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UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

THE PARIS AGREEMENT

IMPLEMENTATION BLUEPRINT

A PRACTICAL GUIDE TO:

- BRIDGING THE GAP BETWEEN ACTIONS AND GOAL
- CLOSING THE ACCOUNTABILITY DEFICIT

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Contents

UNFCCC, Paris Agreement

IMPLEMENTATION BLUEPRINT ('The Blueprint')

A. Overview

1. The Paris Agreement commits governments to limiting global warming to 1.5° C or 'well below' 2.0° C.

2. **It also recognizes, *'with serious concern the urgent need to address the significant gap between the aggregate effect of Parties' mitigation pledges … and aggregate emission pathways consistent'* with the temperature goal.**

3. **There are three principal impediments to bridging this gap:**

   - **The absence of objective frames of reference for interrogating the equity and adequacy of individual country pledges;**
   - **The absence of objective frames of reference for interrogating the adequacy of individual financial contributions to support mitigation and adaptation effort;**
   - **The absence of principles of accountability for delivering the temperature goal.**

4. **The Blueprint presents data on carbon emissions and population designed to assist in overcoming these impediments.**

5. Further, it makes transparent the different pathways to the temperature goal (both globally and for individual Parties).

6. It does so on the basis of internationally accepted data, in particular the Intergovernmental Panel on Climate Change (IPCC) assessments of cumulative emissions of carbon dioxide (or 'carbon budgets') consistent with: -

   - **LOW RISK** 50% likelihood of limiting warming to < 1.5° C (Budget 1)
   - **MEDIUM RISK** 66% likelihood of limiting warming to < 2.0° C (Budget 2)
   - **HIGH RISK** 50% likelihood of limiting warming to < 2.0° C (Budget 3)

NB: the 'high risk' pathway appears to be *inconsistent* with a precautionary approach to a 'well below' 2.0° C target. It is referenced in the Blueprint to denote the outward extremity of 2.0° C pathways, beyond which catastrophic climate change becomes more likely than not.

Nothing in the Blueprint should be interpreted as endorsing the UNFCCC compliance of this pathway.

7. Measured in metric tonnes of carbon, the Blueprint specifically reveals:

   - The pathways of global CO2 budgets over time (past and future), setting the future challenge of rapid decarbonisation within the context of the upward trend of historic carbon dioxide emissions ('emissions').
   - Parties' historic per capita and gross emissions (from 1750-2013), providing easy comparison with Party 'shares' based on equal per capita emissions.
   - The variance between individual Parties' gross emissions over time and shares based on equal per capita emissions, expressed as a 'credit' or 'debit', also measured in tonnes of carbon).
   - Party shares of the remaining budget based on equal per capita emissions (but ignoring historically accrued credits and debits).
   - Rough estimates of Party INDCs, providing for interrogation for the INDC with reference to shares based on equal per capita emissions (but ignoring historically accrued credits and debits).

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8. The purposes of the Blueprint are as follows:

   - To provide transparency on what is required both globally and nationally, if climate catastrophe is to be avoided.
   - To provide transparency on historic responsibility for greenhouse gas emissions.
   - To provide frames of reference, derived from authoritative sources of data, for the formulation of NDCs, based in equity, which are consistent with the temperature goal.
   - To provide all parties (including UNFCCC Parties, the UNFCCC Secretariat and civil society) with a clear and objective basis for interrogating the adequacy and equity of NDCs.
   - To provide a reference for determining Party financial contributions (where a debit, measured in tonnes of carbon, represents a key consideration).
   - To provide a reference for assessing whether Parties are exercising due diligence in meeting the temperature goal.

9. **The Blueprint aims to address *'the accountability deficit'* of the Paris Agreement. It provides UNFCCC Parties with an objective basis for testing and challenging the commitments of others. It provides civil society with a clear and objective basis for challenging government action, whether through advocacy or the courts.**

10. The Blueprint also explains the legal principles that may be invoked to challenge the adequacy of NDCs (whether under domestic or international law).

11. The methodology underpinning the Blueprint is intended to be transparent, objective and easily explicable, making it appropriate for use, inter alia, in judicial proceedings. It is described in further detail in the Notes for Guidance below.

12. The Blueprint results from a collaboration between two not-for-profit organisations: the Global Commons Institute and Plan B . Although there are various other resources available, we believe the Blueprint provides a clear and distinct presentation of existing data-sets (the Country graphs in UNEP's 'Emission Gap Report 2016', for example, begin only in 1990, producing a very different impression of historic responsibility).

This release is a prototype.

The work is unfunded, and we have undertaken as much work as we could justify, in light of available resources and uncertainty as to the value of our approach. Only selected Parties have been covered in the Party specific charts, and certain simplifying assumptions have been made (one such assumption, regarding future population, tends to create a bias in favour of developed country Parties).

13. We will assess whether to develop the prototype into a comprehensive Blueprint on the basis of feedback received.

14. Feedback (regarding concept or methodology) may be submitted to tim@planb.earth

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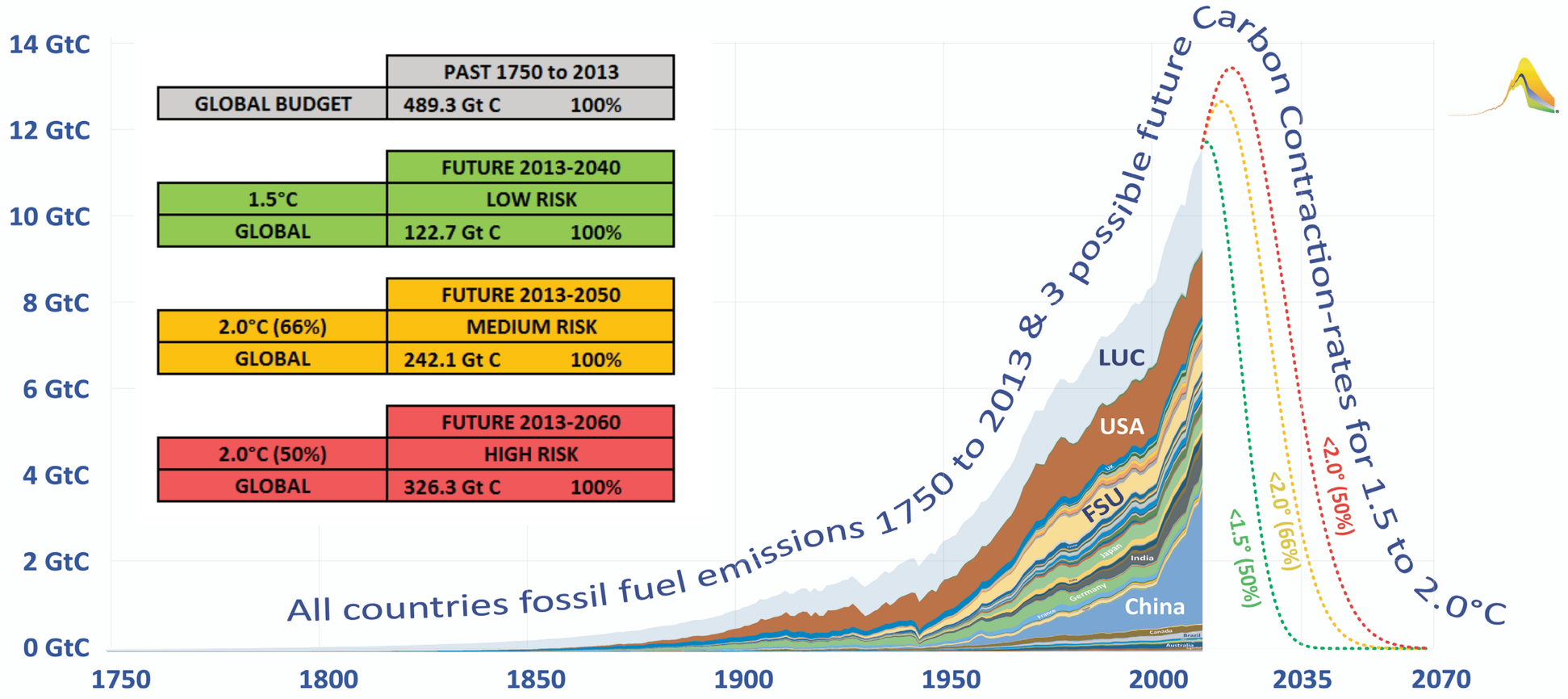
B1. Guide to the Charts

Past/Future Total Global Carbon Budget Chart (1750-2060)

Past Fossil Fuel Consumption data for Coal, Oil, Gas, Gas-Flaring, Cement-Manufacture and Bunker Fuels from CDIAC, adding Land Use Change emission using other sources.
Future path-integrals for Carbon Consumption shown in the dotted lines **123 Gt C 50% odds of <1.5° C, 242 Gt C 66% odds of <2.0° C, 326 Gt C 50% odds of <2.0° C** derived from IPCC AR5 (note overleaf).

For a constant sense of scale from global to international & to national, a miniature of this chart appears in the top left corner of every chart in the one-by-one country catalogue that follows.



This chart shows cumulative historic emissions of carbon dioxide; together with demarcation of the total areas representing the remainder of Budgets 1-3 (**Green**, **Amber**, **Red**) as of 2013.

The X-axis shows years (from 1750); the Y-axis, the weight of carbon emitted in that year (expressed as Gigatonnes, or billions of tonnes of carbon). The different coloured layers, stacked on top of each other, represent the historic emissions of the different country Parties. Additionally the chart includes a global estimate for emissions resulting from 'land use change' ('LUC').

Post 2013, three dotted lines (**Green**, **Amber** and **Red**) demarcate the remaining carbon that may be emitted consistent with the remainder of Budgets 1-3.

The transformation required to buck the trend of emissions rising in line with economic and population growth, to a near immediate decarbonisation, should be immediately apparent.

The **GREEN** dotted line, shows the **'LOW RISK'** pathway. This is the weight of carbon (122 Gt C) that may still be emitted into the atmosphere consistent with a 50% chance of keeping warming to <1.5° C. It can be seen that following a sharp decline, the line reaches zero by 2035 with net zero carbon emissions within 18 years.

The **AMBER** dotted line, shows the **'MEDIUM RISK'** pathway. This is the weight of carbon (242 Gt C) that may still be emitted into the atmosphere consistent with a 66% chance of keeping warming to <2.0° C. This shows peaking around 2025, followed by a sharp decline with net neutrality by 2060.

The **RED** dotted line, shows the **'HIGH RISK'** pathway. This is the weight of carbon (326 Gt C) that may still be emitted into the atmosphere consistent with a 50% chance of keeping warming to <2.0° C. This shows peaking around 2025, followed by a sharp decline with net neutrality by 2070.

This is the path beyond which climate catastrophe is more likely than not.

Budget boxes; global totals & country shares (example chosen here is Norway)

In the bottom left-hand corner of each country specific chart these boxes correlate with the global and country-specific graphics.

The top box contains historic emissions from 1750-2013. The grey part contains the global total i.e. 489 Gt C (to convert this into CO2, multiply by 3.6667, i.e. 1,794 Gt CO2).

Measured in tonnes of carbon the: -

- blue part of the boxes contains the featured country's shares of the global budgets;
- **actual share**: the country's actual historic emissions are expressed in tonnes of carbon and as a per-centage of the total. Norway, for example, emitted 677.0 Mt C over this period (1750-2013), repre-senting 0.14% of historic global emissions;
- **equal per capita share**: the country's 'share' of historic emissions are also expressed in tonnes of carbon and as a percentage.

'Share' Calculation Method

On a year-by-year basis (1750-2013), each country's 'emissions-share' is derived from: -

[a] calculating the population of each country as a % of the growing global population total and then
[b] recalculating each country's 'emissions share' of the global emissions total as being equal to their annual share of the growing global population.

Overall, Norway's share of global population over the period was 0.09%. Consequently its share of the budget, on an equal per capita basis, was 433.5 Mt C.

Carbon 'Credit/Debit'

This is derived by subtracting its 'actual' share from its 'equal per capita share'. So, in Norway's case there is an overall 'debit' of 243.6 Mt C.

The lower boxes reflect the 'traffic-light' colour coding of Budgets 1-3, and correspond to the future pathways (represented by the dotted curves on the right-hand side of the charts).

The top parts of these boxes express the global total remaining budget for each of the pathways. The lower part shows the country's share on the basis of equal per capita emissions. Strictly for this 'future' purpose, historically accrued credits and debits are ignored.

However, to calculate a country's total share of any given budget, its equal per capita share of historic emissions needs only to be added to its per capita share for the relevant future pathway. Deducting actual emissions, gives an indication of a country's remaining share of the total budget. To calculate Norway's share of the Budget 2 for example (66% odds for <2.0° C), add its share of the past budget (433.5 Mt C) to its share of the amber budget (175.7 Mt C) to produce a figure of 609.2 Mt C.

Compare this with its actual historical emissions of 677.0 Mt C and it becomes apparent that by 2013, Norway had already exceeded its share of Budget 2 by 67.8 Mt C.

A country that remains within its total share of a given budget may be considered a net creditor; one that exceeds its share, a net debtor. Legal liability seems likely to attach to debtors rather than creditors (and in proportion to the extent of the debt).

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	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
NORWAY		
Actual Share	677.0 Mt C	0.14%
Equal Per Capita Share	433.5 Mt C	0.09%
Carbon CREDIT/DEBIT	243.6 Mt C	0.05%

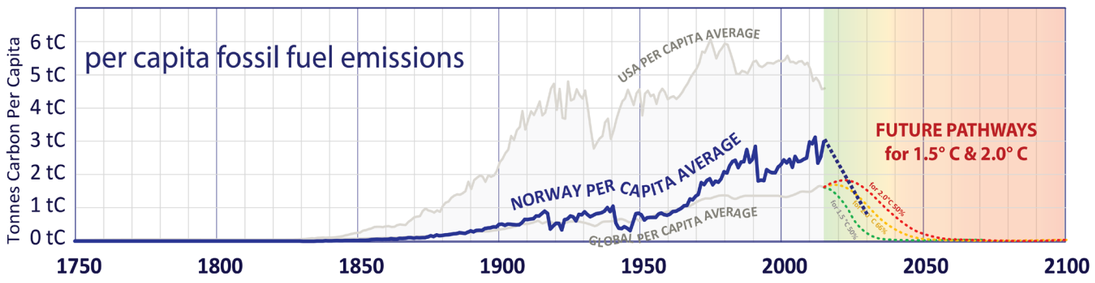
	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
NORWAY	89.1 Mt C	0.07%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
NORWAY	175.7 Mt C	0.07%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
NORWAY	236.7 Mt C	0.07%

More specifically it should be clear that:

1. A country's risk of being found legally liable for inadequate mitigation action increases in line with its excess emissions (as compared to its share based on equal per capita emissions);
2. A country's obligation to provide financial contributions increases in line with its excess emissions (as compared to its share based on equal per capita emissions);
3. A country's risk of being found legally liable for inadequate emissions decreases in line with its 'credit' emissions (ie the size of the unused part of its share).



Per capita country emissions over time (again, example chosen here is Norway)

Bottom right-hand side upper section of each country specific chart.

The template for each country graphic are non-stochastic line plots that provide context for the **featured country's per capita emissions** which are key vectors for the quantitiative analysis 1750-2070.

- the per capita emissions of the US, historically the greatest-cumulative/high-per capita emitter.
- the per capita emissions of the specific country being analysed (in this example Norway)
- the global average of per capita emissions over time past &
- the global average of per capita emissions over time future for the **Green**, **Amber** & **Red** budgets (for simplicity of analysis, the population figure was 'frozen' at seven billion from 2014 onwards).

As can be seen in this example, Norway's per capita emissions were historically higher than the per capita average (but signficantly less so than the USA).

INDC reference

Moving into the future, as this crosses 2013 on the X-axis, the line branches into **Green**, **Amber** & **Red** dotted paths, showing (here Norway's) equal per capita emissions associated with Future Budgets 1-3).

Passing into the future the country line breaks into dots to 2030, estimating the country's future per capita emissions on the basis of its INDC.

It can also be seen that Norway's NDC portray future per capita emissions than are not quite consistent with the Budgets 1, 2 or 3.

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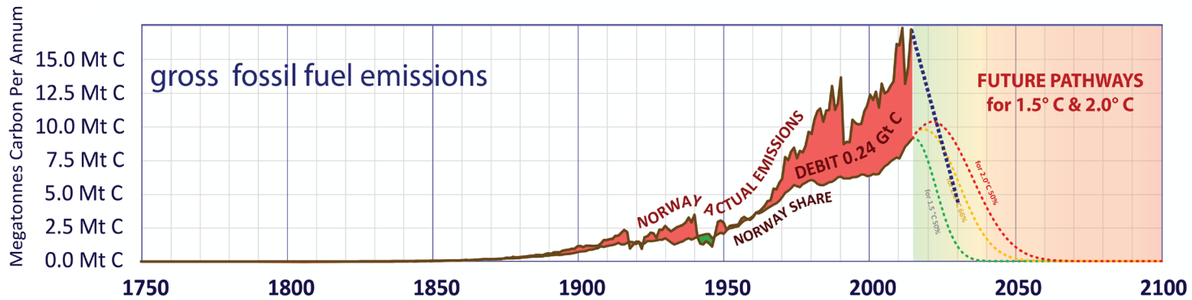

Gross country emissions over time (again, example chosen here is Norway)

Bottom right-hand side lower section of the main graphic. This shows the . . .

'Actual emissions' line.

This line shows the country's actual gross emissions over the period 1750 -2013 and then Norway's INDC.

Country 'Share' line.

This line shows the country's share of the global budget and then their future share of the **Green,** the **Amber** and the **Red** budgets (2014-2070) on the basis of globally equal per capita emissions.

Credit/Debit.

The total past difference between share line and actual emissions line is the country's running debit and/or credit. Where actual emissions are less than share for the relevant year, the line passes beneath the share line and the area between the two lines is 'credit shaded in green.' Where actual emissions are higher than share, the line passes above the share line and the area between the two lines is 'debit shaded in dark red'.

As can be seen, for most of the period between 1750 and 2013, Norway's emissions exceeded its share on an equal per capita basis (leading to the area between the lines being shaded in red). For a short period in the 1940s however (during WWII), Norway's emission were running below the average, so that there is a small area shaded in green. Norway's overall debit for the period 1750 to 2013 can be seen to be 0.24 Gt C.

INDC reference

As the line passes 2013 on the X-axis, it becomes dotted, providing a rough indication of the country's NDC. This allows for the NDC to be seen in relation to the country's share of the past and the remaining budget.

B.2 Source of 'future carbon budget' data - 2011 onwards Calculation of 'Future Global Carbon Budgets' (Path-Integrals), here projected from 2014 onwards

Integrals (weight totals) for Carbon budgets are taken from the Intergovernmental Panel on Climate Change's Fifth Assessment Report (AR5); see Synthesis Report, page 64, table 2.2
https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf

Cumulative CO_2 emissions from 1870 in $GtCO_2$									
Net anthropogenic warming [a]	<1.5°C			<2°C			<3°C		
Fraction of simulations meeting goal [b]	66%	50%	33%	66%	50%	33%	66%	50%	33%
Complex models, RCP scenarios only [c]	2250	2250	2550	2900	3000	3300	4200	4500	4850
Simple model, WGIII scenarios [d]	No data	2300 to 2350	2400 to 2950	2550 to 3150	2900 to 3200	2950 to 3800	n.a. [e]	4150 to 5750	5250 to 6000
Cumulative CO_2 emissions from 2011 in $GtCO_2$									
Complex models, RCP scenarios only [c]	400	550	850	1000	1300	1500	2400	2800	3250
Simple model, WGIII scenarios [d]	No data	550 to 600	600 to 1150	750 to 1400	1150 to 1400	1150 to 2050	n.a. [e]	2350 to 4000	3500 to 4250
Total fossil carbon available in 2011 [f]: 3670 to 7100 $GtCO_2$ (reserves) and 31300 to 50050 $GtCO_2$ (resources)									

1. **Budget 1: 550 Gt CO2, as from 2011, for 50% odds of <1.5 C**
2. **Budget 2: 1000 Gt CO2, as from 2011, for 66% odds of <2.0 C**
3. **Budget 3: 1300 Gt CO2, as from 2011, for 50% odds of <2.0 C**

- These Budgets are expressed in Gigatonnes of carbon (i.e. a billions of tonnes).
- Here, they're converted into 'carbon only' by dividing by the conversion factor of 3.6667.
- So 'carbon only' budgets are: **Budget 1: 150 Gt C**; **Budget 2: 272 Gt C**; **Budget 3**: **355 Gt C**
- 30 GtC has also been deducted from each of those three budgets, reflecting carbon already emitted 2011, 2012 & 2013, to become **120 Gt C**, **242 Gt C** & **325 Gt C** respectively.
- These are then plotted as 'path integrals', with very slight differences in weight between the carbon integrals only from the IPCC Synthesis Report and the more information complete **Green**, **Amber** & **Red** 'carbon-budget-path-integrals' used in this Blueprint Report.

Emissions Data

These are taken from the Carbon Dioxide Information Analysis Center (CDIAC), an organization within the US Department of Energy, responsible for providing the US government and research community with accurate data on carbon dioxide emissions. They include CO2 from burning of fossil fuels, cement manufacture and gas flaring and emissions from bunker fuels (ie International aviation and shipping).

CDIAC data does not include figures for Land Use Change (ie carbon dioxide released as a result of burning of forests etc). Since there is no single authoritative source of data for land use change, figures for LUC have been collated from various different estimates.

Population Data

These come from World Bank data and other sources. Past population has been estimated on an annual basis (for both global and country numbers). Given the complexities of estimating future population changes, and the short period of time available for within-budget decarbonisation, future population has been assumed to be frozen as from 2013, leading to an unintended bias in favour of developed country Parties, discussed below.

Lines marking Party INDCs should be regarded as rough estimates. INDCs include, for example, greenhouse gases other than carbon dioxide (such as methane and nitrous oxide). No attempt has been made to convert INDCs into a 'carbon dioxide only' component. Rather it has simply been assumed that a country's overall INDC should apply, proportionately, to its carbon dioxide emissions. If Switzerland's INDC says, for example, that by 2030 it will reduce its greenhouse gas emissions by 50% compared to 1990, the NDC line simply charts a straight course from 2013 to 50% of its carbon dioxide emissions in 1990.

B.3 Note on Bias

The population of developed countries tends to rise less fast (or decrease) in comparison with that of developing countries. An unintended consequence of the assumption of static population post 2013, is therefore a bias in favour of developed countries, tending to exaggerate their 'shares' of the budget (with a corresponding diminution of developing country shares). Given the short time-frames involved, the effect is likely to be relatively modest: nevertheless, on an equal per capita basis, the developed countries shares of budgets can be assumed to be slightly less than indicated by Blueprint figures; while developing country shares can be assumed to be slightly greater. Ideally the final version of the Blueprint would be grounded in best available projections for future population change.

B.4 Glossary

NB terms as defined in the glossary to the UNEP Emissions Gap Report 2016

Carbon dioxide budget (or carbon budget)

For a given temperature rise limit, for example a 1.5°C or 2°C long-term limit, the corresponding carbon budget reflects the total amount of carbon emissions that can be emitted for temperatures to stay below that limit. Stated differently, a carbon budget is the area under a carbon dioxide (CO2) emission trajectory that satisfies assumptions about limits on cumulative emissions estimated to avoid a certain level of global mean surface temperature rise.

We have assumed that CO2 emissions fall to zero and remain there, but do not go negative.

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Intended Nationally Determined Contribution (INDC)

Submissions by UNFCCC Parties which identify actions each national government intends to take under the Paris Agreement. INDCs are, in effect, the basis of post-2020 global emission reduction commitments included in the Paris Agreement.

Land Use Change (LUC)

A greenhouse gas inventory sector that covers emissions and removals of carbon dioxide resulting from direct human-induced land use, land use change and forestry activities.

Nationally Determined Contribution (NDC)

By its decision, 1/CP.21, paragraph 22, the Conference of the Parties (COP) invited Parties to communicate their first NDC no later than when the Party submits its respective instrument of ratification, acceptance, approval or accession of the Paris Agreement. In the same paragraph, the COP further stated that if a Party has communicated an INDC prior to joining the Agreement, that Party shall be considered to have satisfied the provision of decision 1/CP.21, paragraph 22, unless that Party decides otherwise.

C The Country Charts follow . . .

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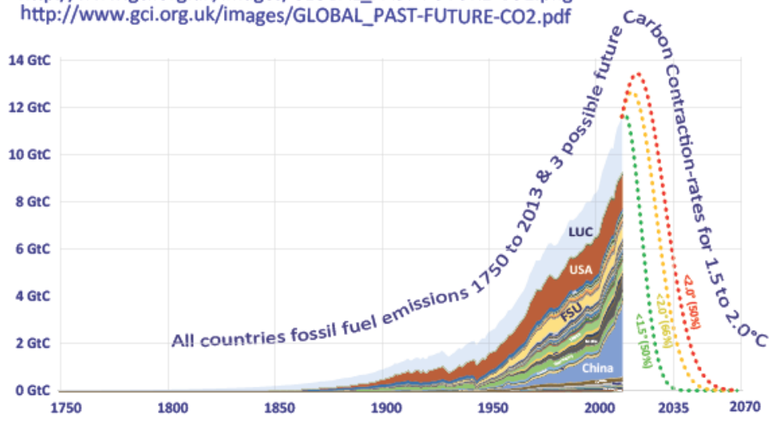
TOTAL GLOBAL CARBON BUDGET

http://www.gci.org.uk/images/GLOBAL_PAST-FUTURE-CO2.png
http://www.gci.org.uk/images/GLOBAL_PAST-FUTURE-CO2.pdf



	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
AUSTRALIA		
Actual Share	4.3 Gt C	0.87%
Equal Per Capita Share	1.5 Gt C	0.31%
Carbon CREDIT/DEBIT	-2.8 Gt C	-0.57%

	FUTURE 2013-2040	
<1.5°C	LOW RISK	
GLOBAL	122.7 Gt C	100%
AUSTRALIA	0.41 Gt C	0.33%

	FUTURE 2013-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
AUSTRALIA	0.8 Gt C	0.33%

	FUTURE 2015-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
AUSTRALIA	1.1 Gt C	0.33%

AUSTRALIA

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

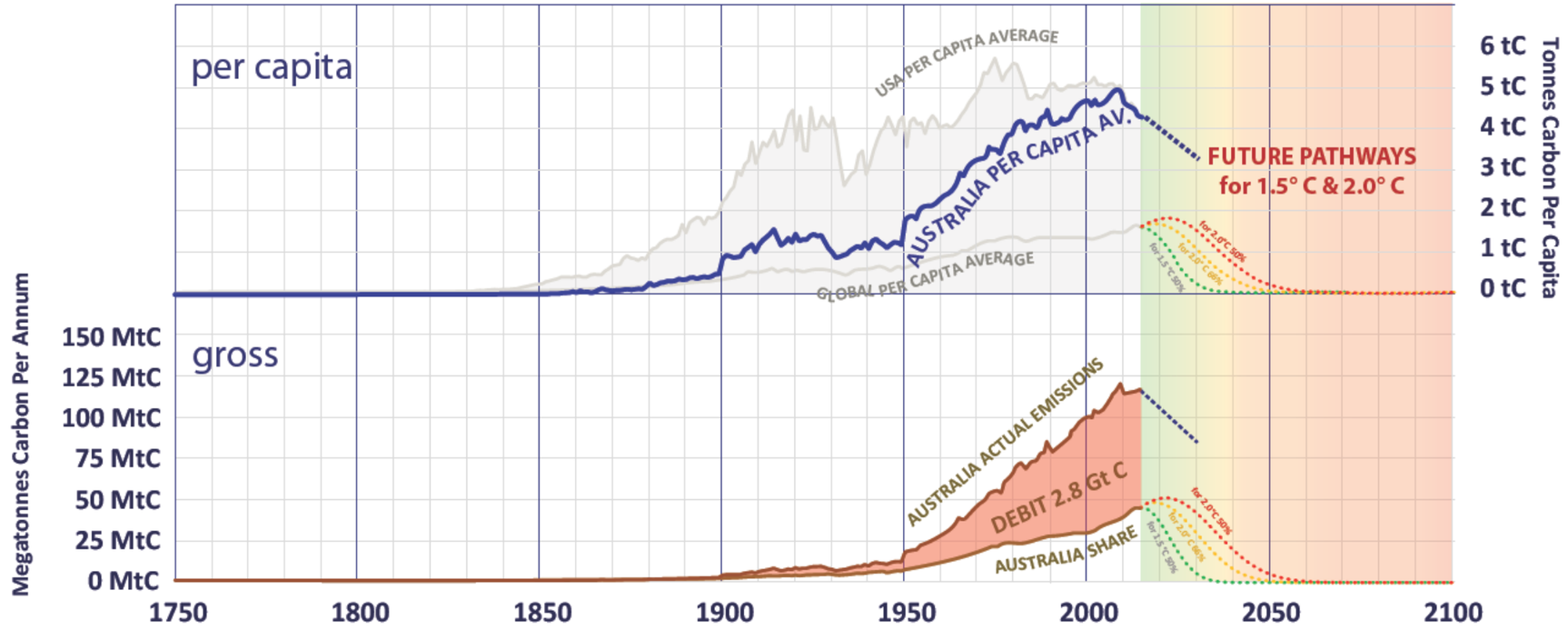
... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

draft documentation

Draft Explanatory Notes and References at: -
http://www.gci.org.uk/Documents/Blueprint.pdf

DEBIT - The extent to which a country is above the Global Per Capita Average of Fossil Fuel Consumption

CREDIT - The extent to which a country is below the Global Per Capita Average of Fossil Fuel Consumption



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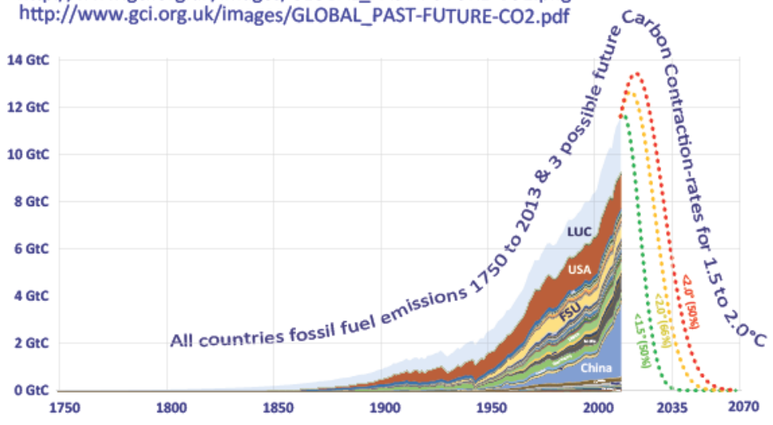

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
CANADA		
Actual Share	7.9 Gt C	1.62%
Equal Per Capita Share	2.5 Gt C	0.50%
Carbon CREDIT/DEBIT	-5.5 Gt C	-1.12%

	FUTURE 2013-2040	
1.5°C	LOW RISK	
GLOBAL	122.7 Gt C	100%
CANADA	0.62 Gt C	0.50%

	FUTURE 2013-2050	
2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
CANADA	1.2 Gt C	0.50%

	FUTURE 2015-2060	
2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
CANADA	1.6 Gt C	0.50%

CANADA

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

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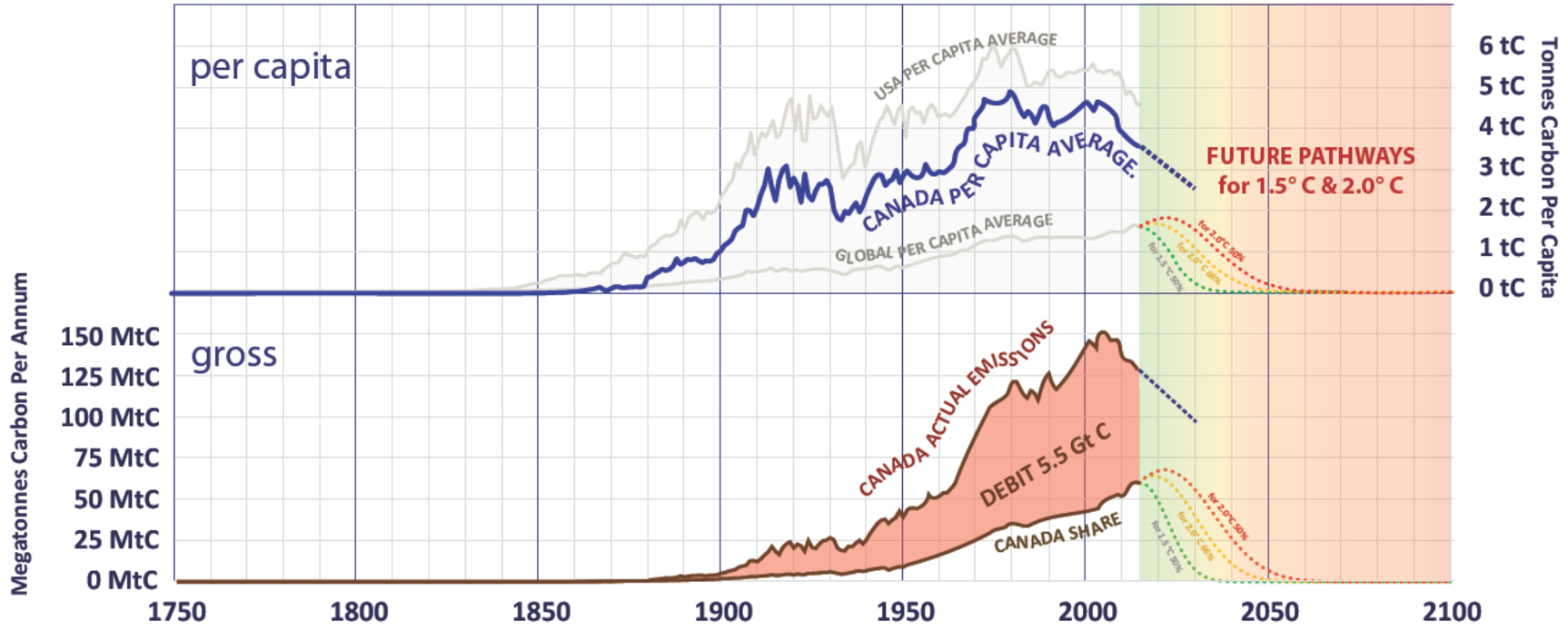

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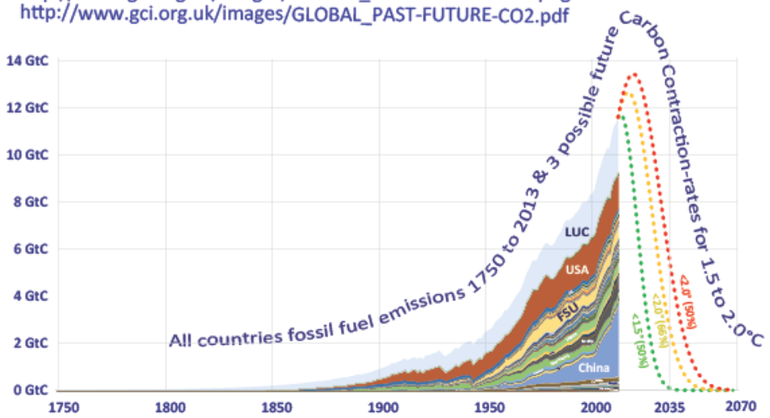

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
CHINA		
Actual Share	44.9 Gt C	9.18%
Equal Per Capita	103.1 Gt C	21.06%
Carbon CREDIT/DEBIT	58 Gt C	11.89%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
CHINA	23.89 Gt C	19.46%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
CHINA	47.1 Gt C	19.46%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
CHINA	63.5 Gt C	19.46%

CHINA

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

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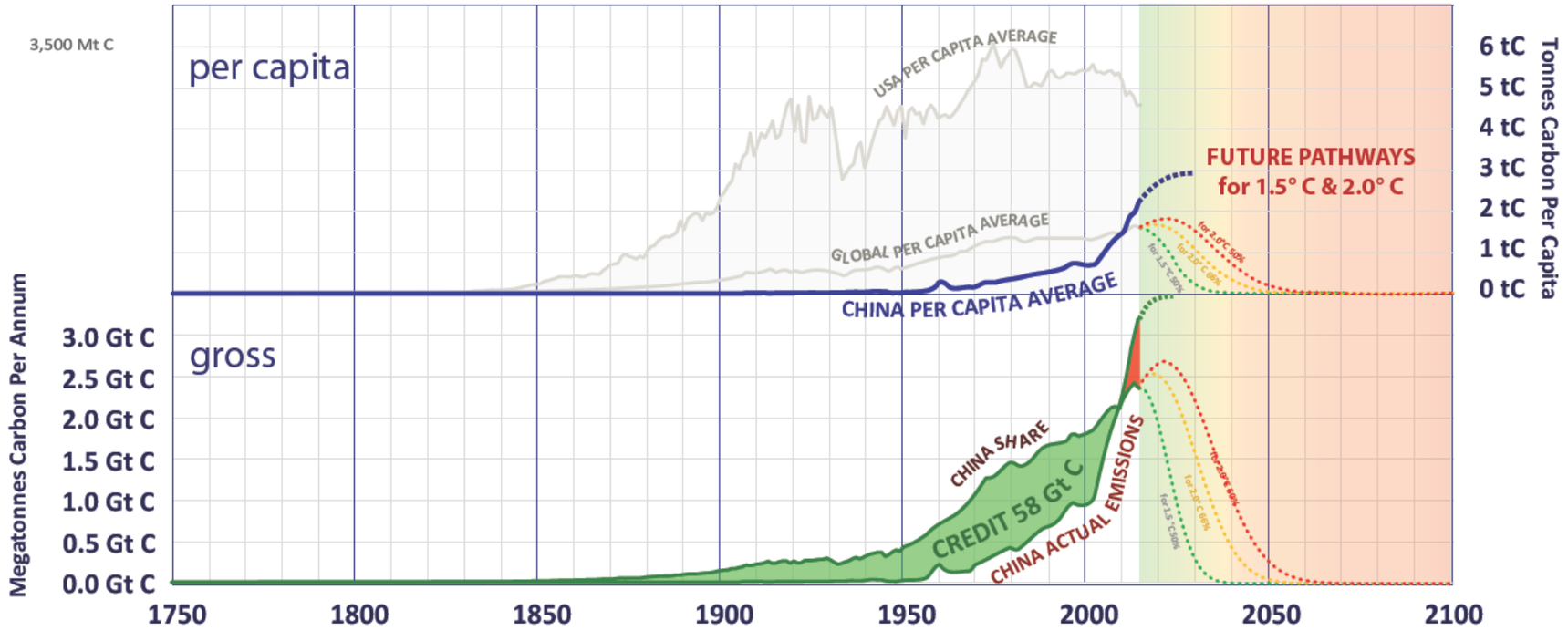

PROTOTYPE - FOR CONSULTATION

TOTAL GLOBAL CARBON BUDGET

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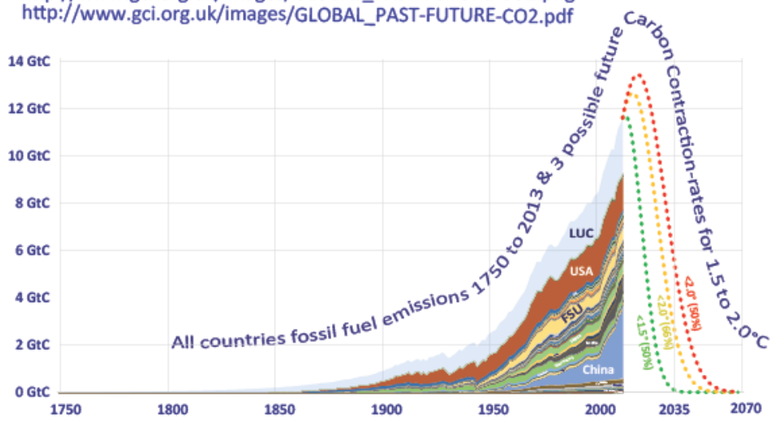
http://www.gci.org.uk/images/GLOBAL_PAST-FUTURE-CO2.pdf



	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
FRANCE		
Actual Share	9.9 Gt C	2.03%
Equal Per Capita Share	6.0 Gt C	1.23%
Carbon CREDIT/DEBIT	-4 Gt C	-0.80%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
FRANCE	1.10 Gt C	0.90%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
FRANCE	2.2 Gt C	0.90%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
FRANCE	2.9 Gt C	0.90%

FRANCE

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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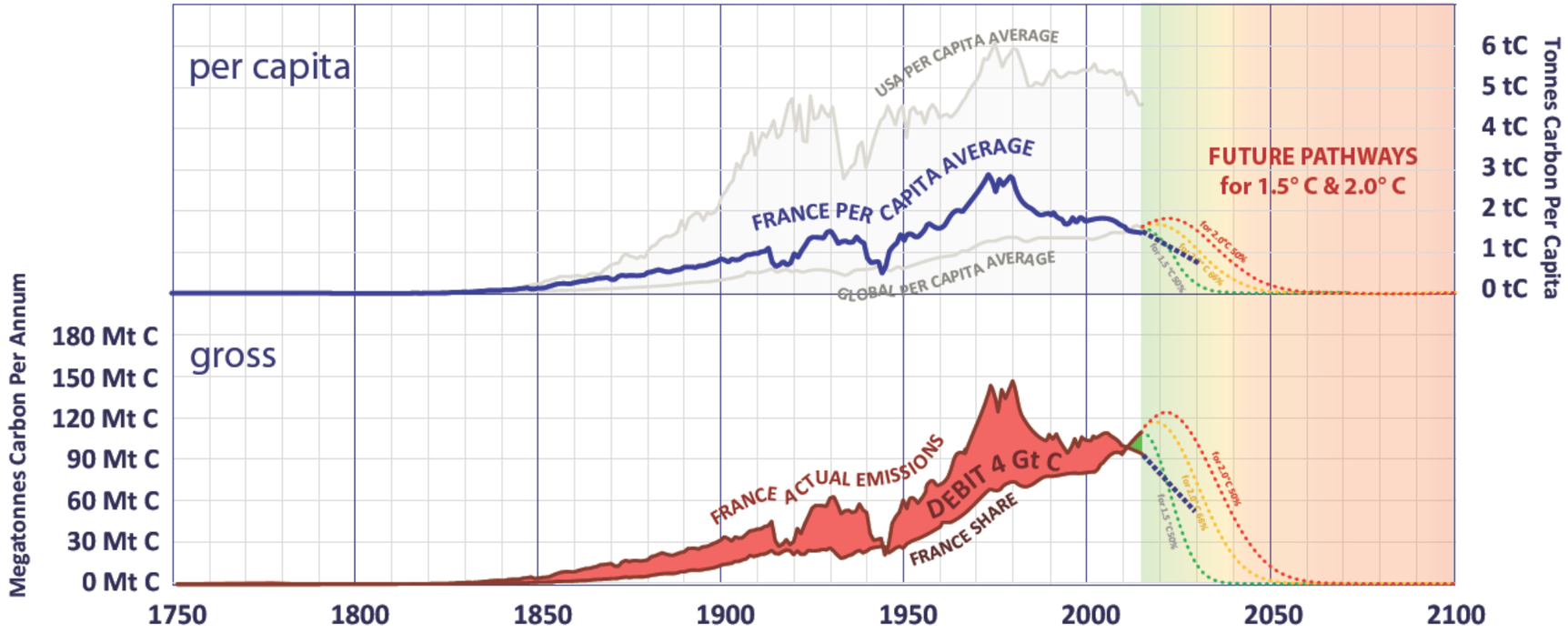

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TOTAL GLOBAL CARBON BUDGET

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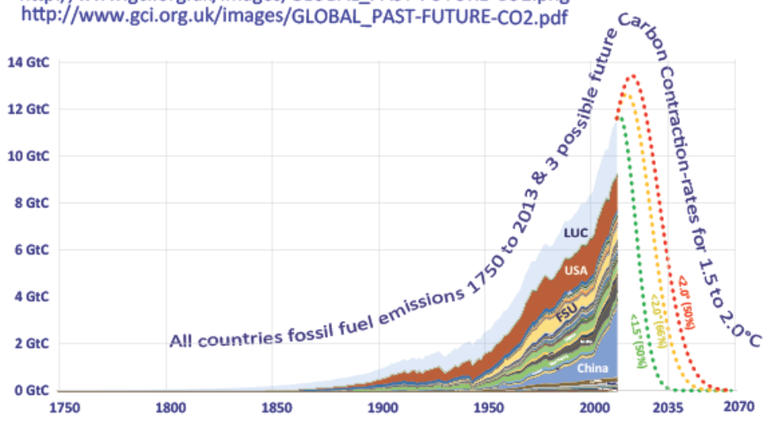

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
GERMANY		
Actual Share	23.6 Gt C	4.81%
Equal Per Capita Share	8.8 Gt C	1.80%
Carbon CREDIT/DEBIT	-15 Gt C	-3.02%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
GERMANY	1.43 Gt C	1.17%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
GERMANY	2.8 Gt C	1.17%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
GERMANY	3.8 Gt C	1.17%

GERMANY

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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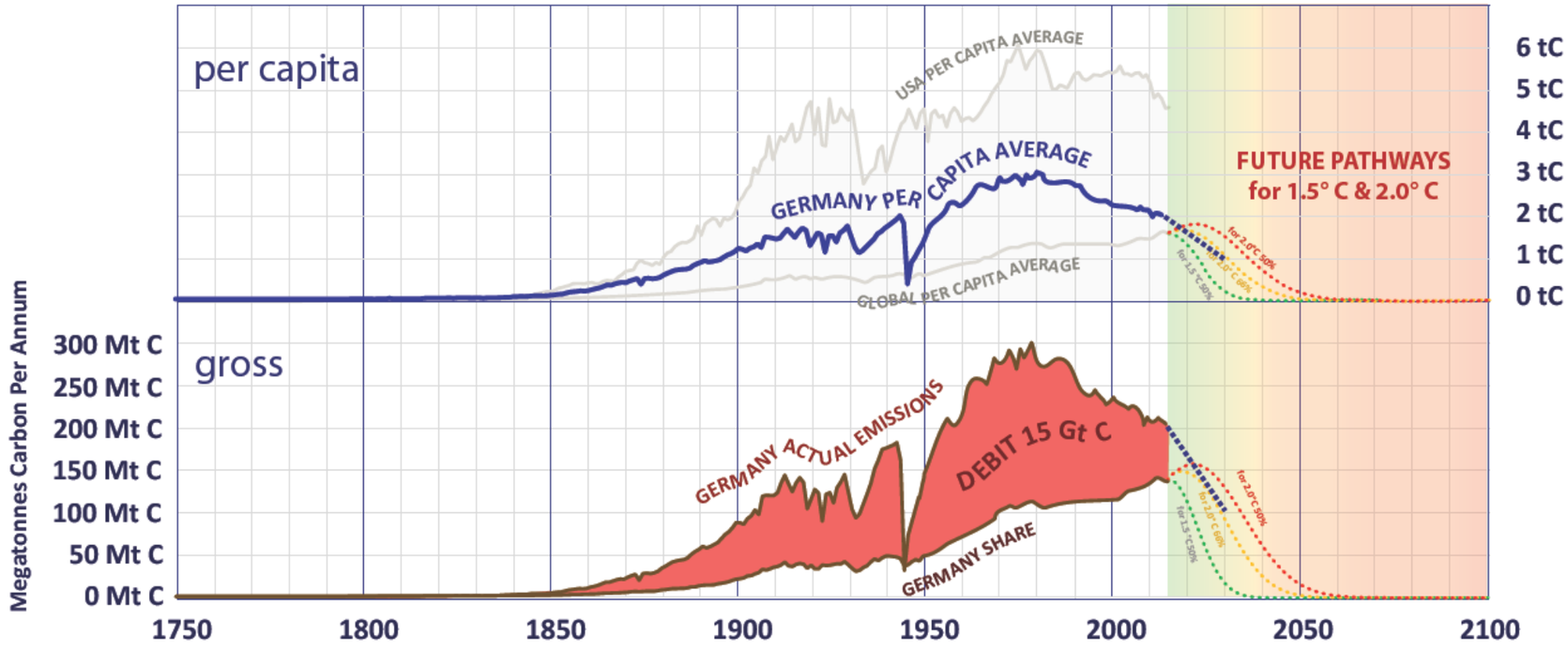

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TOTAL GLOBAL CARBON BUDGET

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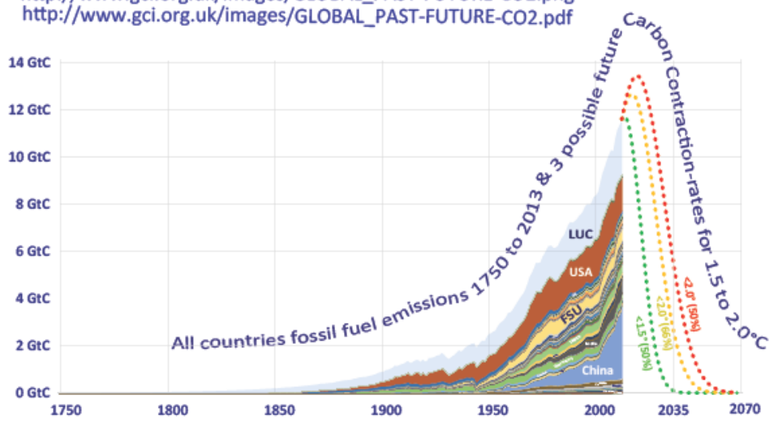

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
INDIA		
Actual Share	10.9 Gt C	2.22%
Equal Per Capita	72.9 Gt C	14.90%
Carbon CREDIT/DEBIT	62 Gt C	12.67%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
INDIA	21.41 Gt C	17.44%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
INDIA	42.2 Gt C	17.44%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
INDIA	56.9 Gt C	17.44%

INDIA

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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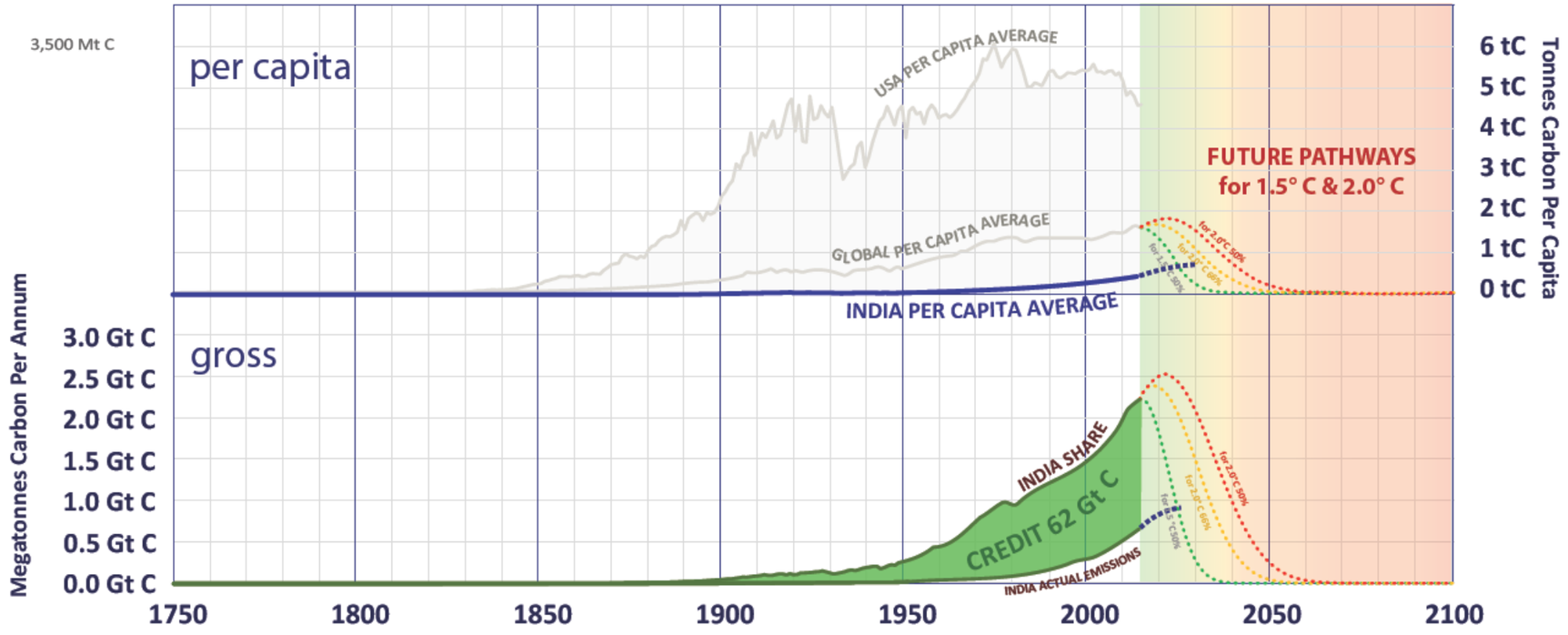

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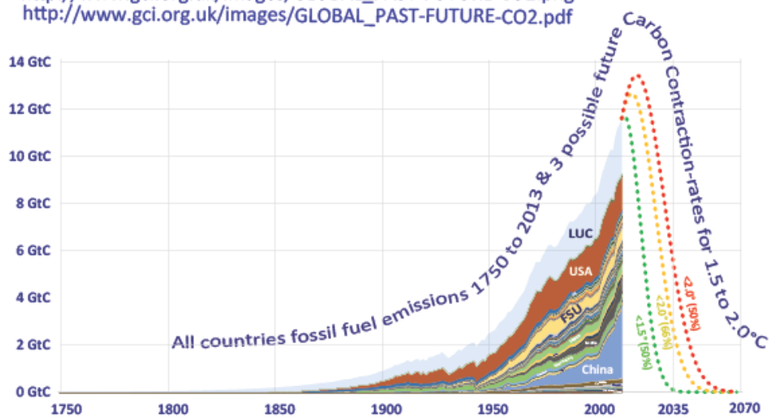

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
INDONESIA		
Actual Share	2.7 Gt C	0.56%
Equal Per Capita	14.7 Gt C	3.00%
Carbon CREDIT/DEBIT	12 Gt C	2.44%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
INDONESIA	4.41 Gt C	3.59%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
INDONESIA	8.7 Gt C	3.59%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
INDONESIA	11.7 Gt C	3.59%

INDONESIA

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

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... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
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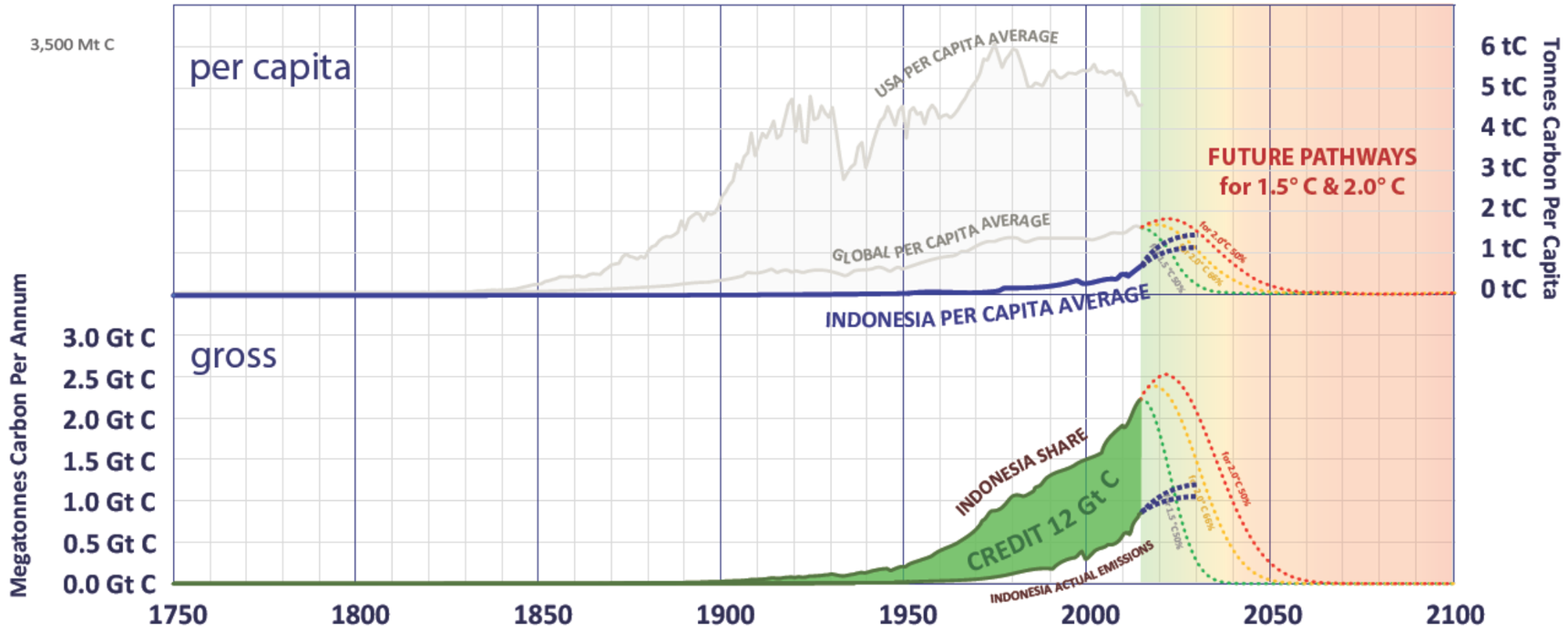

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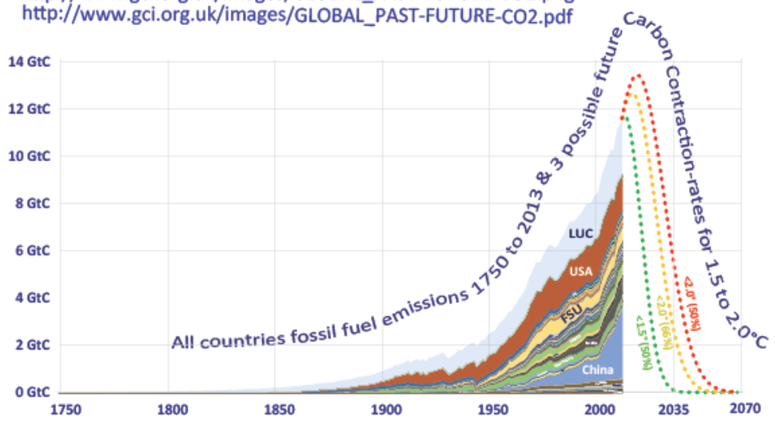

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
KENYA		
Actual Share	0.1 Gt C	0.03%
Equal Per Capita	1.9 Gt C	0.38%
Carbon CREDIT/DEBIT	1.8 Gt C	0.36%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
KENYA	0.77 Gt C	0.62%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
KENYA	1.5 Gt C	0.62%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
KENYA	2.0 Gt C	0.62%

KENYA

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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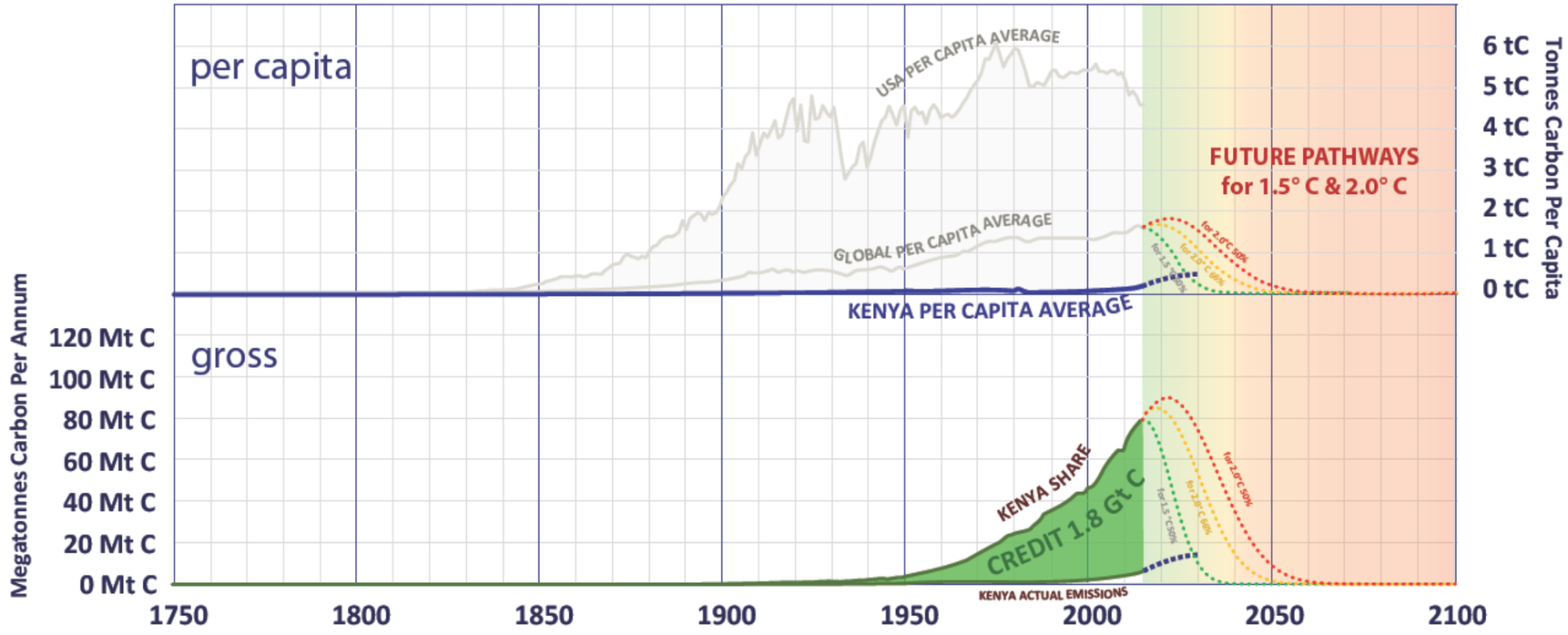
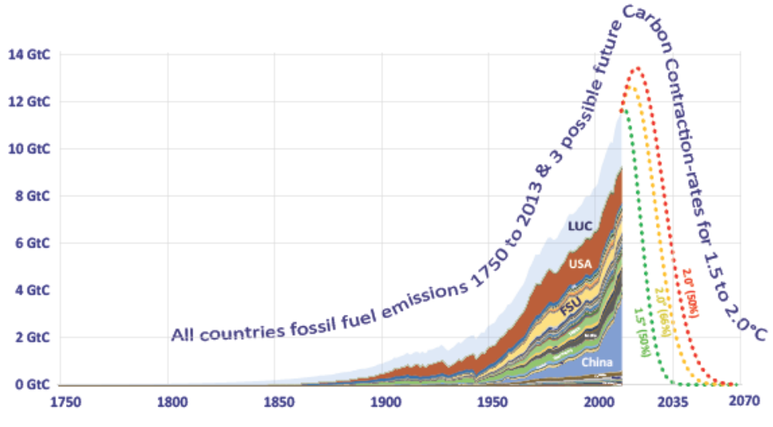


PROTOTYPE - FOR CONSULTATION

TOTAL GLOBAL CARBON BUDGET



	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
MARSHALL ISLANDS		
Actual Share	0.001 Gt C	0.00%
Equal Per Capita	0.003 Gt C	0.00%
Carbon CREDIT/DEBIT	0.002 Gt C	0.00%

2.4 Mt C

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
MARSHALL ISLANDS	0.001 Gt C	0.001%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
MARSHALL ISLANDS	0.002 Gt C	0.001%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
MARSHALL ISLANDS	0.002 Gt C	0.001%

MARSHALL ISLANDS

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
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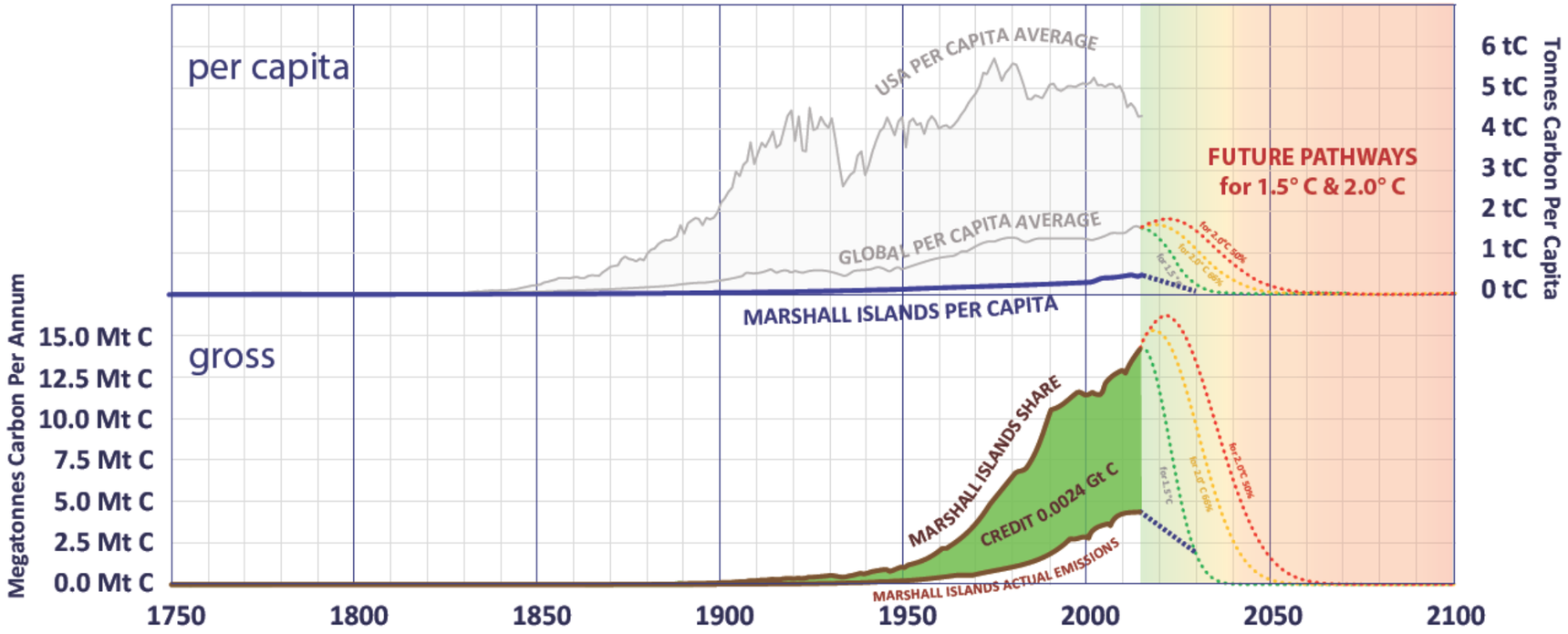

PROTOTYPE - FOR CONSULTATION

TOTAL GLOBAL CARBON BUDGET

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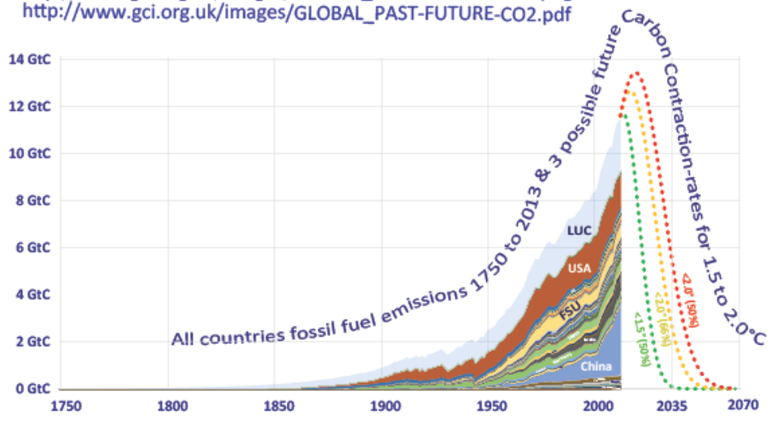

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
NIGERIA		
Actual Share	0.8 Gt C	0.17%
Equal Per Capita	7.6 Gt C	1.55%
Carbon CREDIT/DEBIT	6.7 Gt C	1.38%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
NIGERIA	2.79 Gt C	2.28%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
NIGERIA	5.5 Gt C	2.28%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
NIGERIA	7.4 Gt C	2.28%

NIGERIA

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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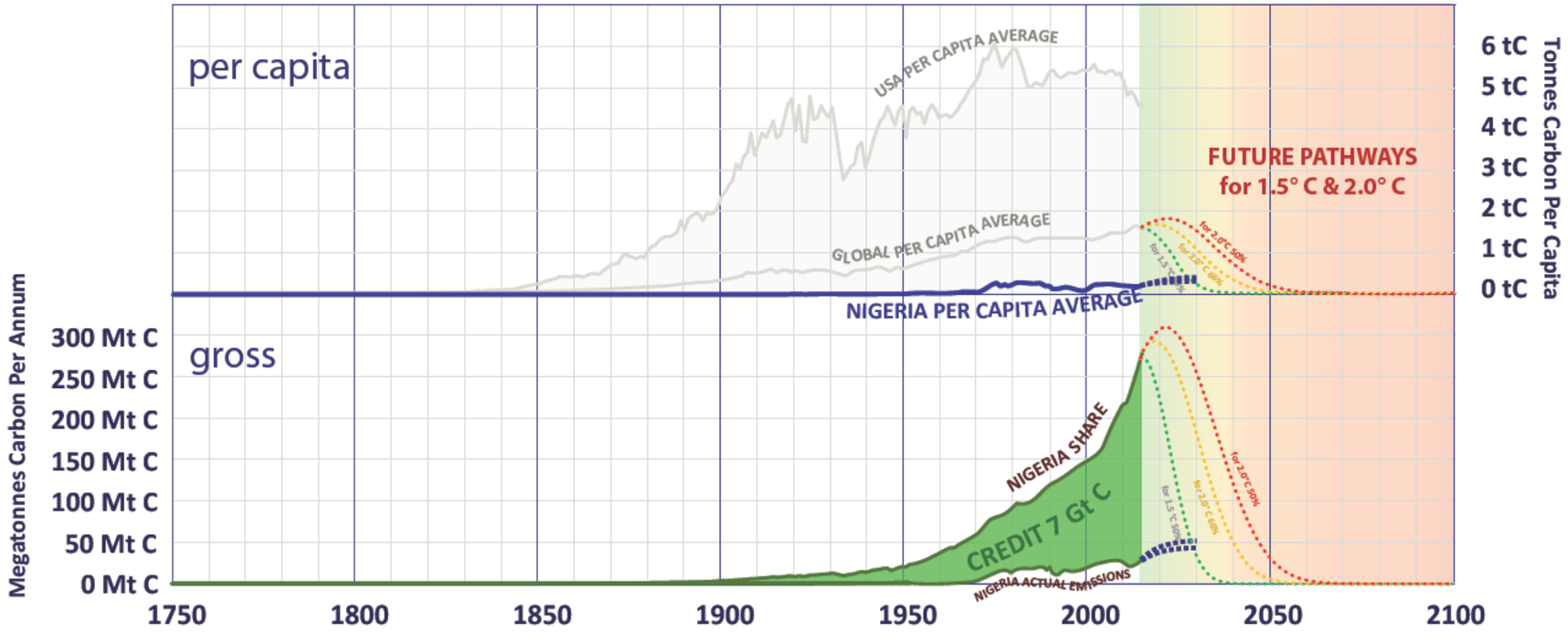

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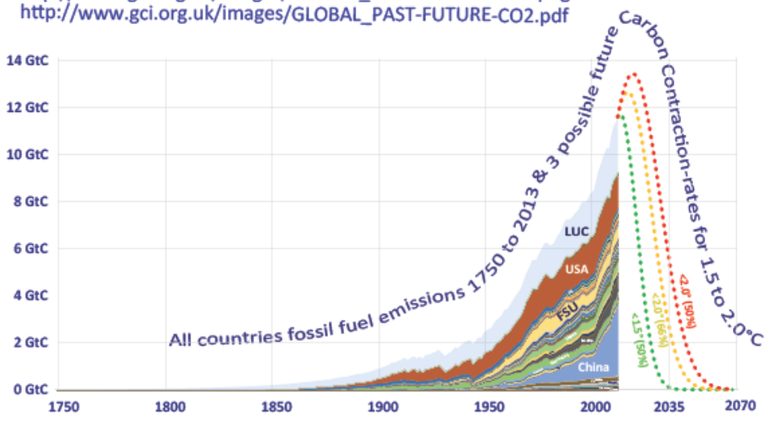

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
NORWAY		
Actual Share	0.7 Gt C	0.14%
Equal Per Capita Share	0.4 Gt C	0.09%
Carbon CREDIT/DEBIT	-0.24 Gt C	-0.05%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
NORWAY	0.09 Gt C	0.07%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
NORWAY	0.18 Gt C	0.07%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
NORWAY	0.24 Gt C	0.07%

NORWAY

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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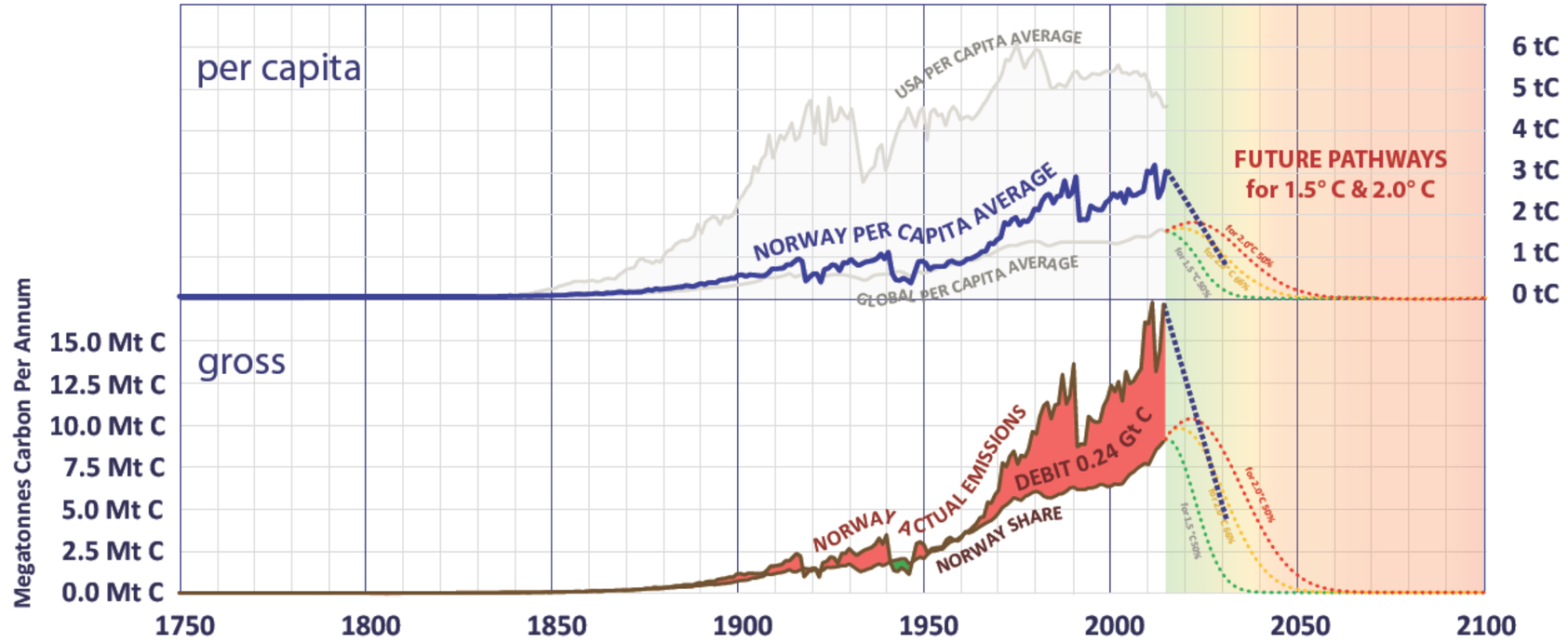

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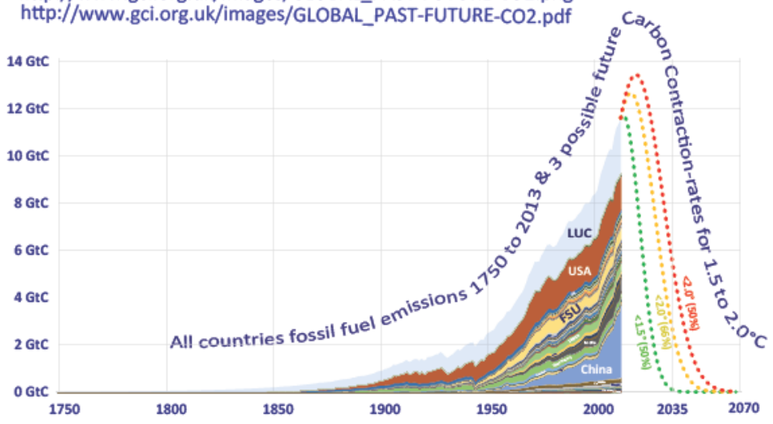

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
PHILIPPINES		
Actual Share	0.7 Gt C	0.15%
Equal Per Capita	5.1 Gt C	1.04%
Carbon CREDIT/DEBIT	4.4 Gt C	0.89%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
PHILIPPINES	1.71 Gt C	1.39%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
PHILIPPINES	3.4 Gt C	1.39%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
PHILIPPINES	4.5 Gt C	1.39%

PHILIPPINES

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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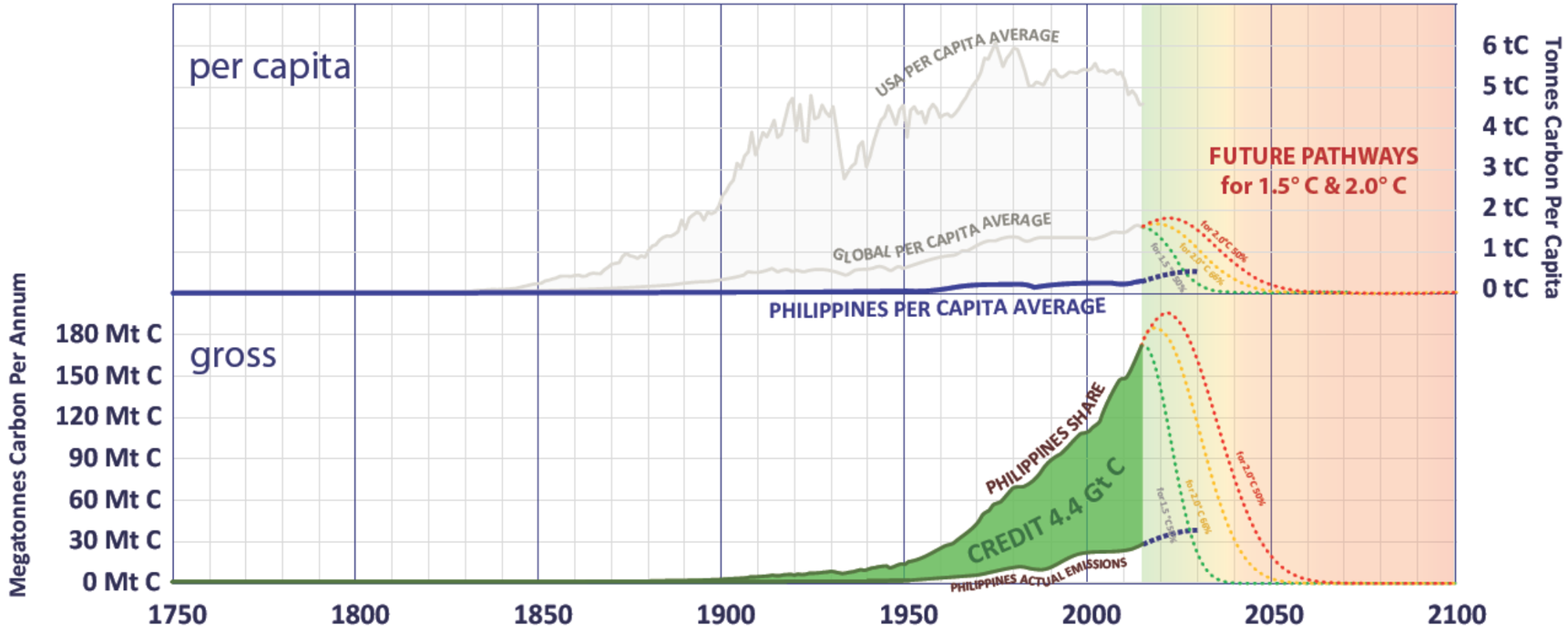

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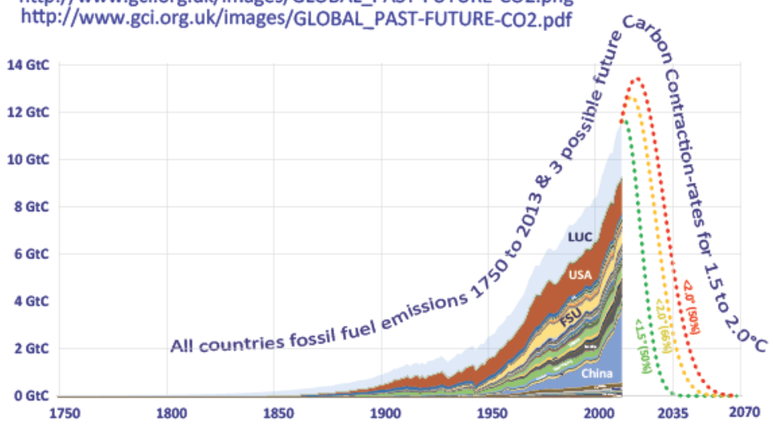

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
SWEDEN		
Actual Share	1.3 Gt C	0.27%
Equal Per Capita Share	0.9 Gt C	0.18%
Carbon CREDIT/DEBIT	-0.45 Gt C	-0.09%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
SWEDEN	0.17 Gt C	0.14%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
SWEDEN	0.33 Gt C	0.14%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
SWEDEN	0.45 Gt C	0.14%

SWEDEN

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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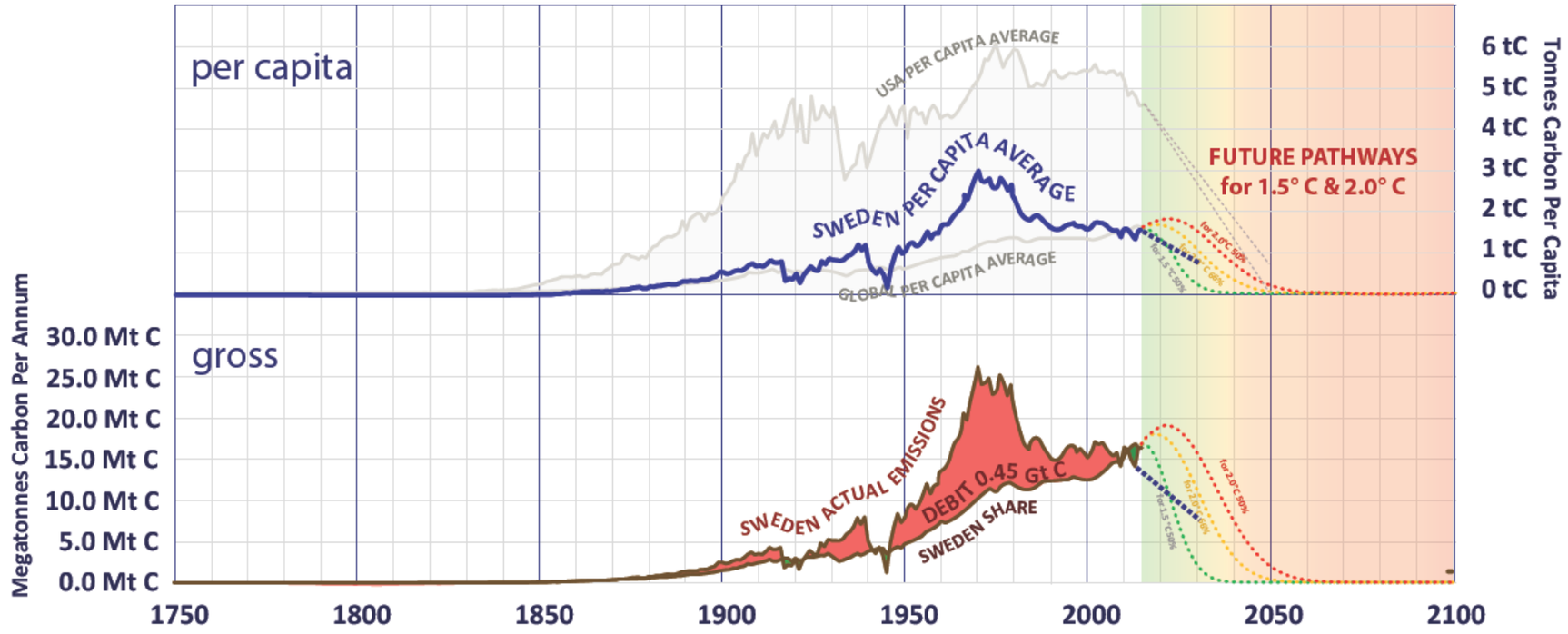
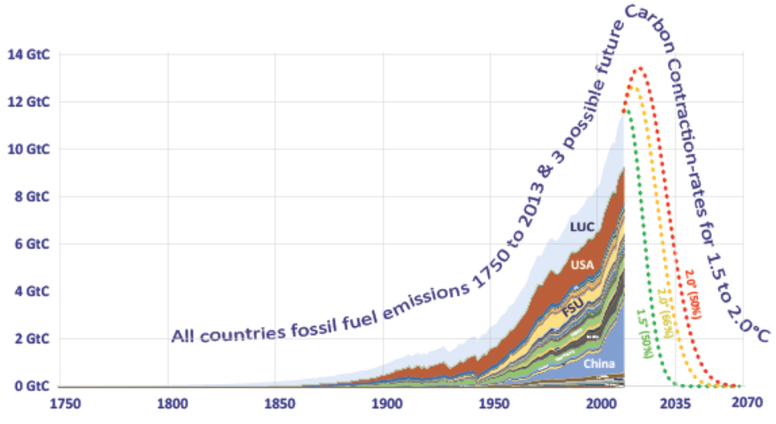
DEBIT - The extent to which a country is above the Global Per Capita Average of Fossil Fuel Consumption

CREDIT - The extent to which a country is below the Global Per Capita Average of Fossil Fuel Consumption



PROTOTYPE - FOR CONSULTATION

TOTAL GLOBAL CARBON BUDGET



	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
SWITZERLAND		
Actual Share	0.8 Gt C	0.16%
Equal Per Capita Share	0.6 Gt C	0.13%
Carbon CREDIT/DEBIT	-0.1 Gt C	-0.03%

	FUTURE 2013-2040	
1.5°C	LOW RISK	
GLOBAL	122.7 Gt C	100%
SWITZERLAND	0.14 Gt C	0.12%

	FUTURE 2013-2050	
2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
SWITZERLAND	0.3 Gt C	0.12%

	FUTURE 2013-2060	
2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
SWITZERLAND	0.4 Gt C	0.12%

SWITZERLAND

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... pathway for <66% odds of 1.5° C
... pathway for <50% odds of 2.0° C
... pathway for <33% odds of 2.0° C
... approximation of country NDC

draft documentation

Draft Explanatory Notes and References at: -
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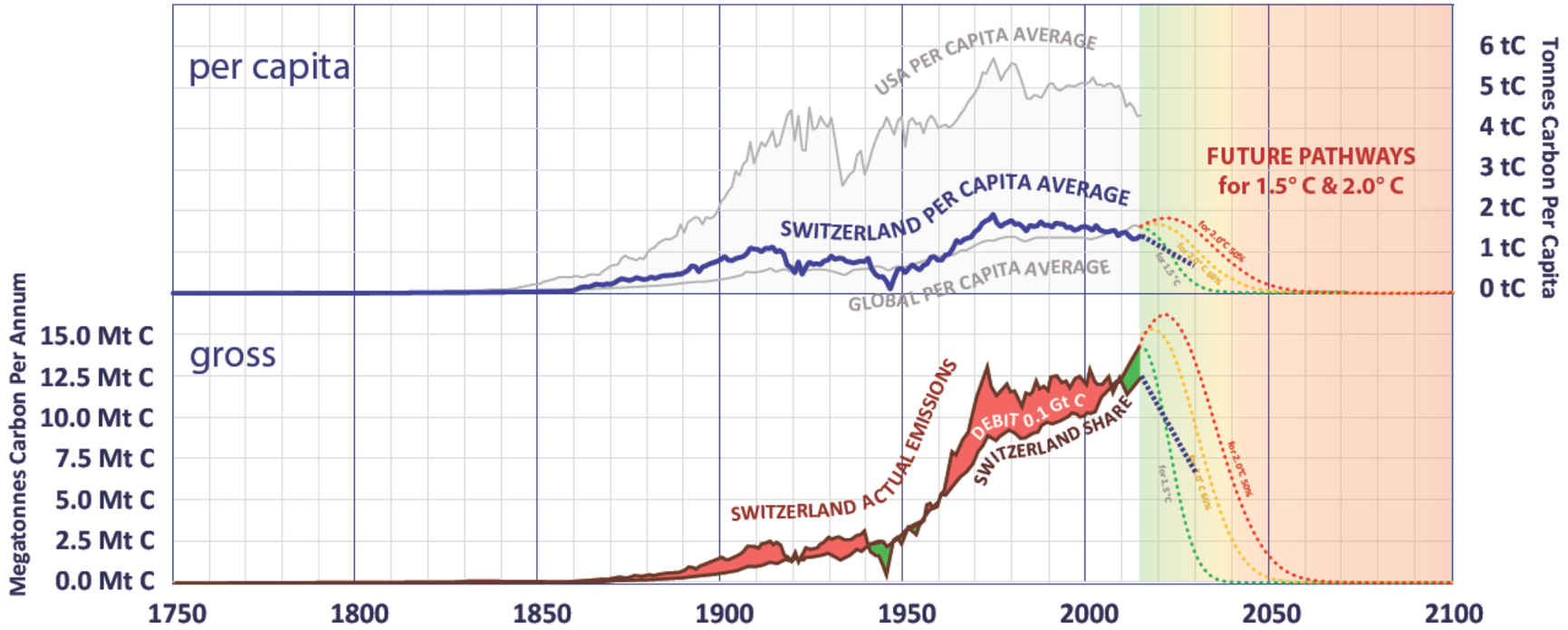

PROTOTYPE - FOR CONSULTATION

TOTAL GLOBAL CARBON BUDGET

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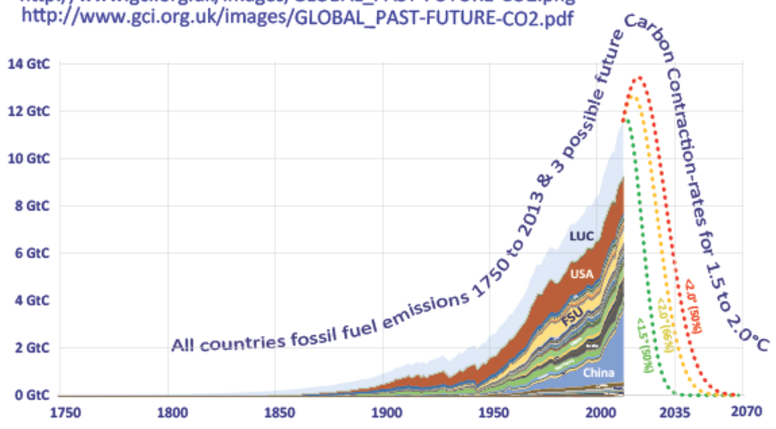

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
UK		
Actual Share	20.9 Gt C	4.27%
Equal Per Capita	6.0 Gt C	1.22%
Carbon CREDIT/DEBIT	-15 Gt C	-3.05%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
UK	1.12 Gt C	0.92%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
UK	2.2 Gt C	0.92%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
UK	3.0 Gt C	0.92%

UNITED KINGDOM

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

draft documentation

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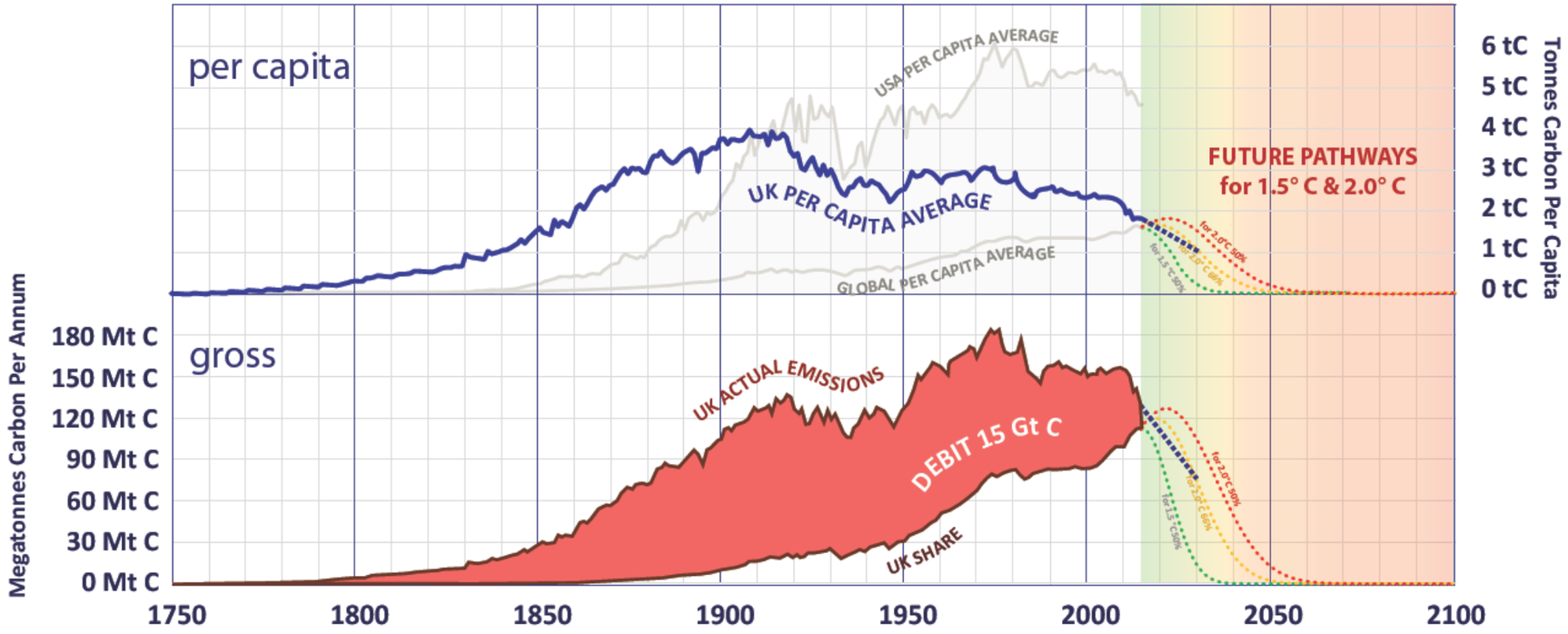

PROTOTYPE - FOR CONSULTATION

TOTAL GLOBAL CARBON BUDGET

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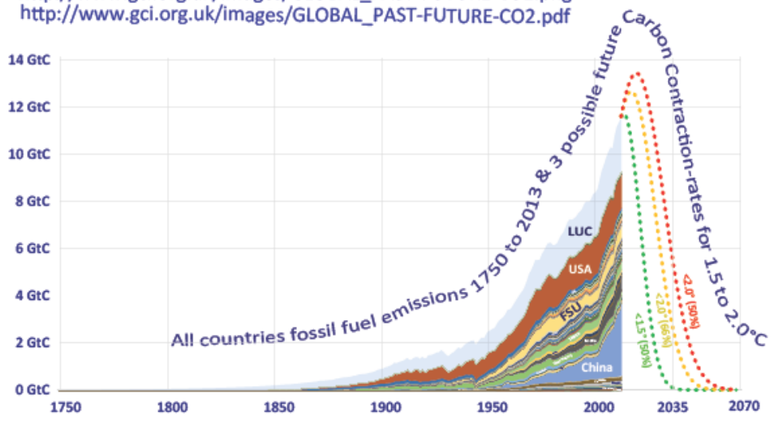

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
USA		
Actual Share	102.7 Gt C	20.98%
Equal Per Capita Share	23.7 Gt C	4.84%
Carbon CREDIT/DEBIT	-79.0 Gt C	-16.14%

	FUTURE 2014-2040	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
USA	5.41 Gt C	4.41%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
USA	10.7 Gt C	4.41%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
USA	14.4 Gt C	4.41%

UNITED STATES of AMERICA

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

draft documentation

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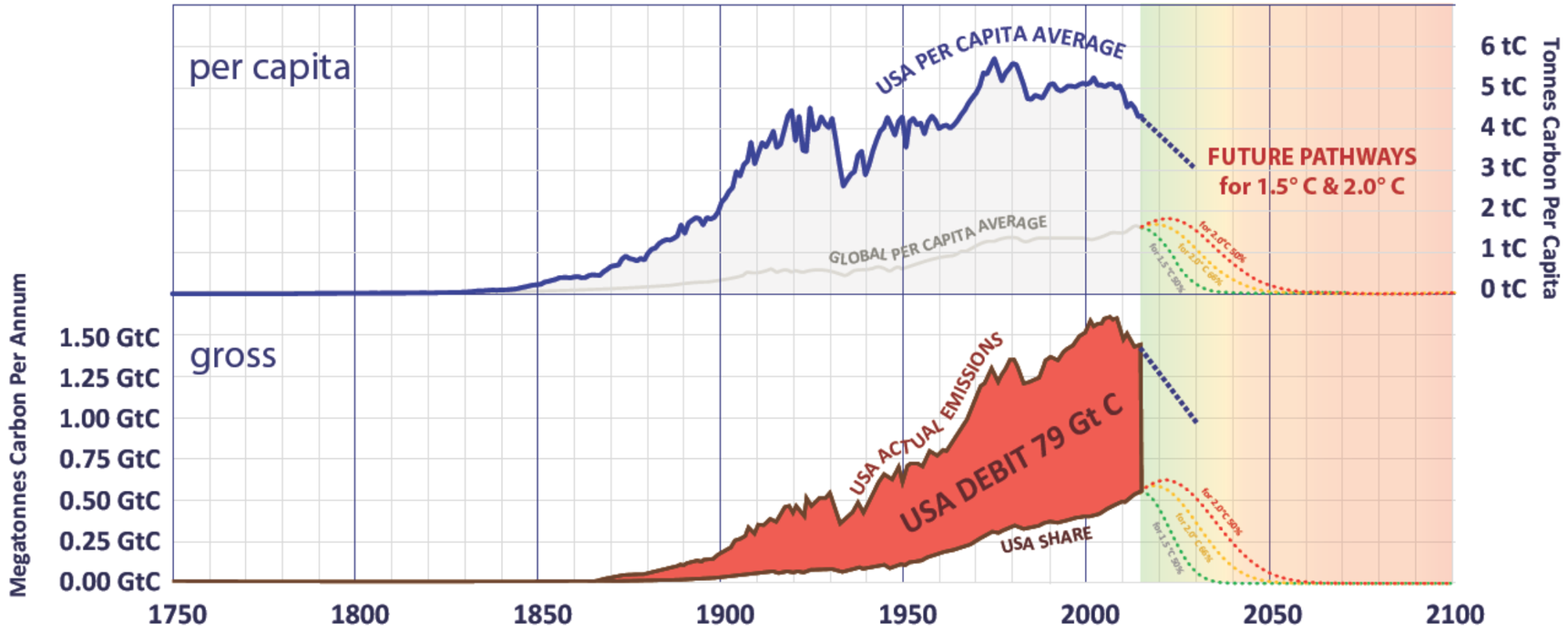

PROTOTYPE - FOR CONSULTATION

TOTAL GLOBAL CARBON BUDGET

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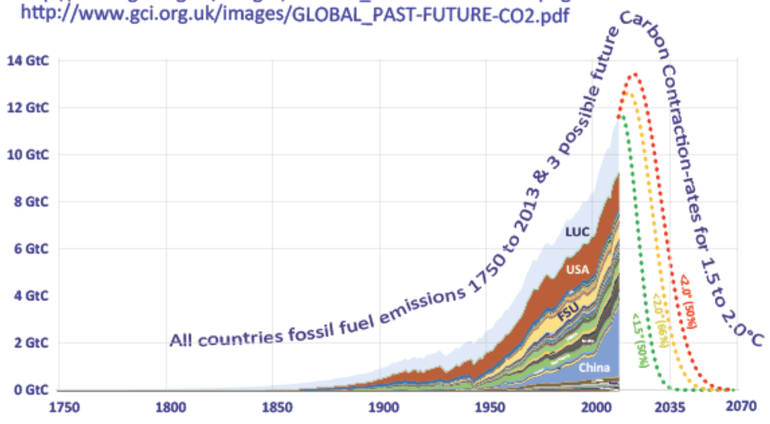

	PAST 1750 to 2013	
GLOBAL BUDGET	489.3 Gt C	100%
VANUATU		
Actual Share	0.001 Gt C	0.00%
Equal Per Capita	0.013 Gt C	0.00%
Carbon CREDIT/DEBIT	0.012 Gt C	0.00%

	FUTURE 2014-2035	
<1.5°C (50%)	LOW RISK	
GLOBAL	122.7 Gt C	100%
VANUATU	0.004 Gt C	0.004%

	FUTURE 2014-2050	
<2.0°C (66%)	MEDIUM RISK	
GLOBAL	242.1 Gt C	100%
VANUATU	0.009 Gt C	0.004%

	FUTURE 2014-2060	
<2.0°C (50%)	HIGH RISK	
GLOBAL	326.3 Gt C	100%
VANUATU	0.012 Gt C	0.004%

VANUATU

Per Capita emissions over time compared to global average
Shares of budgets for 1.5° & 2.0° C on the basis of equal per capita shares
Carbon debit accumulated to 2013, measured gross in Gigatonnes of Carbon (Gt C).

... 123 Gt C 50% odds of <1.5° C
... 242 Gt C 66% odds of <2.0° C
... 326 Gt C 50% odds of <2.0° C
... approximation of country INDC

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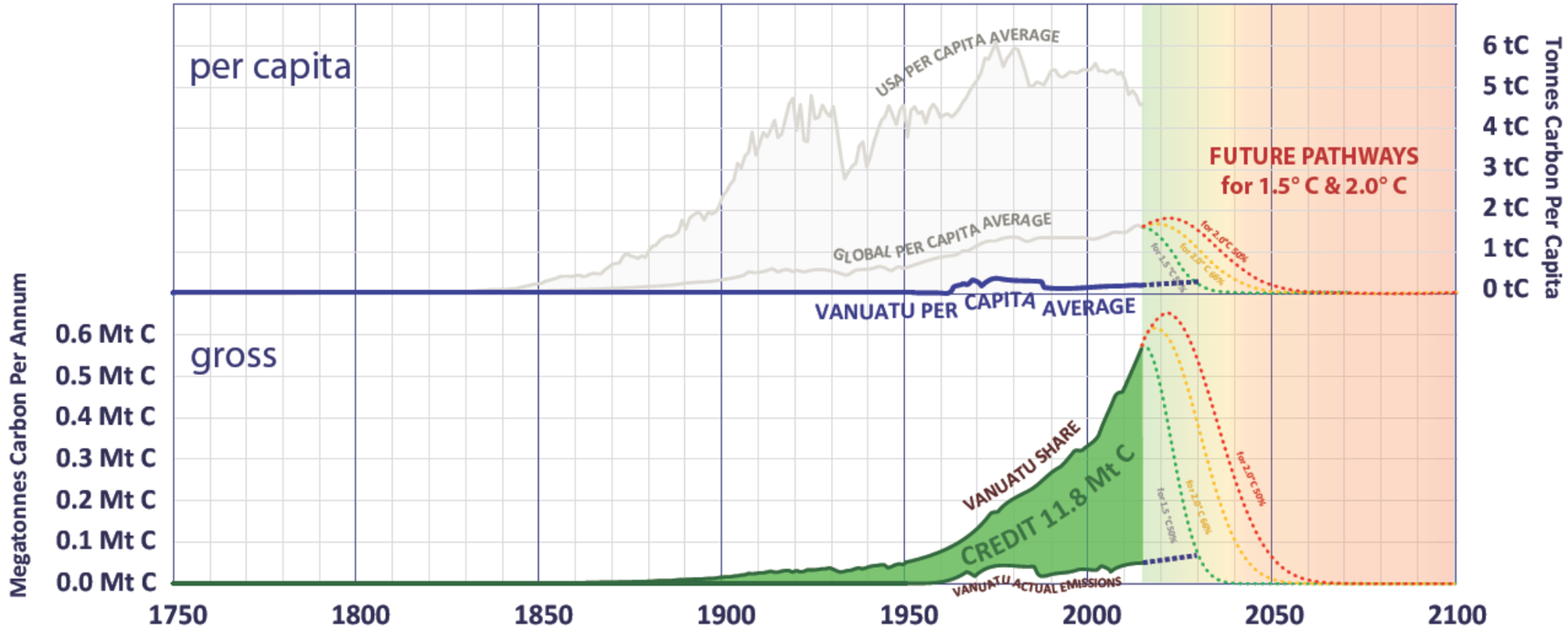

D. Legal Principles

D.1 Introduction

By establishing a procedural framework, which requires Parties to develop and communicate long-term plans for reducing their greenhouse gas (GHG) emissions, the Paris Agreement places NGOs and other Parties in a strong position to challenge the adequacy of those plans through the courts. Such challenges will, in turn, require the courts to develop principles for assessing equitable shares of a 'carbon budget', which may then be broadly applied. We propose a 10 Step scheme, designed principally to demonstrate the viability of such an approach, which provides a rational and objective basis for legal challenge to a government's actions on climate change whether pursuant to:

- public international law (on the basis of the duty to prevent harm)
- public international law (on the basis of the duty to prevent marine pollution under the UN Convention on the Law of the Sea (UNCLOS))
- domestic law.

D.2 Public International Law challenge: the duty to prevent harm to others

States have the sovereign right to exploit their own resources but also the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction (e.g. the high seas or outer space). This is described as the 'principle of prevention' or the 'no-harm rule'. Its existence has been authoritatively confirmed by the International Court of Justice (ICJ). In a recent case the Court found that *"[a] State is thus obliged to use all the means at its disposal in order to avoid activities which take place in its territory, or in any area under its jurisdiction, causing significant damage to the environment of another State".*

The UNFCCC directly invokes the principle in its Preamble, removing any doubt as to its application to climate change:

> **Recalling also that States have, in accordance with the Charter of the United Nations and the principles of international law ... the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.**

States, therefore, have an obligation to take all appropriate measures to anticipate, prevent or minimize the causes of climate change, especially through effective measures to reduce greenhouse gas emissions. As climate change results from a multitude of emissions from various sources that alter the composition of the Earth's atmosphere, attribution of responsibility for climate change loss and damage, and the development of a framework for emissions reductions, demands consideration of a variety of factors such as capacity, the availability of resources and the right to sustainable development. Such considerations introduce complexity but that is not, of course, a reason for the courts to decline to determine the issues.

If, on balance, a State is found to have committed an international legal wrong it is obliged to discontinue the wrongful act, offer guarantees of non-repetition and provide full reparation for the consequences. The purpose of reparation is to wipe out, as far as possible, all the consequences of the illegal act and re-establish the situation, which would, in all probability, have existed if the act had not been committed.

This can take the form of restitution in kind or, if this is not possible, payment of damages, satisfaction or any combination of the three. The claim for reparation may be limited by the requirement for the proportionality of measures. Thus reparation for climate change may be limited to a reasonable and equitable amount. But the bottom line is that loss and damage results in a right and obligation to compensation.

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COP Decision

The COP Decision, para. 52, states that Article 8 *"does not involve or provide a basis for any liability or compensation"*. It addresses a concern on the part of some developed country Parties, in particular the US, that an article on loss and damage might be construed as an admission of liability for climate change damage and potentially result in compensation. Since liability and compensation are excluded from the scope of the Warsaw International Mechanism ('WIM'), lex specialis does not apply (see further below), meaning liability and compensation are left to be determined on the basis of general principles of law. Contrary to the concerns raised by some NGOs in the immediate aftermath of the Paris Conference, the COP Decision serves only to highlight the continuing application of general rules on liability and compensation between States.

Lex specialis

Broadly speaking, countries are subject to general principles of international law, unless they agree to a more specific regime tailored to a particular context. Where they do so agree, it is the specific regime rather that applies (albeit general principles of law should still be taken into account).

In the context of the UNFCCC and the Paris Agreement there is one general point to be made: they must be interpreted in a way that is consistent with their object and purpose: stabilising GHG concentrations [1] and strengthening the response to climate change [2].

By virtue of the *Vienna Convention on the Law of Treaties, 1969, 31(1):*

> **A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.**

In the *Gabcikovo-Nagymaros Project case, 1997*, the ICJ stated that the principle of good faith required parties to apply their treaty 'in a reasonable way and in such manner that its purpose can be realised.'

Plainly it would be inconsistent with the objects and purposes of UNFCCC and the Paris Agreement to interpret them in such a way that they weaken existing legal obligations to prevent climate change. The UNFCCC process may proceed along either of two paths:

1. supplementing the general duty to prevent with additional procedural mechanisms; or
2. replacing the general duty to prevent with a specific framework for liability and compensation for climate change loss and damage; and for legally binding levels of GHG emissions.

For the time-being (and the foreseeable future) the process appears to be committed to pathway 1.

More particularly, lex specialis [3] should be considered in connection with three areas of law:

(i) the duty to co-operate in good faith;
(ii) the duty to prevent harm to other countries or areas beyond national jurisdiction; and
(iii) the approach to liability and compensation.

The duty to co-operate, for example, is a general principle of law, reflected in Principle 7 of the UNEP Draft Principles 1978, as follows:

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1 UNFCCC Article 2
2 Paris Agreement, Article 2
3 lex specialis derogat legi generali – specific law overrides the general

Exchange of information, notification, consultation and other forms of co-operation regarding shared natural resources are carried out on the basis of the principle of good faith and in the spirit of good neighbourliness.

It is an obligation, which requires Countries to follow certain procedural steps, such as notification and consultation, in relation to actions affecting shared natural resources. In the event a matter can not be resolved through co-operation, exchange of information puts parties in a position to bring a substantial challenge to the action where appropriate.

Since the UNFCCC and the Paris Agreement establish detailed and specific obligations on states regarding processes for communicating and consulting over national levels of GHG emissions, they may be regarded as lex specialis in relation to the duty to cooperate over emission reductions.

The position is different in relation to (ii) and (iii) above.

Since the Paris Decision specifically excludes liability and compensation from Article 8, it is clear that lex specialis does not apply in this context.

Both UNFCCC [4] and the Paris Agreement [5] incorporate and reflect the duty to prevent without defining its content. They can not therefore be regarded as lex specialis.

The current situation post Paris, may be contrasted with the Kyoto Protocol, which did specify emission reduction commitments for developed country Parties between 2008 and 2012 ('the first commitment period'). The Doha Amendment, which would have established a second commitment period running from 2013 to 2020, has yet to come into force. As between the Parties to the Protocol, it could be argued that these commitments did represent lex specialis, simply in relation to emission reductions by those Parties between 2008 and 2012. If applicable the principle would have prevented Party A, for example, from arguing that Party B was breaching its duty to prevent by failing to reduce its GHG emissions sufficiently between 2008 and 2012, as long as Party B's reductions were within its Protocol limit. Clearly, the Protocol did not function as lex specialis in relation to emissions outside the commitment period.

The application of the principle is also not limited by the special rules contained in the UNFCCC and the Kyoto Protocol. Both treaties reflect the international community's agreement on the necessary measures (e.g. mitigation, scientific cooperation, capacity building, etc.) to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. They do not address state responsibility for climate change and its impacts. Efforts by developing countries during the UNFCCC drafting process to include references to historic responsibility or the 'polluter pays' principle were opposed by industrialized countries and failed. Upon signing the UNFCCC, Fiji thus stated: *"The Government of Fiji declares its understanding that signature of the Convention shall, in no way, constitute a renunciation of any rights under international law concerning state responsibility for the adverse effects of climate change, and that no provisions in the Convention can be interpreted as derogating from the principles of general international law."*

Declarations in similar terms were made, upon signature or ratification, by Kiribati, Nauru, and Papua New Guinea. Thus, the UNFCCC and Kyoto Protocol cannot be considered a special regime that would exclude the applicability of the general rules of public international law for an internationally wrongful act, or the content or implementation of the international responsibility of a state (amongst its parties).

The Convention, in recital 8 of the preamble, also explicitly recognizes the principle of prevention. With regard to state responsibility for climate change, the UNFCCC and Kyoto Protocol are not 'lex specialis' to the general rules of international law.

4 See UNFCCC Preamble, and Article 3(3)

5 See Paris Agreement, Article 4(3)

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This, however, may change if states adopt a new comprehensive mechanism for loss and damage that puts in place effective compensation arrangements that reflect past injustice and encourage future compliance with the duty of prevention.

Practical application of the duty to prevent

Although the Paris Agreement does not directly define the content of the duty to prevent, the procedural framework it introduces, in combination with the Fifth Assessment Report of the IPCC, provides a platform for a practical assessment of Party compliance with the duty.

One of the most significant features of the Agreement is its ambitious temperature goal. By virtue of Article 2(1)(a), Parties pledge to holding average warming to 'well below' 2 degrees Celsius and to 'pursu[ing] efforts' to limit it to 1.5 degrees. The goal provides an anchor for assessing the adequacy of country prevention measures.

Moreover, the Agreement ensures the availability of detailed information regarding Parties' prevention measures. By virtue of Article 4, Parties are required to 'prepare, communicate and maintain' successive NDCs. In addition the Agreement's Transparency Framework, established by Article 13, requires that:

Each Party shall regularly provide the following information:

(a) A national inventory report of anthropogenic emissions by sources and removals by sinks of greenhouse gases, prepared using good practice methodologies accepted by the Intergovernmental Panel on Climate Change and agreed upon by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement;

(b) Information necessary to track progress made in implementing and achieving its nationally determined contribution under Article 4.

Such information enables other Parties and NGOs to assess the adequacy of a Party's prevention measures in terms of the temperature goal.

It is widely accepted that aggregated NDCs, even if honoured in full, are inadequate in terms of the long-term temperature goal. Future emissions on this scale would almost certainly result in profound levels of damage, in particular to vulnerable regions of the world. The point is acknowledged in the preamble to the Paris Decision:

Emphasizing with serious concern the urgent need to address the significant gap between the aggregate effect of Parties' mitigation pledges in terms of global annual emissions of greenhouse gases by 2020 and aggregate emission pathways consistent with holding the increase in the global average temperature to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre- industrial levels …

Given the nature and scale of the threat this poses to many countries it is becoming increasingly likely either that:

i) a claim alleging breach of the duty to prevent will be commenced; or that
ii) an advisory opinion will be sought from the ICJ regarding the scope of the duty to prevent.

Assuming Parties A, B, C, D and E bring an action against Party F, alleging its NDC is inconsistent with the objective of limiting warming to 1.5 or 'well below' 2 degrees Celsius, on what basis would the adequacy of Party F's NDC be assessed?

UNFCCC directly incorporates a number of relevant principles of law, the most significant of which are:

(i) the precautionary principle [6]; and
(ii) equity [7].

Likewise the Paris Agreement confirms that NDCs should be prepared on the basis of equity and common but differentiated responsibilities [8].

The question for the court might therefore be framed as follows:

In light of the precautionary principle, and principles of equity, is Party F's NDC adequate to discharge its duty to prevent climate induced harm to Parties A, B, C and D?

The Fifth Assessment Report of the IPCC provides guidance on how principles of equity might be applied to climate change mitigation [9]. It proposes 'four key dimensions' of equity:

(i) Responsibility;
(ii) Capacity;
(iii) Equality; and
(iv) the Right to Sustainable Development.

It then goes on to describe two different types of implementing framework:

- Resource-sharing frameworks which establish a basis for sharing the agreed global 'carbon budget';
- Effort-sharing frameworks, which aim at sharing the costs of the global climate response.

A carbon budget translates the temperature goal into gigatonnes of CO2 or CO2 equivalent. Since this is the same 'currency' in which NDCs are expressed, it facilitates an assessment of an NDC's adequacy (or equity) as a contribution towards the common goal.

It is notable that the draft version of the Paris Agreement, submitted to the COP by the Co-chairs on 5 December 2015, included a proposal that Party responsibilities should be based on 'Equitable distribution of a global carbon budget' [10].

Although this wording did not make it into the final version of the Agreement, the concept of a carbon budget is established in terms of the UNFCCC process via the work of the IPCC.

IPCC AR5 utilises the concept of a carbon budget, and estimates the budget associated with the 2 degree Celsius part of the temperature goal (to varying degrees or probability).

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6 UNFCCC Article 3(3) 'The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.'

7 UNFCCC Art 3(1)

8 Paris Agreement, Preamble and Article 4(1) and (3)

9 IPCC AR5, Mitigation of Climate Change, Chapter 4, Sustainable Development and Equity

10 Draft agreement and draft decision on workstreams 1 and 2 of the Ad Hoc Working Group on the Durban Platform for Enhanced Action, Art. 3(1)(c), 5 December 2015: (1)[Parties [collectively][cooperatively] aim to reach the global temperature goal referred to in Article 2 through ...

(e)[Equitable distribution of a global carbon budget based on historical responsibilities and [climate] justice]

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For a better than 66% chance of limiting warming to 2 degrees Celsius, for example, it concludes that that total budget for CO2 emissions (as from 1870) is 2900 Gt CO2 (of which about 1900 GtCO2 had already been emitted by 2011). Put another way, the budget, as from 2011, was 1000 Gt CO2.

In view of the projected risks of exceeding the 2 degree threshold, a 34% prospect of failure suggests this budget may be considered by the courts to be unacceptably high - particularly in light of the precautionary principle. For the sake of argument, however, let's assume that 2011 is an appropriate year from which to calculate the available budget; and that the available budget for reasonable chances of limiting warming to 2 degrees Celsius is 1000 GtCO2 [11].

One way to divide such a budget might be to distribute it (notionally) on the basis of per capita shares (working to the principle that no one person has a right to consume a greater share of the atmosphere's storage capacity than any other). Dividing 1000 Gigatonnes by a world population of 7.4 billion realises per capita shares of 135 tonnes CO2. That would give the US (with a population of about 320 million) a combined share of approximately 43.2 GtCO2. Bangladesh, with a population of about 160million would have approximately 21.6 GtCO2.

There are two obvious objections to this approach, one likely to be raised by developing countries, the other by more developed countries.

IPCC AR5 states that between 1750 and 2011 there were about 2000 Gt of cumulative anthropogenic CO2 emissions to the atmosphere [12]. Developing countries might reasonably argue that an even distribution of the last third of the pie (after developed countries have consumed most of the first two thirds) fails to reflect historic responsibility. The principles of historic responsibility and 'the right to sustainable development' require the development of a formula for the notional distribution of the 'original' CO2 budget (which, according to the IPCC, was about 3000 Gt CO2, as of 1750).

On the other hand developed countries may argue, that even in relation to the final third of the pie, it is simply impractical to divide it equally. Levels of per capita GHG consumption in developed countries far exceed those in the developing world, an imbalance, which, in practical and political terms, can not suddenly be reversed.

Both points have force (the former on the basis of equity; the latter on grounds of practicality). We propose the following as a practical framework for addressing both sets of concerns, ensuring that pragmatism does not come at the expense of equity (nor vice versa).

1. **Assess the total carbon budget available from the start of the industrial age (say 1750) consistent with the 1.5° to 2° C temperature goal: T (Gt CO2)**
2. **Determine the total global population from 1750 to projected decarbonisation date (say 2050): P**
3. **Define per capita shares of the total carbon budget as T/P tonnes of CO2: K (tonnes CO2)**
4. **Calculate the total population for each Party between 1750 and 2050: P1, P2 etc**
5. **Define equitable shares of the total carbon budget for each country as K x P1, K x P2 etc, tonnes of CO2: T1, T2 etc (Gt CO2)**
6. **Calculate total actual emissions for each country: M1, M2 etc (Gt CO2)**
7. **Calculate the difference between equitable and actual share for each country as T1-M1, T2-M2 etc: C1, C2 etc (Gt CO2) where the difference is positive (a GHG 'credit'); D1, D2 etc (Gt CO2), where negative (a GHG 'debit').**
8. **Assess the future carbon budget consistent with a high degree of probability of meeting the**

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11 IPCC, AR5, SPM 2.1: Multi-model results show that limiting total human-induced warming to less than 2 degrees Celsius ... with a probability of > 66% would require cumulative CO2 emissions ... since 1870 ... to remain below about 2900 GtCO2 ... About 1900 GtCO2 had already been emitted by 2011.

12 IPCC, AR5, SPM 1.2

temperature goal: F (Gt CO2).

9. **Use the principles of contraction and convergence to determine practical country shares of this budget: F1, F2 etc Gt CO2.**
10. **Apportion liability for loss and damage, attributable to warming in excess of the temperature goal, on the basis of D / D1, D2 etc (where D is the sum of D1, D2, D3 etc).**

Breach of the duty to prevent might be established on one of two bases:

i) that, looked at in total, Country X has a GHG debit, ie it has emitted more than its fair share of the total carbon budget consistent with the 1.5° to 2.0° temperature goal; or
ii) that Country X's current NDC emissions are inadequate in terms of the long term goal (i.e in excess of F1, F2 etc).

In relation to (i) above, the remedy could only be compensatory. In relation to (ii) a court might order an increase in emission reductions.

It may help to present a simple example of how the framework might operate in practice. Let's assume, for example, that T (the total carbon budget) is 3,000 Gt CO2. D (the sum of all debits) is 1,000 Gt CO2. Party X has a GHG debit, D3, of 100 Gt CO2, ie it is responsible for a tenth of the overshoot. On this basis Party X would be liable for a tenth of all loss and damage consequent on the budget having been exceeded.

The virtues of such a scheme would be multiple. It would:

a) anchor aggregate emissions to the long-term term temperature goal;
b) provide a strong financial incentive for all Parties to be ambitious in their emission reductions;
c) reflect principles of historic responsibility, capacity, equality and the right to sustainable development;
d) enable trading in credits and debits, with the availability of credits firmly anchored to the total available carbon budget;
e) anchor 'debits' / financial contributions in the value of current and projected loss and damage;
f) provide a relatively simple and objective framework, ensuring foreseeability and consistency in the application of the duty to prevent to GHG emissions; and
g) provide a corresponding framework for determining financial contributions / liabilities.

Clearly the scheme might be refined and elaborated in certain respects. For present purposes, the aim is less to present a comprehensive scheme for putting the duty to prevent into practice; than to demonstrate, in general terms, the viability of such a scheme, and to indicate the sort of approach that might be adopted by the ICJ to provide a binding global framework for GHG emission reductions.

Compensation for victims

While the principle of prevention provides a basis for inter-state liability for loss and damage associated with climate change, there are also other relevant norms of public international law, regarding compensation for individual victims.

Stockholm Declaration, 1972, Principle 22, states that:

> **States shall cooperate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction.**

Likewise the Rio Declaration, 1992, Principle 13, states:

> **States shall develop national law regarding liability and compensation for the victims of pollution and other environmental damage. States shall also cooperate in an expeditious and more determined manner to develop further international law regarding liability and compensation for adverse effects of environmental damage caused by activities within their jurisdiction or control to areas beyond their jurisdiction.**

The International Law Commission's (ILC) 2006 Draft principles on the allocation of loss in the case of transboundary harm arising out of hazardous activities, for example, state: *"Each State should take all necessary measures to ensure that prompt and adequate compensation is available for victims of transboundary damage caused by hazardous activities located within its territory or otherwise under its jurisdiction or control."* [13]

The Draft Principles reflect the expected development of public international law and at present there is probably no substantive right to compensation for individual claimants on the basis of international environmental law. The concept of prompt and adequate compensation, however, appears to enjoy increasing recognition within the international community. [14] States may at least be obligated to gradually develop the necessary legal frameworks on liability and compensation for environmental damage to areas outside their jurisdiction. [15] The ILC Draft principles envisage, in particular, the establishment of international arrangements and funds (to supplement industry-based funds) if only global efforts can tackle a problem. [16] Alternative remedies for individual victims will be briefly discussed at 3.4 below.

There are already international mechanisms through which redress for specific types of loss and damage can be sought. Addressing the potential impacts of human behaviour and disaster is part of a wider risk management approach.

There are examples of such arrangements by the international community: the international oil pollution compensation funds (the 1971 Fund, the 1992 Fund and the Supplementary Fund) providing compensation for oil spills from tankers, and the liability regime for nuclear accidents under the Convention on Third Party Liability in the Field of Nuclear Energy (Paris), the Supplementary Convention (Brussels) and the IAEA Vienna Convention on Civil Liability for Nuclear Damage. The UN Security Council established a Compensation Commission in 1991 to process claims and pay compensation for losses resulting from Iraq's invasion and occupation of Kuwait. [17]

Other international arrangements to ensure adequate compensation include the International Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea, the International Convention on Civil Liability for Bunker Oil Pollution Damage and the Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety. The "Hull Doctrine" of international investment law employs a similar standard of prompt, adequate and effective compensation being owed to investors whose property or rights are diminished by a host state.

[Provision limited impact on private international law - disputes between persons of nations – e.g. Hague conference].

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13 International Law Commission, Draft Principles on the Allocation of Loss in the Case of Transboundary Harm Arising from Hazardous Activities, Official Records of the General Assembly, Sixty-First Session, U.N. Doc. A/61/10, 106-110 (2006), principle 4 para.1
14 Patricia Birnie and Alan Boyle, International Law and the Environment (Oxford: Oxford University Press, 2nd ed., 2002), p. 113.
15 1992 Rio Declaration, Principle 13; UNEP 2009 Draft Guidelines for the development of national legislation on liability, response action and compensation for damage caused by activities dangerous to the environment, Guideline 8.
16 ILA, Draft Principles, Principle 7 - Development of specific international regimes
17 Security Council resolution 687 of 3 April 1991

The history of compensation arrangements and funds established by the international community to date usually began with major incidents in the North. For example: oil spills polluting the UK, French, Spanish and Portuguese coastlines. [18] The Chernobyl accident in the Ukraine which subsequently led to major improvements of the existing nuclear liability regime affected mostly other European countries (e.g. Belarus, Austria, Ukraine, Finland, Sweden, Moldova, Slovenia, Switzerland and the Slovak Republic).

There are huge disparities in the ecological footprint inflicted by rich and poor countries on the earth because of the significant differences in consumption patterns. It has been estimated that the environmental damage caused by the world's richest countries to developing nations by far exceeds the financial debt owed by the developing world. At least to some extent, the rich nations have developed at the expense of the poor. [19] Those wrongs cannot be undone. But they can be recognized and dealt with in a fair and equitable manner.

Liability and compensation are the natural consequences of causing harm without good reasons. Why should this be any different if it is predominately poor people in developing countries who are affected? Farmer, fisher folk or slum dwellers in Bangladesh already carry a heavy burden. Without their being effectively compensated for additional loss and damage caused by the wealthy societies in the North there is no justice – and, since polluters are able to displace the social and environmental costs onto others, a critical market failure.

D.3 Public International Law Challenge – UNCLOS and marine pollution

Obligation to protect and preserve the marine environment under UNCLOS

CO_2 indeed all GHGs, threaten the marine environment in two ways:

- by warming the oceans beyond the adaptive capacity of many forms of ocean life; and
- in the case of CO2, by acidifying the oceans, jeopardising the ocean food chain, and the livelihoods and food security of those who depend on it.

State use of the oceans is governed principally by the UN Convention on the Law of the Sea (UNCLOS).

UNCLOS Art. 1(4) defines 'pollution of the marine environment' in broad terms, applicable to the emission of GHGs.

States are obliged to protect and preserve the marine environment generally (Art. 192), and specifically to take all measures necessary to 'prevent, reduce and control' pollution of the marine environment.

UNCLOS, in other words, imposes on states a clear, legal obligation to avoid damaging the marine environment through the emission of GHGs.

Liability and compensation under UNCLOS

In contrast to UNFCCC, UNCLOS explicitly provides for liability and compensation, requiring that States ensure the availability of 'prompt and adequate compensation' in relation to damage to the marine environment caused by those within its jurisdiction (UNCLOS Art. 234).

Dispute resolution under UNCLOS

UNCLOS Article 287 provides a choice of procedures for dispute resolution (to be determined by Party declaration): (a) the International Tribunal for the Law of the Sea; (b) the International Court of Justice; (c) an arbitral tribunal constituted in accordance with Annex VII; (d) a special arbitral tribunal constituted in accordance with Annex VIII for one or more of the categories of disputes specified therein.

In the absence of a declaration a Party is deemed to have elected arbitration, and where two or more Parties have chosen different options, the dispute will go to arbitration, unless they otherwise agree.

Lex specialis

It might conceivably be argued that, in light of the UNFCCC framework, UNCLOS should not be applied to the emission of GHGs: lex specialis derogat legi generali (the specific law overrides the general).

Such an argument fails on two grounds:

- Ocean acidification is outside the mandate of the UNFCCC (which makes no mention of it);
- In any event UNFCCC does not impose specific emission reduction commitments (which therefore remain subject to general principles of law and the requirements of other relevant treaties).

The principles of the Blueprint, including the 'ten step' process described above for determining the scope of the duty to prevent, are equally applicable in assessing whether States have complied with their obligations under UNCLOS Article 192.

D. 4 Domestic Law challenge: demanding your government 'pulls its weight'

In the words of Thomas Jefferson:

> **The first duty of government is the protection of life, not its destruction. Abandon that, and you have abandoned all.**

If governments fail to take appropriate action against climate change they are failing in this first duty, and may be legally accountable to their citizens.

Governments, public authorities and the rule of law

The UN General Assembly has issued a 'Declaration on the Rule of Law at the National and International Levels' which states:

> **We ... recognize that all persons, institutions and entities, public and private, including the State itself, are accountable to just, fair and equitable laws.**

In the US, the Supreme Court confirmed the principle of the rule of law in the case of Marbury v Madison (1803) as follows:

> **The Government of the United States has been emphatically termed a government of laws, and not of men. It will certainly cease to deserve this high appellation if the laws furnish no remedy for the violation of a vested legal right.**

Governments and public authorities must act within the law, and, if they fail to do so, may be challenged through the courts.

It is the first responsibility of governments to safeguard the welfare of their citizens, including by taking reasonable measures to mitigate substantial threats. Climate change is a grave threat to people around the world, jeopardising health, security and prosperity. If governments fail to take reasonable and rational

18 An updated incident map of the IOPC Fund is available at: www.iopcfunds.org/incidents/incident-map

19 See, for example, the Guardian article at: www.theguardian.com/science/2008/jan/21/environmental.debt1

measures to safeguard against it, or take actions which increase the threat, they may be called to account through the judicial process.

In the last year individuals and citizen platforms have successfully challenged government actions in the US, the Netherlands and Pakistan; and commenced similar claims in Belgium and New Zealand.

The scope of judicial review

Judicial review is the process through which the courts review the legality of public authority actions and, in some jurisdictions, of primary legislation.

In most jurisdictions the courts can review:

- the administrative acts of public bodies (such as a decision to grant or withdraw a subsidy or to permit a proposal for fracking); and
- secondary legislation (for example, rules about greenhouse base emissions made further to primary legislation).

Many jurisdictions (including the US) allow judicial review of primary legislation, on the basis the legislation contravenes constitutional rights. Even in jurisdictions which assert 'the sovereignty of Parliament' (such as the UK) primary legislation may be challenged on the basis of inconsistency with the constitution or with fundamental human rights (under the UK's Human Rights Act 1998, for example, a court may issue a 'declaration of incompatibility' between a protected right and another Act of Parliament).

Substantive and/or procedural challenges

Judicial review may be brought on the basis that the decision of a public authority is substantively or procedurally flawed (or both).

A substantive challenge asserts that a particular decision or policy is illegal per se, e.g.:

- that the government emissions reductions target is inadequate and therefore a breach of its duty of care;
- that a public pensions authority is acting irrationally in investing in fossil fuels;
- that a government regulator has failed to enforce corporate requirements to disclose accurate information regarding climate change risk; or that
- a government body has taken insufficient steps to protect its citizens from climate change-induced flooding.

A decision or policy may also be challenged on the basis of procedural irregularity, e.g.:

- a failure to consult appropriately regarding a permission to conduct fracking;
- a failure to consider relevant information in establishing a GHG emission reduction plan; or
- a failure to consider the impact on climate change of a new infrastructure project.

Duty of care / positive human rights obligations

It is the first responsibility of government in a democratic society to protect and safeguard the lives of its citizens. This principle may be given legal effect in different ways in different jurisdictions. In general terms, however, where there is a foreseeable risk of substantial harm, a government will be under a duty of care to take reasonable steps to safeguard its citizens against that harm, and failing to take such steps will constitute a breach of that duty.

PROTOTYPE - FOR CONSULTATION

Governments and public authorities must also act in accordance with fundamental human rights. The Preamble to the Paris Agreement affirms this principle to the context of climate change:

> **Parties should, when taking action to address climate change, respect, promote and consider their ... obligations on human rights ...**

Not only must governments avoid infringing human rights (such as the right to life or the right to family life), in certain circumstances they must take positive steps to safeguard those rights (i.e. even when the rights are threatened by other (private) persons or activities that are not directly connected with the State).

Many people are dying already from climate change and air pollution. If governments fail to take reasonable, proportionate action to tackle climate change they are also failing to take reasonable steps to uphold the right to life.

The public trust doctrine

The public trust doctrine asserts that the sovereign or government holds certain natural resources in trust for the public.

The Roman Emperor, Justinian, first established the principle that sea, air and running water were common to everyone. In Britain, this principle was reflected in the Magna Carta; in the US, the Supreme Court upheld it in the case of Ilinois Central Railroad Company v. Illinois, 146 U.S. 387 (1892) (the court annulling the purported transfer of a large part of Chicago Harbour to the Illinois Central Railroad Company).

The public trust doctrine may be invoked to require governments to safeguard the climate generally, and to prevent damaging levels of air and ocean pollution.

Relevance of treaty / international law obligations

States have assumed commitments under the UNFCCC process, including a commitment to limiting warming to 1.5 or 'well below' 2 degrees Celsius. International law generally creates obligations only between states, but where obligations 'connect one and all' (are erga omnes) they may apply more widely (see e.g. Article 93 of the Dutch Constitution). The obligation to prevent climate change may be considered an obligation which 'connects one and all'.

In any event, it may be assumed that states wish to respect their international law obligations. This means that when applying and interpreting national-law standards and concepts, including reasonableness, the general interest or other legal principles, courts should take account of such international-law obligations. Thus international law obligations have a 'reflex effect' in national law.

Challenging your government's GHG emission reduction plans

Governments have agreed that warming must be limited to between 1.5 and 'well below' 2 degrees Celsius. No government is likely to contend that warming can safely exceed 2 degrees Celsius.

Accepting that governments are under an obligation to take reasonable steps to protect their citizens from climate change, that obligation may be further particularised as follows:

> **Governments are under an obligation to their citizens to take reasonable steps to keep global warming to 1.5 degrees Celsius, or at least to 'well below' 2 degrees Celsius.**

Given that it is the aggregate effect of emissions from all countries which determine future warming, there is some complexity to determining what 'reasonable steps' entails for any one country. There is grave dan-

ger, however, in an approach which reasons 'because everyone is responsible no-one is responsible', and, as evidenced by the Dutch Court in the Urgenda case, courts will identify principles for determining an equitable share of the collective responsibility.

In Urgenda the court focussed on the conclusion from the 4th Assessment Report of the IPCC, that greenhouse gas concentrations would need to stabilise at 450 parts per million (ppm) for a 50% chance of limiting warming to 2 degrees Celsius (a fact not disputed by the Parties), stating that (at 4.83):

> **Now that at least the 450 scenario is required to prevent hazardous climate change, the Netherlands must take reduction measures in support of this scenario.**

The court referred to an IPCC assessment that to achieve such a stabilisation 'Annex 1 countries' (which include the Netherlands) would need to cut their emissions by 25-40% by 2020, compared to 1990. Since the policy of the Dutch government, at the time of the action, left it on course for reductions of a maximum of 17% by 2020, the court ruled it inadequate, and ordered it to ensure its emissions were reduced by at least 25% by 2020 (i.e. compared to the baseline of 1990).

The analysis might be simplified if the court proceeded as follows:

> i) identify the global 'carbon budget' consistent with the temperature goal (IPCC AR5 suggests 1000 Gigatonnes of CO2, as from 2010 for a > 66% chance of limiting warming to 2 degrees Celsius);
>
> (ii) identify the country's fair share of that budget;
>
> (iii) plot a rational distribution of that budget over time.

See: Carbon Budgets, Equity and Attribution

Standing to bring claims / costs

In general terms, the test for whether a party has 'standing' (or locus) to bring a legal claim is whether they have a 'sufficient interest' in the subject of the action, i.e. whether they are specifically affected by the illegality they allege.

Everyone has an interest in a safe climate. There is a danger that this distribution of interest leads to the 'tragedy of the commons', i.e. where a common resource is shared, no one person has sufficient responsibility, motivation and resource to look after it and to compete with the vested interests that threaten it. This may be particularly so in countries which lack the resources to support effective enforcement organisations.

The danger has long been recognised in connection with environmental protection more generally, and international law encourages 'access to environmental justice'.

The Rio Declaration, Principle 10, for example states that:

> **Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.**

The Aarhus Convention 1998 requires parties to adopt a broad approach to standing in environmental cases, Article 9(2) stating that 'sufficient interest' should be determined:

> **... consistently with the objective of giving the public concerned wide access to justice within the scope of this Convention.**

PROTOTYPE - FOR CONSULTATION

The Convention also provides that NGOs, promoting environmental protection, and meeting national requirements, shall be deemed to have 'sufficient interest' and 'rights capable of being impaired.'

Article 9(4) on the Convention requires that procedures should be:

fair, equitable, timely and not prohibitively expensive.

For a list of State Parties to the Aarhus Convention, see here. The Aarhus Convention Compliance Committee receives complaints direct from members of the public.

Further to the Convention, countries may introduce costs protection for citizens or organisations bringing judicial reviews in the public interest. In the UK, for example, the Court may order a 'protective costs order' (PCO) where:

- The issues raised are of general public importance;
- The public interest requires that those issues should be resolved;
- The applicant has no private interest in the outcome of the case;
- Having regard to the financial resources of the applicant and the respondent(s) and to the amount of costs that are likely to be involved it is fair and just to make the order;
- If the order is not made the applicant will probably discontinue the proceedings and will be acting reasonably in doing so.
- If those acting for the applicant are doing so pro bono this will be likely to enhance the merits of the application for a PCO.
- It is for the court, in its discretion, to decide whether it is fair and just to make the order in light of the considerations set out above.

See: R (Corner House Research) v Secretary of State for Trade and Industry [2005] EWCA Civ 192. Corner House is an anti-corruption NGO who were initially refused a protective costs order for a judicial review they were bringing against the Export Credits Guarantee Department. The Court of Appeal reversed that decision explaining that if they had not granted the PCO:

> **…issues of public importance that arose in the case would have been stifled at the outset, and the courts would have been powerless to grant this small company the relief that it sought.**