Climate Change:
Ethical issues and implications

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August 2017
“No person is an island, entire of itself. Every person is a piece of the continent, a part of the main. If a clod be washed away by the sea, Europe is the less ....... Any person's death diminishes me, because I am involved in humanity. And therefore never send to know for whom the bell tolls; it tolls for thee.”

Modified from John Donne (1572-1631)
Our common home – no others available!
1. Introduction – the wide range of ethical issues
2. The costs of climate change (or the ‘climate burden’) – mitigation, adaptation and compensation
3. Sharing the climate burden – principles and considerations
   - Questions and problems
   - The principles embodied in the UNFCCC
   - Other relevant principles of distributive justice
   - Assessing and applying some of the principles
4. Allocating the remaining global carbon budget
5. Funding the costs of adaptation – e.g. sea level rise
6. Conclusion
Introduction

1. Climate change raises an enormous range of complex ethical issues; they push us to the limits of our moral imagination

2. Here are some:
   - Discounting – how should we value the future, including the far future (fundamental to cost-benefit analysis)?
   - How should we value the impacts on non-market goods – such as the loss of individual species and ecosystem services, or mass extinctions?
   - What criteria should be used to determine the appropriate targets for the stabilization of greenhouse gas concentrations in the atmosphere? What level of damages is morally tolerable? What level of risk is ethically defensible?
   - What are our responsibilities to future generations? And how should we balance conflicting intertemporal considerations?
   - How should the inevitable costs of climate change mitigation and adaptation be shared, globally, nationally and locally?
   - How should the international community respond if certain states block effective global action or refuse to contribute fairly to the collective mitigation effort?
   - Should there be public compensation for those are suffer (uninsured) losses due to climate change – e.g. from sea level?
Introduction

• Not possible to consider all these issues here
• Some are considered elsewhere in the course
• Focus here on burden sharing – principles of justice
• Complex territory – not possible to go into depth
• Vast literature
• Taking the science of climate change as read – causes, impacts, stabilization issues, etc.
• Assuming knowledge of the international policy framework under the UNFCCC and domestic policy arrangements
Father carries son through King tide waters after a party in Tuvalu meeting hall.
King tides push water into pig styies, creating additional pollution.
The costs of climate change

1. Three different types of costs (but related):
   a) Mitigation – the costs of reducing emissions to limit future damage; taxes, subsidies, etc.
   b) Adaptation – the costs of climate ‘proofing’ and reducing vulnerability
   c) The costs of impacts, including compensation for damages
   (a), (b) and (c) = the ‘climate burden’ (Kingston, 2012)

2. Various estimates of costs – IPCC, Stern, Garnaut, etc.
   – Enormous scope, scale, duration, uncertainty, etc.
   – Problems – attribution, estimation, discounting
   – Spending on mitigation now will reduce the costs of mitigation, adaptation, impacts and compensation later
   – Measuring emissions, issues – a production or a consumption basis? Weighting of different gases?
Emissions - the evolving pattern

The costs of climate change are due to greenhouse gas emissions (various gases)

Need to consider (amongst other things):

1. Historic (cumulative) emissions (but from when?)
2. Current annual emissions
3. Future emissions

Also relevant:

1. Aggregate and per capita emissions
2. Balance of responsibility for emissions is changing
China has the largest fossil fuel emissions today. However, climate change is driven by cumulative emissions, so developed nations, especially the U.S., have greatest responsibility.
Emissions Trajectories

Figure 20: Global business as usual emissions shares by region, 2000 to 2030

Sharing the costs

Many questions:

1. Who should bear how much of the climate burden? When? How?
2. To whom does the allocation problem apply? Nations? Corporations? Individuals?
3. What are the relevant principles and considerations that should be taken into account, and how should they be weighted?
Sharing the costs

Many problems:

1. Much of the available atmospheric ‘sink’ has already been used up (given a 1.5-2°C cap)
2. Long time lags between cause and harms; complex causal pathways; full extent of costs unknown
3. Diverse group of ‘perpetrators’; many now dead
4. No adequate international governance framework to apply the relevant principles or enforce any decisions
5. Competing principles of distributive justice
Principles of distributive justice

1. Formal principles – important general principles but lack specific content; need supplementation to be applied in particular situations

2. Example: the principle of comparative justice or principle of like treatment (Aristotle)
   – like cases should be treated alike and different cases should be treated differently (and in proportion to their differences)
   – but what similarities or differences are relevant (e.g. or policy purposes)?
   – we need criteria (or material principles) to decide what is a relevant similarity or difference. Such criteria must be those for which their possessors can fairly be held responsible; for it would be wrong to discriminate between people on grounds over which they have no fair opportunity to acquire, avoid or control = the fair opportunity requirement
Principles of distributive justice

Material principles:

A. Egalitarian
   1. Equality
   2. Need

B. Non-egalitarian
   3. Merit – virtue, innate and acquired skills
   4. Contribution
   5. Effort
UN criteria for burden sharing

UN Framework Convention on Climate Change

Article 3

In their actions to achieve the objective of the Convention and to implement its provisions, the Parties shall be guided, inter alia, by the following:

1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.

2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.
Sharing the costs

1. What is equity? (many conflicting principles of distributive justice)
2. What responsibilities are held in “common” across countries and what does this mean in practice?
3. How should responsibilities be “differentiated”? On the basis of what criteria? (brings us back to principles of distributive justice)
4. How should “respective capabilities” be assessed?
5. What weighting should be given to differentiated responsibilities versus respective capabilities?
Sharing the costs

Possible material principles:

1. Polluter pays principle (historic responsibility – contribution to the problem)
2. Ability to pay principle (or capability)
3. Beneficiaries pay
4. Equal right to pollute; equal per capita share of the atmosphere
5. Ensure that each country faces an equal marginal cost of reducing emissions
6. Other principles and considerations – e.g. development rights based on relative need

Focus here on 1-4; principles not all mutually exclusive
Sharing the costs

1. The polluter pays principle (PPP):
   – Parties should bear the costs of the ‘climate burden’ in proportion to their contribution to the problem, with contribution being measured on the basis of their total GHG emissions over time
   – Advanced by Brazil in 1997 (the ‘Brazilian proposal’)
   – The basis for the PPP:
     ▪ Intuition – people should be held accountable for their actions
     ▪ Penalizes people and thus helps to deter harmful actions
     ▪ Retains an ethical link between harmers and those harmed
     ▪ A widely accepted principle in policy-making internationally
Sharing the costs

Objections to the PPP:

1. The problem of measuring cumulative emissions and assigning responsibilities between parties, especially pre-1990
2. The problem of ignorance – until the mid 20th century, few people knew of the risks. Can cumulative emissions serve as a legitimate moral basis for allocating the climate burden? When is ignorance no longer excusable?
3. Should current generations be responsible for the sins of their forebears? (current generations enjoy many of the benefits)
4. Even the very poor produce emissions, but they should not be expected to contribute (right to development/satisfy basic needs)
5. Lack of institutional mechanisms to implement the PPP, plus geopolitical constraints; PPP could never be implemented, even with 1990 as the baseline
Kingston (2012) argues for a poverty and ignorance-sensitive polluter pays principle (PISPP) – *parties should bear the climate burden in proportion to their contribution to its cause, not counting emissions produced before it was reasonable to suppose they had the potential of systemic harmful consequences, unless doing so would seriously threaten their basic needs*

- Kingston sets the date for responsibility somewhere between 1970 and 1990; such dates leave no one responsible for a large quantum of emissions
- The climate burden generated under ignorance and the burden from the emissions of the very poor = “the no-fault burden”
Sharing the costs

2. The ability to pay principle (APP)
   – The climate burden should be allocated on the basis of ability to pay (or capability)
   – Capability should be based on GDP per capita now and in the future (either in a linear or non-linear manner) (proxy)
   – This principle should either be used to allocate the whole climate burden or some part of it (e.g. the no-fault burden)

Rationale for the APP:
   – Those with the greatest resources have the greatest capacity to pay without suffering significant disadvantages or harms
Sharing the costs

Problems with the APP:

- Those who are best off (on average) will be people in the future (assuming continued economic growth); hence, we should leave it to future generations to pay the climate burden
  - but that would mean less mitigation now with even worse consequences in the future, etc.
  - some of the costs of adaptation must be met now
  - will future generations really be better off?

- Lack of institutional mechanisms to implement APP, plus geo-political constraints: how do we get the better-off to pay?
Sharing the costs

3. The beneficiary pays principle (BPP):
   - Those who benefit from unjust (or harmful) actions should bear the costs of these actions until the injustice (or harm) has been rectified (or the benefits exhausted)

Rationale:
   - Beneficiaries of unjust or harmful acts have a special duty to the victims of the injustice or harm
   - BPP is intuitively appealing and defensible, and appears to apply to climate change
Sharing the costs

Problems with all variants of this principle, including:

1. The acts which created the historical climate burden, if done under ignorance, were not unjust (although they were certainly unfortunate)

2. APP is more appropriate than BPP in cases of innocent harm

3. Other principles – PPP and APP – are more compelling and/or override the BPP; these principles ensure that victims of misfortune have their needs met in a just manner

4. Lack of institutional mechanisms to implement BPP fairly plus geo-political constraints
Sharing the costs

4. Equal rights to pollute; equal per capita share of the atmosphere (irrespective of space and time)
   – Contraction and convergence (equal emissions allowances per capita globally before or by 2050)

   • Should we be equalizing ‘goods’ or quality of life or capabilities?
   • Some have a greater need to emit GHGs in order to achieve the same quality of life (e.g. those in very cold and very hot climates)
   • If emissions are not equalized per capita until 2040 or 2050, allocations between countries and individuals prior to this will be grossly unfair
   • Could we ever establish a global institution to allocate emission rights on a per capita basis?
   • Only relevant for future emissions; not relevant for sharing the full climate burden, including adaptation costs and compensation for impacts/losses
1. All four principles have strengths and weaknesses
2. PPP has merit, especially after 1990; prior to this, the ‘no-fault burden’ of climate change should arguably be shared via the ability to pay principle
3. There is merit in moving to an equal per capita right to emit, but by the time this become a realistic and practical possibility, globally we will need negative net emissions!
Two specific ethical issues

1. Sharing the remaining global carbon budget

2. Sharing the costs of adaptation
1. The Earth’s mean surface temperature has increased almost 1.0°C since 1750-1800 (pre-industrial), with another 0.5°C is in the pipeline due climate system lags

2. Global agreement to keep warming to ‘well below’ 2°C (above pre-industrial levels) and ‘to pursue efforts to limit the temperature increase to 1.5°C’ (see Copenhagen Accord, Paris Agreement, etc.)

3. Nothing ‘safe’ about 2°C threshold – it implies 10 to 15 meters of sea-level rise over hundreds of years or millennia

4. Global CO₂ emissions are approximately 36 billion tonnes per annum (or about 10 billion tonnes of carbon p.a., GtC) (ratio 3.67), and grew about 1.8% per annum 2006-15 (coal 43%, oil 33%, gas, 18%, cement 5%, etc.)
The stabilization challenge

5. To have a 50% chance of remaining within the 2°C warming target, humanity can only emit 820 GtC (+/-) (taking non-CO$_2$ gases into account) (IPCC, 2013, p.27)
   - this is the global cumulative carbon budget for centuries, unless we can remove CO$_2$ from the atmosphere for a sustained period

6. From 1860/80 to 2016 humans emitted close to 570 GtC
   - 250 GtC left to burn
   - 25 years at current emission rates
   - the longer the delay in reducing emissions, the less of the budget will be left for later decades or future generations

7. This cumulative carbon budget of 250 GtC is only about 20% of known remaining fossil fuel reserves – so why explore for more?
Cumulative global carbon budget – 50% change of avoiding 2°C+

820 GtC (+/-)  
(taking non-CO₂ gases into account)

From 1860/80 to 2016 humans have emitted close to 570 GtC

Under 250 GtC of the ‘budget’ is left

Current annual emissions = 10 GtC

If we want more than a 50% chance, the remaining budget is smaller ...
The stabilization challenge

8. To keep within a global carbon budget of 820 GtC
   – global emissions must be cut by up to 70% by 2050 and eventually to zero or negative net emissions
   – implies reducing GHG emissions from about 8 tonnes per capita globally to about 2 tonnes by 2050 and eventually to zero
   – Australian GHG emissions are currently about 26 tonnes per capita \((\text{CO}_2 = 16 \text{ tonnes per capita})\)
   – NZ GHG emissions currently about 17 tonnes per capita \((\text{CO}_2 8 \text{ tonnes})\)

8. Need rapid decarbonization of the global economy

9. Good news: the technical means exist to decarbonize global energy and transport systems and the costs are not prohibitive – but need supportive policy settings
What is NZ’s share of the remaining global carbon budget?

1. Suppose we allocate the remaining budget on an equal per capita basis globally
2. NZ’s share would be about 0.06% (5m v 8 billion, taking 2030 as the population baseline)
3. Suppose we settle for a 50% chance of remaining within the 2°C warming cap, leaving a global budget of 250GtC or 920 GtC0
4. NZ’s share would be 575MtC0 or 0.575GtC0
5. Current NZ gross emissions are about 40 MtC0 per annum
6. Implications – NZ’s share will be exhausted in less than 14.5 years
7. Note: our share will go much quicker if we:
   – Include our non-C02 emissions (i.e. less than 8 years)
   – Account for our high cumulative per capita emissions to date (already gone?)
   – Include our emissions from international air travel
   – Want more than a 50% chance or a lower warming target
Christchurch – 10 metre sea level rise
25 metre sea level rise – no more Christchurch!
Sharing the costs of adaptation

1. Sea level rise will displace millions of people over the coming century

2. Impacts in NZ will be large

3. How should we pay for the costs of managed retreat and climate ‘proofing’ infrastructure (e.g. South Dunedin)?

4. Goals – minimize long-term costs and share the costs equitably

5. Argument: we will need a centralized fund like EQC
Conclusions

1. Humanity is struggling to cope with major environmental issues – protecting the global commons and living within safe biophysical limits

2. Climate change poses huge ethical, political and practical challenges, not least the problem of how to share the ‘climate burden’ (i.e. the costs of mitigation, adaptation and compensation for damages)

3. Sharing the climate burden equitably is limited by:
   - Weak global governance institutions
   - Claims of national sovereignty
   - National self-interest
   - Powerful vested interests
   - An inadequate sense of global citizenship and being part of a common humanity
   - Conflicting ethical principles and intuitions
Conclusions

4. There is little prospect of a systematic and just allocation globally:

- The Paris Accord does not embody a principled top-down way of sharing the climate burden – it is bottom up;
- developed countries (especially the US) will not step up (in terms of mitigation effort or climate finance) to the extent required by well-established principles of justice;
- developing countries will have little choice but to cover most of the costs of climate impacts and adaptation, despite their limited contribution to the problem;
- the future will involve significant climate injustice and suffering, especially by the least advantaged (analogy: the EU’s handling of the refugee crisis);
- there is a risk over the longer-term of climate change undermining the capacity for democratic governance and peaceful change.
Conclusions

Mr President, the evidence is there. The damage is being done. ... We need a realistic programme of action and an equally realistic timetable. Each country has to contribute, and those countries who are industrialised must contribute more to help those who are not. The work ahead will be long and exacting. We should embark on it hopeful of success, not fearful of failure. ... We are not the lords, we are the Lord's creatures, the trustees of this planet, charged today with preserving life itself—preserving life with all its mystery and all its wonder. May we all be equal to that task.

Margaret Thatcher, UN speech, 1989
## Some References

1. Intergovernmental Panel on Climate Change *Fifth Assessment Report* (Summaries for Policy Makers from WG1, WG2 and WG3) (Cambridge University Press, 2013-14)


5. UNFCCC Reports and Decisions of recent COPs


8. See the work of political and moral philosophers such as John Broome, Simon Caney, Stephen Gardiner, Clive Hamilton, etc.