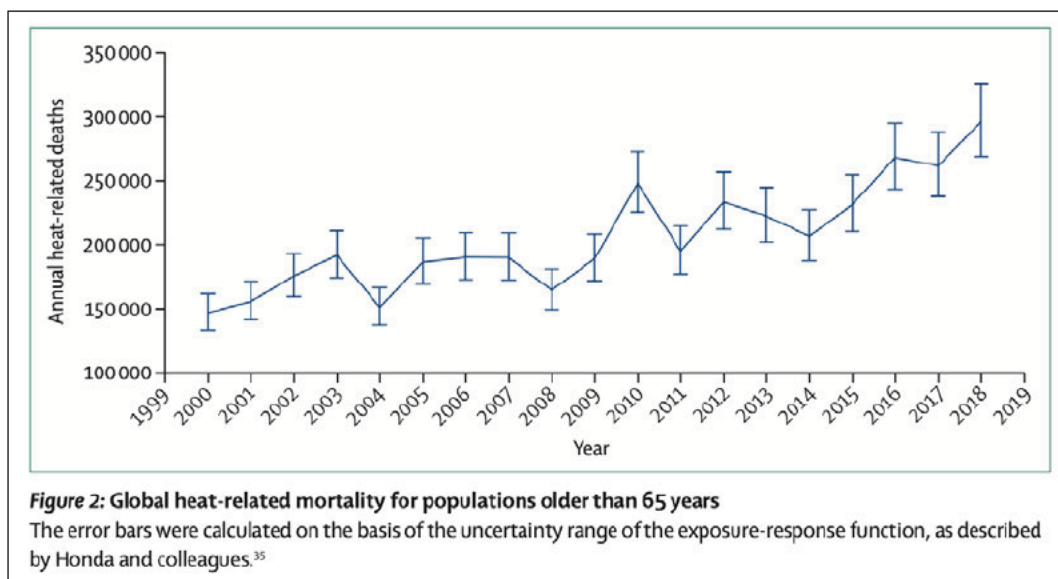
25 In the following, to complement and update these facts, the Applicants submit the following recent scientific findings:

26 The recent 2020 report of The Lancet Countdown³² states that "vulnerable populations were exposed to an *additional 475 million heatwave events* globally in 2019, which was, in turn, *reflected in excess morbidity and mortality*. During the past 20 years, there has been a 53.7% *increase in heat-related mortality in people older than 65 years*, reaching a total of 296'000

³¹ FOEN et al., Management Summary: Climate Change in Switzerland, Indicators of driving forces, impact and response, Bern 2020, p. 9, available at https://www.bafu.admin.ch/dam/bafu/en/dokumente/klima/uz-umwelt-zustand/klimawandel2020.pdf.download.pdf/en_BAFU_UZ_2013_Klimawandel_bf.pdf (last visited 10 October 2021).

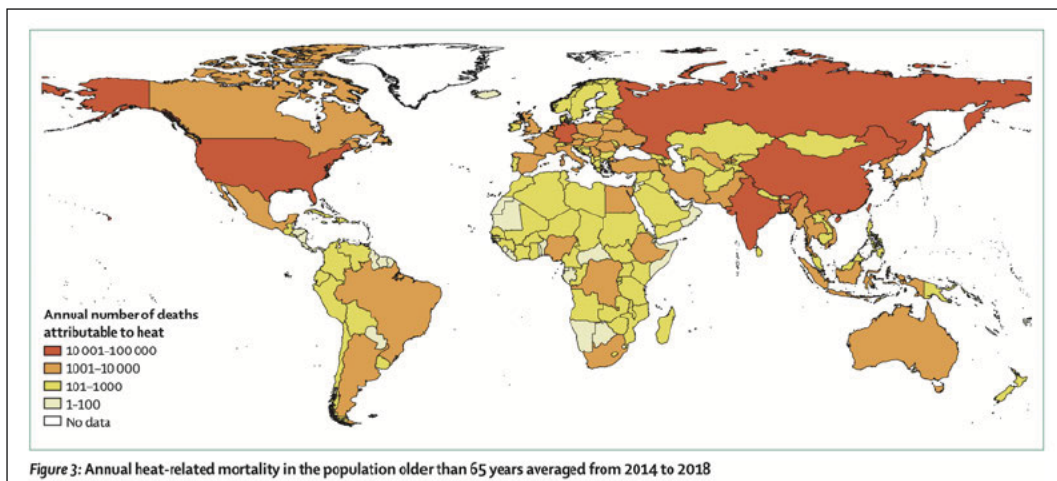
³² WATTS ET AL., The 2020 report of the Lancet Countdown on health and climate change: responding to converging crisis, Vol. 397, 9 January 2021, available at [https://doi.org/10.1016/S0140-6736\(20\)32290-X](https://doi.org/10.1016/S0140-6736(20)32290-X) (doc. 3).

deaths in 2018. The high cost in terms of human lives and suffering is associated with effects on economic output (...) In Europe in 2018, the monetised cost of heat-related mortality was equivalent to 1.2% of regional gross national income, or the average income of 11 million European citizens. Turning to extremes of weather, advancements in climate science allow for greater accuracy and certainty in attribution. Studies from 2015 to 2020 have shown the fingerprints of climate change in 76 floods, droughts, storms, and temperature anomalies"³³ (emphasis added). WATTS ET AL. provide for the following figures visualizing their statements:



Source: WATTS ET AL., The 2020 report of the Lancet Countdown on health and climate change (n 32), Figure 2

³³ WATTS ET AL., The 2020 report of the Lancet Countdown on health and climate change (n 32) (doc. 3).

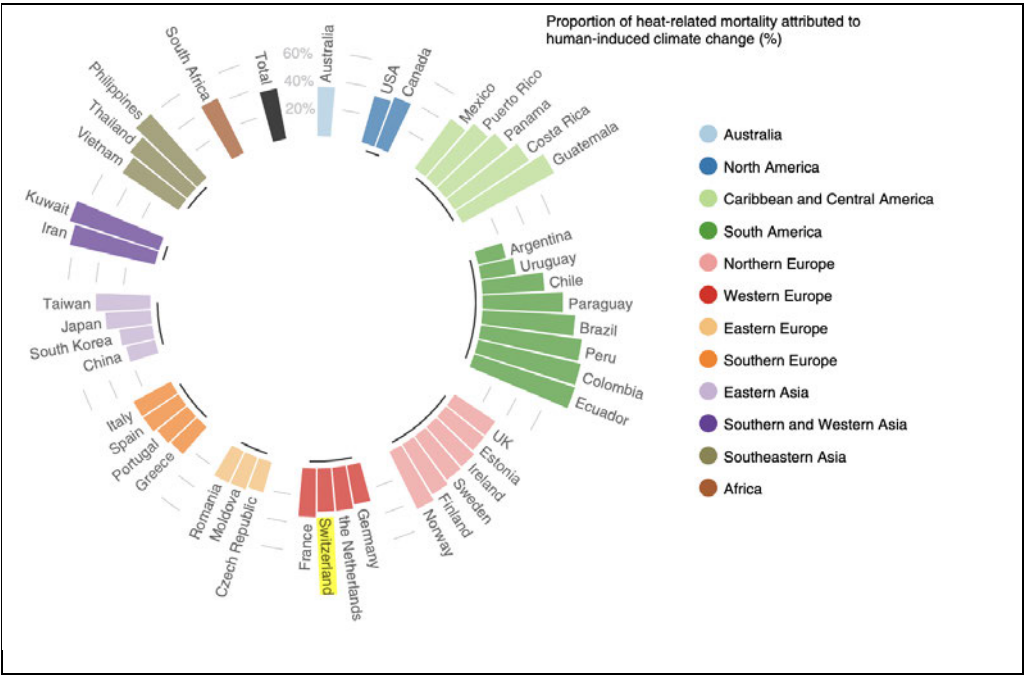


Source: WATTS ET AL., The 2020 report of the Lancet Countdown on health and climate change (n 32), Figure 3

- 27 A recent attribution study conducted by VICEDO-CABRERA/SCOVRONICK/SERA ET AL. on "The burden of heat-related mortality attributable to recent human-induced climate change" published 31 May 2021 found that:
- "37.0% (range 20.5–76.3%) of warm-season heat-related deaths can be attributed to anthropogenic climate change and that increased mortality is evident on every continent. Burdens varied geographically but were of the order of dozens to hundreds of deaths per year in many locations. Our findings support the urgent need for more ambitious mitigation and adaptation strategies to minimize the public health impacts of climate change."³⁴
- 28 Regarding *Switzerland*, the study found that around 30% of the warm-season heat-related deaths can be attributed to anthropogenic climate change. This is

³⁴ VICEDO-CABRERA/SCOVRONICK/SERA ET AL. (n 2), p. 1(*doc. 1*).

demonstrated in the following figure showing the warm-season heat-related mortality (emphasis in yellow added):



Source: VICEDO-CABRERA/SCOVRONICK/SERA ET AL. (n 2), Fig. 4c

- 29 In a 2021 case-crossover study conducted by SAUCY ET AL. specifically concerning cardiovascular deaths in Zurich (city of Switzerland) area between 2000 and 2015, SAUCY ET AL. also found an increased risk of mortality due to heat. They highlighted that heat-related mortality was particularly strong *among older women (>75 years)*.³⁵
- 30 Additionally, RAGETTLI/RÖÖSLI noted on the summer 2019 that "the age-specific analyses of heat-related excess mortality once again *confirm older persons as the largest risk group of heat-related health damage in Switzerland*"³⁶ (emphasis added). RAGETTLI/RÖÖSLI provide the following table

³⁵ SAUCY ET AL., The role of extreme temperature in cause-specific acute cardiovascular mortality in Switzerland: A case-crossover study, Science of The Total Environment, Vol. 790, 10 October 2021, available at <https://doi.org/10.1016/j.scitotenv.2021.147958>.

³⁶ RAGETTLI/RÖÖSLI, Hitzebedingte Sterblichkeit im Sommer 2019, Primary and Hospital Care 2021;21(03):90-95, 3 March 2021, available at <https://doi.org/10.4414/phc-d.2021.10296>.

on *heat-related excess mortality* in Switzerland during the four hottest summers to date and in each of the warmest months:

Tabelle 3: Hitzebedingte Übersterblichkeit in der Schweiz während den bisher vier heissesten Sommer und in den jeweils wärmsten Monaten.

Sommer	Rangfolge der heissesten Sommer ^a	°C über Norm (1981–2010) ^a	Juni–August		Wärmster Monat		Referenzperiode	Quelle
			Zusätzliche Todesfälle (Anzahl)	Zusatzsterblichkeit (%)	Monat	Zusätzliche Todesfälle (Anzahl)		
2003	1	+3,6	975	6,9%	August		1993–2002	[7]
2015	2	+2,4	804	5,4%	Juli	570	2005–2014	[6]
2018	4	+2,0	185 ^b	1,2% ^b	August	177	2009–2017	[8]
2019	3	+2,3	521	3,5%	Juli	308	2009–2018	

^a gemäss MeteoSchweiz [16–18]; ^b nicht statistisch signifikant

Source: RAGETTLI/RÖÖSLI, Hitzebedingte Sterblichkeit im Sommer 2019 (n 36), Table 3

- 31 It is also worth mentioning that the upcoming authoritative assessment report on climate impacts and vulnerability (IPCC AR6 Climate Change 2022: Impacts, Adaptation and Vulnerability) will probably contain an updated assessment on climate change-induced mortality and morbidity when it is published in February 2022.³⁷
- 32 Overall, according to MITCHELL, mortality associated with rising temperatures is *one of the clearest and impactful fingerprints of a changing climate*.³⁸
- 2.6. Heatwaves are causing and have already caused illnesses and restrictions of wellbeing to the Applicants in the past
- 33 The Applicants fully uphold the statements of facts made in the Application, as elaborated in Additional Submission section 1.2. To complement these statements and add further anecdotal evidence, they submit the following:
- 34 The medical doctor of Applicant 3, that has been treating her cardiologically since 2015, confirmed again on 23 September 2021³⁹ Applicant's 3 significant

³⁷ See for schedule <https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/> (last visited 12 October 2021).

³⁸ MITCHELL, Climate attribution of heat mortality, *Nature Climate Change* 11, 467–468 (2021), available at <https://doi.org/10.1038/s41558-021-01049-y> (doc. 4).

³⁹ Medical Certificate Applicant 3, 23 September 2021 (doc. 5).

suffering from heat-related illnesses (AS para. 9). In detail, the doctor confirms the following:

“Elle est suivie et traitée par plusieurs médicaments pour une hypertension artérielle ainsi que pour de l'arythmie cardiaque.

Durant les fortes chaleurs, le traitement ne peut pas être maintenu tel quel, car la patiente présente des baisses de tension et des déstabilisations de son arythmie, ayant mené des consultations et à des sanctions thérapeutiques.

Cette situation a effectivement été constatée de façon régulière depuis 2018. Les canicules de l'époque ont selon mon dossier médical alors confiné la patiente à domicile, ne lui permettant de sortir que tôt le matin ou le soir. Des hypotensions ont été documentées, avec des systoliques < 100 mmHg, des malaises hypotensifs se sont manifestés mais sans perte de connaissance. Ils se manifestent par une faiblesse générale, un lâchage des membres inférieurs, l'obligeant à se coucher, et à surélever ses jambes. Les arythmies plus importantes durant ces périodes ont également nécessité une augmentation d'un double traitement anti-arythmique.

Les recommandations d'usage sont également suivies par la patiente durant cette période: habits qui ne soient pas serrés, douches fraîches régulières, bonne hydratation.”

- 35 Besides Applicant 3, three members of the Applicant 1 (hereafter Member 1, 2 and 3) respectfully submit to the Court recent medical certificates and personal statements, showing significantly suffering from heat.
- 36 Member 1 is 66 years old. She has been suffering from venous insufficiency of the lower limbs for more than 10 years, which has been treated surgically. To control it, she receives venotonic medication and elastic support. This situation is regularly aggravated by recurrent heatwaves.⁴⁰
- 37 Member 2 is herself a doctor and describes in her statement that during the last years, the Respondent Government regularly sent her posters to hang up in the waiting room of her medical practice, and brochures to distribute among her patients, both explaining that heat poses a danger to older persons, and what measures can be taken. Member 2 remarks that during heat waves,

⁴⁰ Medical Certificate Member 1, 17 September 2021 (*doc. 6*).

she noticed a fragilisation of her elderly patients, inter alia an exacerbation of cardiovascular and pulmonary diseases.⁴¹

- 38 Member 3 is 75 years old. Excessive heat contributes heavily to her quality of life. She has difficulties moving around, and when she does, she finds it hard to breathe. This is partly due to water retention in her legs, which is more acute in the heat. Because of the risk that heat is posing to her health, in addition to her domicile, she was forced to rent a flat in the mountains, where the temperature is cooler. However, this imposes a heavy financial burden on her. Also, in her flat in the mountains, it is difficult for her to obtain health care, and interpersonal contacts are rare.⁴²
- 39 Regarding Applicant 2 who died on 15 July 2021, the Representatives informed the Court in their letter of 8 September 2021 that her son, [REDACTED] wishes to continue his mother's proceedings before the Court.⁴³ The Representatives enclosed the certificate of inheritance ("Erbschein")⁴⁴ and the birth certificate ("Geburtsschein")⁴⁵ of her son. In its letter dated 27 September 2021, the Respondent submitted that it has no objection to the son pursuing the application brought by his deceased mother.

2.7. Staying within the 1.5°C limit would significantly reduce the risk of heat-related excess mortality and morbidity

- 40 Regarding the fact that staying within the 1.5°C limit would significantly reduce the risk of heat-related excess mortality and morbidity, the Applicants fully uphold the statements of facts made in the Application, AS section 1.5, which have been fully evidenced. Applicants add that there is an *exponential* increase in mortality with increasing temperatures.⁴⁶

2.8. Knowledge of the Respondent

- 41 The Respondent knows about all the issues mentioned (section 2.1–2.7), as stated in the Application (as set out in AS para. 55). It is clear from Respondent's Government public communications (see e.g. accompanying documents as set out in AS section 1.1 and the Respondent's Government

⁴¹ Personal Statement Member 2, 27 September 2021 (*doc. 7*).

⁴² Personal Statement Member 3, 2021 (*doc. 8*).

⁴³ Power of Attorney, 6 October 2021 (*doc. 9*).

⁴⁴ Certificate of inheritance Applicant 2, 2021 (*doc. 10*).

⁴⁵ Birth certificate son of Applicant 2 (*doc. 11*).

⁴⁶ MITCHELL (n 38) (*doc. 4*) with further references.

preparatory work with regard to the reduction of GHGs⁴⁷), its endorsement of the IPCC's findings (see AS para. 14 ff.) and by being part of the UNFCCC and the Paris Agreement that the Respondent knows and acknowledges the risks and harms caused by climate change-induced heatwaves. The Respondent has never contested these facts either.

2.9. The Respondent has failed to set any domestically binding climate targets for 2030 and 2050

- 42 Under the Paris Agreement (Art. 4 (2)), the Respondent submitted in late 2020 a formally updated nationally determined contribution (NDC) on its plans to achieve the Paris Agreement's 1.5°C long-term temperature goal. It reads as follows:

"Switzerland is committed to follow recommendations of science in order to limit warming to 1.5 degrees Celsius. In view of its *climate neutrality target by 2050*, Switzerland's NDC is to reduce its greenhouse gas emissions *by at least 50 percent by 2030 compared with 1990 levels*, corresponding to an average reduction of greenhouse gas emissions by at least 35 percent over the period 2021–2030. *By 2025, a reduction of greenhouse gases by at least 35 percent compared with 1990 levels is anticipated. Internationally transferred mitigation outcomes (ITMOs) from cooperation under Article 6 of the Paris Agreement will partly be used.* The methodological approaches underlying the Swiss NDC are included in this communication."⁴⁸

- 43 However, the Respondent has failed to implement its NDC into national law. The current CO₂-legislation contains only a binding emissions reduction target for 2020 (Art. 3(1) CO₂ Act), that has been extended to 2021 (Art. 3(1^{bis}) CO₂ Act). A new binding target for 2030 has been rejected in a referendum on the new CO₂ Act on 13 June 2021.
- 44 The rejection took place despite a legislative process in Parliament lasting several years. The Respondent Government submitted its dispatch on the total revision of the CO₂ Act after 2020 to the Respondent Parliament on

⁴⁷ See e.g. BBl 2018 247, BBl 2009 7433, BBl 2021 1972; for excerpts see the Observations on the Law, hereinafter "OL", section 1.2.

⁴⁸ Switzerland's information necessary for clarity, transparency and understanding in accordance with decision 1/CP.21 of its updated and enhanced Nationally Determined Contribution (NDC) under the Paris Agreement (2021-2030, p. 6, available at https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Switzerland%20First/Switzerland_Full%20NDC%20Communication%202021-2030%20incl%20ICTU.pdf (last visited 11 October 2021)).

- 1 December 2017.⁴⁹ The Respondent Parliament started the debate about the Respondent Government's proposal one year later, on 3 December 2018.⁵⁰ It eventually agreed on a new CO₂ Act on 25 September 2020.⁵¹
- 45 Despite the extraordinarily long debates, the Respondent Parliament failed to agree on a CO₂ Act on which all Swiss Parties stand behind, which is why the Swiss People's Party ("SVP") launched a referendum against the new CO₂ Act. Their referendum campaign, based mainly on claims of higher housing and transport costs, was successful. The other major parties and the Respondent Government failed to effectively counter this campaign.
- 46 The Respondent plans to debate again on a new CO₂ Act. They allow for a period of more than three years for a new law to come into force. A Parliamentary Commission has proposed an interim solution for extending the expiring instruments of the CO₂ Act, until the end of 2024, with which the Federal Council agrees.⁵² The aim is to hold the final parliamentary vote on the interim bill in the 2021 parliamentary winter session. The draft interim solution entails a climate target to reduce GHG emissions by 1.5% per year until 2024. Three-quarters of these reductions needed to be reached with domestic measures, one quarter can be met with measures abroad.⁵³ With this system domestic emissions would be reduced by 1,125% per year, i.e. of 24.5% below 1990 levels by 2024. This is about a third less ambitious than the envisaged 37.5% by 2030 in the rejected (inadequate⁵⁴) new CO₂ Act, which would have entailed a domestic reduction of 1.75% per year⁵⁵, and well below the ambition expressed in its NDC (see above para. 42).
- 47 Furthermore, particularly with regard to 2050, it is worth mentioning that neither "Switzerland's Long-Term Climate Strategy" dated 27 January 2021⁵⁶,

⁴⁹ BBl 2018 247.

⁵⁰ See Geschäft Nr. 17.071, Totalrevision des CO₂-Gesetzes nach 2020, available at: <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaeft?AffairId=20170071> (last visited 12 October 2021).

⁵¹ BBl 2020 7847.

⁵² Der Bundesrat, Bundesrat unterstützt Weiterführung unbestrittener Instrumente des CO₂-Gesetzes bis 2024, 17 September 2021, available at <https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-85136.html> (last visited 12 October 2021); BBl 2021 2252.

⁵³ UREK-N, Medienmitteilung, Übergangslösung für auslaufende Instrumente des CO₂-Gesetzes, 25 August 2021, available at <https://www.parlament.ch/press-releases/Pages/mm-urek-n-2021-08-25.aspx?lang=1031> (last visited 12 October 2021).

⁵⁴ See AS, section 1.3.1 and 1.3.2 and below section 2.10.

⁵⁵ $37.5 - 20 = 17.5 / 10 = 1.75$.

⁵⁶ The Federal Council, Switzerland's Long-Term Climate Strategy, 27 January 2021, available at <https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/emission-reduction/reduction-targets/2050-target/climate-strategy-2050.html> (last visited 12 October 2021)

nor the recent dispatch on the counter-proposal⁵⁷ to the popular initiative "For a healthy climate (Glacier Initiative)"⁵⁸ dated 11 August 2021 (hereinafter "counter-proposal 2021"), contain any binding climate targets.

2.10. Respondents' climate strategy is not in line with the 1.5°C limit

2.10.1. No 1.5°C compatible fair share contribution

- 48 The Applicants laid down in the Application that the Respondent's 2020 and (proposed) 2030 climate targets are not in line with international climate law and the best available science. The Applicants showed that the Respondent's 2020 and 2030 climate targets fail to meet the 1.5°C limit and even the outdated 2°C limit (AS section 1.3.1 and 1.3.2). Since the filing of the application, the 2030 climate target, entailing a domestic emission reduction of 37.5% and an emission reduction abroad of 12.5% by 2030 below 1990 levels (Art. 3(1) and (2) new CO₂ Act) was rejected.
- 49 The Applicants also cited the IPCC science indicating that the 1.5°C SR stated that in pathways that are consistent with staying within the long-term warming limit of 1.5°C, global net anthropogenic CO₂ emissions decline by about 45% below 2010⁵⁹ levels by 2030 (which translates to about 50% below current, pre-covid levels) and reach net zero by 2050 (AS para. 20).
- 50 The above net-zero target assessed by the IPCC is for the *global* pathway and therefore needs to be achieved *collectively*. National net-zero targets do not necessarily have to coincide with the net-zero years and global pathways⁶⁰, quite the contrary, as shown below (below para. 54 ff.).
- 51 The Applicants have left open the question as to what the Respondent has to undertake in terms of national emission reductions to meet the 1.5°C limit. Complementing the Application, the Applicants submit that the *Respondent needs to reduce emissions by 2030 to net negative levels (as compared to the emissions in 1990) in order to comply with the 1.5°C limit, for the reasons set out below*. It is worth mentioning here already that this target includes a *domestic component of a 61% reduction (range: 53–67%) by 2030 below 1990 levels and a foreign component through emissions reduction in other*

⁵⁷ See Art. 139 and 139b of the Swiss Constitution.

⁵⁸ BBl 2021 1972 (see also OL section 1.2.3).

⁵⁹ The different reference years 1990 and 2010 are of little importance for Switzerland, as emissions in 1990 and 2010 are very similar.

⁶⁰ UNEP, Emissions Gap Report 2020, 9 December 2020, p. 34, available at <https://www.unep.org/emissions-gap-report-2020> (last visited 12 October 2021).

countries so overall net negative emissions can be reached (see hereto section 2.10.2).

- 52 Limiting global temperature increase to a specific level implies limiting cumulative CO₂ emissions within a *carbon budget*.⁶¹ In its recent AR6, the IPCC presented its latest numbers on the remaining carbon budget (calculated from the beginning of 2020):

Table SPM.2: Estimates of historical CO₂ emissions and remaining carbon budgets. Estimated remaining carbon budgets are calculated from the beginning of 2020 and extend until global net zero CO₂ emissions are reached. They refer to CO₂ emissions, while accounting for the global warming effect of non-CO₂ emissions. Global warming in this table refers to human-induced global surface temperature increase, which excludes the impact of natural variability on global temperatures in individual years. {Table TS.3, Table 3.1, Table 5.1, Table 5.7, Table 5.8, 5.5.1, 5.5.2, Box 5.2}

Global warming between 1850–1900 and 2010–2019 (°C)		Historical cumulative CO ₂ emissions from 1850 to 2019 (GtCO ₂)				
1.07 (0.8–1.3; <i>likely</i> range)		2390 (± 240; <i>likely</i> range)				

Approximate global warming relative to 1850–1900 until temperature limit (°C)*(1)	Additional global warming relative to 2010–2019 until temperature limit (°C)	Estimated remaining carbon budgets from the beginning of 2020 (GtCO ₂)					Variations in reductions in non-CO ₂ emissions*(3)
		Likelihood of limiting global warming to temperature limit*(2)					
		17%	33%	50%	67%	83%	
1.5	0.43	900	650	500	400	300	Higher or lower reductions in accompanying non-CO ₂ emissions can increase or decrease the values on the left by 220 GtCO ₂ or more
1.7	0.63	1450	1050	850	700	550	
2.0	0.93	2300	1700	1350	1150	900	

*(1) Values at each 0.1°C increment of warming are available in Tables TS.3 and 5.8.

*(2) This likelihood is based on the uncertainty in transient climate response to cumulative CO₂ emissions (TCRE) and additional Earth system feedbacks, and provides the probability that global warming will not exceed the temperature levels provided in the two left columns. Uncertainties related to historical warming (±550 GtCO₂) and non-CO₂ forcing and response (±220 GtCO₂) are partially addressed by the assessed uncertainty in TCRE, but uncertainties in recent emissions since 2015 (±20 GtCO₂) and the climate response after net zero CO₂ emissions are reached (±420 GtCO₂) are separate.

*(3) Remaining carbon budget estimates consider the warming from non-CO₂ drivers as implied by the scenarios assessed in SR1.5. The Working Group III Contribution to AR6 will assess mitigation of non-CO₂ emissions.

Source: IPCC, AR6, Summary for Policymakers (n 4), Table SPM.2

- 53 According to the information in the table above, to have a 67% chance to stay within the 1.5°C limit, the remaining *global* carbon budget amounts to 400 GtCO₂. To increase the chance to 83%, the remaining global carbon budget is 300 GtCO₂.

⁶¹ IPCC, AR6, Summary for Policymakers (n 4), D.1.1.1.

- 54 The question remains, how this global carbon budget can be apportioned between states.
- 55 Switzerland's share of total global population is around 0.11% (Application doc. 49). With globally the same *per capita burden sharing for emissions from 2020 onwards (i.e. "equal per capita emissions" with no further considerations such as the extensive per capita contribution to cumulative emissions before 2020)*, Switzerland has a remaining carbon budget of 0.44 GtCO₂ (likelihood of 67%) resp. 0.33 GtCO₂ (likelihood of 83%) from the beginning of 2020. At 2019 emission levels, the *equal per capita emissions CO₂ budget* will be used up in around 12 years, i.e. 2033 (likelihood of 67%) resp. 9 years, i.e. 2030 (likelihood 83%).⁶² Translated in a scenario with a linear CO₂ reduction pathway, Switzerland would have to be net-zero around the year 2042 (likelihood 67%) resp. around the year 2036 (likelihood 83%).⁶³ The budgets for CO₂ emissions can increase or decrease depending on developments in non-CO₂ emissions.
- 56 Having said that, the quantification approach "equal per capita emissions" standing alone is *not a valid approach to determine national "fair shares" in reducing greenhouse gas emissions*. This also does not seem to be the view of the Respondent, as it is including more approaches to determine its NDC.⁶⁴
- 57 The general understanding of a *fair level of contribution* is that it reflects the "highest possible ambition" and "common but differentiated responsibilities and respective capabilities, in the light of different national circumstances" (hereafter "CBDR-RC") (Art. 4(3) Paris Agreement, Art. 3(1) and 4(1) UNFCCC, Principle 7 Rio Declaration). While there is no set agreed mechanism under the UNFCCC on what constitutes a fair level of contribution in light of CBDR-RC, international law principles inform the assessment of what the range of *fair level of contribution* would look like.
- 58 It should be noted at the outset that the IPCC in its AR4 and AR5, as mentioned in the Additional Submission, para. 17 and 18, presented findings on the basis of an assessment of the then-existing effort-sharing literature. The effort-sharing analysis provided by AR4 and AR5 does, however, have

⁶² Calculation of the remaining CO₂-budget based on AR6 by the Applicants (*doc. 12*).

⁶³ Calculation of the linear pathway based on AR6 by the Applicants (*doc. 13*).

⁶⁴ See e.g. Updated NDC (n 48).

limitations when used to determine a State's 'fair share'.⁶⁵ A key problem arises when each State 'cherry picks' the equity interpretation that is most preferable to it. If all States adopt the lowest end of their 'fair share' range, the temperature target will be missed by a significant margin.⁶⁶ More recent academic studies have attempted to address this limitation in effort-sharing analyses.⁶⁷

- 59 A prominent example is a recent study by RAJAMANI ET AL.⁶⁸ Similar to the assessment in AR4 and AR5, the study considers the full spectrum of effort sharing methodologies but then assesses these methodologies through the prism of the established principles of international environmental law, which also inform the interpretation of the Convention.⁶⁹ The study identifies the methodologies that are consistent with principles and norms of international law, such as equity and CBDR-RC. Methodologies that are not in line with these norms and principles, such as cost efficiency, small share of global emissions and emissions per GDP are excluded from the results presented in the paper,⁷⁰ thus reducing the range of each country that can be considered as 'fair'.⁷¹ Finally the study further narrows each State's "Fair share Range" of emissions reductions to ensure that collectively the 1.5°C long-term temperature limit can be met.⁷² The authors concluded that an environmental law-compliant reading of the global carbon budget results in the conclusion that *developed states have a Paris temperature goal compatible emission level in 2030 that is net-negative*.⁷³ With regard to Switzerland, RAJAMANI ET AL. calculated that emissions needed to be similar to other European countries

⁶⁵ MAXWELL/MEAD/VAN BERKEL, Standards for adjudicating the next generation of *Urgenda*-style climate cases, in: ALABRESE/SAVARESI/SCOTT (eds.), Special Issue, Climate Change Litigation and Human Rights: Stocktaking and a Look at the Future, Journal of Human Rights and the Environment, *forthcoming*.

⁶⁶ This was one of the grounds for critique on the outcome in the *Urgenda* case. See for instance: LISTON, 'Enhancing the Efficacy of Climate Change Litigation: How to Resolve the 'Fair Share Question' in the Context of International Human Rights Law, Volume 9 Issue 2 Cambridge International Law Journal, pp. 241–263, available at <https://doi.org/10.4337/cilj.2020.02.07>.

⁶⁷ MAXWELL/MEAD/VAN BERKEL (n 65).

⁶⁸ RAJAMANI ET AL., National 'fair shares' in reducing greenhouse gas emissions within the principled framework of international environmental law, Climate Policy Volume 21 Issue 8, pp. 983–1004, 7 September 2021, available at <https://doi.org/10.1080/14693062.2021.1970504>.

⁶⁹ International environmental law principles assessed included: "harm prevention, precaution, sustainable development, special circumstances, equity (inter- and intra-generational), common but differentiated responsibilities, public participation, international cooperation and good faith" RAJAMANI ET AL. (n 68), p. 985.

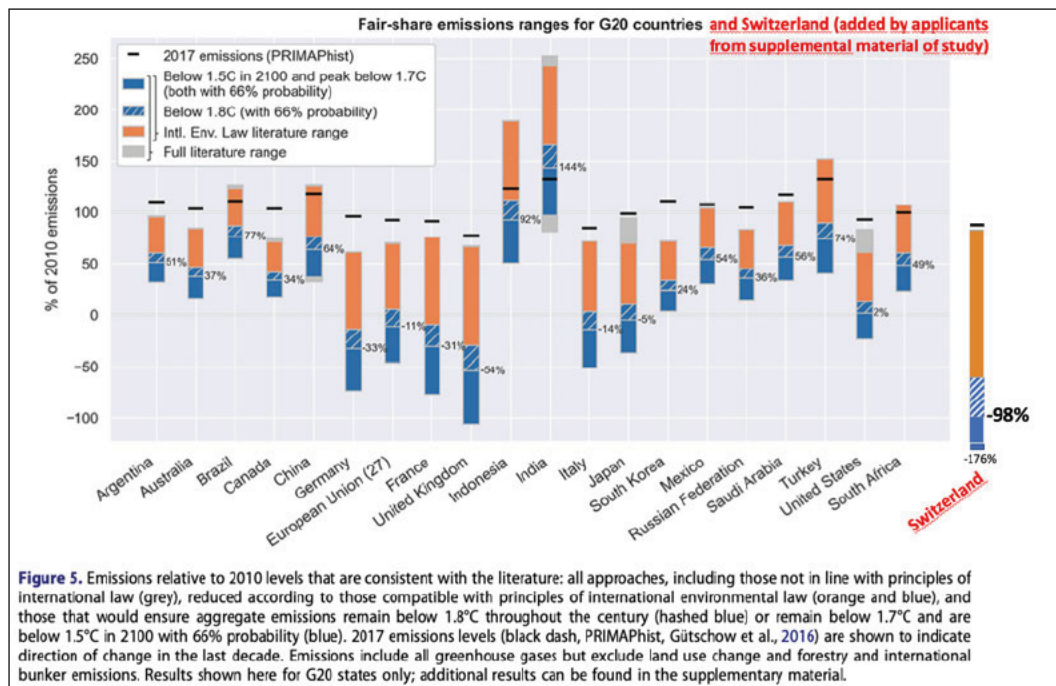
⁷⁰ RAJAMANI ET AL. (n 68), p. 991.

⁷¹ See also MAXWELL/MEAD/VAN BERKEL (n 65).

⁷² See also MAXWELL/MEAD/VAN BERKEL (n 65).

⁷³ RAJAMANI ET AL. (n 68), p. 999.

net negative in 2030 reaching a level of -98% of 2010 emissions in order to stay below 1.5°C in 2100 with a 66% probability and a maximal temperature overshoot peak of 1.7°C.⁷⁴ The Applicants fully refer to this study as an integral part of their observations and provide the Court with the following, own visualization of RAJAMANI ET AL.'s conclusion on Switzerland:



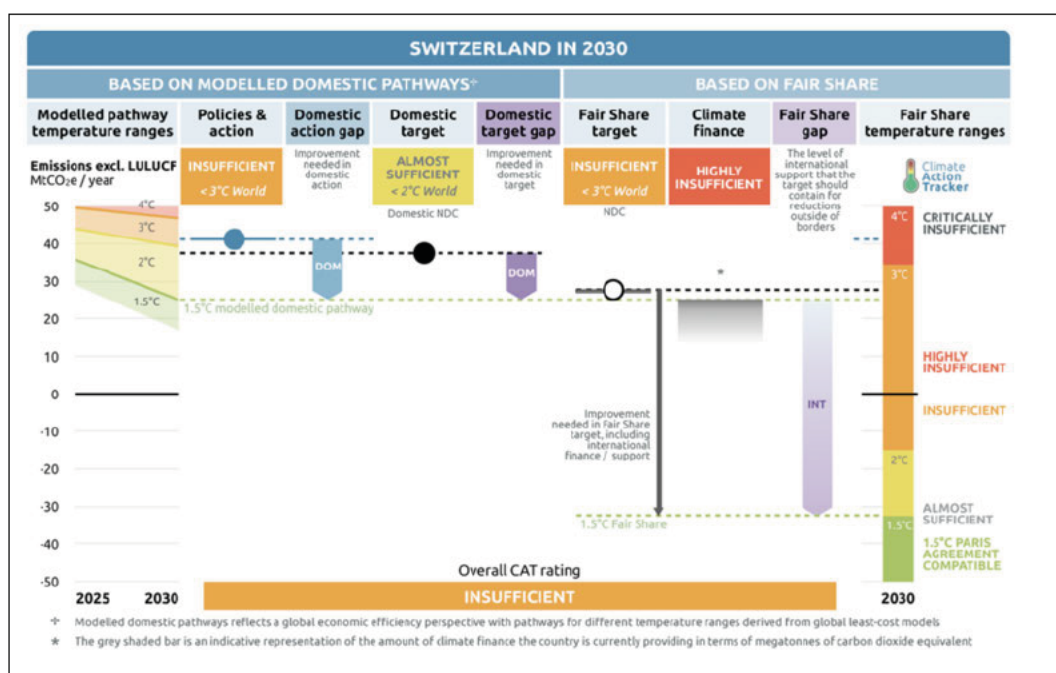
Source: RAJAMANI ET AL. (n 68), Figure 5 (the range for Switzerland added by the Applicants from the supplemental material of the study)

- 60 The Applicants reiterate that the fact that the Respondent's climate strategy is not in line with the 1.5°C limit is also confirmed by the Climate Action Tracker (CAT) and Swiss academies of science. The CAT is a collaboration of two independent climate science institutes which assesses States' NDCs against the globally agreed Paris Agreement temperature limit.⁷⁵ With regard to Switzerland's NDC, CAT will fully analyse Switzerland's profile in the coming months, at which time the rating may change, but at present the CAT

⁷⁴ RAJAMANI ET AL. (n 68), Supplemental material, available at <https://www.tandfonline.com/doi/suppl/10.1080/14693062.2021.1970504?scroll=top> (last visited 12 October 2021; under "Showing 2/4: tcpo_a_1970504_sm7020.csv" the data concerning Switzerland can be downloaded) (*doc. 14*).

⁷⁵ CAT, About, available at <https://climateactiontracker.org/about/> (last visited 12 October 2021). The scientific methodology of the Climate Action Tracker is elaborated on in GANTI ET AL., Fair National Greenhouse Gas Reduction Targets under Multiple Equity Perspectives - A Synthesis Framework, *forthcoming*, preliminary version dated 14 May 2021 available at <https://doi.org/10.21203/rs.3.rs-397507/v1>.

stated on 15 September 2021 that "we rate Switzerland's overall NDC target as 'Insufficient' when compared with its fair-share emissions allocation. 'Insufficient' rating indicates that Switzerland's NDC needs *substantial improvements to be consistent with the Paris Agreement's 1.5°C temperature limit*. [...] If all countries were to follow Switzerland's approach, warming would reach up to 3°C."⁷⁶ (emphasis added). This analysis is based on the assessment framework by CAT that combines both fair share and cost-efficient mitigation perspectives to assess the different components of government targets and actions.⁷⁷ Particularly, similar to RAJAMANI ET AL., the CAT concluded that to do its fair share to limit global warming to 1.5°C, *Switzerland must reduce its greenhouse gas emissions to significantly below zero by 2030 (i.e. -60% to more than -100% of 2010 emissions), which can be seen from the following graphic*.⁷⁸



Source: CAT, Switzerland (n 76)

⁷⁶ CAT, Switzerland, Targets, 15 September 2021, available at <https://climateactiontracker.org/countries/switzerland/targets/> (last visited 12 October 2021).

⁷⁷ CAT, CAT rating methodology, Overview, 15 September 2021, available at <https://climateactiontracker.org/methodology/cat-rating-methodology/> (last visited 12 October 2021); at detailed description of the CAT rating methodology dated September 2021 is available at https://climateactiontracker.org/documents/874/CAT_2021-09_RatingMethodology_FullDescriptionNewSystem.pdf (last visited 12 October 2021).

⁷⁸ CAT (n 76).

- 61 Finally, Climate Analytics⁷⁹ analysed in a study published on 15 June 2021 that an overall fair share contribution for Switzerland would amount to *at least 127% reduction below 1990 levels by 2030 to limit warming to below 1.5°C in 2100 with a 50% chance*.⁸⁰ This again confirms the overall claim of the Applicants that by 2030 net negative emissions should be reached.
- 62 Overall, the Respondent's current climate strategy falls far from a 1.5°C fair share contribution towards the global mitigation burden, which would be to have a greenhouse gas emission level in 2030 that is net-negative overall reaching -30% up to -100% of 2010 emissions to comply with the 1.5°C-limit with a probability higher than 50% (see for domestic emission reduction hereafter).

2.10.2. No 1.5°C compatible *domestic* emissions reduction

- 63 Having laid down that the Respondent needs to have a greenhouse gas emission level in 2030 that is net-negative as a 1.5°C fair share contribution, the question remains what *domestic* emission reduction commitments within that fair share are compatible to ensure the Paris Agreement's 1.5°C limit is achieved.
- 64 The 1.5°C compatible pathways laid down by the IPCC (see above para. 49) refer to *global* pathways and therefore need to be achieved *collectively*. Certainly, as a wealthy country, the Respondent's *domestic* emissions reductions cannot be less than what is needed by the global average, i.e. global CO₂ neutrality by 2050 with approximately halving of emissions by 2030.
- 65 According to RAJAMANI ET AL., if the level of the fair share burden is not reachable with domestic emission reductions alone in some States, these

⁷⁹ Climate Analytics is a multidisciplinary team composed of experts in climate science and impacts, including authors of the IPCC, experts in climate finance, adaptation, climate negotiation, mitigation policies and climate policy analysis, see Climate Analytics, Our team, available at <https://climateanalytics.org/about-us/team/> (last visited 12 October 2021).

⁸⁰ Climate Analytics, A 1.5°C compatible Switzerland, 15 June 2021, available at https://climateanalytics.org/media/final_clean_icci_1406_aligning_switzerlands_2030_emissions_target_with_the_1-5c_paris_agreement_temperature_limit_2.pdf (last visited 12 October 2021). These emission reductions should be reached, according to Climate Analytics, through domestic emission reductions, emission reductions abroad and support for developing countries (climate finance); see regarding climate finance also CAT, Switzerland, Country Summary, 15 September 2021, available at <https://climateactiontracker.org/countries/switzerland/> (last visited 12 October 2021): "We rate Switzerland's international public climate finance contributions as 'Highly Insufficient'. Switzerland has committed to increase its climate finance but contributions to date have been very low compared to its fair share. To improve its rating Switzerland needs to ramp up its international climate finance contributions in the period post-2020."

States need to correspondingly scale up the support they offer to others to reduce their emissions.⁸¹ In this regard, the Respondent would need to show that it can't reach the fair share level with domestic emission reductions alone.

- 66 Using technically and economically feasible global mitigation pathways published by IPCC in SR1.5⁸², and applying downscaling methods, Climate Analytics derived a range of national domestic greenhouse gas emissions reduction pathways for Switzerland that are 1.5°C compatible. This range of downscaled pathways would show that a *domestic target of 53–67% by 2030 and net-zero by 2050 below 1990 levels* is needed to limit warming to below 1.5°C in 2100 with a 50% chance.⁸³ Climate Analytics made clear that the now rejected 37.5% domestic reduction target was an insufficient domestic emission reduction contribution to limiting warming to 1.5°C⁸⁴, as argued by the Applicants (see AS section 1.3).
- 67 The visualisation of the interactive *1.5°C national pathway explorer*⁸⁵ by Climate Analytics shows that the now rejected 37.5% *domestic* emissions reductions target lies 25% below a 1.5°C-compatible domestic emission reduction target for 2030.⁸⁶

⁸¹ RAJAMANI ET AL. (n 68), p. 999.

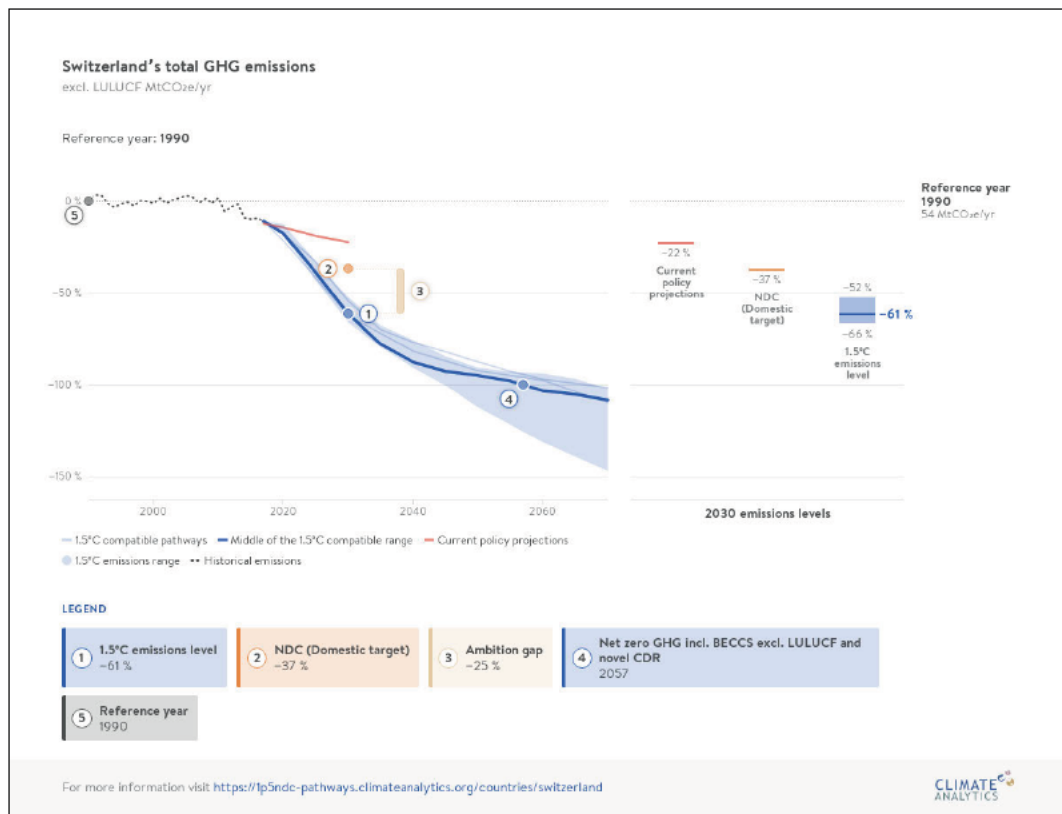
⁸² See HUPPMANN ET AL., IAMC 1.5°C Scenario Explorer and Data hosted by IIASA, Integrated Assessment Modeling Consortium & International Institute for Applied Systems Analysis, 2019, available at 10.5281/zenodo.3363345.

⁸³ Climate Analytics (n 80).

⁸⁴ Climate Analytics (n 80).

⁸⁵ See Climate Analytics, 1.5°C national pathway explorer, What is Switzerland's pathway to limit global warming to 1.5°C? available at <http://1p5ndc-pathways.climateanalytics.org/countries/switzerland/ambition-gap/> (last visited 12 on October 2021).

⁸⁶ It is to note that the 1.5°C national pathway explorer is based on globally cost-efficient modelled pathways that limit warming to 1.5°C, but it does not provide any information on Switzerland's fair share and does also not take into account emissions occurring abroad that are attributable to Switzerland.



Source: Climate Analytics, 1.5°C national pathway explorer (n 85)

- 68 The pathway explorer holds similar to the CAT-Analysis that a *61% domestic reduction below 1990 levels* (excluding LULUCF) (range: 52-66%⁸⁷) is needed to place Switzerland's 2030 target within a 1.5°C compatible range.⁸⁸
- 69 The Respondents current strategy of purchasing emission reductions abroad and accounting them to a national emission reduction target of "at least 50%", postpones the reduction efforts Switzerland *itself* must undertake to be net-zero in 2050 to after 2030. Such a strategy would require, after 2030, reducing domestic emissions to zero within a *very short time with emission rates that become increasingly impossible*. To paraphrase the Emissions Gap Report 2020, postponing ambitious climate action, thereby delaying the path towards reaching net-zero emissions, *will make it impossible to achieve the Paris Agreement temperature goal of limiting global warming to 1.5°C*.⁸⁹

⁸⁷ The difference to the previously mentioned range of 53-67 is due to its being based on a more recent model.

⁸⁸ Climate Analytics, 1.5°C national pathway explorer (n 85).

⁸⁹ UNEP, Emissions Gap Report 2020 (n 60), p. 34.

- 70 Purchasing emission reductions abroad would therefore only be a valid strategy when first, a reliable crediting system for internationally tradable emission reductions is established in terms of Article 6(2) and (4) of the Paris Agreement, and when second, such purchased emission reductions are used to *enlarge* the reduction efforts *beyond* the 1.5°C compatible *domestic* emissions reduction. Internationally transferred mitigation outcomes have to “allow for higher ambition” according to Art. 6(1) of the Paris Agreement.
- 71 Overall, the Respondents' *domestic* emissions reduction plans are *not compatible with the limit of 1.5°C*. In order to be on track to meet the *1.5°C* safely, the Respondent would need at minimum to ensure *domestic* GHG emission reductions of 61% below 1990 levels by 2030.

2.10.3. No effective prevention of emissions occurring abroad directly or indirectly attributable to the Respondent

- 72 The reporting mechanism under the UNFCCC refers to emissions that occur *on the territory* of a state. However, the Paris Agreement's *temperature goal* to limit the temperature increase to 1.5°C above pre-industrial levels and the target to *make finance flows consistent with this temperature goal* (Art. 2(1a) and (1c)) are clearly independent of the source of the emission, i.e. the distinction between territorial emissions and emissions occurring abroad as a result of a State's conduct, as well as the distinction between direct and indirect emissions.
- 73 As shown above (section 2.2.2), *most* of the Respondent's emissions are emissions that do *not* occur on the territory of the Respondent, but occur abroad (i.e. direct emissions like consumption-based emissions, and indirect emissions caused by the finance sector). They are still attributable to the Respondent as they are within its control and it is clear: emissions occurring abroad do contribute to global warming and they do matter.
- 74 The Respondent Government admitted that consumption-based emissions (in Switzerland called *grey emissions*) have to be taken into account when setting the Respondent's emissions reduction ambition, as can be seen in its dispatch in 2017. Herein, it held that it aims to compensate for consumption-based emissions particularly with additional measures abroad.⁹⁰ This is reflected in

⁹⁰ BBl 2018 247, p. 286 section 1.3.1 (see OL section 1.2.2).

Art. 3(3) of the new (but rejected) CO₂ Act and its updated NDC, that referred to the now rejected CO₂ Act.⁹¹

- 75 Also, the UNEP Emissions Gap Report 2020 made clear: "On an *aggregate level*, compliance with the 1.5°C goal of the Paris Agreement will require *reducing consumption emissions to a per capita lifestyle carbon footprint* of around 2 to 2.5 tonnes of CO₂eq by 2030, and an even smaller 0.7 tonnes by 2050. Understanding the distribution of lifestyle emissions among populations and by activities is important for equitable targeting of mitigation measures, in order to *encourage reductions from households with high consumption emissions and to avoid regressive impacts associated with imposing burdens on the poor*."⁹² To indicate the relative scale of lifestyle emission changes required, a target for global average per capita consumption emissions of 2.1 CO₂ per capita in 2030 is also shown, as implied by 1.5°C-consistent pathways"⁹³ (emphasis added).
- 76 In terms of the *finance sector* (see above para. 17), the Respondent Government has noted that finance flows must be in line with the climate target enshrined in Art. 2(1a) of the Paris Agreement.⁹⁴ Also, the Respondent Government acknowledges in its dispatch 2017 that today's investments can have a considerable influence on greenhouse gas emissions. It admits that the investment behaviour in Switzerland today *still does not do enough justice to this objective*.⁹⁵ This has neither been taken into account in the new (rejected) CO₂ Act nor in the updated NDC. In the new (rejected) CO₂ Act, the Swiss Financial Market Supervisory Authority and Swiss National Bank would have merely been obliged to regularly review the financial risks of climate change (Art. 66 [rejected] CO₂ Act). This (rejected) provision aimed at *protection from climate-related financial losses, but not at making financial flows climate-compatible*.⁹⁶ The Respondent Government is of the view that

⁹¹ Updated NDC (n 48), p. 1 and 15.

⁹² UNEP, Emissions Gap Report 2020 (n 60), p. 62.

⁹³ UNEP, Emissions Gap Report 2020 (n 60), p. 63.

⁹⁴ FOEN, Klimaverträglichkeit im Test, last updated 20 July 2021, available at <https://www.bafu.admin.ch/bafu/de/home/themen/klima/fachinformationen/klima-und-finanzmarkt/pacta.html> (last visited 12 October 2021).

⁹⁵ BBl 2018 247, p. 269.

⁹⁶ Climate-compatible finance flows in terms of the Paris Agreement support investments in environmentally friendly and future-oriented technologies and energy sources, while phasing-out greenhouse gas-intensive investments, see BODANSKY ET AL., International Climate Change Law, Oxford 2017, p. 230.

the implementation of this goal is to be achieved through "voluntary measures by the financial industry".⁹⁷

- 77 A recent study showed that the Swiss National Bank is globally relevant both because of the vast size of its portfolio and because of Switzerland's disproportionate role in the world financial system.⁹⁸ The study rated the Swiss National Bank in terms of fossil fuel financing as "grossly insufficient" or "insufficient" in all of the examined aspects.⁹⁹
- 78 Overall, the Applicants submit that the Respondent has to prevent and reduce any emissions occurring abroad that are directly or indirectly (esp. finance sector) attributable to the Respondent in line with a 1.5°C above pre-industrial levels limit.

2.10.4. Reliance on Carbon Dioxide Removal is a major risk in the ability to limit warming to 1.5°C

- 79 All IPCC greenhouse gas emission reduction pathways include net negative CO₂ emissions (particularly Carbon Dioxide Removal, "CDR") to remove remaining emissions, at various levels. Yet, it is to stress that the IPCC itself recognises that "CDR deployed at scale is *unproven, and reliance on such technology is a major risk in the ability to limit warming to 1.5°C*."¹⁰⁰
- 80 Against that background, reliance on *CDR needs to be as small as possible*, and greenhouse gas sinks need to be *as safe as possible* to not pose a major risk in the ability to limit warming to 1.5°C. This underlines that the choice of emission reduction pathways is limited.
- 81 The Respondent fails to implement the necessary emissions reduction and instead relies on CDR in its climate strategy despite the fact that scale, feasibility and associated risks remain unclear.¹⁰¹ This is a major risk in the Respondent's ability to do its share to limit warming to 1.5°C, even making it impossible.

⁹⁷ FOEN, Klimaverträglichkeit im Test (n 94); ZAHAR, The Paris Agreement and the Gradual Development of a Law on Climate Finance, Climate Law 6 (2016), pp. 75–90, p. 81.

⁹⁸ TONG, Unused tools: How Central Banks are fueling the Climate Crisis, Oil Change International, August 2021, p. 9, available at http://priceofoil.org/content/uploads/2021/08/central_bank_report_A4_v08.pdf (last visited 12 October 2021).

⁹⁹ TONG (n 98), p. 5.

¹⁰⁰ IPCC, Special Report: Global Warming of 1.5°C, 2018 (1.5°C SR), p. 34, available at https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf (last visited 12 October 2021).

¹⁰¹ BBI 2021 1972, section 2.1 (see OL section 1.2.3).

82 The Applicants submit that to be in line with the 1.5°C limit, first and foremost, the Respondent must reduce its greenhouse gas emissions in line with its fair share including a 1.5°C compatible domestic emission reduction targets (see sections 2.10.1 and 2.10.2) and prevent any emissions occurring abroad that are directly or indirectly attributable to the Respondent (section 2.10.3). Only residual GHG emissions may have to be *permanently* removed by *safe, ecologically and socially sound* GHG sinks. Such removal may also be necessary if the concentration of greenhouse gases in the atmosphere is exceeding the level corresponding to the 1.5°C above pre-industrial levels limit - here, the Respondent needs to do its fair share as well.

2.11. The Respondent failed to implement and enforce measures to meet its (inadequate) 2020 target

83 The Applicants laid down in the Application that the Respondent failed to implement and enforce measures to meet its (inadequate) 2020 target (AS section 1.4). They also made a detailed analysis in their request (Application doc. 14 sections 4.3.2 and 8.5). In complementing the Application, the Applicants submit below recent updates and two examples.

84 According to the Respondent Government's communication dated 22 April 2021, Switzerland will not reach its (insufficient) 2020 target:

"Greenhouse gas emissions in Switzerland amounted to 46.2 million tonnes of CO₂ equivalents in 2019, around 0.3 million tonnes less than in 2018, according to the greenhouse gas inventory of FOEN. Emissions in the buildings sector were unchanged compared to the previous year, largely due to the colder winter. Emissions in industry also remained unchanged in 2019, while in transport they are still above the 1990 level. A slight decrease was seen in agriculture and in synthetic greenhouse gases. *According to current estimates, Switzerland will miss its national climate target for 2020 of minus 20 percent greenhouse gas emissions compared to 1990.* To significantly reduce emissions, it is essential to strengthen the measures provided for in the revised CO₂ Act"¹⁰² (emphasis added).

85 From this, it logically follows that existing emission reduction measures were insufficient to achieve the inadequate reduction target, and implementation of

¹⁰² FOEN, Schweizer Treibhausgas-Ausstoss 2019 kaum gesunken, 22 April 2021, available at <https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-83046.html> (last visited 12 October 2021).

climate change legislation has failed. The Applicants provide two examples of failed implementation:

- 86 *Example 1:* Buildings account for about one-third of Switzerland's CO₂ emissions.¹⁰³ Almost two-thirds of the building stock are still *heated with fossil fuels (oil and gas)*.¹⁰⁴
- 87 This goes – *inter alia* – back to the insufficient application of the CO₂-law: Art. 9(1) CO₂ Act requires the cantons to issue building standards based on the “current state of the art” to comply with the climate target. These cantonal building regulations are, according to the Respondent Government, an important pillar of climate policy.¹⁰⁵ Nevertheless, these regulations have not fully materialized to this day¹⁰⁶ despite Art. 9(1) CO₂ Act entering into force as early as 2013. Even if cantonal building regulations within the meaning of Art. 9(1) CO₂ Act have come into force in some cantons, they do not contain a ban on the installation of oil and gas heating systems, neither in new buildings nor in existing buildings, although alternative heating systems are without doubt more efficient and emit less GHGs and can be considered as the “current state of the art”. Also, the Respondent Government insufficiently exercised its duty of supervision over the cantons (cf. Art. 49(2) Cst.) and has to this day not ensured that reports have been obtained from the cantons about their technical measures to reduce the CO₂ emissions from buildings (see Art. 9(2) CO₂ Act).
- 88 *Example 2:* The transport sector accounts for more than one third of Switzerland's CO₂ emissions.¹⁰⁷ Fuel emissions have *increased* by 2.9% in 2019 compared to 1990.¹⁰⁸ According to calculations of the Respondent

¹⁰³ SFOE, Buildings, last updated 21 January 2021, available at <https://www.bfe.admin.ch/bfe/en/home/efficiency/buildings.html> (last visited 12 October 2021).

¹⁰⁴ Federal Statistical Office, Energy field, available at <https://www.bfs.admin.ch/bfs/en/home/statistics/construction-housing/buildings/energy-field.html> (last visited 12 October 2021).

¹⁰⁵ FOEN, Gebäude, last update 17 December 2020, available at <https://www.bafu.admin.ch/bafu/de/home/themen/klima/fachinformationen/verminderungsmaßnahmen/gebaeude.html> (last visited 12 October 2021).

¹⁰⁶ EnDK, Stand Umsetzung MuKE 2014, 5 September 2021, p. 1, available at https://www.endk.ch/de/ablage/grundhaltung-der-endk/20210915_Stand%20Umsetzung%20MuKE%202014%20CH-Karten.pdf (last visited 12 October 2021).

¹⁰⁷ FOEN, Kenngrößen (n 10), p. 16.

¹⁰⁸ FOEN, CO₂-Statistik: Erneut kein Rückgang der Benzin- und Diesel-Emissionen, 7 July 2020, available at <https://www.bafu.admin.ch/bafu/de/home/themen/klima/mitteilungen.msg-id-79780.html#:~:text=Veranstaltungen,CO2%2DStatistik%202019%3A%20Erneut%20kein%20R%C3%BCckgang,der%20Benzin%2D%20u>

Government, the average CO₂ emissions of new cars were 137.8 g CO₂/km in 2018 and 138.1 g CO₂/km in 2019. The Respondent Government explained the reasons for the increase in CO₂ emissions due to the increased share of all-wheel drive vehicles (2019: 51.3%), the higher unladen weight, and the decrease in the share of diesel vehicles.¹⁰⁹ Under the CO₂ Act (Art 10(1)), CO₂ emissions from passenger cars should have been reduced to an average of 95 g CO₂/km by the end of 2020. However, this provision did not lead to any reduction of GHG emissions compared to 1990 through the Respondent Government's fault.

- 89 *Inter alia*, the Respondent Government failed to apply the law properly in the transport sector by not requiring measurements of the CO₂ emissions from passenger cars corresponding to their *actual emissions*.¹¹⁰ Until the end of 2020, the Respondent relied on figures calculated by manufacturers under idealized conditions in terms of the “New European Driving Cycle (NEDC),”¹¹¹ whereas *the average deviation from real emissions is 42 %*.¹¹² From the beginning of 2021, it applied a better test procedure (“Worldwide Harmonized Light-Duty Vehicles Test Procedure” (WLTP)). However, this did not lead to a (more) effective implementation of the limits enshrined in Art. 10 (1) and (2) of the CO₂ Act. Instead, the Respondent amended the CO₂ Act and the CO₂ Ordinance and *increased the limit* from 95 g CO₂/km to 118 CO₂/km (Art. 10(4) CO₂ Act and Art. 17b CO₂ Ordinance). For Art. 10 (1) and (2) of the CO₂ Act to be correctly implemented and to be (more) effective, however, CO₂ emissions should have been measured *in the best possible way* from the beginning (i.e. since 2013), i.e. with Real Drive Emissions (RDE) tests, and not under fictitious conditions widely deviating

nd%20Diesel%2DEmissionen&text=Bern%2C%2007.07.2020%20%2D%20Die,gegen%C3%BCber%20dem%20Vorjahr%20unver%C3%A4ndert%20hoch (last visited 12 October 2021).

¹⁰⁹ SFOE, Leichte Zunahme von Treibstoffverbrauch und CO₂-Emissionen neuer Personenwagen im 2019, 2 July 2020, available at <https://www.bfe.admin.ch/bfe/de/home/news-und-medien/medienmitteilungen/mm-test.msg-id-79705.html> (last visited 12 October 2021).

¹¹⁰ DUPUIS ET. AL., La politique Suisse de réduction des émissions de gaz à effet de serre: une analyse de la mise en oeuvre/Rapport à l'intention de l'Office fédéral de l'environnement (OFEV), Université de Lausanne, 2016, p. 9, available at <https://core.ac.uk/download/pdf/77169066.pdf> (last visited 12 October 2021).

¹¹¹ SFOE AND FEDRO, Einführung WLTP in der Schweiz, FAQ, June 2018, p. 3, available at <https://pubdb.bfe.admin.ch/de/publication/download/9016> (last visited 12 October 2021).

¹¹² SFOE, Übergang NEFZ – WLTP, Erläuterungen zu Artikel 10, UREK-N, 8/9 October 2018, p. 2, available at https://www.bafu.admin.ch/dam/bafu/de/dokumente/klima/rechtliche-grundlagen/UEBERGANG-NEFZ-WLTP-ERLAUTERUNGEN-ZU-ARTIKEL-10%20.pdf.download.pdf/Pr%C3%A4sentation_UREK-N_NEFZ-WLTP_de.pdf (last visited 12 October 2021); also DUPUIS ET AL. (n. 110), p. 9.

from reality. This lead to a significant reduction in the fines that must be paid if the limit is exceeded (see hereto Art. 13 CO₂ Act) and thus has significantly reduced the pressure on importers of passenger cars to adapt vehicle fleets accordingly.

- 90 Besides this, the Applicants submit that there are domestic GHG-relevant areas that have not been regulated at all, particularly the agriculture sector. Agriculture accounts for around 14% of all domestic GHG emissions in Switzerland¹¹³ but is neither included in the CO₂ Act nor in any other law. Instead, the Respondent supports the agriculture sector with subsidies, for example with exemptions from Mineral Oil Tax (Art. 18(2) Mineral Oil Tax Act).

2.12. The Respondent is able to do its share, i.e. to *reduce* the risk of heat-related excess mortality and morbidity

- 91 The above 1.5°C compatible pathways that show a *domestic target of 61% by 2030 and net-zero by 2050 below 1990 levels* are calculated using *technically and economically feasible* global mitigation pathways (see above para. 66). More specific analysis of decarbonisation paths for Switzerland have shown already for some time that pathways delivering a 60% reduction by 2030 are technically and economically feasible.¹¹⁴
- 92 The remaining emission reductions needed to meet its fair share (above para. 62) can be achieved with measures abroad. The Respondent is one of the wealthiest States globally (see for details below para. 120), from that it follows without a doubt that the Respondent is able to scale up the support to others to reduce their emissions as its fair share contribution.
- 93 It is worth mentioning that Climatestrike Switzerland has most recently, together with many renowned academics, elaborated a comprehensive climate action plan for Switzerland that shows in 377 pages "technically

¹¹³ FOEN, Treibhausgasemissionen der Landwirtschaft, last updated 12 April 2021, available at <https://www.bafu.admin.ch/bafu/de/home/themen/klima/zustand/daten/treibhausgasinventar/landwirtschaft.html> (last visited 12 October 2021).

¹¹⁴ See for example econcept, Massnahmenkatalog Klimapolitik 2030 für eine klimaverträgliche Schweiz, 8 January 2016, available at https://www.klima-allianz.ch/wp-content/uploads/Klima-Masterplan_Teil_Inland.pdf (last visited 12 October 2021) or Greenpeace, energy (r)evolution, Eine nachhaltige Energieversorgung für die Schweiz, 2013, available at <https://www.greenpeace.ch/de/publikation/3675/energyrevolution/> (last visited 12 October 2021).

feasible and socially just ways" to significantly speed up emission reductions within Switzerland in all sectors.¹¹⁵

- 94 The Applicants stress that the Respondent never claimed that it is *not able* to raise its ambition, neither in domestic proceedings, nor in its Observations, nor elsewhere. On the contrary, the Respondent Government always justified its proposals with a view to assumptions on political majority ability, ambitions of the European Union (which have since increased) and statements of the IPCC on mitigation pathways that must be adhered to by the global average (see hereto below section 3.3.8).

3. Reply to the Respondent's arguments

3.1. Decisions of the national courts

- 95 The Applicants fully uphold the statements made in the Application (AS section 1.7). They respectfully make the following observations on the points in dispute:

- 96 The Respondent states that the Federal Department of the Environment, Transport, Energy and Communication (DETEC), although acknowledging that some of the conditions for admissibility had been met, considered that the Applicants' rights had not been individually affected and that they therefore had no interest worthy of protection (para. 7).

The Applicants submit that the DETEC only considered that the Applicants' rights had not been individually affected but left open the question whether they had an interest worthy of protection (Application doc. 15 section 1.1). For further details see Additional Submission para. 26.

- 97 The Respondent states further that the Federal Supreme Court (FSC) considered that the question may arise as to whether, in the case of the reduction of greenhouse gases, state measures can be demanded based on Art. 25a of APA, and that demands for shaping policy areas are in principle made through democratic instruments (para. 11).

Hereto the Applicants submit that these statements of the FSC were not the reason for dismissing the Applicants' claim, but that these were merely thoughts of the FSC not relevant for the decision-making process; they have

¹¹⁵ Climatestrike Switzerland, Climate Action Plan, 8 January 2021, available at https://admin.climatestrike.ch/uploads/Climate_Action_Plan_1_0_7ba47e3b16.pdf (last visited 12 October 2021).

therefore not been further evaluated and eventually left open (Application doc. 19 para. 4.3). Also, it must be clarified that requests for legal remedy have in substance not been based on Art. 25a APA, as this is merely a procedural provision, but on Art. 10 Const. and Art. 2 and 8 ECHR (see Application doc. 18 section 2.5.2.1, 2.5.2.2 and 2.5.2.3). Clearly, the protection of individual human rights is a matter for the courts. The Convention is designed as an instrument to protect the rights of all individuals, including the protection of vulnerable persons and groups. Individual human rights of members of a vulnerable group can hardly be effectively protected by democratic means, as the standard by which democratic decisions are made is the majority principle.

- 98 Regarding the Respondents' summary of the Application (para. 12), the Applicants refer to their Application in which they claim and lay down in detail how their Convention rights are violated.

3.2. Climate change in Switzerland

3.2.1. One of the main impacts of climate change in Switzerland are heatwaves

- 99 The Respondent states that Switzerland is particularly affected by climate change, namely that average temperature in Switzerland has risen by around 2°C since pre-industrial times which is twice as much as the global average, causing more frequent and intense rainfall and the melting of glaciers (para. 13–16).
- 100 The Applicants do not contest para. 13–16 of the Respondent's observations as wrong. They are taken from the Management Summary: "Climate change in Switzerland"¹¹⁶, p. 6 ff, published by FOEN and the Federal Office of Meteorology and Climatology (MeteoSwiss) and the National Centre for Climate Services (NCCS) on 16 November 2020. However, the Applicants submit that this information presented by the Respondent is incomplete, even with a view to that Management Summary. Climate change does not only cause the melting of glaciers and more frequent and intense rainfall. It likewise causes more frequent and intense heatwaves (section 2.4) which have caused, are causing and will cause deaths and illnesses particularly

¹¹⁶ FOEN et al., Management Summary (n 31).

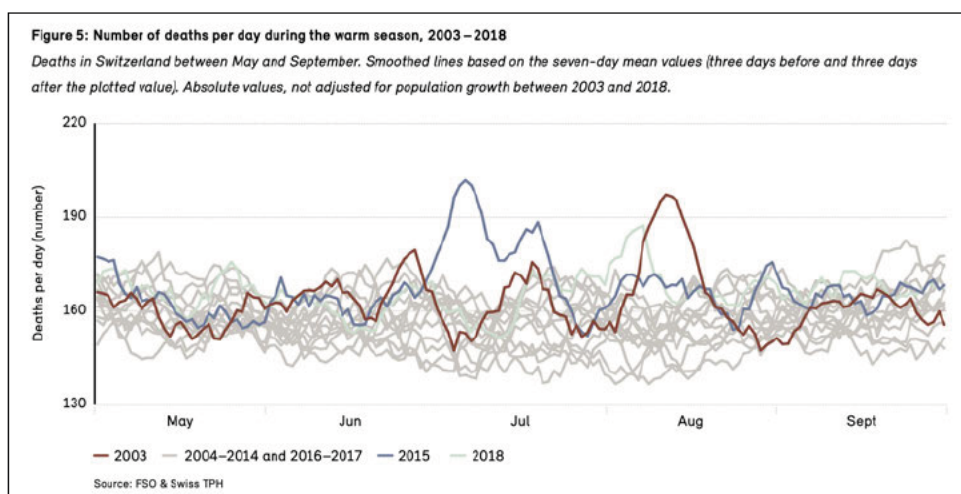
among older people and particularly older women (section 2.5), as also the Management Summary presented by the Respondent demonstrates:

- "*Heatwaves, more hot days and nights*, and shrinking snow cover on the Swiss Plateau are all evidence of climate change" (emphasis added).¹¹⁷
- "Switzerland's future climate will depend largely on the development of global greenhouse gas emissions. If emissions can be massively reduced over the next few decades (RCP2.6), the latest Swiss Climate Scenarios (CH2018) suggest that Switzerland will be 2.1–3.4°C warmer by the end of the century, compared to pre-industrial levels. However, if greenhouse gas emissions continue to rise (RCP8.5), the average temperature in Switzerland could increase to 4.8 – 6.9 °C above pre-industrial levels by the same date (see Figure 3). According to this pessimistic scenario, (...). Heatwaves would also increase markedly in intensity and frequency. *However, with concerted climate change mitigation measures, around half of the potential impact on Switzerland's climate would be avoided by 2060, and two thirds by 2100*" (emphasis added).¹¹⁸
- "Climate change also has an impact on society. *Heatwaves place strain on the human body*. They can cause dehydration and the impairment of heart and lung function, leading to an increase in emergency hospital admissions. *Old people* and infants are *particularly at risk*. In Switzerland, 975 more people died during the hot summer of 2003 than in a normal June to August period. *Increased mortality rates* were also recorded in the summers of 2015 and – to a less extreme degree – 2018" (emphasis added).¹¹⁹ The Management Summary also shows the number of deaths per day during the warm season, 2003–2018:

¹¹⁷ FOEN et al., Management Summary (n 31), p. 6.

¹¹⁸ FOEN et al., Management Summary (n 31), p. 7.

¹¹⁹ FOEN et al., Management Summary (n 31), p. 9.



Source: FOEN et al., Management Summary (n 31), Figure 5

- 101 Against that background, the Applicants submit that their statements of facts made in the Application – that heatwaves are causing deaths and illnesses to older women including the Applicants (AS, section 1.1) and that staying within the 1.5°C limit would significantly reduce the risk of heat-related excess mortality and morbidity (AS, section 1.5) – are confirmed by the Respondent Government's recent Management Summary.

3.2.2. The Respondent's contribution to climate change is excessively high

- 102 The Respondent states that per capita emissions in Switzerland are below the global average (para. 105).
- 103 Hereto, the Applicants wish to clarify that this is correct only for *territorial* emissions. As the Respondent Government states, the *greenhouse gas footprint* (i.e. consumption-based emissions) *per capita* is *excessively high in international comparison*, which is why it assessed the current state as "poor" and the trend "unsatisfactory" (see for details and accompanying documents above section 2.2). The same emerges from the Management Summary the Respondent referenced (para. 13). It reads as follows: "Switzerland's overall greenhouse gas emissions have fallen slightly since 2005, (...). However, *this number does not include all emissions attributable to Switzerland*. Taking into account the global impact of Swiss consumption, *around 70% of greenhouse gas emissions in 2015 were generated abroad*" (emphasis added).¹²⁰

¹²⁰ FOEN et al., Management Summary (n 31), p. 6.

3.3. Switzerland's Climate policy

3.3.1. Respondent's Long-term climate strategy remains without implementation

- 104 The Respondent states that the Federal Council adopted a "Long-Term Climate Strategy " dated 27 January 2021, of which the new CO₂ Act entailing the framework for climate policy until 2030 is an "essential prerequisite to Switzerland's achievement of its climate target by 2050." It also states that the new CO₂ Act aimed to reduce greenhouse gas emissions by half by 2030 and to bring them to net-zero by 2050 (para. 17 third mirror line, para. 97).
- 105 The Applicants point out that the new CO₂ Act was rejected by referendum on 13 June 2021 and thus, in view of the Respondent, the "essential prerequisite" for Switzerland to achieve its 2050 climate target has ceased to exist. Also, contrary to what the Respondent claims, the new CO₂ Act did not propose reductions by 2030 that are compatible with a net-zero target by 2050 nor did it contain any target for 2050 whatsoever (see Art. 3 new CO₂ Act).
- 106 Switzerland's Long-Term Climate Strategy¹²¹ is not legally binding in any way (above section 2.9).

3.3.2. Current CO₂ Act remains in force only on a limited basis and remains insufficient, as is the proposed interim solution

- 107 The Respondent further states that the current CO₂ Act remains in force despite the Swiss people rejecting the new CO₂ Act (para. 17 fourth mirror line and para. 96). The Applicants submit that although there is no formal repeal of the current CO₂ Act, some measures will expire or be limited by 2022 as officially stated by the Respondent Government,¹²² Switzerland has:
- No national climate target beyond 2021
 - No obligation for fuel importers to compensate for their CO₂ emissions
 - No increase in CO₂ levy on thermal fuels after 2022
- 108 The Applicants further submit that the current CO₂ Act is, if at all, designed to reach an emission reduction of 20% below 1990 levels by 2020, that this climate target fails to meet the Paris Agreement 1.5° limit (see AS section

¹²¹ The Federal Council, Switzerland's Long-Term Climate Strategy (n 56).

¹²² FOEN, Massnahmen, die mit dem Nein zum CO₂-Gesetz per 1. Januar 2022 auslaufen oder beschränkt werden, last updated 30 July 2021, available at <https://www.bafu.admin.ch/bafu/de/home/themen/klima/recht/totalrevision-co2-gesetz/auslaufende-massnahmen.html> (last visited 12 October 2021).

1.3), and that even when fully operational, the measures implemented in the current CO₂ Act were insufficient to reach the (inadequate) 2020 target (see AS section 1.4 and above section 2.11).

- 109 As mentioned above (para. 46), a Parliamentary commission recently proposed, based on instruments entailed in the current CO₂ Act, an interim solution for expiring instruments of the CO₂ Act that shall be valid until the end of 2024. The proposed domestic climate target of 1,125% per year, i.e. of 24.5% below 1990 levels by 2024 is *less ambitious than the current (inadequate) CO₂ Act* which entailed a domestic reduction of 2% per year. The Federal Council itself states that the reduction path will not be sufficient to achieve its NDC, and that it will be a major challenge to compensate for the delay until a new law will enter into force in 2025 and for the elimination of measures entailed in the new (rejected) CO₂ Act. The Federal Council agrees with the proposed interim solution with the note that the share of measures taken abroad will have to be significantly higher than planned.¹²³
- 110 The current CO₂ Act, even if all of its measures remain in force thanks to a new interim solution, and even if this is admittedly better than nothing, is insufficient in view of the 1.5°C limit. Adhering to that limit is necessary to protect the Applicants' rights.

3.3.3. New solutions are likely to be too weak and too late

- 111 The Applicants do not contest that the Respondent Government intends to find new solutions in the medium term with all stakeholders (para. 17 fifth mirror line, para. 96 and para. 103).
- 112 However:
- Both the Respondent's existing 2020 and intended 2024 and 2030 domestic climate targets, as well as its NDC are not in line with the 1.5°C limit (see above section 2.10 and AS section 1.3);
 - the measures entailed in the Respondent's new (rejected) CO₂ Act were "very unlikely to be sufficient to halve greenhouse gas emissions by 2030 and continuously reduce them to net zero domestically by 2050", as stated by the Swiss Academy of Sciences (SCNAT),¹²⁴

¹²³ BBl 2021 2252, p. 2254.

¹²⁴ SCNAT, Fortschritte und Defizite des revidierten CO₂-Gesetzes, Positionspapier der Akademie der Naturwissenschaften Schweiz, 15 December 2020, available at <https://portal-cdn.scnat.ch/asset/a15e3f48-1541-5379-ba7c-a3f2c6e436bf/CO2->

- with a view to the political realities in Switzerland and the people's vote, it is likely that a 2024 CO₂ Act will be even weaker than the (rejected) 2020 CO₂ Act in terms of the domestic target and in terms of measures; instead of comprehensive information being given to the public about the irreversible and serious consequences of unabated climate change, a clear and positive vision of a climate-neutral way of life, and honest communication about the so far insufficient climate policy framework, it is explicitly the Federal Council's strategy to forego unpopular but effective domestic measures;¹²⁵
- with a view to the statements in the present case and with a view to the official communication by the Respondent Government, it is likely that the Respondent Government will continue to *omit the human rights aspects of climate change in its communication to the Respondent Parliament and the general public*, and particularly that there is a need to meet a certain level of GHG reduction arising from its human rights obligation to protect vulnerable groups;
- likewise, it is likely that the Respondent will continue to refrain from putting its climate policy *on specific studies on the compatibility with the 1.5°C limit* (see below section 3.3.8);
- starting with finding solutions in the "medium term", with a view to the Swiss legislative procedure and with a view to the recently proposed interim solution that shall last until the end of 2024, it is clear that it will take at least more than three years for a new CO₂ Act to be entering into force (see above 2.9); this is *crucial time lost* for the Respondent to be in line with the 1.5°C limit, and it might well be that in 2025 it will be too late for Switzerland to stay on a safe pathway compatible with the 1.5°C limit (section 2.10).

Gesetz_Positionspapier%20SCNAT%20de?b=7cb1a223-9713-563e-b956-e91a43a90117&v=ee6c3980-04c6-5d2c-9e75-5728dc5e04d7_0&s=BmdiMOU8XvsXOm7ntbJ5vW3-

ThY63t_YEk9g_hFq4Fwd41zhLB0kPkJw2ZroemkCnoehGnskLF4Z9XqZVcPP-iEphFIismvBj0w2nUNedIKscUAZFMhwhdQ56FEkPdfx_GhtSkxKGmB-3JCp1o7O3-otHhe8PqH4rN3K9NZSh_k (last visited 12 October 2021).

¹²⁵ The Federal Council, Klimapolitik: Der Bundesrat stellt die Weichen für eine neue Gesetzesvorlage, 17 September 2021, available at <https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-85164.html> (last visited 12 October 2021).

3.3.4. The Respondent's NDC as well as its long-term climate strategy are inadequate to stay on a pathway compatible with the 1.5°C limit

- 113 The Applicants do not contest that the Respondent Government *submitted* to the UNFCCC Secretariat an updated NDC and that it adopted a long-term climate strategy (para. 99 first and second mirror line). However, contrary to the Respondent's assertion (para. 95), the Respondent's NDC as well as its long-term climate strategy cannot be considered a 1.5°C limit compatible fair share contribution needed to protect the Applicants' rights (see hereto above section 2.10). Also, the "update" regarding 2030 is merely a formal one (from "-50%" to "less than -50%").¹²⁶ Switzerland submitted an "update" without actually increasing its pledge, which makes Switzerland according to Bill Hare, CEO of Climate Analytics, a country "of particular concern."¹²⁷
- 114 The same applies regarding the Respondent Government's recent counter-proposal 2021, aiming at *enshrining an inadequate net-zero target by 2050 in the Swiss Constitution*.
- 115 Making it even worse, the Respondent's net zero target by 2050 can distract from the urgent need for deep emissions reductions, allowing the Respondent Government to hide insufficient 2030 targets behind longer-term net zero aspirations.

3.3.5. No concrete idea how to proceed after rejection of the new CO₂ Act

- 116 The Respondent states that in the view of the Respondent Government, the rejection of the revision is not a "no" to climate protection. It was a no to the new CO₂ Act, on which the Swiss people voted. The Respondent states further that many people want to protect the climate, but not in this way and not with this law and that the Respondent Government has understood this message (para. 99 third mirror line).
- 117 The Applicants submit that the Respondent did not provide any accompanying documents underlining these assumptions. In particular, the Respondent did not provide any concrete idea on how a new CO₂ Act could be designed and that at the same time will not be rejected by the Swiss people in a referendum. This applies all the more on a new CO₂ Act that

¹²⁶ See Climate Analytics (n 80), p. 4.

¹²⁷ Kottasova, Not a single G20 country is in line with the Paris Agreement on climate, analysis shows, CNN, 15 September 2021, available at <https://edition.cnn.com/2021/09/15/world/climate-pledges-insufficient-cat-intl/index.html> (last visited 12 October 2021).

would be compatible with the 1.5°C limit (section 2.10). The Respondent did also not provide any answer to the question on how it plans to proceed to make sure that a new CO₂ Act could enter into force in due time. Instead, the Respondent Parliament plans to debate again for more than three years on a new law (above para. 46), and the Respondent asserts wrongly (see below section 3.3.9) and contrary to its communication in its dispatches that there is still time (para. 57, 110, 114): The Respondent Government rightly stated already in 2009 that because greenhouse gases remain in the atmosphere for a long time, emissions should be reduced *as quickly as possible*¹²⁸, and in 2017 that it is "crucial that global greenhouse gas emissions reach their maximum as soon as possible and then decline massively and rapidly"¹²⁹.

3.3.6. Mitigation potential remains unused on the justification of high costs

- 118 The Respondent states that the costs of reducing emissions are high in Switzerland due to the limited availability of cost-effective short-term mitigation potentials: Energy production in Switzerland was almost carbon-free and there is little heavy industry. The potential for reducing emissions would mainly lie in the housing and transport sectors. These sectors were typically characterised by long processing periods (para. 105).
- 119 First, it should be noted that the Respondent does not provide any evidence for the claim that reducing GHG emissions in Switzerland would be costly or too costly.
- 120 On the point that the costs of reducing emissions in Switzerland are high, the Applicants further note that Switzerland is one of the wealthiest countries in the world. Despite being a small state, in 2020, Switzerland ranks 18th among the world's largest economies.¹³⁰ Also in 2020, with USD 86'849.47, Switzerland had the second largest gross domestic product (GDP) per capita in the world.¹³¹ Thus, the affordability of climate protection measures, including long-term mitigation measures, is not an argument against a Swiss climate policy that adheres to the 1.5°C limit. Also, as the Respondent

¹²⁸ BBI 2009 7433, section 4.1.1 (see OL section 1.2.1).

¹²⁹ BBI 2018 247, section 1.1.1 (see OL section 1.2.2).

¹³⁰ Statista, Ranking der 20 Länder mit dem grössten Bruttoinlandsprodukt im Jahr 2020, April 2021, available at <https://de.statista.com/statistik/daten/studie/166224/umfrage/ranking-der-20-laender-mit-dem-groessten-bruttoinlandsprodukt-pro-kopf/> (last visited 12 October 2021).

¹³¹ Statista, Die 20 Länder mit dem grössten Bruttoinlandsprodukt pro Kopf im Jahr 2020, April 2021, available at <https://de.statista.com/statistik/daten/studie/166224/umfrage/ranking-der-20-laender-mit-dem-groessten-bruttoinlandsprodukt-pro-kopf/> (last visited 12 October 2021).

Government states, it is strongly in Switzerland's own *financial* interests that global warming is limited to 1.5°C.¹³² The Respondent Government is perfectly aware that *insufficient action would come at a very high price, especially in Switzerland which is significantly affected by climate change*. It pointed out to studies that indicated that the cost for Switzerland by 2050 would amount to up to 4% of annual GDP if global warming continues, whereas, if global emissions were significantly reduced and global warming *was restricted to a maximum of 1.5°C, the cost by 2050 would only stand at a maximum of 1.5% of GDP*. According to these estimates, the *benefits of a global reduction in emissions to net-zero would amount to 2.5% of GDP for Switzerland by 2050*.¹³³ Against that background, the Respondent's climate strategy seems to pursue the aim of financially benefiting from emission reductions of other countries (which is a classic situation of the prisoner's dilemma).

- 121 On the point that there would be little heavy industry and thus a limited availability of short-term mitigation potentials, the Applicants submit that the Respondent Government recently announced that the greenhouse gas emissions of the Swiss industrial sector are around *600,000 tonnes of CO₂eq higher annually than previously assumed*. The reason for this is only one, previously unknown, source of nitrous oxide from the production of the chemical and pharmaceutical company Lonza AG.¹³⁴ A single source that accounts for around 1,3% of the Respondent's annual greenhouse gas emissions (see above para. 9). Although the Respondent Government knew of this source since spring 2018 and its short-term mitigation potential, it allowed Lonza to wait roughly four years to install a catalytic converter that reduces emissions by at least 98%.¹³⁵ Also, the Respondent Government

¹³² The Federal Council, Switzerland's Long-Term Climate Strategy (n 56), p. 5.

¹³³ The Federal Council, Switzerland's Long-Term Climate Strategy (n 56), p. 5; see also BBl 2021 1972, section 6.5.3 (see OL section 1.2.3).

¹³⁴ FOEN, Treibhausgasemissionen des Schweizer Industriesektors höher als angenommen, 10 February 2020, available at <https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-78041.html> (last visited 12 October 2021).

¹³⁵ See Parliamentary Interpellation 20.4319, available at <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaefte?AffairId=20204319>; Parliamentary Interpellation 20.3045, available at <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaefte?AffairId=20203045> and Parliamentary Interpellation 20.4322, available at <https://www.parlament.ch/de/ratsbetrieb/suche-curia-vista/geschaefte?AffairId=20204322> (last visited 12 October 2021).

admitted that this might not be the only unknown source in the industrial sector.¹³⁶

- 122 On the point that the potential for reducing emissions would mainly lie in the housing and transport sectors, the Applicants submit that the *potential to reduce GHGs has been severely under-used even in these sectors for many years and the available measures were insufficiently enforced*. The Applicants discussed the omissions and missed opportunities in their request in detail (see Application doc. 14 section 4.3.2.3 and 4.3.2.4) and provided an updated summary above (section 2.11.) Also, it should be stressed that precisely *because* these sectors are characterised by long processing periods, it is all the more important to take *immediate* action to avoid a lock-in¹³⁷ of carbon-intensive infrastructure.¹³⁸
- 123 Finally, the Applicants submit that there are important GHG-relevant areas *including cost-effective mitigation potential* not regulated and used. This concerns e.g. *the agriculture sector* (see Application doc. 14, para. 82 and above para. 90) and the *finance sector* (see above para. 73 ff.).

3.3.7. The Situation in 2016 different from today

- 124 The Respondent further states that the objectives of the new CO₂ Act and the updated NDC, i.e. a reduction of at least 50% by 2030 and zero net emissions by 2050, would not differ significantly from what the Applicants have requested of the Respondent Government in their third Legal Request in 2016 and that they therefore appear to assume that such a reduction is compatible with Switzerland's positive obligations under the Convention (para. 111).
- 125 The Applicants submit that this is wrong and it should be made clear at the outset that the difference between what should be done by the Respondent and what is being done has become much greater since 2016. Also, science, politics, case law and doctrine have developed further since then.
- 126 The Applicants requested in 2016 that the Respondent Government shall carry out *all acts*, within their competence, *required to lower emissions by 2030 to such an extent that Switzerland's contribution aligns with the "well*

¹³⁶ Parliamentary Interpellation 20.3045 (n 136).

¹³⁷ Lock-in occurs when a market is stuck with a standard even though participants would be better off with an alternative.

¹³⁸ UNEP, Emissions Gap Report 2020 (n 60), p. 34 figure 3.

below 2°C” target, thus ending the unlawful omissions inconsistent with these targets (see Application doc. 14 p. 4). Since the release of the 1.5°C SR in 2018, the global political and scientific consensus is that a *1.5°C limit* is the benchmark for countries to calibrate their mitigation efforts (see AS para. 16 and AS section 1.3.2), a consensus also committed by the Respondent that emerges from all its public communication and its Observations as well (e.g. para. 95, 102 and 104). Thus, the Applicants claim that this is the relevant standard that informs the scope of the obligation to protect (AS para. 56).

- 127 Also, the Respondent never aimed at reducing GHG emissions in the mentioned extent *domestically* (see AS section 1.3.1¹³⁹), which is indeed a significant difference to the Applicants’ 2016 request (see section 2.10). The Applicants specified the request, making clear, that a *domestic* emission reduction of *at least* 50% below 1990 is necessary to be in line with a “well below 2°C target” (Application doc. 14 para. 44 and 45). From the wording of the requests and the reasoning in the request, it is clear that these were *absolute minimum* requests. They were based on the latest science *at the time*, a science that was still based on the outdated 2°C limit (see hereto AS para. 15 f. and AS section 1.3.1). Since a *1.5°C limit* is the benchmark for countries to calibrate their mitigation efforts, the mitigation pathways based on this limit require more stringent emission reductions. Also, studies examining a pathway consistent with the 1.5°C limit for Switzerland have only recently emerged (see above para. 59 ff.) – studies that have never been conducted by the Respondent itself (see below para. 130). What this means in terms of the necessary emission reductions by the Respondent as a wealthy state has been laid down by the Applicants above (see above section 2.10).

3.3.8. Level of climate protection not based on scientific studies but on assumed majority opinions

- 128 The Respondent states further that it is essential that decisions are based on best scientific knowledge, and that the 2017 Respondent Government Dispatch (2017 Dispatch) refers in particular to the IPCC reports of 2014 and 2018, the reports of the Organisation for Economic Cooperation and Development (OECD), the strategic recommendations of the Consultative

¹³⁹ The Federal Council proposed to the parliament that of total 50% emission reductions compared to 1990 by 2030, 60% shall be domestic reduction. The Parliament, in a counter-proposal to the Federal Council, proposed a domestic target of 37.5% by 2030, see Art. 3 of the new (rejected) CO₂ Act.

body on climate change (OcCC) and the data and information provided by the National Centre for Climate Services (NCCS) (para. 96 and 120).

- 129 It is correct that the Respondent Government *does refer* to these reports, i.e. in the mentioned 2017 Dispatch. However, the Applicants submit that Respondent's decisions and proposals regarding climate protection, particularly regarding the level of emission reductions, are *not based on best scientific knowledge but on political considerations resp. on assumptions by the Government about the majority ability in Parliament*.
- In the Respondent's 2017 Dispatch, under the heading "justification and evaluation of the proposed solution / reduction targets by 2030" (section 1.3.1) it is written that "Switzerland's future reduction targets are based on the findings of science (cf. section 1.1.1) and the international objective set out in the Paris Agreement to limit the increase in average global temperature to well below 2 degrees Celsius and, if possible, to below 1.5 degrees Celsius compared to pre-industrial levels." ¹⁴⁰ However, section 1.1.1 of the 2017 Dispatch describes merely, in a general manner, the "scientific surroundings". These "scientific surroundings" *contain no information whatsoever to the level of national (and global) emission reductions necessary to stay on a pathway to limit global warming to 1.5°C*.¹⁴¹
 - The Respondent explained further in the 2017 Dispatch that Parliament agreed to this reduction target when approving the Paris Agreement and that also the majority of participants in the consultation process were in favour of this or a stricter target. The Respondent Government did not cite or base its conclusion on any scientific considerations that it "*considers* a domestic target of at least 30% *to be appropriate* in view of the goal under the Paris Agreement to reduce emissions to net zero by the second half of this century (...)" (emphasis added).¹⁴² Also, the Respondent Government openly admitted that "compared to the current CO₂ Act, which requires domestic greenhouse gas emissions to be reduced by 20% below 1990 levels by 2020, the proposed target implies a *much lower rate of 1 percent per year compared to the*

¹⁴⁰ BBl 2018 247, p. 285 section 1.3.1 (see OL section 1.2.2).

¹⁴¹ BBl 2018 247, p. 253 f. section 1.1.1 (see OL section 1.2.2).

¹⁴² BBl 2018 247, p. 285 section 1.3.1 (see OL section 1.2.2).

current reduction trajectory"¹⁴³ (emphasis added), and that this "less pronounced decline in domestic emissions *shifts the need for reduction into the future*"¹⁴⁴ (emphasis added).

- The Respondent Government submitted further in the 2017 Dispatch that the objective was also oriented towards the EU, Switzerland's most important trading partner. The Respondent stated that "despite this proximity to Europe, however, the starting position is different. In contrast to the EU, Switzerland produces hardly any fossil-based electricity and has a significantly smaller share of emissions-intensive industry. In the EU, on the other hand, there is still great potential for cost-effective CO₂ reduction in these areas. On the other hand, Switzerland has a high proportion of grey emissions in an international comparison. For this reason, it seems *appropriate* to set the overall target higher than the EU (minus 50 percent compared to minus 40 percent in the EU), but in contrast to the EU, to allow additional measures abroad"¹⁴⁵ (emphasis added).
- The Respondent Government further openly admits in the 2017 Dispatch that EU countries structurally comparable to Switzerland such as Sweden (40%), Denmark (39%), Finland (39%) and Germany (38%) would have to reduce their emissions more than its proposal for Switzerland (30%),¹⁴⁶ *without giving a scientific or even political reason for this*. The Applicants submit that the Respondent's emission reduction plans for 2030, as currently merely entailed in its NDC, have in the meantime (i.e. since 2017) *moved significantly further away from those in the EU and those of the named countries*. For example, Finland's draft new climate law contains a domestic emission reduction target of 60% by 2030 and GHG neutrality by 2035,¹⁴⁷ Denmark has significantly increased its ambitions and committed to reducing

¹⁴³ BBI 2018 247, p. 285 f. section 1.3.1 (see OL section 1.2.2).

¹⁴⁴ BBI 2018 247, p. 286 section 1.3.1 (see OL section 1.2.2).

¹⁴⁵ Ibid.

¹⁴⁶ Ibid.

¹⁴⁷ Data from Third party intervention by CAN-Network Europe in *Agostinho and others v. Portugal and 32 other States*, no. 39371/20, 6 May 2021. See also European Network of National Human Rights Institutions ENNHRI, "Climate change and human rights in the European Context", May 2021, pp. 38-45, available at http://ennhri.org/wp-content/uploads/2021/05/ENNHRI-Paper-Climate-Change-and-Human-Rights-in-the-European-Context_06.05.2020.pdf (last visited 12 October 2021).

domestic emissions by 70% by 2030,¹⁴⁸ the EU committed to a domestic emission reduction target of 55% by 2030 (Article 4(1) European Climate Law¹⁴⁹) as part of its European Green Deal¹⁵⁰ and Germany increased its domestic ambition to 65% by 2030 after the decision of the Federal Constitutional Court¹⁵¹ (see further section "Relevant legal framework and practice" within the Applicants' Observations on the law). *This is not to say that these countries are doing enough to limit global warming to 1.5°C* – also for them, e.g. the findings of RAJAMANI ET AL. apply (see above para. 59).

- The same issues arise regarding the Dispatch concerning Swiss climate policy after 2012 dated 26 August 2009.¹⁵² Although in that Dispatch, the Respondent Government explicitly stated what developed countries like Switzerland "should" do according to AR4 to stay within the (now outdated) 2°C limit with a probability of about 66%, namely reducing their domestic emissions by 25 to 40% compared to 1990 levels, and further stated that according to *recent* scientific findings, at least 40% by 2020 "would" be necessary",¹⁵³ it suggested an insufficient emission reduction target (20% by 2020 compared to 1990 level) to the Respondent Parliament (see also Application doc. 14 para. 297).¹⁵⁴ This eventually led to the inadequate climate target entailed in Art. 3(1) of the current CO₂ Act (see AS para. 17). It should be noted that also the OcCC stated hereto in 2012 that the 20% reduction target is not compatible with the global goal of a maximum of 2° warming (see Application doc. 14 para. 294).¹⁵⁵
- Likewise, the counter-proposal 2021 does not contain any specific scientific evaluations as to the proposed emission reduction target of

¹⁴⁸ Data from Third party intervention by CAN-Network Europe in *Agostinho and others v. Portugal and 32 other States*, no. 39371/20, 6 May 2021.

¹⁴⁹ Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law').

¹⁵⁰ European Commission, 2030 climate & energy framework, available at https://ec.europa.eu/clima/policies/strategies/2030_en (last visited 12 October 2021).

¹⁵¹ Bundesministerium für Wirtschaft und Energie, Deutsche Klimaschutzpolitik, available at <https://www.bmwi.de/Redaktion/DE/Artikel/Industrie/klimaschutz-deutsche-klimaschutzpolitik.html> (last visited 12 October 2021).

¹⁵² BBl 2009 7433.

¹⁵³ BBl 2009 7433, p. 7446 section 1.5 (see OL section 1.2.1).

¹⁵⁴ BBl 2009 7433, p. 7465 f. section 4.1.1 (see OL section 1.2.1).

¹⁵⁵ OcCC, Klimaziele und Emissionsreduktion, Bern 2012, p. 5, available at <http://www.occc.ch/pdf/2623.pdf> (last visited 12 October 2021).

net-zero by 2050. The Respondent Government refers merely in passing to the 1.5°C SR¹⁵⁶ which does not quantify national emission reduction targets, but presents a global pathway which shows that to have a chance of keeping global temperature increase within the Paris temperature limits, *global* CO₂ neutrality must be achieved by 2050 (see AS para. 20 and above para. 49). Thus, there is no scientific basis for the Respondent's assertion that its counter-proposal 2021 "is compatible with all of Switzerland's international obligations".¹⁵⁷ The same applies to the Respondent's Long-Term Climate Strategy 2050.¹⁵⁸

- Eventually, it is worth mentioning that the Respondent Government has just recently decided to dispense with the OcCC as of next year.¹⁵⁹

130 Despite the Respondent assertions that it is essential that decisions in the field of climate protection are based on best available scientific knowledge by itself, there are *no specific investigations and studies* on which the current CO₂ Act, the new (rejected) CO₂ Act, the NDC, the Respondent's long-term Climate Strategy 2050 as well as its counter-proposal 2021 and *in particular the climate targets contained* therein are based. This has been confirmed by the Respondent Government¹⁶⁰ on the basis of a request for access to such documents by Applicant 1.¹⁶¹ It is worth adding that the dispatches not only contain no adequate scientific information, but also, despite the alleged "review of constitutionality" contained herein, which would be of particular importance since Switzerland does not have constitutional jurisdiction¹⁶², no reference to human rights whatsoever.¹⁶³ The Applicants submit the dispatches to be misleading for the Parliament as well as the public at large.

131 For the Respondent's NDC, CAT also noted that *"without any meaningful increase in ambition*, Switzerland maintains that its 2030 target puts it on an emission development *pathway in line with recommendations by science* to keep the global average temperature increase to 1.5°C. It *does not provide*

¹⁵⁶ BBl 2021 1972, p. 8 section 2.1 (see OL section 1.2.3).

¹⁵⁷ BBl 2021 1972, p. 45 section 6.6.2 (see OL section 1.2.3).

¹⁵⁸ The Federal Council, Switzerland's Long-Term Climate Strategy (n 56), p. 7 f.

¹⁵⁹ SRF, Sommaruga verzichtet auf Beirat zum Klimawandel, 5 September 2021, available at <https://www.srf.ch/news/schweiz/wissenschaftliche-perspektive-sommaruga-verzichtet-auf-beirat-zum-klimawandel> (last visited 12 October 2021).

¹⁶⁰ FOEN, Ihr Zugangsgesuch vom 19. Februar 2021, Ittingen, 10 March 2021 (*doc 15*).

¹⁶¹ Verein KlimaSeniorinnen Schweiz, Gesuch um Zugang zu amtlichen Dokumenten, Zurich 19 February 2021 (*doc 16*).

¹⁶² See Application doc. 14 para. 242.

¹⁶³ See e.g. BBl 2018 247, p. 368 section 5.1 (see OL section 1.2.2).

any citation to demonstrate this point. This is the same language as in the previous NDC, which claimed its 50% target was in line with keeping the global temperature increase to 'below 2°C'" (emphasis added).¹⁶⁴

- 132 Overall, the Respondent has failed to assess its fair share of the necessary global emissions reductions following an approach which, if followed by all countries, would be capable of staying within the 1.5°C limit.

3.3.9. No more time to take the necessary measures

- 133 The Respondent states further that according to the FSC, there is still a certain period of time to prevent global warming and to achieve the Applicant's objectives by the political means and democratic instruments available in Switzerland (para. 110 and 144). Hereto, the Respondent also mentioned 1.5°SR claiming that the IPCC expected global warming to reach 1.5 °C around 2040 if it continues to increase at the current rate (para. 57).
- 134 The Applicants submit that it is correct that *FSC stated this*. However, FSC is not a scientific body, and the statements of the Court are patently wrong (see hereto AS section 1.8 and AS para. 47). The Respondent Government itself rightly stated already in 2009 that because greenhouse gases remain in the atmosphere for a long time, emissions should be reduced *as quickly as possible*,¹⁶⁵ and in 2017 that it is "crucial that global greenhouse gas emissions reach their maximum *as soon as possible* and then decline *massively* and *rapidly*"¹⁶⁶ (emphasis added).
- 135 The IPCC never stated in its 1.5°SR that there would be time to wait before starting to act, and particularly, it did not say so regarding developed states like Switzerland. Quite to the contrary, 1.5°C SR stated that "pathways that limit global warming to 1.5°C with no or limited overshoot show *clear emission reductions by 2030 (high confidence)*"¹⁶⁷ (emphasis added). It made clear that "the lower the emissions in 2030, the lower the challenge in limiting global warming to 1.5°C after 2030 with no or limited overshoot (high confidence). The challenges from delayed actions to reduce greenhouse gas emissions include the risk of cost escalation, lock-in in carbon-emitting

¹⁶⁴ CAT, Switzerland, Comparison of NDC submissions, available at: https://climateactiontracker.org/media/images/Switzerland_CAT_NDC_Comparison_Table_2020.12.original.png (last visited 12 October 2021).

¹⁶⁵ BBI 2009 7433, section 4.1.1 (see OL section 1.2.1).

¹⁶⁶ BBI 2018 247, section 1.1.1. (see OL section 1.2.2).

¹⁶⁷ IPCC, AR6, Summary for Policymakers (n 4), D.1.1.

infrastructure, stranded assets, and reduced flexibility in future response options in the medium to long term."¹⁶⁸ It further states that "*the longer the delay in reducing CO₂ emissions towards zero, the larger the likelihood of exceeding 1.5°C*, and the heavier the implied reliance on net negative emissions (particularly CDR) after mid-century to return warming to 1.5°C (high confidence)"¹⁶⁹ (emphasis added). It noted that "CDR deployed at scale is *unproven, and reliance on such technology is a major risk in the ability to limit warming to 1.5°C*."¹⁷⁰ Furthermore, it made clear that "every year's delay before initiating emission reductions decreases, by approximately two years, the remaining time available to reach zero emissions on a pathway still remaining below 1.5°C."¹⁷¹

136 Furthermore, in its recent AR6 the IPCC states that "in all scenarios assessed here except SSP5-8.5, the central estimate of crossing the 1.5°C threshold lies in the early 2030s. This is about ten years earlier than the midpoint of the likely range (2030–2052) assessed in the SR1.5, which assumed continuation of the then-current warming rate; this rate has been confirmed in the AR6."¹⁷²

137 Also, as has been shown above, Switzerland needs to reduce its emissions so as to be net-negative in 2030, with domestic emission reductions of 61% by 2030 (section 2.10). From this, it follows without doubt that *for Switzerland, there isn't any time left to wait to take the necessary measures*.

138 Eventually, the UNEP Emissions Gap Report 2020 makes clear that "achieving the long-term temperature goal to limit global warming to 1.5°C depends strongly on implementing mitigation action by 2030"¹⁷³ and that by now, "the global average emissions reductions required per year to meet 2030 emission levels that are consistent with the 2°C and 1.5°C scenarios are approximately quadruple and more than double, respectively, what they would have been had serious collective climate action started in 2010. This *remarkable increase in annual emission reduction rates due to the lack of sufficient action add significantly to the challenge of meeting the Paris*

¹⁶⁸ IPCC, 1.5°C SR (n 100), D.1.3.

¹⁶⁹ IPCC, 1.5°C SR (n 100), p. 34.

¹⁷⁰ Ibid.

¹⁷¹ IPCC, 1.5°C SR (n 100), p. 61.

¹⁷² IPCC, AR6, Climate Change 2021: The Physical Science Basis, Chapter 4, Executive Summary, available at https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_04.pdf (last visited 12 October 2021)

¹⁷³ UNEP, Emissions Gap Report 2020 (n 60), p. 33.

*Agreement*¹⁷⁴ (emphasis added). It states that "the conclusion is clear: *postponing ambitious climate action, thereby delaying the path towards reaching net-zero emissions, will make it impossible to achieve the Paris Agreement temperature goal of limiting global warming to 1.5°C.* Greater climate action is therefore needed by 2030 to make reducing global GHG emissions to levels consistent with 1.5°C pathways feasible"¹⁷⁵ (emphasis added).

Zurich, 13 October 2021

Yours faithfully,



Cordelia Christiane Bähr
lic. iur., LL.M. Public Law (LSE),
Attorney-at-Law



Martin Looser
Attorney-at-Law

¹⁷⁴ UNEP, Emissions Gap Report 2020 (n 60), p. 34.

¹⁷⁵ Ibid.