The Paris Agreement Implementation Blueprint

A Practical Guide to:

• Bridging the gap between actions and goal, and
• Closing the accountability deficit

Tim Crosland (Plan B, UK), Aubrey Meyer (the Global Commons Institute, UK) & Margaretha Wewerinke-Singh (University of the South Pacific, Vanuatu)*

'Ladies and Gentlemen, we face the actuality of scarce resources and the increasing potential for conflict. Policy instruments such as tradable emissions, carbon taxes and joint implementation may well serve to make matters worse unless they are properly referenced to targets and time tables ... Equitable burden sharing in emission reduction has no meaning unless it is preceded by equitable benefit sharing of environmental space.'

Kamal Nath, On behalf of the Government of India, UNFCCC COP 1, 1995

Abstract

The combination of political and climate crises in early 2017 create the conditions for the ultimate perfect storm. The dramatic collapse of polar ice-sheets, coupled with climatic and weather conditions increasingly hostile to human life and livelihoods, appear to demand an immediate international response at precisely the moment when co-ordinated political action appears unattainable.

Governments have agreed to limit warming to 1.5°C or ‘well below’ 2°C, but the world remains on course for disaster. There is currently no plan or framework for closing the gap between action and goal. More specifically there is no common framework to support either the equitable division of the remaining carbon budget or the quantification of rights to finance (upon which any equitable division of the carbon budget must depend).

In this paper we propose a solution. We do not, however, suggest its implementation will be straightforward: after so much procrastination straightforward solutions are no longer available.

Using the basic proposition that all people have equal rights to the earth’s atmosphere we develop a coherent, integrated framework (‘the Blueprint’) which, if adopted, would:

(i) Help quantify the rights of historically low emitting countries to financial support
(ii) Provide a reference point for determining legal liability for climate change and its adverse consequences
(iii) Provide a clear and rational basis for the apportionment of damages resulting from historic emissions (including the costs of adaptation), and
(iv) Limit anthropogenic emissions of CO2 to a total consistent, according to the ‘best available science’¹, with the 1.5°C / ‘well below’ 2°C temperature goal

Crucially, implementation of the Blueprint does not depend on the political process. Courts have begun to recognise that the climate crisis threatens constitutional protections and fundamental human rights, and to rule accordingly. However, even where they are willing in principle to order the steps logically and

* We are grateful to the many experts (both scientists and lawyers) who have provided invaluable comments and suggestions on earlier drafts of this paper. Responsibility for this final version lies, of course, exclusively with the authors. We would also like to thank Catherine Pocock, publishing editor at Lawtext, for all her encouragement, support and co-operation.

¹ In practical, political terms the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) serves as the ‘best available science’, recognizing that events in the Arctic, in particular, imply that the pace of change is ahead of its predictions
practically necessary to avert disaster, to do so in practice they will require a framework for quantifying ‘common but differentiated responsibilities’ in terms of the common goal.

The Blueprint has been designed to meet this need. By providing an accessible, science-based framework for navigating the complexity of carbon budgets and climate finance it facilitates objective, mutually consistent decision-making in both climate policy and litigation.

Following some further introductory sections, this paper falls into two main parts:

**Part 1: Explanation of the approach to historic emissions and division of the future carbon budget**

Part 1 introduces the global and country charts, which reveal:

- a country’s contribution to historic carbon emissions (between 1750 and 2013), in absolute and relative terms;
- the carbon credit or debit arising;
- and the country’s equal per capita share of future carbon budgets.

Together, these three elements contextualize each country’s current emissions and finance commitments. Part 1 also explains the methodology underpinning the charts, using the chart for Norway as illustration.

**Part 2: Legal avenues to Blueprint implementation**

Recognising the difficulties of raising ambition through the political process, and the growing momentum behind climate change litigation\(^2\), Part 2 of this paper highlights a number of different legal avenues to:

(i) securing appropriate financial resources to support developing countries in implementing mitigation measures and achieving sustainable development;

(ii) securing appropriate compensation for loss and damage (including the costs of adaptation) arising from historic emissions; and

(iii) implementation of a science-based framework for the division of the remaining carbon budget, in order to limit warming to 1.5°C or ‘well below’ 2°C.

Specifically Part 2 considers legal actions on the following basis:

- Breach of a country’s duty to prevent harm to other countries.
- Breach of a country’s duty to prevent pollution of the marine environment (under UN Convention on the Law of the Sea, Article 194).
- Breach of fundamental norms of human rights (such as the right to life)
- Breach of a government’s duties to its citizens (including procedural obligations to act reasonably and rationally).

**Background**

It was in 1992 that the governments of the world agreed the UN Framework Convention on Climate Change (UNFCCC). This acknowledged that:

the global nature of climate change calls for the widest possible cooperation by all countries and their participation in an effective and appropriate international response.

The ‘ultimate objective’ of the Convention and related legal instruments, as set out in Article 2, is:

---

\(^2\) See for example ‘Could the Courts bring Order to Climate Change?’, Isabella Kaminski, The ENDS Report, 8 December 2016
to achieve ... stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

The graphic below, from the US Government’s Carbon Dioxide Information Analysis Centre (CDIAC), reveals the failure of the UNFCCC to realize this objective (CO2 is the most significant greenhouse gas):

The impacts of climate change are already diverse. Rising sea-levels, melting glaciers and ‘extreme weather’ - such as drought, flooding and super-typhoons – are its most obvious manifestations. More insidious are the consequences for international security and the economy. Research suggests that the worst drought in Syria’s history (between 2007-2011) was significantly intensified by climate change, driving mass internal migration that contributed to the outbreak of civil war and the rise of ISIS. The near total loss of Lake Chad, likewise accelerated by climate change, has displaced millions of people, and been linked to the rise of Boko Haram. More generally, the US Department of Defense Report on National Security Implications of Climate Change, 2015 asserts:

Case studies indicate that in addition to exacerbating existing risks from other factors (e.g., social, economic, and political fault lines), climate-induced stress can generate new vulnerabilities (e.g., water scarcity) and thus contribute to instability and conflict even in situations not previously considered at risk.

In September 2015, Mark Carney, Governor of the Bank of England, and Chair of the G20’s Financial Stability Board, warned darkly of the threat to the global economy:

The challenges currently posed by climate change pale in significance compared with what might come ...

Climate change is the tragedy of the horizon ... The horizon for monetary policy extends out to two to three years. For financial stability it is a bit longer, but typically only to the outer boundaries of the credit cycle – about a decade. In other words, once climate change becomes a defining issue for financial stability, it may already be too late.

---

3 See, eg ‘Scientists are tying more and more extreme events to a changing climate’, Washington Post 15 December 2016
4 See: http://www.pnas.org/content/112/11/3241.full for the original research; and http://www.independent.co.uk/news/world/middle-east/climate-change-key-in-syrian-conflict-and-it-will-trigger-more-war-in-future-10081163.html, March 2015, for a newspaper summary
The 21st Conference of the Parties to the UNFCCC (COP 21), held in December 2015, concluded the Paris Agreement. The Paris Agreement commits governments collectively to:

Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels ... 7

When it comes to the individual Parties, however, the Agreement itself requires only that they:

aim to reach global peaking of greenhouse gas emissions as soon as possible ... and to undertake rapid reductions thereafter in accordance with best available science [emphasis supplied]. 8

Measures taken by the Parties in accordance with this provision are referred to as ‘nationally determined contributions’ (‘NDCs’) 9.

In the absence of specific principles for aligning national measures to the temperature goal it was predictable that their combined effect would prove inadequate. Indeed the Preamble to the Paris Decision emphasizes:

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].

Meanwhile in November 2016, nearly a year on from COP21, the UN Environment Programme published its Emissions Gap Report, stating:

... [W]e are actually on track for global warming of up to 3.4 degrees Celsius. Current commitments will reduce emissions by no more than a third of the levels required by 2030 to avert disaster.

UNFCCC and the Paris Agreement also leave a ‘finance gap’. The Paris Agreement states that:

Developed country Parties shall provide financial resources to assist developing country Parties with respect to both mitigation and adaptation. 10

Although the Paris Decision refers to a collective goal ‘from a floor of USD 100 billion per year’ 11 for finance mobilisation prior to 2025, neither Agreement nor Decision provide a framework for quantifying the rights and obligations of individual countries in terms of financial provision. In the absence of such a framework it is impossible for many developing countries (in particular the least developed countries) to plan effectively their energy transitions. The finance gap, in other words, is inextricably linked to the emissions gap, and an integrated framework is required, which addresses both simultaneously.

Introduction to the Blueprint

There are four principal impediments to bridging ‘the emissions gap’:

• A challenging political context.

• The absence of objective frames of reference for interrogating the equity and adequacy of individual country commitments on emissions of greenhouse gases (GHGs).

• The absence of objective frames of reference for determining rights and obligations in terms of financial support for mitigation efforts.

• The absence of principles for apportioning responsibility for climate change loss and damage (including the costs of adaptation).

---

7 PA Article 2(1)(a)  
8 Ibid. Art. 4(1)  
9 Ibid. Art 4(2). In the build up to COP21 Parties submitted what were known as ‘intended nationally determined commitments’ (INDCs)  
10 Ibid. Art. 9(1)  
11 COP21 Decision, para. 54
This Implementation Blueprint (‘the Blueprint’) has been developed to overcome these impediments. It provides an integrated framework\(^\text{12}\) for assessing:

(i) the equitable distribution of entitlements to the future carbon budget
(ii) rights and obligations in terms of financial support for mitigation efforts
(iii) potential liability for loss and damage (including the costs of adaptation), and
(iv) the apportionment of damages.

In the first instance it may be used to support negotiations through the political process, but, where necessary, it may also support hard-edged accountability through courts of law.

Taken together, the United Nations Framework Convention on Climate Change (UNFCCC), the Paris Agreement and the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC), provide a partial framework for co-operative governmental action against climate change.

The Paris Agreement confirms international agreement to taking the necessary steps to limit global warming to 1.5°C or at least ‘well below’ 2°C. AR5 provides a range of global carbon budgets, as from 2011, consistent with those (and other) temperature limits:

Examples include\(^\text{13}\):

\[
\begin{align*}
550 \text{ GtCO}_2 \ (150 \text{ GtC}) & \text{ for a 50\% likelihood of } < 1.5\degree \text{C} \\
850 \text{ GtCO}_2 \ (232 \text{ GtC}) & \text{ for a 33\% likelihood of } < 1.5\degree \text{C} \\
1000 \text{ GtCO}_2 \ (272 \text{ GtC}) & \text{ for a 66\% likelihood of } < 2\degree \text{C}
\end{align*}
\]

On the face of it only the first budget is consistent with ‘pursuing efforts’ to limit warming to <1.5°C. A budget of 1000 GtCO\(_2\) is almost certainly inconsistent with the terms of the Paris Agreement (since it only provides a 20\% likelihood of limiting warming to 1.5°C, and indeed creates a 34\% chance of exceeding 2°C).

The UNFCCC and the Paris Agreement (reflecting general principles of law) confirm principles applicable both to the selection of a budget and its distribution between countries. UNFCCC Article 3(3), for example, invokes the precautionary principle:

\textit{The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects.}

Both UNFCCC and the Paris Agreement emphasise the principle of equity:

\textit{The Parties should protect the climate system ... on the basis of equity ...}\(^\text{14}\)

\textit{In pursuit of the objective of the Convention, and being guided by its principles, including the principle of equity ...}\(^\text{15}\)

\textit{This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities ...}\(^\text{16}\)

\textit{In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible ... and to undertake rapid reductions thereafter ... on the basis of equity ...}\(^\text{17}\)

Additionally, both UNFCCC and the Paris Agreement require ‘developed country Parties’ to provide ‘developing country Parties’ with financial resources to support the costs of mitigation measures.\(^\text{18}\)

\(^{12}\) The procedural detail of which might be substantiated either through the UNFCCC process or the courts

\(^{13}\) To derive a figure for carbon (tC) derived from tCO\(_2\), divide by 3.664

\(^{14}\) UNFCCC Art. 3(1)

\(^{15}\) Paris Agreement, Preamble

\(^{16}\) Ibid. Art. 2(2)

\(^{17}\) Ibid. Art. 4(1)

\(^{18}\) See UNFCCC Art.4(3) and PA Art. 9(1)
There are, however, essential elements missing from the framework, specifically:

- Agreement on which carbon budget (in light of the precautionary principle) is most appropriate to the temperature goal.
- Agreement on how the principle of equity should be applied to distribution of that budget.
- Agreement on the principles for allocating financial resources.

In the absence of these elements there is no reliable platform to support negotiation and co-operation towards the common goal.

Imagine a fishery on which a number of different communities depend. It is recognised by all that overfishing is threatening the fishery’s survival. All Parties agree the fish population must be stabilised at a minimum of say, 100,000 fish. If each community chooses its own fishing limit (without first agreeing a collective budget and principles for distributing that budget), it is likely that the aggregate of the fish caught will exhaust the fishery, leading to food insecurity and conflict.

The same principle applies when it comes to burden-sharing of climate change mitigation actions. If each country determines ‘equitable use’ of the atmosphere according to its own terms it is more or less inevitable that each country will adopt an approach that favours its own interest. This will result in insufficient overall mitigation, and unsafe atmospheric greenhouse gas concentrations; in other words, ‘overshooting’ the carbon budget, leading to increasingly dangerous temperature rises, climate insecurity and possible conflict.

In 2011, the Conference of the Parties (COP) to the UNFCCC, established a subsidiary body, the Ad Hoc Working Group on the Durban Platform for Enhanced Action (the ADP). The ADP was mandated to develop the legal instrument that was to become the Paris Agreement. It conducted its work over a period of four years, concluding it only at the end of the first week of the 21st COP of the UNFCCC (‘COP21’ the conference that culminated in the Paris Agreement). Significantly one of the missing elements of the framework was included as an option in the ADP’s final draft, presented to the Parties on 5 December 2015:

> [Parties [collectively][cooperatively] aim to reach the global temperature goal referred to in Article 2 through ...

> [Equitable distribution of a global carbon budget based on historical responsibilities ...]

Although political representatives ultimately rejected this part of the text, practically and logically the proposed approach remains key to realization of the temperature goal, and it is reflected within the Blueprint.

In alignment with the language of the UNFCCC, equal *per capita* emissions over time are used to give effect to the concept of ‘equitable distribution’:

> Noting that the largest share of historical and current global emissions of greenhouse gases has originated in developed countries, that per capita emissions in developing countries are still relatively low ...

The approach provides an objective, coherent and non-arbitrary framing for division of a global carbon budget. Any attempt to introduce additional variables (such as adjustments for GDP) risks intractable dispute and division. Moreover, since the more developed economies have generally been constructed on the basis of a high *per capita* consumption of fossil fuels, distribution of a carbon budget on the basis of historic responsibility and equal *per capita* emissions over time, already serves as a good indicator of relative economic development and capacity.

---

19 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)(e), 5 December 2015
20 Preamble to UNFCCC
The difference between a country’s actual historic emissions and its share of the total, based on equal *per capita* emissions, produces its running ‘carbon credit’ or ‘carbon debit’. These credits and debits provide a basis, grounded in equity, capacity and historical responsibility, for both (i) the allocation of financial resources to support mitigation measures; and ii) the apportionment of responsibility for loss and damage (including the costs of adaptation). Since damages reflect real world loss and damage, credits do not represent either ‘rights to damages’ or limits to the quantum of damages.

Allocation of notional shares of the future carbon budget, on the basis of equal *per capita* shares linked to the provision of finance, provides the basis for an international ‘cap-and-trade’ scheme, anchored by IPCC science to the temperature goal (‘a framework-based market not a market-based framework’).

This is a critical feature of the scheme. In practical and political terms compliance with UNFCCC obligations depends on establishing a framework which links finance to shares of the carbon budget, incentivizing ambition and co-operation towards the common goal.

A number of other features of the Blueprint may be emphasized at the outset:

- It provides an integrated framework, which informs (i) allocation of financial resources to support mitigation measures and sustainable development; (ii) responsibility for loss and damage (which includes the costs of adaptation measures); and (iii) allocation of the remaining carbon budget.

- It adopts a comprehensive approach to historic emissions. In the interests of transparency and in order to avoid prejudice to any party, we have begun the account in 1750, when the historic record for fossil fuel emissions begins.

- Recognising the challenges in the political process, the Blueprint makes the concept of carbon budgets accessible to NGOs, civil society and others.

- It may be used by courts confronted with climate cases as an objective framework for assessing the adequacy of government action.

- It may be used flexibly, providing an objective reference point for negotiations, policy-making and court judgements. It does, however, highlight the inescapable logic that if Country X consumes more than its share of the carbon budget, then that excess must come out of the shares of Countries Y and Z. Thus, in order to remain collectively within budget, Countries X, Y and Z must organize together.

- The Blueprint provides a framework for operationalising the principles of equity and common but differentiated responsibilities, and the right to sustainable development. It does not, however, presume to define equity precisely, and does not, therefore, attempt to value the carbon credits and debits, which reflect historic responsibility. Given the complex political and economic issues arising, the value of carbon credits and debits, may need to be determined through arbitration or the Courts (assuming it can not be agreed between countries).

- Finally, and most importantly, in terms of collective security, subject to the selection of an appropriate budget, and the accuracy of the IPCC budgets, operating within the framing of the Blueprint presents a reasonable chance of compliance with the long-term temperature goal set out in the Paris Agreement.

**NB** Throughout this paper we emphasise that loss and damage includes the costs of adaptation measures. We do this to correct for the potentially misleading distinction between ‘loss and damage’ and ‘adaptation’ in the UNFCCC process and the Paris Agreement. It is a general principle of law that the victims of legal wrongs should take reasonable steps to minimize their loss; and that the costs of doing so will be recoverable as an element of loss and damage.
Part 1: Explanation of the approach to historic emissions and division of the carbon budget

1.1 Introduction

The Blueprint makes transparent the different pathways to the temperature goal, providing a framework within which country emissions may be understood as shares of the global carbon budget, and therefore as contributions towards the common goal set out in Article 2 of the Paris Agreement.

It does so on the basis of internationally accepted data, in particular the IPCC assessments of cumulative emissions of carbon dioxide (or ‘carbon budgets’) consistent with:

**LOW RISK OF NON-COMPLIANCE** 50% likelihood of limiting warming to < 1.5°C (Budget 1)

**MEDIUM RISK OF NON-COMPLIANCE** 33% likelihood of limiting warming to < 1.5°C (Budget 2)

**HIGH RISK OF NON-COMPLIANCE** 66% likelihood of limiting warming to < 2°C (Budget 3)

More specifically the Blueprint reveals (measured in metric tonnes of carbon):

- The pathway of global historic carbon emissions (‘emissions’) over time, setting the future challenge of rapid decarbonisation within the context of the upward global trend of historic emissions.
- Individual countries’ historic per capita and gross emissions (from 1750-2013), contrasted with country ‘shares’ calculated with reference to equal per capita emissions.
- The variance between individual Parties’ gross emissions over time and their shares, expressed as a ‘credit’ or ‘debit’ and measured in tonnes of carbon.
- Party shares of the remaining budget based on equal per capita emissions (with historically accrued credits and debits reflecting obligations and entitlements relating to financial support for sustainable development in ‘creditor’ countries).
- An approximation of the relationship between a country’s (Intended) Nationally Determined Contribution (INDC or NDC), and its share of the remaining budgets.

The purposes of the framework are:

- To provide transparency on what is required both globally and nationally, if climate disaster is to be avoided.
- To provide transparency on historic responsibility for carbon emissions.
- To provide a frame of reference for determining rights and obligations to financial resources in support of mitigation measures and sustainable development (where debits and credits, measured in tonnes of carbon, represents key considerations).
- 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 frame of reference for apportioning responsibility for climate change loss and damage (including the costs of adaptation).
- To provide a reference for assessing whether Parties are exercising due diligence in meeting the temperature goal.
The methodology underpinning the Blueprint is intended to be transparent, objective and easily explicable, making it appropriate for use in policy-making and judicial proceedings.

It draws the line between past and future at 2014, reflecting the fact that 2013 is the last year of authenticated CDIAC data for country emissions. The Blueprint will be updated as new data become available.

1.2 Guide to charts

1.2.1 Global Carbon Budget Chart

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

The GREEN dotted line, shows the ‘LOW RISK OF NON-COMPLIANCE’ pathway. This is the cumulative mass of carbon (117 Gt C) that may still be emitted into the atmosphere consistent, as from 2014, 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 around 2035 ie within 20 years.

The AMBER dotted line, shows the ‘MEDIUM RISK OF NON-COMPLIANCE’ pathway. This is the cumulative mass of carbon (198 Gt C) that may still be emitted into the atmosphere, as from 2014, consistent with a 33% chance of keeping warming to <1.5° C. This shows a sharp decline with net neutrality by around 2045.

The RED dotted line, shows the HIGH RISK OF NON-COMPLIANCE pathway. This is the cumulative mass of carbon (240 Gt C) that may still be emitted into the atmosphere, as from 2014, consistent with a 66%
chance of keeping warming to <2.0° C. This shows a sharp decline with net neutrality by 2050. This is the path beyond which climate catastrophe is more likely than not.

The precise pathways shown by these dotted lines are no more than indicative: it is the area under the lines that is fixed rather than the pathway. It is evident, for example, that if were the paths to decline immediately, the rate of subsequent decline could be somewhat slower, providing for slightly later dates for net neutrality to be attained.

Nb: It is recognized that for many the impacts of climate change are already devastating. Reference to levels of risk is not intended to imply the existence of a ‘safe’ level of climate change; but simply to reflect the likelihood (on the basis of IPCC projections) of limiting warming to the agreed temperature goal.

1.2.2 Country carbon budget charts (example chosen here is Norway)

Country charts reveal:

- the subject country’s historic responsibility for past emissions (1750-2013), in both absolute and relative terms, displayed as either a ‘credit’ or a ‘debit’.
- the subject country’s share of future Budgets 1-3, together with a rough representation of its (I)INDC for comparison

For illustrative purposes, Norway’s chart is given below.

NORWAY & GLOBAL CO2 EMISSIONS
Per Capita & Gross Emissions over time compared to global average.
Carbon Credit/Debit accumulated 1750-2013 in Gigatonnes of Carbon (Gt C).
Shares of budgets for 1.5°C & 2.0°C 2014-2050 & INDC.

---

21 For the time being we have used INDCs, but the charts may easily be updated to reflect NDCs, as and when they become available.
We now discuss each element of the chart in turn.

### 1.2.2.1 Budget boxes; global totals & country shares

**GLOBAL BUDGET**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAST 1750 to 2013</td>
<td>487 Gt C</td>
<td>100%</td>
</tr>
</tbody>
</table>

- **NORWAY**
  - Actual Share: 677 Mt C (0.14%)
  - Equal Per Capita Share: 422 Mt C (0.09%)
  - Carbon Credit/Debit: 255 Mt C (0.05%)

**FUTURE 2014-2035**

- LOW RISK
  - GLOBAL: 117 Gt C (100%)
  - NORWAY: 85 Mt C (0.07%)

- MEDIUM RISK
  - GLOBAL: 198 Gt C (100%)
  - NORWAY: 144 Mt C (0.07%)

- HIGH RISK
  - GLOBAL: 240 Gt C (100%)
  - NORWAY: 174 Mt C (0.07%)

These boxes correlate with the global with the country-specific graphics.

The top box contains historic carbon emissions from 1750-2013 (referred to as ‘global budget’). The grey part contains the global total i.e. 487 Gt C (to convert this into CO2, multiply by 3.664, i.e. 1,784 Gt CO2).

Measured in tonnes of carbon the:

- **blue part of the top box** contains the featured country’s shares of historic emissions, expressed as:
  - **Actual share**: the country’s actual historic emissions are expressed in tonnes of carbon and as a percentage of the total. Norway, for example, emitted 677.0 Mt C over this period (1750-2013), representing 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.
  - **Carbon debit** (on the country chart in RED): this is the difference between a country’s equal per capita share and the amount by which its actual share was more than this. Norway’s ‘carbon debit’ over this period (1750-20130) was 677 Mt C minus 422 Mt C, showing an ‘excess’ or ‘carbon debit’ of 255 Mt C, representing 0.05% of historic global emissions;
  - **Carbon credit** (on the country chart in GREEN) is the difference between a country’s equal per capita share and the amount by which its actual share was less than this. Overall 1750-

---

22 We recognize that ‘budget’ is a potentially confusing term in this context, since it refers only to actual historic emissions, rather than a pre-determined allocation. We have used it simply to correspond to the concept of the country ‘shares’ of historic emissions, which, in turn, provide the basis for the assessment of credit and debit.
2013, Norway had no ‘credit’, though it did dip below the global per capita average during WWII (shown in green).

The lower boxes reflect the traffic-light coding of Carbon Budgets 1-3, and correspond to the future budgets represented by the dotted curves on the right-hand side of the charts. The top parts of these boxes express the global total mass of carbon remaining for each of the Budgets. The lower part shows the country’s share on the basis of equal per capita emissions, expressed as a percentage of global population (in Norway’s case, 0.07%).

1.2.2.2 Per capita country emissions over time

Top left-hand side 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 quantitative analysis 1750-2050. Each graphic contains:

- the per capita emissions of the USA, historically the greatest-cumulative and highest per capita emitter.
- the per capita emissions of the specific country being analyzed (in this example Norway)
- the global average of per capita emissions over time past, and
- the global average of per capita emissions over time future for the Green, Amber and 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 global average (but significantly below those of the USA).

Moving into the future (ie for illustrative purposes, 2014 onwards) as the global per capita average line 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 per capita average line breaks into dots (in dark blue) to 2030, providing a rough description of the country’s future per capita emissions on the basis of its INDC / NDC.

It can also be seen that Norway’s INDC appears to exceed its share of the future budgets for 1.5°C. It should be noted that this is aside from the matter of Norway’s historical debit, which would need to be repaid to creditor countries in order for Norway to qualify for a remaining part of the future budget. Accounting for historical emissions also remains relevant to calculating for past damages.
1.2.2.3 Gross country emissions over time

Middle left-hand side section of each country specific chart

![Graph showing gross country emissions over time.]

**Actual emissions line**
This line shows the country’s actual gross emissions over the period 1750-2013 and then its approximate INDC (the blue dotted line), assuming carbon emissions fall in line with GHG emission pledges.

**Country ‘Share’ line**
This line shows the country’s share of the global budget and then its future share of the Green, the Amber and the Red budgets (2014-2050) 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 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 the ‘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 the ‘debit’, shaded in dark red.

As can be seen, for most of the period between 1750 and 2013, Norway’s actual 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 emissions 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 0.25 GtC.

**(I)NDC / NDC reference**
As the actual emissions line passes 2013 on the x-axis, it becomes dotted providing a rough indication of the country’s (I)NDC. This allows for the (I)NDC to be seen in relation to the country’s share of the past and the remaining budget. Intended Nationally Determined Contributions (INDCs) were submitted in anticipation of the Paris Agreement, which formally requires Parties to submit Nationally Determined Contributions (NDCs). For the moment The Blueprint references INDCs. It will be updated to show NDCs once these are generally available.
1.3 Notes on Methodology

1.3.1 ‘Share’ Calculation Method (including note on bias)

On a year-by-year basis for the past (1750-2013) each country’s equal per capita share of past emissions is derived from:

- a) Compiling the estimates of each country’s population for each year 1750-2013 as paths, but not integrals (source primarily World Bank and various);

- b) Compiling the estimates of each country’s CO2 emissions from fossil fuel burning for each year 1750-2013 as paths but also as integrals (source primarily CDIAC);

- c) Summing the CO2 emissions from fossil fuel burning for each country to totals for each year 1750-2013 – giving an overall total of 376 Gt C;

- d) Adding and summing a global estimate of the non-fossil CO2 emissions from Land Use Change (LUC) for each year, giving an integral of 111 Gt C 1750-2013;

- e) Summing both the fossil and the non-fossil CO2 emissions globally for all years 1750-2013 that are also then summed to a global total integral of emissions of 487 Gt C; and this is the composite global carbon budget for the period ‘the PAST’ 1750-2013;

- f) The emissions per capita of each country are calculated by dividing the CO2 emissions for each year by the population for each year (as paths only and not as integrals);

- g) Each country’s ‘emissions share’ of the global emissions total is calculated as being equal to their annual share of the global population total as that total emerged, 1750-2013;

- h) Norway’s equal per capita share of global emissions over the period 1750-2013 was 433.5 Mt C or 0.09% of the total global carbon budget for that period, reflecting its share of global population.

For shares of future budgets, a static population is assumed post 2013. 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, therefore, is a bias in favour of developed countries, tending to exaggerate their shares of the budget (with a corresponding diminution of developing country shares). It is difficult for us to quantify the impact of this bias, and ideally shares would be based on projections of future population: the general point, however, is that, on an equal per capita basis, the developed countries shares of budgets can be assumed to be somewhat less than indicated by Blueprint figures; while developing country shares can be assumed to be somewhat greater.

There is a critical distinction to be drawn between notional shares of historic emissions and shares of the future carbon budget. Past shares are used to derive the credits and debits (see below), which represent rights and obligations in relation to climate finance. They do not represent ‘rights to pollute’ (if they did the result, given the scale of credits accrued, would be overshoot of the global budget). Shares of the future budget, however, may be understood as ‘rights to pollute’ (i.e. within the context of a scheme in which carbon debtors discharge their debts and continue to meet the costs of loss and damage in proportion to those debts) and are referred to as ‘certificated carbon shares’ (see below). Historic debts that are not discharged would deprive a debtor country of its entitlement to the future budget. Creditor countries might use finance derived from credits to purchase certificated carbon shares, enabling historic credit to be used to obtain greater than equal shares of the future budget.

---

23 Such an analysis could, of course, be undertaken but, at least for the time being, is beyond the scope of the authors.
1.3.2 Carbon ‘Debit/Credit’

Carbon debits and credits are derived by subtracting a country’s ‘actual’ share from its ‘equal per capita share’ (where a positive value is expressed as a credit and a negative value as a debit). In Norway’s case, for example, there is a historic ‘debit’ of 255 Mt C.

A debit quantifies a debtor country’s obligation to provide finance to developing countries in support of their mitigation efforts\textsuperscript{24}. A credit is the corresponding entitlement to that finance. Credits and debits give effect to the principle that countries that have used more than their share of the atmospheric space must compensate those whose shares have been correspondingly reduced.

Valuation of credits and debits requires only a price to be attached to a tonne of carbon. There is a great deal of existing work on valuing the price of carbon\textsuperscript{25}, which in the absence of a specific mechanism, courts might draw upon to set an appropriate figure. The approach to valuing historic carbon credits and debits will involve specific considerations relating to equity as well as the environmental integrity of the framework.

Crucially, it is not for the Blueprint to propose a valuation. The Blueprint provides a conceptual framework for navigating the complexities of finance and carbon budget distribution. Given the political and economic significance of credit / debit valuation, this issue is better left to arbitration or the courts (assuming a value can not be agreed upon by the Parties).

For illustrative purposes only let us assume a price of $10 per tonne of carbon. On that basis Norway’s debt would amount to $2.55 billion. A country with credit of 255 MtC or more (Party B) could claim the $2.55 billion to support its mitigation efforts. On transfer of the funds Norway’s debit would be discharged, while Party B’s credit would be reduced by 255 MtC.

Plainly the valuation of credits and debits, and the imposition of appropriate interest rates incentivizing timely payment, would be key to ensuring equity to all Parties.

The obligation to provide finance, however, is distinct from liability for loss and damages (which includes the costs of adaptation). There is no cap on the potential for liability for loss and damages, and discharging a debit does nothing to reduce liability under this head of claim.

Nevertheless debits may be used to determine liability and apportion damages (see further below)\textsuperscript{26}.

1.3.3 Certificated carbon shares

Since historic responsibility for past emissions is accounted for through credits and debits linked to finance, the remaining future budget can be divided into shares on the basis of equal per capita emissions. To distinguish these from shares of past emissions they will be referred to as ‘certificated carbon shares’.

Carbon debtor countries would need to discharge their debts in order to access their shares. Where debtor countries are locked into existing energy infrastructure to the extent that they are unable to meet their needs through their initial allocation of shares, they would need to purchase additional shares. Countries at a relatively low level of development may have greater potential to ‘leap-frog’ straight to a clean energy base, and therefore to remain within budget, obtaining additional finance.\textsuperscript{27} The Blueprint framework would support the development of a ‘cap-and-trade’ scheme that would:

- Incentivise ambition on the part of all parties

\textsuperscript{24} pursuant to the Paris Agreement, Article 9(1) and the duty to take prevention measures under general principles of law
\textsuperscript{25} See eg, the work of the World Bank: http://www.worldbank.org/en/programs/pricing-carbon
\textsuperscript{26} Practical application of the duty to prevent harm
\textsuperscript{27} It is worth noting in this context the commitment of the 48 countries of the Climate Vulnerable Forum to move to a 100% renewable energy base by 2050: http://www.thecvf.org/countries-vow-100-renewable-by-2050/
• Anchor aggregate NDCs to the long-term temperature goal, and
• Support the efficient allocation of ‘rights to emit’.

It is beyond the scope of the present paper to consider the detail of a scheme for trading in shares of the future carbon budget. Practical questions arise, for example, regarding the establishment of a starting point and regulatory oversight. However the following general points may be made:

• Trading would be in certificated shares measured in tonnes of carbon, where the sum of all shares equals the total remaining carbon budget.
• Consequently accounting would be transparent and straightforward: at any given moment the correspondence between total shares and the remaining carbon budget might be easily checked and verified.
• The global carbon budget would be reduced annually, to account for actual global emissions for the previous year, with the stock of shares reduced accordingly.
• As the supply of shares reduces, their price rises in response, harnessing market forces to the long-term temperature goal.
• All Parties would have an economic incentive to stay within budget, but all Parties would have the option to pay for additional shares (in the case of creditor countries, such purchases might be financed through the funding generated by their credits).
• Given the catastrophic consequences of the global budget being exceeded, courts might rule, as a matter of policy, that any countries failing to operate within the framework for the future budget will be jointly and severally liable for all loss and damages arising. This would, of course, be a compelling incentive to budgetary compliance.
• Such a cap-and-trade approach may be conceived of as a ‘framework-based market’ (as distinct from a ‘market-based framework’).

It is possible to conceive of an alternative approach in which ‘historic responsibility’ is used to allocate shares of the future budget in proportion to credit and debit, so that the historically lowest emitting countries would have the highest shares of the remaining budget. Such an approach would encounter serious practical difficulties. Historically high emitting countries would have negligible or negative shares of the remaining budget, that would quickly or immediately be exhausted through their actual emissions. Since the price of certificated shares is likely to rise over time, initially the historically lowest emitting countries would be reluctant to sell their shares. A scheme in which those with currently the highest emissions have:

a) negligible rights to the remaining budget, and
b) no guarantee of obtaining shares to support excess use,

would most likely founder for lack of plausibility and credibility. For this reason, the Blueprint instead translates ‘historic responsibility’ to obligations to provide finance for sustainable development and mitigation.

The example of Norway has been used in this paper for illustrative purposes. Equivalent charts for all countries are accessible at:

http://www.gci.org.uk/CREDIT-DEBIT.html and

Part 2 of this paper, to be published in the next edition of Environmental Liability, will consider different routes to implementing the Blueprint framework through the courts. It will also include a hypothetical case
study, showing how its principles might operate in practice.

contact: tim@planb.earth

Part 2: Legal avenues to Blueprint implementation

2.1 Introduction

As the limitations of the political process have become evident, increasing attention has been paid to the role of the courts in leading a rational and ethical response to the climate crisis. The following excerpts from recent judgements highlight the readiness of judges to intervene:

If, and this is the case here, there is a high risk of dangerous climate change with severe and life-threatening consequences for man and the environment, the State has the obligation to protect its citizens from it by taking appropriate and effective measures.28

The debate about climate change and its impact has been before various political bodies for sometime now ... But the intractability of the debates before Congress and state legislatures and the alleged valuing of short term economic interest despite the cost to human life, necessitates a need for the courts to evaluate the constitutional parameters of the action or inaction taken by the government.29

Exercising my "reasoned judgment," ... I have no doubt that the right to a climate system capable of sustaining human life is fundamental to a free and ordered society. Just as marriage is the "foundation of the family," a stable climate system is quite literally the foundation "of society, without which there would be neither civilization nor progress.30

This trend has been summarized in a recent article in the ENDS report31:

Litigation has long been considered an important tool to hold companies and governments to account on environmental matters, and climate change is no exception ...

But when ENDS tried to write a feature on this subject in 2013, it hit a brick wall; nothing exciting is happening in this space was the standard response, action is a long way off. One experienced but dejected lawyer said to call again in 50 years’ time.

The mood is now completely different. In the intervening three years the political landscape has shifted, new options for using the law have been considered and tested, legal precedents have been set, and the hopes of people trying to drive action through the law have been reset.

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 Parties, NGOs and others 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 whether a government’s plans are consistent with its legal and constitutional obligations. The risk, however, is that different courts around

29 Kelsey Cascade Rose Juliana et al v United States of America et al. Federal District Court in Oregon (Our Children's Trust), April 2016, per Magistrate Judge Coffin
30 Kelsey Cascade Rose Juliana et al v United States of America et al. Federal District Court in Oregon (Our Children’s Trust), November 2016, on appeal from the April judgement, per Judge Aiken
31 ‘Could the Courts bring Order to Climate Change?’, Isabella Kaminski, The ENDS Report, 8 December 2016
the world will adopt a wide range of mutually inconsistent approaches, tending to collective incoherence.

The Blueprint aims to provide governments, civil society and courts with a globally applicable *substantive* framework, based on authoritative sources of data, for assessing State responsibility (or liability) in terms of:

- (i) Loss and damage arising from historic emissions (including the costs of adaptation);
- (ii) The duty to take preventative action by reducing its own emissions; and
- (iii) The duty to take preventative action through the provision of financial resources to support developing countries with their mitigation plans, and sustainable development.

The framework may be utilized in a wide range of legal actions including for:

- (i) Breach of a country’s duty to prevent harm to other countries.
- (ii) Breach of a country’s duty to prevent pollution of the marine environment (under UN Convention on the Law of the Sea, Article 194).
- (iii) Breach of fundamental norms of human rights (such as the right to life)
- (iv) Breach of a government’s duties to its citizens (including procedural obligations to act reasonably and rationally).

Part 2 of this paper focuses principally on (i) above on the basis that it raises issues of international law likely to be relevant to all contexts.

### 2.2 Breach of the duty to prevent harm

#### 2.2.1 The general principle

States have the sovereign right to exploit their own resources. They have a corresponding responsibility to ensure activities within their control do not cause substantial damage other States or areas beyond the limits of national jurisdiction (such as the high seas or outer space). This is described as the ‘principle of prevention’ or the ‘no-harm rule’. In a recent case the International Court of Justice held 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.\(^{32}\)

The UNFCCC directly invokes the principle in its Preamble, removing all doubt regarding 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, in particular through effective measures to reduce greenhouse gas emissions to a level consistent with the temperature goal. The principle itself is straightforward. It is the apparent complexity of quantifying the scope of the obligation for any given country that has caused some to question its practical applicability. The Blueprint aims to address this concern.

---

\(^{32}\) *Pulp Mills on the River Uruguay*, ICJ, 2010, para. 101
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 have existed if the act had not been committed. Reparation must therefore include compensation for the costs of necessary prevention measures incurred by the victim (ie the costs of adaptation).

In practical terms, and in accordance with the UNFCCC and the Paris Agreement, the duty to prevent harm implies the following in the context of climate change:

- liability for climate change loss and damage, including the costs of adaptation, arising out of past breaches of the duty

And, in relation to future prevention measures, the duty implies distinct obligations to

- reduce GHG emissions in line with the global target, and
- on the part of countries which have used more that their share of the carbon budget, to support financially the implementation of mitigation measures on the part of those who have used less.

Given that all states emit greenhouse gases, courts will need a framework to assess what is reasonable and equitable: again, the Blueprint has been designed with these purposes in mind.

### 2.2.2 Relation of the COP21 Decision to the duty to prevent harm

The COP21 Decision, para. 52, states that Article 8 of the Paris Agreement (concerning loss and damage):

*does not involve or provide a basis for any liability or compensation.*

The clause addressed a concern on the part of some developed country Parties, in particular the USA, that a provision on loss and damage might be construed as an admission of liability. Since liability and compensation are specifically excluded from the scope of the Paris Agreement provisions on loss and damage, the principle of *lex specialis* does not apply (see 2.2.3 below): consequently liability and compensation must 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.

### 2.2.3 Lex specialis and the ‘object and purpose’ of the Paris Agreement

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 that takes precedence over the general (although general principles should still be taken into account). This principle is commonly referred to as *lex specialis.*

---

33 International Law Commission, Articles on Responsibility of States for Internationally Wrongful Acts, Article 30(a).
34 Ibid Article 30(b).
35 Ibid Article 31(1).
36 Factory at Chorzow, Merits, ICJ, p. 47.
37 Although Bhutan is in fact net negative when forestry sequestration is taken into account
38 *lex specialis derogat legi generali* – ‘specific legal provisions override the more general’
More particularly, the principle of *lex specialis* may be considered in connection with three distinct aspects of the international legal framework for climate change:

(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:

*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 cannot be resolved through co-operation, exchange of information puts parties in a position to challenge 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* applicable 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 these contexts.

Indeed both UNFCCC and the Paris Agreement incorporate and reflect the general duty to prevent harm. They confirm the obligations on all Parties to implement measures to realise the temperature goal. They also confirm the obligation on ‘developed country parties’ to:

*provide financial resources to assist developing country Parties with respect to both mitigation and adaptation.*

What they do not do, however, is develop a specific framework for quantifying these obligations, leaving quantification to be determined by the courts.

The current situation post Paris, may be contrasted with the Kyoto Protocol, which did prescribe specific 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* in relation to emission reductions by those Parties between 2008 and 2012. On that basis the principle might have prevented Party A, for example, from arguing that Party B was breaching its duty to prevent harm 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, however, the Protocol could not be considered to be *lex specialis* in relation to emissions outside the

---

39 See UNFCCC Preamble, and Article 3(3)
40 See Paris Agreement, Article 4(3)
41 Ibid. Article 3
42 Ibid. Article 9(1)
commitment period.

In this context it is also relevant to consider the ‘object and purpose’ of the UNFCCC regime. International agreements must be interpreted in way that is consistent with their object and purpose. The fundamental object and purpose of UNFCCC and the Paris Agreement is to stabilise atmospheric concentrations of greenhouse gases\(^{43}\) and, more generally, to strengthen the response to climate change\(^{44}\).

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 *Gabčíkovo-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.’

It would be inconsistent with the objects and purposes of UNFCCC, the Kyoto Protocol and the Paris Agreement to interpret them in such a way that they *weaken* the pre-existing legal regime (in which countries are accountable to each other for their contributions to climate change) by replacing it with one in which countries set their own targets with no accountability. Applying the *Vienna Convention*, therefore, 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 legally binding levels of greenhouse gas emissions, with consequent legal liability and provisions for compensation.

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

It is also relevant to note that on signing the UNFCCC, Fiji 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 of the UNFCCC, by Kiribati, Nauru, and Papua New Guinea. And upon signing and/or ratifying the Paris Agreement, the Cook Islands, the Marshall Islands, Micronesia, Nauru, Niue, Solomon Islands, Tuvalu and Vanuatu all explicitly preserved their rights to compensation for climate damages under general international law.

### 2.2.4 Practical application of the duty to prevent harm

#### 2.2.4.1 Liability for loss and damage (including the costs of adaptation)

Although establishing liability or state responsibility for loss and damage ultimately is a qualitative process, it should be clear that:

1) A country’s risk of being found legally liable for loss and damage increases in line with its carbon

---

\(^{43}\) UNFCCC Article 2  
\(^{44}\) Paris Agreement, Article 2
debit;
2) A country’s risk of being found legally liable for loss and damage decreases in line with its carbon credit;
3) The share of a country’s responsibility for loss and damage (including the costs of adaptation) increases in line with its carbon debit; and more specifically
4) The share of a country’s responsibility for loss and damage (including the costs of adaptation) may be calculated as a percentage on the basis of its share of the total debit (so that if total debit, for example, is 200 Gt C\(^{45}\), and Country A’s debit is 2 Gt C, it will be 1% responsible for all loss and damage arising).

It is not intended that a country’s ability to recover damages should be limited by its credit. A debit on the part of a claimant country, however, may be indicative of a finding of contributory negligence.

2.2.4.2 Liability for failing to take adequate prevention measures

Although the Paris Agreement does not directly define the content of the duty to take measures to prevent future harm, 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 ‘pursuing efforts’ to limit it to 1.5 degrees. Paragraph 1(c) of the same article commits Parties to ‘making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development’. Together, these goals provide an anchor point for assessing the adequacy of countries’ prevention measures.

Moreover, the Agreement ensures the availability of detailed information regarding Parties’ prevention measures relating to their domestic mitigation 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.

In addition, Article 9(5) requires developed country Parties to ‘bienally communicate indicative quantitative and qualitative information related to paragraphs 1 and 3 of this Article, as applicable, including, as available, projected levels of public financial resources to be provided to developing country Parties’ while other Parties providing resources ‘are encouraged to communicate biennially such information on a voluntary basis’.

Other Parties and NGOs may therefore challenge the adequacy of a Party’s prevention measures in terms

\(^{45}\) This figure is used for illustrative purposes only. An accurate figure for total debit will be available at http://www.gci.org.uk/CREDIT-DEBIT.html when work has been complete on all country charts
of the temperature goal, providing there is a suitable framework for so doing.

It is generally recognised that aggregated (I)NDCs and finance pledges, even if honoured in full, are inadequate in terms of the temperature goal. 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 …

> Recognizing the urgent need to enhance the provision of finance, technology and capacity-building support by developed country Parties, in a predictable manner, to enable enhanced pre-2020 action by developing country Parties …

It follows that at least some Parties are failing to do what is required of them under both general international law and the Paris Agreement. Without a framework for determining the scope of obligations there is, however, an accountability gap (which leads almost inevitably to the ‘emissions gap’ and the ‘finance gap’): indeed Parties themselves have no obvious way of determining the scope of their obligations.

The UNFCCC, directly incorporates a number of general principles of international law, which must be the basis for any framework, the most significant of which are:

1. the precautionary principle,\(^{46}\)
2. the principle of equity,\(^{47}\)
3. the right to sustainable development,\(^{48}\) and
4. the obligation to reduce emissions in accordance with the ‘best available science’.\(^{49}\)

Likewise the Paris Agreement confirms that NDCs should be prepared on the basis of equity.\(^{50}\)

Since the Paris Agreement itself does not provide a framework for the application of equity to mitigation measures (i.e. the framework that is required if the objective of the Agreement are to be realised) it is reasonable to consider the travaux preparatoires. As described in more detail above, the draft Paris Agreement, presented to the Parties after a four year process of negotiation, included the proposal that:\(^{51}\)

> [Parties [collectively][cooperatively] aim to reach the global temperature goal referred to in Article 2 through …

> [Equitable distribution of a global carbon budget based on historical responsibilities …]

\(^{46}\) 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.’

\(^{47}\) UNFCCC Art 3(1)

\(^{48}\) UNFCCC Art 3(4)

\(^{49}\) Paris Agreement, Article 4(1)

\(^{50}\) Ibid. Preamble and Article 4(1) and (3)

\(^{51}\) 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)(e), 5 December 2015
The Fifth Assessment Report of the IPCC also provides guidance on the interpretation of equity. It proposes ‘four key dimensions’:

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

It proceeds 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.

Given the need for finance to support mitigation measures, in practice a single integrated framework is required: since an increase in the share of country A, means that much less for country B, the equity of Country A’s NDC can only be considered in conjunction with flows of finance (ie either its entitlement to finance, or its obligation to pay it).

**Selection of a global carbon budget**

For a given temperature rise limit, for example the 1.5°C or ‘well below’ 2°C long-term limit, the corresponding carbon budget should reflect the ‘best available science’ for the total amount of carbon emissions, measured in tonnes, that can likely be emitted for temperatures to stay below that limit. Since NDCs are expressed in similar terms, a carbon budget facilitates an assessment of an NDC’s adequacy (and equity) in relation to the common goal.

IPCC AR5 sets out the specific carbon budgets associated with different temperature limits, on the basis of a range of probabilities (see above). On the basis of the precautionary principle, a court may consider that a budget of greater than 550 Gt CO2 would be inconsistent with the Paris Agreement goal (that is already, after all, a 50% chance of long-term warming in excess of 1.5°C).

**Distribution of the global carbon budget**

More complex than the task of budget selection is that of budget division. The obvious way to distribute a budget (at least notionally) is to do so on the basis of equal per capita shares. Such an approach has a number of advantages:

- It accords with the Preamble of UNFCCC and the work of the ADP (provided that historical emissions are accounted for through credits and debits)
- It reflects an intuitive principle that all people have an equal right to the earth’s atmosphere
- It offers a straightforward criterion for carbon budget division, that may be implemented on the basis of authoritative sources of data.
- It provides for a flexible ‘cap-and-trade’ scheme, anchored to the carbon budget.

High emission countries may argue that in practical terms they will need a greater share of the remaining

---

52 IPCC AR5, Mitigation of Climate Change, Chapter 4, Sustainable Development and Equity
53 The Blueprint integrates both ‘types’ of framework into a single whole, reflecting the inextricable linkage between finance and mitigation.
54 Sources of Data – Carbon Budgets
55 See above ‘Certificated carbon shares’
future budget than currently low emitting countries. That may well be true, in part due to the time required to introduce fundamental changes to infrastructure. However practical need should not be confused with ‘legal entitlement’: in such a case they will need to purchase the appropriate share certificates under a cap-and-trade scheme.

Historically low emitting countries may argue they should have a greater share of the remaining budget to reflect historic responsibility. The answer to this is that historic responsibility is intended to be accounted for in the system of carbon credits and debits, ensuring that historically low emitting countries have access to the finance and technology required to achieve sustainable development (for which high emitters are liable, along with damages) in proportion to their credits. Any unresolved issues of equity may be addressed through the approach to valuation of historic debits and credits, ensuring that creditors, where necessary have access also to sufficient funds to purchase additional certificated shares.

More generally, in the absence of a valuation for carbon credits / debits, the Blueprint framework itself is ‘equity neutral’. In the event that courts were to value a carbon credit at just $1 per tonne of carbon, for example, there would be a strong argument that the implementation of the framework was inequitable to historically low emitters. On that basis (generally speaking) developing countries would probably lack sufficient funding either:

(i) to finance the clean energy infrastructure required to support sustainable development; or
(ii) to purchase, where necessary, additional certificated carbon shares.

On the other hand, were the courts to impose a valuation of say $100 per tonne of credit / debit, creditor countries would be in a very powerful position (including in relation to the purchase of certificate carbon shares), but many debtor countries would be likely to be bankrupted.

Properly understood the Blueprint provides a conceptual framework for the equitable allocation of finance and the carbon budget, but does not itself define that allocation.

Courts are designed to address matters of equity. The problem, for the moment, is that they lack a framework on which to base their deliberations. That is the gap that the Blueprint aims to fill.

As noted above, distribution of the remaining budget on the basis of equal per capita emissions is dependent on carbon debtors discharging their carbon debts to carbon creditors. Consequently courts and policy-makers will have to consider simultaneously both aspects of the duty to take preventative measures (i.e. the duty to reduce emissions and the duty to provide finance to developing countries).

*Defining the scope of rights and obligations in respect of finance*

The atmosphere has a limited capacity to contain safely emissions of carbon. Those countries that have emitted more than their share have done so at the expense of others, and have a corresponding obligation to support the development of those countries that have emitted less than their share of carbon. Economic development requires energy, and countries have a right to sustainable development: if historically low emitting countries are now unable to pursue fossil-fuel based development because of the actions of others, there is a corresponding obligation on those others to finance the initially more expensive alternative.

More specifically the UNFCCC and the Paris Agreement mandate that developed country Parties provide
finance to developing country Parties to support their mitigation and adaptation efforts. Moreover the same obligation can be derived from the duty to take preventative action against climate change: in practical terms preventing dangerous climate change demands that developed countries provide developing countries with the finance, resource and expertise to transition their economies to a renewable energy base. Given the long-term cycle for infrastructure planning, development and implementation, countries need to know now what level of sustained financial support they can anticipate in support of their mitigation efforts.

Operationalising the obligation to provide finance, however, demands a framework for determining the adequacy and equity of commitments. Creditor countries need a clear indication of what is owed to them. Debtor countries equally need to be able to determine the scale of their debt. Courts and policy-makers need to know that they are operating to principles capable of consistent and transparent application across jurisdictions.

A common scale is required that:

- ensures symmetry between credit and debit
- reflects the principle of equity
- accounts for historic emissions.

The Blueprint meets these criteria by allocating credits and debits to countries, measured in tonnes of carbon, according to whether their historic emissions are above or below their shares (determined on the basis of equal per capita emissions over time).

All that is required to translate credits and debits into finance is a valuation of a tonne of carbon.

Additional finance might be generated through sale of certificated carbon shares.

**Link between finance and emission obligations**

The duty to prevent harm demands all countries to limit their future emissions to their equal per capita share of the remaining carbon budget, subject to the sale or purchase of certificated carbon shares.

Rights and obligations in relation to future emissions are, however, conditional on the credits and debits being honoured. Debtor countries ‘rights to emit’ an equal share of the future carbon budget are dependent on their debts being paid. The emissions limits imposed on creditor countries likewise only apply where credits are being honoured.

Again it is apparent that an integrated framework is required to define the scope of both aspects of the duty to take prevention measures (i.e. the obligation to provide finance and obligations in respect of national emissions).

**2.3 Breach of the duty to ‘prevent, reduce, and control’ pollution of the marine environment**

The emission of greenhouse gases threatens the marine environment in two distinct ways:

---

56 See for example PA Art. 9(1)

57 See further above: Notes on Methodology
• by leading to warming of 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, with consequent implications for livelihoods and food security.

The UN Convention on the Law of the Sea (UNCLOS) is the principal legal instrument governing countries’ use of the oceans.

UNCLOS Art 194(1) provides that:

States shall take, individually or jointly as appropriate, all measures ... necessary to prevent, reduce and control pollution of the marine environment from any source ...

UNCLOS Art. 1(4) defines 'pollution of the marine environment' in broad terms:

"pollution of the marine environment" means the introduction by man, directly or indirectly, of substances or energy into the marine environment ... which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing ...

The definition, which refers specifically to the ‘indirect’ introduction of ‘substances or energy’, is sufficiently broad to encompass emissions of greenhouse gases.

UNCLOS, in other words, imposes on states a legal obligation to ‘prevent, reduce and control’ pollution of the marine environment through the emission of GHGs.

2.3.1 Liability and compensation under UNCLOS

In contrast to UNFCCC, UNCLOS is explicit in stating that breach of its provisions implies liability and compensation. Article 234 reads as follows:

(1) States are responsible for the fulfillment of their international obligations concerning the protection and preservation of the marine environment. They shall be liable in accordance with international law.

(2) States shall ensure that recourse is available in accordance with their legal systems for prompt and adequate compensation or other relief in respect of damage caused by pollution of the marine environment by natural or juridical persons under their jurisdiction.

(3) With the objective of assuring prompt and adequate compensation in respect of all damage caused by pollution of the marine environment, States shall cooperate in the implementation of existing international law and the further development of international law relating to responsibility and liability for the assessment of and compensation for damage and the settlement of related disputes, as well as, where appropriate, development of criteria and procedures for payment of adequate compensation, such as compulsory insurance or compensation funds.

2.3.2 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.

2.3.3 Lex specialis: UNCLOS and the Paris Agreement

It might be argued that, in light of the UNFCCC framework, UNCLOS should not be applied to the emission of GHGs: *lex specialis derogat legi generali* (see 2.2.3 above).

Such an argument fails on three grounds:

- Ocean acidification is outside the mandate of the UNFCCC (and therefore UNCLOS is *lex specialis* in relation to ocean acidification)
- UNCLOS is *lex specialis* in relation to marine pollution more generally
- 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 (see 2.2.3 above).

2.3.4 The Blueprint and UNCLOS

Although UNCLOS offers some specific advantages as a basis for a legal claim (in particular its liability and dispute resolution provisions), the key substantive issues for any claim are likely to be the same as for breach of the duty to prevent harm: when everyone is contributing something to the problem, how do you determine:

(i) Responsibility for loss and damage (including the costs of adaptation) already incurred; and  
(ii) The scope of the duty to take preventative measures (including through the provision of financial support for developing country mitigation measures).

The Blueprint helps to address these issues in precisely the same way as it does for breach of the duty to prevent harm.

2.4 Breach of international human rights law

An interdependency between human rights and a safe climate and environment is widely acknowledged in international instruments and jurisprudence.

Principle 1 of the *Stockholm Convention 1972*, for example, states:

*Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations ...*
The Council of Europe, Manual on Human Rights and the Environment, 2012 explains:

(...)the [European Court of Human Rights] has emphasised that the effective enjoyment of the rights which are encompassed in the Convention depends notably on a sound, quiet and healthy environment conducive to well-being.

And the Preamble to the Paris Agreement 2015 includes the following:

Acknowledging that climate change is a common concern of humankind, Parties should, when taking action to address climate change, respect, promote and consider their respective obligations on human rights, the right to health, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations and the right to development, as well as gender equality, empowerment of women and intergenerational equity.

It is generally accepted that the fundamental principles of human rights form part of customary international law (as well as governing the actions of corporations and the obligations of governments to their citizens). The Restatement (Third) of the Foreign Relations Law of the United States, for example, states as follows:

A state violates international law if, as a matter of state policy, it practices, encourages, or condones ...

(g) a consistent pattern of gross violations of internationally recognized human rights.

Subsidising and supporting fossil fuel industries, or failing to take adequate action to control emissions, over an extended period of time, in full knowledge of the likely devastating consequences for others would appear to meet this definition. However for a claim on this basis to gain traction a framework is required against which the adequacy of state action might be addressed. Again, the principles of the Blueprint may assist with such an assessment.

2.5 Breach of a government’s duties to its own citizens

In the last couple of years, domestic courts have shown an increasing willingness to intervene in government climate change policy.

In June 2015, a Dutch court upheld a claim brought by the Urgenda Foundation, a citizens’ platform, that the Dutch Government’s actions to tackle climate change were inadequate, and therefore a breach of its duty of care:

Due to the severity of the consequences of climate change and the great risk of hazardous climate change occurring – without mitigating measures – the court concludes that the State has a duty of care to take mitigation measures.

Based on its considerations here, the court concludes that in view of the latest scientific and technical knowledge it is the most efficient to mitigate and it is more cost-effective to take adequate action than to postpone measures in order to prevent hazardous climate change. The court is therefore of the opinion that the State has a duty of care to mitigate as quickly and as much as possible.

58 At section 702
59 Urgenda Foundation v. Kingdom of the Netherlands, District Court of the Hague [2015] HAZA c/09/00456689
60 Ibid. 4.83
61 Ibid. 4.73
The fact that the amount of the Dutch emissions is small compared to other countries does not affect the obligation to take precautionary measures in view of the State’s obligation to exercise care. After all, it has been established that any anthropogenic greenhouse gas emission, no matter how minor, contributes to an increase of CO2 levels in the atmosphere and therefore to hazardous climate change. Emission reduction therefore concerns both a joint and individual responsibility of the signatories to the UN Climate Change Convention.\(^{62}\)

Based on the foregoing, the court concludes that the State – apart from the defence to be discussed below – has acted negligently and therefore unlawfully towards Urgenda by starting from a reduction target for 2020 of less than 25% compared to the year 1990.\(^{63}\)

A little later in the year the High Court in Lahore, Pakistan, considered a claim brought by a farmer that the government’s inaction on climate change was a breach of his fundamental rights\(^{64}\):

The petitioner submits that in order to address the threat of climate change the National Climate Change Policy, 2012 ("NCCP") and the Framework for Implementation of Climate Change Policy (2014-2030) ["Framework"] has been announced by the Ministry of Climate Change, Government of Pakistan, however, no implementation on the ground has taken place. He submits that inaction on the part of Ministry of Climate Change and other Ministries and Departments in not implementing the Framework, offends his fundamental rights in particular Articles 9 and 14 of the Constitution besides the constitutional principles of social and economic justice.

The court upheld his complaint, ordering the establishment of a Climate Change Commission to oversee implementation of the national framework:

It is quite clear to me that no material exercise has been done on the ground to implement the Framework. In order to expedite the matter and to effectively implement the fundamental rights of the people of Punjab, Climate Change Commission ("CCC") is constituted by this Court.

In April 2016 a US Federal Court ruled against the Federal Government’s motion to dismiss a claim that is violating the constitutional rights of young people by enabling the continuing exploitation of fossil fuels\(^{65}\), Magistrate Judge Coffin stating as follows:

Assuming plaintiffs are correct that the United States is responsible for about 25% of the global CO2 emissions, the court cannot say, without the record being developed, that it is speculation to posit that a court order to undertake regulation of greenhouse gas emissions to protect the public health will not effectively redress the alleged resulting harm. The impact is an issue for the experts to present to the court after the case moves beyond the pleading stage.

In November 2016, this ruling was upheld on appeal, Judge Aiken ruling\(^{66}\):

Plaintiffs argue defendants’ actions violate their substantive due process rights to life, liberty, and property, and that defendants have violated their obligation to hold certain natural resources in trust for the people and for future generations …

[Plaintiffs] ask this Court to determine what emissions level would be sufficient to redress their injuries.

\(^{62}\) Ibid 4.79
\(^{63}\) Ibid. 4.93
\(^{64}\) Leghari v Federation of Pakistan, etc, Lahore High Court, Case No: W.P. No. 25501/2015
\(^{65}\) Youth v USA et al, District Court for the District of Oregon, 6:15-cv-1517-TC, April 2016
\(^{66}\) Youth v USA, US District Court for the District of Oregon, Eugene Division, Case No. 6: 15-cv-01517-TC, 10 November 2016
That question can be answered without any consideration of competing interests ...

The science may well be complex, but logistical difficulties are immaterial to the political question analysis. See Alperin, 410 F.3d at 552, 555 ("[T]he crux of the political question inquiry is ... not whether the case is unmanageable in the sense of being large, complicated, or otherwise difficult to tackle from a logistical standpoint," but rather whether "a legal framework exists by which courts can evaluate ... claims in a reasoned manner.") ...

Although the United States has made international commitments regarding climate change, granting the relief requested here would be fully consistent with those commitments. There is no contradiction between promising other nations the United States will reduce CO2 emissions and a judicial order directing the United States to go beyond its international commitments to more aggressively reduce CO2 emissions ...

If plaintiffs can show, as they have alleged, that defendants have control over a quarter of the planet’s greenhouse gas emissions, and that a reduction in those emissions would reduce atmospheric CO2 and slow climate change, then plaintiffs’ requested relief would redress their injuries ...

Plaintiffs do not object to the government’s role in producing any pollution or in causing any climate change; rather, they assert the government has caused pollution and climate change on a catastrophic level, and that if the government’s actions continue unchecked, they will permanently and irreversibly damage plaintiffs’ property, their economic livelihood, their recreational opportunities, their health, and ultimately their (and their children’s) ability to live long, healthy lives. Echoing Obergefell’s reasoning, plaintiffs allege a stable climate system is a necessity condition to exercising other rights to life, liberty, and property ...

In this opinion, this Court simply holds that where a complaint alleges governmental action is affirmatively and substantially damaging the climate system in a way that will cause human deaths, shorten human lifespans, result in widespread damage to property, threaten human food sources, and dramatically alter the planet’s ecosystem, it states a claim for a due process violation. To hold otherwise would be to say that the Constitution affords no protection against a government’s knowing decision to poison the air its citizens breathe or the water its citizens drink. Plaintiffs have adequately alleged infringement of a fundamental right.

Other actions are already underway (including in Switzerland67 and Sweden68) alleging government failure to take appropriate action on climate change.

Once courts accept the principle that inaction on climate changes threatens constitutional protections and fundamental human rights, they will increasingly find themselves addressing the action that is logically and practically required to uphold those protections, and to avert collective disaster.

What is lacking for the moment, however, is an objective framework for assessing the adequacy and equity of a government’s actions as a contribution to the common Paris Agreement temperature goal (both in terms of its own mitigation and its financial support for the mitigation measures of developing countries). In the absence of such a framework, even where courts recognize the need to advance a common vision, they will struggle to do so.

Hypothetical example

68 http://www.magnoliamålet.se/info/the-magnolia-lawsuit-application-in-english/
Given the nature and scale of the threat posed by the current global emissions trajectory, and the urgency of increasing finance flows to support mitigation efforts, it is becoming increasingly likely that some governments will be motivated to commence legal action.

To illustrate the operation of the Blueprint in practice, let us suppose that Parties A, B, C, and D bring an action against Parties E and F, alleging that:

(i) Parties E and F are partially responsible for the disappearance of Lake K, depriving large parts of their populations of access to fresh water, and necessitating the building of a pipeline to replenish the lake at a cost of $15 billion, and consequently in breach of their past duty to prevent harm; and that

(ii) The emission reduction plans of Parties E and F, as expressed in their NDCs, are inconsistent with the objective of limiting future warming to 1.5°C or ‘well below’ 2°C, and therefore in breach of their future duties to prevent harm;

(iii) Parties E and F are failing to meet their obligations to provide Parties A, B, C and D with adequate finance to support their mitigation efforts; and that

(iv) consequently Parties E and F are also in breach of their obligations under international human rights law (given the real and substantive threat to the right to life, for example, of people in countries A, B, C and D)

The Court accepts in principle that:

• Countries have a duty to prevent harm from climate change, and consequently that

• The Court must determine the scope of both past and future obligations in order to determine the case.

• That, referencing UNFCCC and the Paris Agreement, the duty to prevent future harm entails both emission reduction obligation and obligations to provide finance.

• That breaches of these obligations threaten large-scale loss of life and displacement of people, and consequently breach also fundamental norms of international human rights law.

Recognising, however, that climate change is a global problem, and that many similar future cases may arise the Court is concerned to adopt a framework that may be applied consistently and transparently, enabling countries not party to the litigation to determine also the scope of their respective obligations.

On the evidence before it the Court finds that the drying up of Lake K is 50% attributable to poor irrigation methods on the part of Parties A, B, C and D, and 50% attributable to climate change. It assesses the total damages (including the cost of the pipeline construction) at $20 billion, of which $10 billion dollars can be attributed to climate change.

Party E has a carbon debit of 10 Gt C while Party F had a carbon debit of 1 Gt C. The total carbon debit (let us say) is 200 Gt C \(^{69}\). Party E is therefore responsible for 5% of all loss and damages (including adaptation costs), Party F, for 0.5%. On that basis the Court finds that Party E must pay Parties A, B, C and D a total amount of $500 million in compensation for loss and damage arising from the drying up of Lake K, while Party F must pay $50 million.

Parties A, B, C and D each have a carbon credit of 1 Gt C, representing rights to finance for their sustainable development and mitigation efforts (as distinct from adaptation costs). No common framework for valuing a tonne of carbon in this context has as yet been agreed. Parties A, B, C and D produce various analyses by external parties in proposing a valuation of $20 per tonne. Parties E and F produce different analyses in

---

\(^{69}\) See footnote 40 above
proposing that a valuation of $1 per tonne would in fact be more appropriate to the context of historic carbon credits and debits. The Court concludes that an equitable valuation would in fact be $10 per tonne, Consequently the Court assesses each 1 Gt C credit to be worth $10 billion.

On that basis Party E’s debit equates to an obligation to provide $100 billion of climate finance; Party F’s, $10 billion. Additionally the Court calculates a figure for interest accruing on the debts, increasingly their value accordingly. Party E can evidence previous payments to support climate mitigation globally of $10 billion, reducing its debit by a corresponding amount. The Court orders Party F to commit $10 billion to Party A to support its climate mitigation efforts; and Party F to commit $10 billion each to Parties B, C and D.

On condition that Parties E and F discharge their debits, the Court holds that they are entitled to an equal per capita share of the remaining carbon budget of 150 Gt C (as from 2011), which according to the IPCC, would give a 50% likelihood of limiting warming to 1.5°C. Any use beyond these shares must be supported by the purchase of certificated carbon shares. Additionally the Court prescribes the interest applicable to any delay in payment.

Given the catastrophic consequences of the global budget being exceeded, any country failing to operate within the framework for the future budget will be jointly and severally liable for all loss and damages arising.

If the judgement appears radical, that is only because it would be the first time in our history to date that a court would be drawing the existing legal framework on climate change to its logical consequence in light of the best available science.

**Conclusion**

The scale of the threat from climate change, the power of vested interests, and the political and economic complexity arising from dependence on fossil fuels, combine to disguise the logical simplicity of the solution.

Humanity must limit global warming to <1.5°C or ‘well below’ 2°C, or face critical points of irreversibility and ever more dangerous consequences of dangerous climate change.

There is clear scientific guidance on the total mass of carbon dioxide that may be emitted consistent with reasonable (though by no means certain) chances of keeping to those limits (i.e. ‘the carbon budget’).

Humanity’s future now depends on:

a) devising a common framework for the division of that budget (which integrates both rights to emissions, and right and obligations in terms of financial support); and then

b) implementing it in good faith.

It is a challenging but not impossible task.

*Contact: tim@planb.earth*
Appendices

Appendix 1: Sources of Data

Carbon budgets

1. Budget 1: 550 Gt CO2, as from 2011, for a 50% likelihood of <1.5 C
2. Budget 2: 850 Gt CO2, as from 2011, for a 33% likelihood of <1.5 C
3. Budget 3: 1,000 Gt CO2, as from 2011, for a 66% likelihood of <2.0 C

- These Budgets are expressed in Gigatonnes of carbon (i.e. billions of tonnes).
- Here, they are converted into ‘carbon only’ by dividing by the conversion factor of 3.664.
- So ‘carbon only’ budgets are: Budget 1: 150 Gt C; Budget 2: 232 Gt C; Budget 3: 273 Gt C
- 11 GtC/year has also been deducted from each of those three budgets, reflecting the carbon already emitted in 2011, 2012 & 2013, to become 117 Gt C, 198 Gt C & 240 Gt C respectively.
- These are then plotted as ‘path integrals’, with very slight differences in cumulative mass between the carbon integrals only from the IPCC AR5 Synthesis Report and the more information complete Green, Amber & Red ‘carbon-budget-path-integrals’ used in this Blueprint Report.

We have assumed that the IPCC integrals refer to total emissions of CO2 (fossil fuel and LUC). However we have not deducted a figure for LUC prior to the indicative assessment of country shares (shares would be proportionately less had we done so).

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 (i.e. international aviation and shipping). CDIAC data does not include figures for Land Use Change (i.e. carbon dioxide released as a result of burning of forests etc), nor does it include non-CO2 greenhouse gases such as methane, nitrous oxide and chlorofluorocarbons. Since there is no single authoritative source of data for land use change, figures for LUC have been collated from various different estimates.

We have assumed that CO2 emissions fall to zero and remain there, but do not go negative (i.e. we have not assumed the development of technologies for removing carbon from the atmosphere).

**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 (explained at 1.3.1 above).

**(I)NDCs / NDCs**

Lines marking Party (I)NDCs should be regarded as rough estimates. (I)NDCs include, for example, greenhouse gases other than carbon dioxide (such as methane and nitrous oxide). No attempt has been made to convert (I)NDCs into a ‘carbon dioxide only’ component. Rather it has simply been assumed that a country’s overall (I)NDC should apply, proportionately, to its carbon dioxide emissions. If Switzerland’s (I)NDC says, for example, that by 2030 it will reduce its greenhouse gas emissions by 50% compared to 1990, the (I)NDC line simply charts a straight course from 2013 to 50% of its carbon dioxide emissions in 1990. This is a simplification given that most countries will be planning to, and able to, reduce their carbon dioxide emissions (typically from energy and industry) significantly faster than making reductions in their other greenhouse gas emissions (typically from agriculture and land use).

**Appendix 2: Glossary**

The following terms are 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.

**Intended Nationally Determined Contribution (INDC)** Submissions by UNFCCC Parties, made prior to the Paris Agreement, which identify actions each national government intends to take under 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.