



BABY BOOMERS: BRIEFING NOTES CONTENTS

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Responsibility for climate change

Briefing Note 1

A timeline of key evidence of climate change and its causes

- **1953:** In a TIME magazine article, physicist Gilbert Plass explains how increasing levels of carbon dioxide (CO₂) in the atmosphere will lead to a global warming. In principle, this “greenhouse effect” has been known to science since the 1800s, thanks to the works of scientists like Joseph Fourier (1820s), John Tyndall (~1860), and Svante Arrhenius (1890s).
- **1958:** Scientist Charles David Keeling starts collecting data for his “Keeling Curve”, a graph that shows how CO₂ is building up in the atmosphere. He is often credited for having brought broader attention to this phenomenon.
- **1970:** The American National Oceanic and Atmospheric Administration (NOAA) is founded and starts monitoring CO₂ concentrations worldwide.
- **1970s:** Some scientists predict a “global cooling” due to increasing levels of aerosols in the atmosphere that would overcompensate the greenhouse effect. A 2008 review of the contemporary scientific literature, however, reveals that in fact global warming dominated the scientific discourse at the time. Warnings about global cooling were overemphasised in the media.
- **1972:** In its report, “**The Limits to Growth**”, which receives considerable public attention, the Club of Rome discusses the impact of economic activities on the environment.
The same year, the United Nations sponsors the Conference on Humans and the Environment (UNCHE), in Stockholm. Gathering representatives from 114 countries, the conference was successful in setting a global agenda for the environment, establishing the United Nations Environment Programme (UNEP). A separate action plan includes the general recommendation “*that governments be mindful of activities in which there is an appreciable risk of effects on climate.*”
- **1979:** The American National Academy of Science confirms findings that the increasing concentration of CO₂ will change the global climate and that this change will be far from negligible. They warn: “**A wait-and-see policy may mean waiting until it is too late.**”
The first World Climate Conference also takes place in Geneva and gathers scientists from all over the world to review possible impacts of climate change. The final declaration urges the world's governments “*to foresee and prevent potential man-made changes in climate that might be adverse to the well-being of humanity.*”
- **1988:** The International Panel on Climate Change (IPCC) is established, a forum for scientists from around the world who provide sound scientific data on climate change to the international community.
1988 is also the hottest year on record at the time, but has been exceeded since. Today, the ten warmest years on record have all occurred since 1998.
- **1990:** The IPCC publishes its First Assessment Report, concluding that the world’s scientists are certain that human activities are responsible

for the increase of atmospheric concentrations of greenhouse gases which will lead to a warming of the Earth's surface.

- In November 1990, the first IPCC report provides the basis for discussions at the second world climate conference, held in Geneva. Gathering 747 scientific experts, the final declaration of the conference calls for the negotiation of a framework convention on climate change.
- 1992: The United Nations Framework Convention on Climate Change (UNFCCC) is agreed upon at the UN's "Earth Summit" in Rio de Janeiro. This treaty provides a framework for further negotiations. The majority of countries now formally acknowledge climate change as a key policy issue.

After six rounds of negotiations, the UN Framework Convention on Climate Change (UNFCCC) is adopted at the Rio Summit. Ratified by 155 Parties, the Convention commits signatories to a long-term goal of stabilising atmospheric greenhouse gases "*at a level that would prevent dangerous anthropogenic interference with the climate system*". The UNFCCC came into force in 1994.

- 1995: the Intergovernmental Panel on Climate Change (IPCC) publishes its second assessment report of the scientific evidence of climate change, concluding that the evidence suggests "a discernible human influence on global climate".
- 1997: The Conference of Parties adopts the Kyoto Protocol, setting legally binding emissions targets for developed countries - to limit their emissions of the six major greenhouse gases. Negotiations started with the United States refusing to reduce its emissions below 1990 levels, whereas the European Union proposed a 15% emission target for all developed nations.
- Following extensive bargaining and negotiation, the Parties agreed on a target: Annex B countries committed to reduce their GHG emissions by 5.2% on average below aggregate 1990 emission levels during a commitment period 2008-2012. The Protocol places a heavier burden on developed nations under the principle of "*common but differentiated responsibilities*"
- 2005: Kyoto Protocol comes into force. The first commitment period runs from 2008-2012.
- 2006: The Stern Review is published and receives widespread attention. In this landmark study, LSE's Lord Nicholas Stern extensively discusses the impact of global warming on the global economy and shows the costs of inaction are much higher than the costs of action – particularly given the scale of the risks posed by climate change (see pull-out box below).
- 2007: The IPCC and former American Vice President Al Gore jointly receive the Nobel Peace Prize "*for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change*".
- 2008: The Climate Change Act, passed in the UK in November, sets out emission reduction targets that the UK must legally comply with. It represents the first global legally binding target set by a country. The Act commits the UK to reducing its greenhouse gas emissions by 80 per cent by 2050, compared to 1990 levels. The Act also provides a system of carbon budgeting, to help the UK meet its targets through a series of five year carbon budgets.
- 2009: **Conference of Parties, Copenhagen (international climate change negotiations)**. Negotiations were turbulent and looked as if they could fail, but an agreement was forged in the last hours when the US, Brazil, China, Indonesia, India and South Africa agreed on the Copenhagen Accord. Approved by consensus in the final plenary session, the deal does not set an agreement on binding commitments for after the first commitment period of

the Kyoto Protocol, ending in 2012, but recognizes the need to limit the global temperature rise to 2°C based on the science of climate change.

- **2012:** Doha Amendment to the Kyoto Protocol adopted in December, setting out new commitments for the Annex 1 Countries who agree to a second commitment period from the 1st January 2013 to the 31st December 2020.
- **2013:** For the first time in human history, the concentration of greenhouse gases in the Earth's atmosphere reaches 400 parts-per-million (ppm), compared to about 280 ppm before the Industrial Revolution.
- **2014:** In a draft for its latest Assessment Report, the IPCC once again confirms that climate change is virtually certain (more than 99% probable) and estimates that the global mean temperature has increased by about 0.85 °C (± 0.2) since 1880. The Panel also states that it is extremely likely (more than 95% probable) that human activities are the dominant cause for global warming.

In February 2014, Globe International, in partnership with the Grantham Research Institute will launch its latest global climate legislation study – a comprehensive annual audit of climate change-related legislation worldwide.

Stern Review (2006): key findings

- The Stern Review provided a rigorous analysis of the costs and risks of climate change, including a series of political and economic recommendations on how to invert the current course of climate change. The study was conducted by a group of economists led by Lord Nicholas Stern, at the request of the British government. The report found (in 2006):
- The current level or stock of greenhouse gases in the atmosphere is equivalent to around 430 parts per million (ppm) CO₂, compared with 280ppm before the Industrial Revolution.
- With annual emissions increasing, as fast-growing economies invest in high carbon infrastructure and as demand for energy and transport increases around the world. The level of 550ppm CO₂e could be reached as early as 2035. At this level, there is at least a 77% chance - and perhaps up to a 99% chance, depending on the climate model used - of a global average temperature rise exceeding 2°C.
- Under a “business as usual” (BAU) scenario, the stock of greenhouse gases could more than treble by the end of the century, giving at least a 50% risk of exceeding 5°C global average temperature change during the following decades.
- Developing regions are at a geographic disadvantage: they are already warmer, on average, than developed regions, and they also suffer from high rainfall variability. As a result, further warming will bring poor countries high costs and few benefits. Moreover, developing countries - in particular the poorest - are heavily dependent on agriculture, the most climate-sensitive of all economic sectors, and suffer from inadequate health provision and low-quality public services. In addition, their low incomes and vulnerabilities make adaptation to climate change particularly difficult.
- Markets for low-carbon energy products are likely to be worth at least \$500bn per year by 2050, and perhaps much more. Individual companies and countries should position themselves to take advantage of these opportunities.
- Estimated costs of mitigation of around 1% of GDP are small relative to the costs and risks of climate change that will be avoided. However, for some countries and some sectors, the costs will be higher.
- Policy to reduce emissions should be based on three essential elements: carbon pricing, technology policy, and removal of barriers to behavioural change.
- Adaptation policy is crucial for dealing with the unavoidable impacts of climate change, but it has been under-emphasised in many countries
- Curbing deforestation is a highly cost-effective way of reducing greenhouse gas emissions.
- Scaling up flows of carbon finance to developing countries to support effective policies and programmes for reducing emissions would accelerate the transition to a low-carbon economy.
- Policy-makers should encourage the take-up of opportunities for energy efficiency.
- There is still time to avoid the worst impacts of climate change if strong collective action starts now.

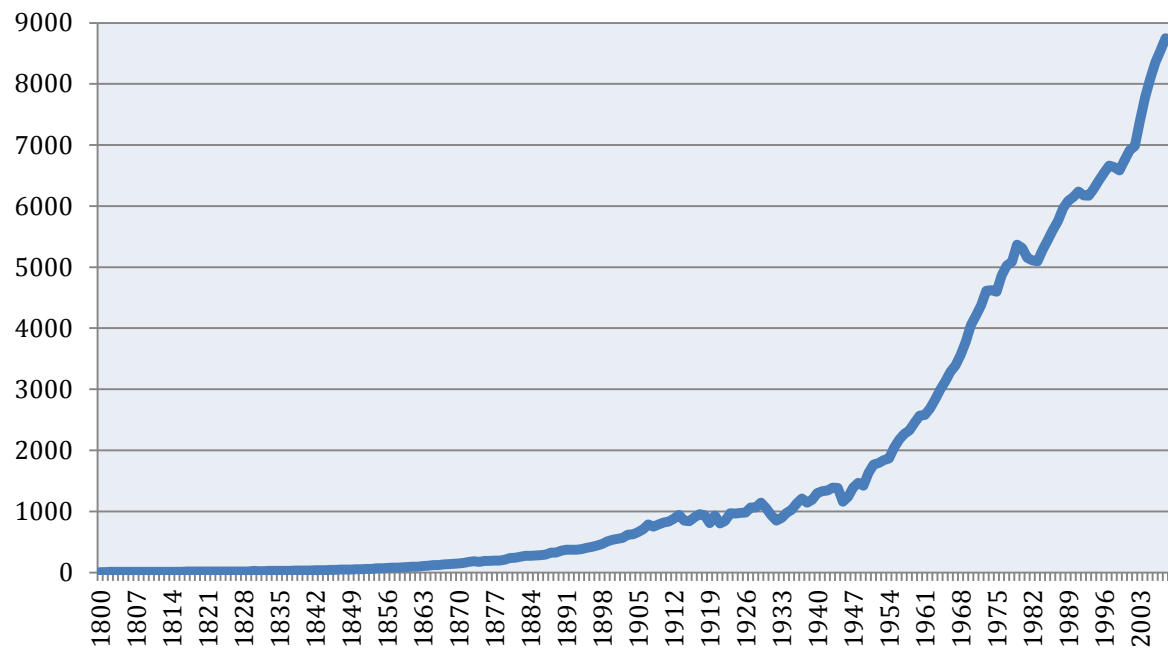
Read more:

- More for information on the international climate negotiations, please refer to briefing note 2.
- “50 Years On: The Keeling Curve legacy” by Helen Briggs (2007) for the BBC: <http://news.bbc.co.uk/1/hi/sci/tech/7120770.stm>
- “A Timeline of Climate Change Science” by Matthew Knight (2008) for CNN: <http://edition.cnn.com/2008/TECH/science/03/31/Intro.timeline/index.html>
- “Global carbon dioxide in atmosphere passes milestone level” by Damian Carrington (2013) for The Guardian: <http://www.theguardian.com/environment/2013/may/10/carbon-dioxide-highest-level-greenhouse-gas>
- “Climate Change 2013: The Physical Science Basis. Summary for Policy Makers” by the IPCC (2013): https://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5_SPM_brochure_en.pdf
- “Headline Statements from the Summary for Policymakers” by the IPCC (2013): https://www.ipcc.ch/news_and_events/docs/ar5/ar5_wg1_headlines.pdf

When did greenhouse gas emissions increase?

- During the Industrial Revolution in the 18th Century, people started to extensively burn fossil fuels in order to produce energy. As a result, greenhouse gases have been emitted into the atmosphere at a higher rate than the Earth can absorb them. This rate has been increasing steadily for more than 200 years now. Beginning in the 1950s, however, the upward trend accelerated significantly. Starting at 1.6 billion metric tons of carbon in 1950, global emissions have gone up to 4.1 in 1970, 6.1 in 1990, and 9.2 metric tons of carbon in 2010.
- Population growth, economic recovery in Europe, higher incomes in the developed world, changing lifestyles, international trade, as well as new technologies are among the factors contributing to this. These changes led to higher greenhouse gas emissions due to the use of fossil fuels for electricity production, transportation, industrial production, heating and so forth. In fact, burning fossil fuels is the primary source of greenhouse gas emissions. But also farming or livestock breeding produces greenhouse gases. In addition, related activities like deforestation can destroy sinks that usually absorb CO₂ from the air.
- As a consequence of the increase in these activities, annual global carbon emissions from fossil fuels are more than five times as high today as they were in 1950. Apart from few temporary fluctuations due to external shocks such as the oil crises in the early and late 1970s, yearly emissions have been rising almost constantly at a rate unprecedented in human history.
- In May 2013, an atmospheric CO₂ concentration of 400 parts per million (ppm) was measured in Hawaii. Scientists estimate that the last time levels were so high was between 2.6 to 5.3 million years ago, during the so-called Pliocene Epoch. Apart from being a symbolic milestone that illustrates the current trends, the figure is regarded to be an important threshold. If global warming is to be limited to between 2.0 and 2.4 °C, emissions must be stabilised below 400 parts per million, according to the IPCC.

Global carbon emissions from fossil fuels in million metric tons



Data source: US Department of Energy

Read more:

- “Atmospheric Greenhouse Gas Concentrations” by the European Environment Agency (2013) at <http://www.eea.europa.eu/data-and-maps/indicators/atmospheric-greenhouse-gas-concentrations-2/assessment-1>
- “Climate Milestone: Earth’s CO₂ Level Passes 400 ppm” by Robert Kunzig (2013) for National Geographic at <http://news.nationalgeographic.com/news/energy/2013/05/130510-earth-co2-milestone-400-ppm/>
- Guardian FAQ on why climate change is described as a stock-flow problem: <http://www.theguardian.com/environment/2012/feb/20/climate-change-stock-flow>

Responsibility for greenhouse gas emissions

- Historically, rich developed countries have been causally responsible for the vast majority of greenhouse gas emissions. Being the world’s biggest economy, the United States was by far the single biggest emitter of greenhouse gases for many decades. Britain, one of the wealthiest countries and the cradle of Industrialisation, has also contributed its share. As a 2007 study by the United Nations Development Programme shows, the United Kingdom with a population of about 60 million emits more CO₂ than the 472 million people living in Egypt, Nigeria, Pakistan, and Vietnam combined.
- When thinking about historical responsibility for climate change, it is important to note that greenhouse gases stay in the atmosphere and affect the global climate for a long time. Even if emissions were stopped altogether right now, their concentration would decrease only very slowly. Past emissions from rich countries are still in the atmosphere and will continue to warm the planet for decades or even centuries to come. When thinking about the culpability and

responsibility for climate change it is therefore important to take *cumulative* greenhouse gas emissions into account.

Country ranking according to annual carbon emissions

	1950	1970	1990	2010
1	United States	United States	United States	China
2	Soviet Union	Soviet Union	Soviet Union	United States
3	United Kingdom	China	China	India
4	West Germany	Japan	Japan	Russia
5	France	West Germany	West Germany	Japan

Data source: US Department of Energy; China excluding Hong Kong and Macao

Country ranking according to cumulative contributions to global warming

	Total	Relative to population
1	United States	United Kingdom
2	China	United States
3	Russia	Canada
4	Brazil	Russia
5	India	Germany
6	Germany	Netherlands
7	United Kingdom	Australia
8	France	Brazil
9	Indonesia	France
10	Canada	Venezuela

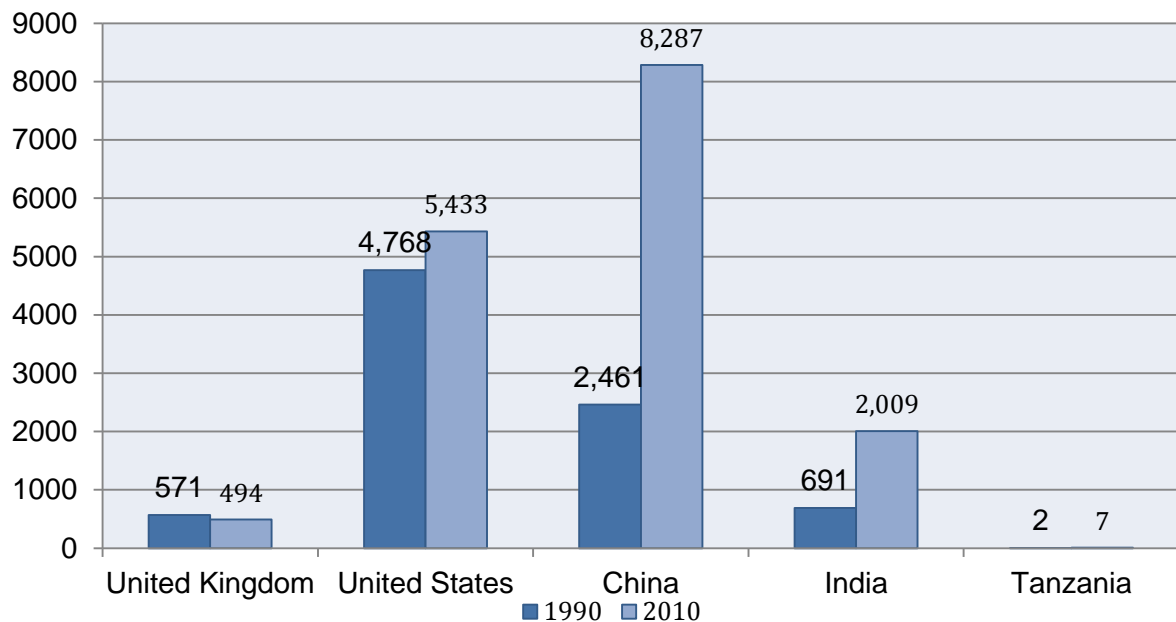
Source: H Damon Matthews, Tanya L Graham, Serge Keverian, Cassandra Lamontagne, Donny Seto, and Trevor J Smith (2014): *National Contributions to Observed Global Warming*. *Environmental Research Letters* 9(1).

- While rich developed countries have been historically responsible for the bulk of historical greenhouse gas emissions, developing countries have increased their contribution to global greenhouse gas emissions.
- Some countries, such as China and India, have experienced rapid economic growth in recent decades. Since the early 2000s in particular, this development has led to a dramatic increase in greenhouse gas emissions. Part of the reason is that China relies largely on coal, a particularly “dirty”, i.e. carbon-intensive source of energy.
- As a result of these trends, the developing world now accounts for about half of annual greenhouse gas emissions. There are still very poor countries however that emit very little in comparison, but still suffer from the consequences of global warming; even more so as they sometimes are particularly vulnerable due to geographic location, and as they obviously lack economic capacities necessary to adapt to a changing climate.
- On the other hand, emissions in many European countries, including the United Kingdom, have decreased in recent years, in part due to the wider economic recession, but also thanks to efforts to promote renewable energy production and energy efficiency. The scale of such policies, however, has not been large enough to stop the global increase in emissions.
- The trends outlined above may indicate a shifting causal responsibility from developed countries to the emerging economies. The issue, however, is

complex. At a closer look, there are some arguments that put the recent developments into perspective. Countries like China and India have substantial populations. With about 25 percent of annual global emissions, China may today be the single biggest emitter of CO₂ in the world. But in terms of emission per capita, it is on par with countries like Iceland or Italy. According to the IPCC's Fourth Assessment Report from 2007, developed countries, on the other hand, accounted for 57 percent of global wealth, 46 percent of global greenhouse gas emissions, but only 20 percent of world population.

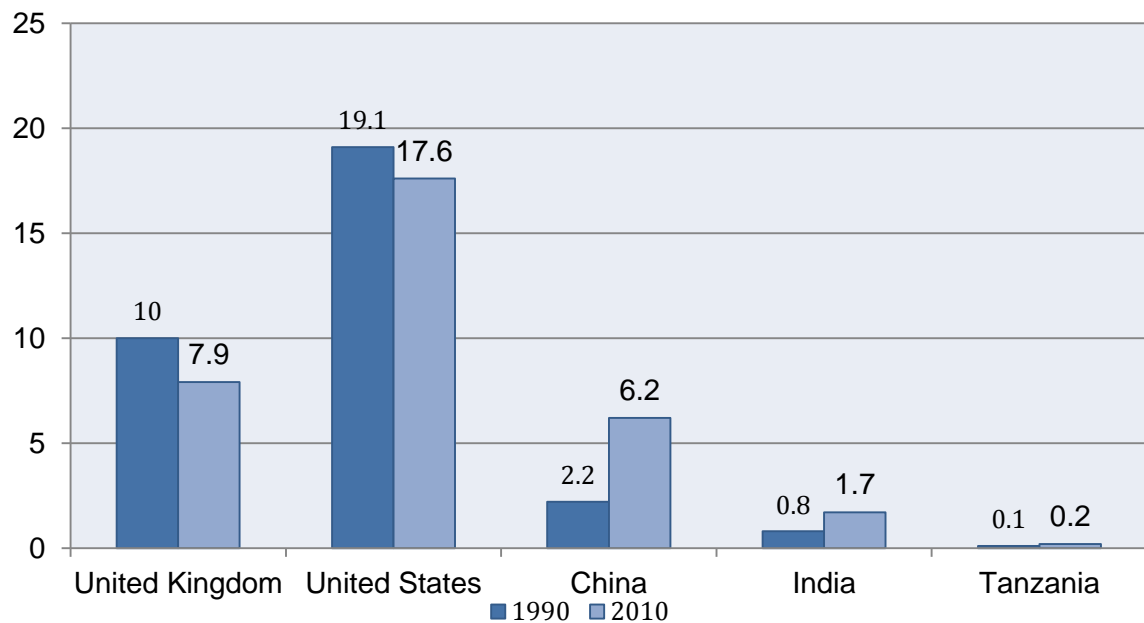
- Also, while China has carbon-intensive industries, it is worth noting what these industries actually produce and for whom. A lot of Chinese goods like consumer electronics and clothes are exported to developed countries such as the UK. In a way, not only the production of these goods, but also the associated greenhouse gas emissions are “outsourced” to poorer parts of the world. The same is true for oil production and energy-intensive mining of resources that ultimately end up being consumed in rich industrialised countries.
- Some ask how blaming developing countries can be just, considering the historical responsibilities for greenhouse gas emissions. After having emitted greenhouse gases into the atmosphere that will affect the global climate for a long time, can developed countries demand that poorer countries cut emissions? On the other hand, developing countries, especially the emerging economies, need to act now if climate change is to be mitigated effectively and the risks are to be managed.

CO₂ emissions of selected countries in million metric tons



Data source: United Nations Statistical Commission; China excluding Hong Kong and Macao

CO₂ emissions per capita in selected countries in metric tons



Data source: *The World Bank*; China excluding Hong Kong and Macao

Read more:

- “CO₂ Emissions Are Being 'Outsourced' by Rich Countries to Rising Economies” by Suzanne Goldenberg (2014) for The Guardian: <http://www.theguardian.com/environment/2014/jan/19/co2-emissions-outsourced-rich-nations-rising-economies>
- “Trends in Global CO₂ Emissions” by the PBL Netherlands Environmental Assessment Agency (2013): http://edgar.jrc.ec.europa.eu/news_docs/pbl-2013-trends-in-global-co2-emissions-2013-report-1148.pdf
- “World Carbon Dioxide Emissions by Country”, interactive map by Nick Evershed (2013) for The Guardian: <http://www.theguardian.com/news/datablog/interactive/2013/jul/16/carbon-emissions-carbon-tax>
- “2012's Carbon Emissions in Five Graphs” by Freya Roberts (2013) for The Carbon Brief: <http://www.carbonbrief.org/blog/2013/11/2012s-carbon-emissions-in-five-graphs/>
- “Global Emissions Data”, interactive graph by The Washington Post at <http://www.washingtonpost.com/wp-srv/special/climate-change/global-emissions.html>
- “Differentiating (Historic) Responsibilities for Climate Change. Summary Report” by Benito Müller, Niklas Höhne, and Christian Ellermann (2007): <http://www.oxfordclimatepolicy.org/publications/documents/DifferentiatingResponsibility.pdf>
- “Who is Most Responsible for Climate Change?” by Ivonne Pena (2013) for The Energy Collective: <http://theenergycollective.com/ivonnepena/281366/who-most-responsible-climate-change-infographic>
- “UK tops list of world's biggest greenhouse gas emitters” by Roz Pidcock (2014) for The Carbon Brief: <http://www.carbonbrief.org/blog/2014/01/uk-tops-list-of-world%E2%80%99s-biggest-greenhouse-gas-emitters/>
- “The Global Carbon Atlas”: <http://www.globalcarbonatlas.org/>



International Climate Change Negotiations

Briefing note 2

What are climate change negotiations and how are they organised?

- After six rounds of negotiations, the UN Framework Convention on Climate Change (UNFCCC) was adopted at the Rio Summit, in June 1992. Ratified by 155 parties, the Convention commits the signatories to a long-term goal of stabilising atmospheric greenhouse gases "*at a level that would prevent dangerous anthropogenic interference with the climate system.*" The UNFCCC came into force in 1994.
- Article 2 of the Convention states:

"The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner".
- The UNFCCC rests on two pillars. The first is mitigation, which seeks to reduce the sources of greenhouse gases, or to enhance the sinks that absorb these gases, such as forests. The second is adaptation, which is about the adjustments that humans, and ecological, social, or economic systems, make in response to actual or expected climatic changes.
- The main arenas for multilateral climate change negotiations are the Conference of the Parties (COP) -the ultimate authority for decisions regarding the UNFCCC - and the Meetings of the Parties (MOP), for the main decisions concerning the 1997 Kyoto Protocol.
- COP/MOP meetings are held on an annual basis. Nineteen COPs have been hosted since 1995; the last nine sessions have been hosted together with the MOP.
- The next Climate Summit (COP20/ MOP10) will take place in Lima (Peru), in December 2014.
- Although the sessions of the two summits are held jointly, there are two different agendas. Moreover, the UNFCCC parties that are not members to the Protocol have their participation to the MOP limited to the status of Observer.

- At COP/MOP decisions are taken by consensus, with the plenary of the Parties discussing the final the content of any final declaration.
- Currently, there are 195 Parties (194 States and 1 regional economic integration organization- the EU) to the UNFCCC, and 191 parties to the Kyoto Protocol.
- The United States, Afghanistan, Andorra and South Sudan all have membership to the UNFCCC. Although these countries are signatories to the Kyoto Protocol, they have never ratified it. Another drawback for the Protocol came in 2012, when Canada withdrew its membership.

Responsibility for action on climate change under the international agreements

- Developed and developing countries are not given equal responsibility for taking action to cut greenhouse gas emissions in the international agreements and negotiations. Climate change negotiations are grounded on the principle of *“common, but differentiated responsibility”* that recognises the different historical responsibilities and economic capacities of the Parties. Accordingly, Article 3 of the UNFCCC establishes that *“developed country Parties should take the lead in combating climate change and the adverse effects thereof”*. Moreover, it states that *“the specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, should be given full consideration”*.
- The UNFCCC divides countries into a number of groups or Annexes, who have differing responsibilities:
 Group 1: Annex I – Includes developed countries members to the Organisation for Economic Co-operation (OECD), and other economies in transition (EITs) (listed on the annex B list of the Kyoto Protocol).
 Group 2: Annex II- encompasses exclusively OECD members.
 Group 3: Non-Annex_I – includes all other parties, mainly developing countries.

Major outcomes of previous negotiations

- **COP 1- Berlin, 1995** – Decisions were focused on institutional and administrative matters. The Parties agreed that mechanisms under the UNFCCC were inadequate and approved the “Berlin Mandate”, allowing the parties to make specific commitments. Non-Annex 1 countries were exempted from additional obligations. They also reviewed the first round of national communications to the UNFCCC (in which Annex I parties report on their emissions) and finalised much of the institutional and financial machinery needed to support action under the Convention in the years to come.

- **COP 2- Geneva, 1996-** The Parties endorsed the second IPCC's assessment report which provided stated that evidence suggested "*that there is a discernible human influence on global climate.*" In addition, the report advocated the availability of cost-effective strategies for combating climate change. The Ministerial Declaration discussed in the plenary session called on Parties to accelerate negotiations towards a legally binding protocol. The document was noted, but not adopted.
- **COP 3- Kyoto, 1997 –** The Conference adopted the Kyoto Protocol, setting legally binding emissions targets for developed countries (listed in Annex B) - to limit their emissions of the six major greenhouse gases.
- Negotiations started with the United States refusing to reduce its emissions below 1990 levels, whereas the European Union proposed a 15% emission target for all developed nations.
- Following extensive bargaining and negotiation, the Parties agreed on a target: Annex B countries committed to reduce their GHG emissions by 5.2% on average below aggregate 1990 emission levels during a commitment period 2008-2012.
- In addition, they adopted three market-based mechanisms to allow the parties to meet this target: emissions trading, the Clean Development Mechanism (CDM), and Joint Implementation (JI).
- Complementing the National Communication to the UNFCCC, the Protocol required the countries in Annex B to record and monitor (transparently and with accuracy), their GHG emissions.
- The Protocol established the principle that countries could potentially receive credit toward their emissions targets for carbon absorbed by forests, soils and other so-called carbon "sinks." However, it did not specify what sinks activities would be recognized or how the credits would be calculated.
- **COP 4- Buenos Aires, 1998-** The Buenos Aires Action Plan allowed a two year period for the development of mechanisms for implementing the Kyoto Protocol. The plan also established deadlines for finalising work on the Kyoto Mechanisms (Emissions Trading, CDM and JI), and outlines a process to facilitate the transfer of environmentally sound technology.
- **COP 5- Bonn, 1999-** This COP focused on "*the adoption of the guidelines for the preparation of national communications by developed countries, capacity building, transfer of technology and flexible mechanisms.*"

- **COP 6- The Hague, 2000-** The main objective of COP6 was to agree to a legally binding technical pact with specific terms detailing how countries would reduce emissions. Yet, the parties could not reach an agreement on the issue and negotiations had to be suspended. The European Union and the G77 (a group of developing countries) were committed to an agreement, but the United States, followed by Japan, Canada and Australia, did not accept the proposal tabled.
- **COP 6 (b)- Bonn, 2001 –** Negotiations of COP6 resumed in 2001 and this time were more successful. The Parties reached a consensus around the “Bonn Agreement” which addressed four core issues: a) operating rules for emissions trading and other market-based mechanisms established under the Protocol; b) how the sequestration of carbon by forests and other "sinks" would be credited toward Kyoto emission targets; c) funding to help developing countries combat and cope with climate change; d) and mechanisms to encourage and enforce compliance with the Kyoto targets.
- It is important to emphasize that the Kyoto Protocol had not come into force yet. In fact in Bonn, the US announced that it did not intend to ratify the Protocol and attended COP6 as just an observer. Moreover, the parties postponed a decision over the legal character of compliance to the protocol to the first meeting of the Parties after its entry into force.
- **COP7 – Marrakesh, 2001–** The Marrakesh Accords agreed at the conference detailed the rules for the implementation of the Protocol. The Parties also agreed on a Least Development Countries Fund specially targeted to provide financial support to LDC countries to prepare and implement National Adaptation Programmes of Action (NAPAs). The Parties also approved the Special Climate Change Fund (SCCF) to finance projects relating to agriculture, forestry and waste management, adaptation, technology transfer and capacity building, energy transport, industry, and economic diversification.
- **COP8 – Delhi, 2002 –** Amongst its various provisions, the Delhi Ministerial Declaration called for developed countries to transfer technology to developing countries.
- **COP9 – Milan, 2003-** With the Kyoto Protocol still not into force, negotiations focused on technical issues. The Parties agreed on rules for carbon “sink” projects under the Clean Development Mechanism (CDM), new guidelines for emissions reporting, in addition to procedural norms on Special Climate Change Fund (SCCF) and the Least Developed Countries Fund (LDCF).
- **COP10- Buenos Aires, 2004 –** Marking the 10th anniversary of the UNFCCC, at COP10 the Parties discussed the challenges and achievement of global climate action. The conference also praised the ratification of the Kyoto Protocol by Russia, announced in November of

that year, which allowed for the Protocol to come into play. Discussions then focused on adaptation, mitigation, and technological transfer.

- **COP11/ MOP 1- Montreal, 2005** – This was the first joint COP/MOP meeting. As expected, discussions were centered on the next steps for the implementation of the Kyoto Protocol. There were also improvements in more technical matters. The Parties discussed issues like capacity building, technology development and transfer, the adverse effects of climate change on developing and least developed countries, and financial and budget-related issues, including guidelines for the Global Environment Facility (GEF), which serves as the Convention's financial mechanism.
- **COP12/MOP2- Nairobi 2006-** The Parties made small improvements on the agenda of adaptation and discussed themes including deforestation and technological transfer. Yet, with some parties strongly objecting to binding commitments, especially the United States and developing countries, the Conference did not advance much on agreements on international action beyond 2012.
- **COP13/ MOP2, Bali, 2007-** The parties adopted the Bali Action Plan, negotiating GHG mitigation actions for after the Kyoto Protocol expiration date in 2012. The plan included a decision to launch an Adaptation Fund and adopted more measures on technology transfer and on reducing emissions from deforestation. Critical moments emerged when the Parties discussed an eventual increase in the responsibility of emerging economies part of the non-Annex I list (mainly the BRICS countries, Brazil, Russia, India, China, South Africa).
- **COP14/ MOP3- Poznan, 2008-** The parties discussed financial mechanisms to assist developing countries on adaptation to climate change. More specifically, the conference decided that a UN Adaptation Fund could be disbursed applying a 2% levy on carbon trading under the Clean Development Mechanism.
- **COP15/ MOP4 – Copenhagen, 2009-** Negotiations were turbulent and looked as if they could fail, but an agreement was forged in the last hours when the US, Brazil, China, Indonesia, India and South Africa agreed on the Copenhagen Accord. Approved by consensus in the final plenary session, the deal does not set an agreement on binding commitments for after the first commitment period of the Kyoto Protocol, ending in 2012, but recognizes the need to limit the global temperature rise to 2°C based on the science of climate change.
- The Accord also included a commitment by developed countries to provide financial support to help developing countries with mitigation and adaptation. The deal included an estimated contribution of up to USD30 billion from 2010 to 2012, gradually increasing to up to USD100 billion by 2020, annually. It also launched the Green Climate Fund to

assist the Convention in developing and supporting policies and projects in developing countries.

- The Parties also advanced on technological transfer mechanisms and stressed the importance of reducing emissions from deforestation and degradation (REDD); emphasising the need to support actions in this area.

COP16/ MOP5- Cancun, 2010- The Parties officially adopted the main decisions of the Copenhagen accord; agreeing to restrict the increase in global temperature below 2°C. Yet, this commitment is subjected to review by 2015. Emission pledges were included in the Annex to the agreement, but are not legally binding.

- Developed countries also formalised a commitment to provide financial assistance to developing countries of up to USD100 billion annually by 2020. A Green Climate Fund (GCF) was established to support projects, programmes, policies and other activities in developing countries.
- Progress was also made on deforestation, with developed countries agreeing to explore market mechanisms to assist developing countries in curbing deforestation. The Annex I countries also agreed to explore this concession, with aid in return for forest protection in the case of least developed countries.
- **COP17/MOP6- Durban, 2011-** The Parties adopted the Durban Platform, agreeing to aim to secure a legally binding climate deal to be finalised by 2015, to come into force in 2020.
- 38 Parties agreed on a second commitment period for the Kyoto Protocol, starting in January 2013, running until 2017 or 2020. Russia, Japan and Canada were amongst those who did not commit to new targets.
- The Durban Package also addressed more than fifty technical and operational issues, mostly regarding the implementation of measures adopted one year earlier, in Cancun. These included the approval of a governing instrument for the Green Climate Fund; measures for the implementation of the Cancun Adaptation; and advanced the Technological Mechanism, adopted at COP16, enabling it to become fully operational in 2012.
- **COP18/ MOP7- Doha, 2012-** The Parties agreed on the details for the second commitment period of the Kyoto Protocol. Yet, the parties failed to adopt a pathway to provide the USD100 billion/year in financial support for developing countries by 2020.
- The concept of “loss and damage” was introduced in climate

negotiations, recognising the support developing countries and small islands nations needed to address loss and damage associated with the adverse effects of climate change through measures that include finance, technology and capacity-building.

- **COP19/ MOP8- Warsaw, 2013-** A significant part of the discussions focused on the pre-negotiations around a roadmap for the agreement of a legally binding treaty on GHG emissions reduction, planned to be adopted at COP21 Paris, in 2015.
- A major divide between developing countries and developed countries over the status of “loss and damage” threatened the successful conclusion of COP19.
- Non-Annex I Parties, mainly low-lying islands and countries, were looking for a formal acknowledgement that adaptation would not work with the impact of a changing climate, which is already moving beyond the ability of people and systems to adapt. Placing “loss and damage” under the COP would have signaled acceptance that it was as important as adaptation and mitigation.
- Yet, developed nations, like the US, claimed that “loss and damage” should be included under adaptation; arguing that the practical responses and actions to prevent or address “loss and damage” were similar to those for adaptation, such as disaster risk reduction.
- The outcome of tense negotiations favored the position of the Annex I group: the Parties agreed on a non-binding agreement to establish a “loss and damage” mechanism under the adaptation agenda; yet, details for its implementation were not specified.
- In addition, at COP19 the United Nations' Reducing Emissions from Deforestation and Forest Degradation (REDD+) Programme was formally adopted and backed by pledges of USD280 million in financing from Norway, the United Kingdom and the United States. Yet, there were still no major improvements on a plan to provide USD100 billion per year by 2020 – a promise still outstanding since it was made in 2009.

Read more:

- FAQ on the responsibility of the Parties:
<http://www.theguardian.com/environment/2011/apr/21/countries-responsible-climate-change>
- Interview with Christiana Figueres (the Executive Secretary of the UNFCCC) on the trends and challenges of climate negotiations
<http://www.pwc.com/gx/en/sustainability/publications/trend-challenges-climatechange-figueres.html>

- The position of China on climate negotiations (and how it relates to the US approach) see: <http://www.nytimes.com/2013/11/22/world/us-and-china-find-convergence-on-climate-issue.html?ref=globalwarming>
- Summary of the main outcomes of the latest COP in Warsaw (2013): <http://www.theguardian.com/environment/2013/nov/24/warsaw-climate-talks-greenhouse-gas-emissions>
- More on the Kyoto Protocol: http://unfccc.int/kyoto_protocol/items/2830.php
- More on the debate on Loss and Damage at COP19: <http://www.bbc.co.uk/news/science-environment-25010515>

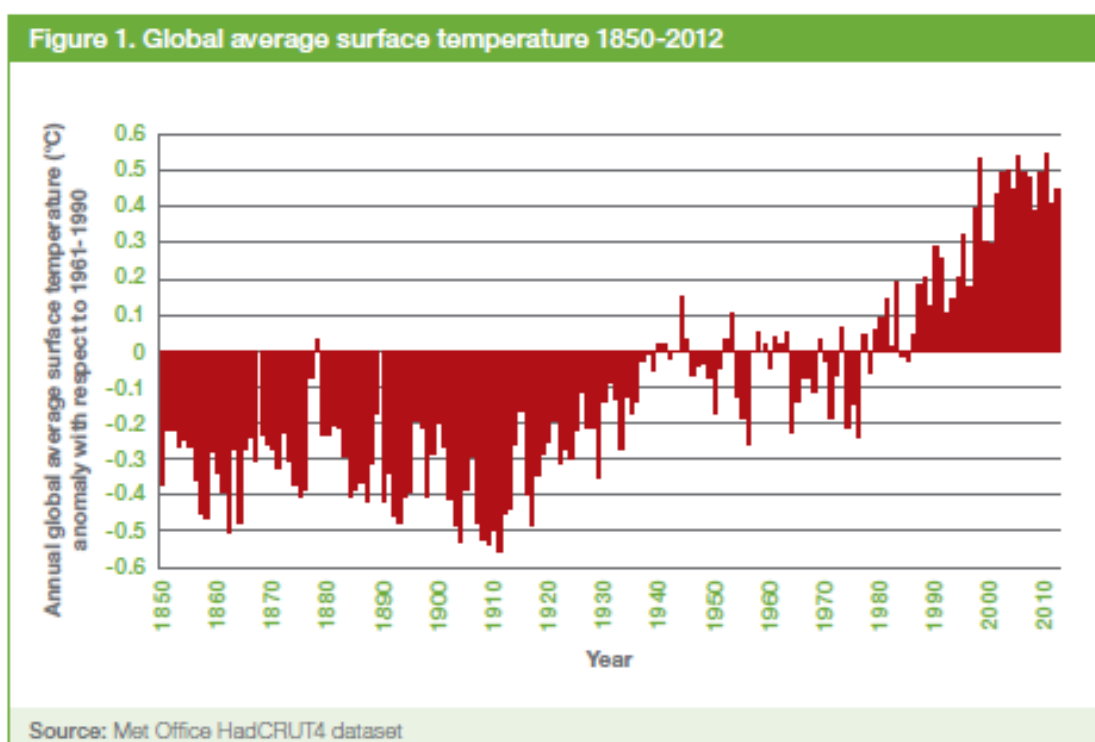


Evidence for and impacts of climate change

Briefing Note 3

Latest evidence of climate change

- The latest Intergovernmental Panel on Climate Change (IPCC) report, published in September 2013, is a report prepared by 259 scientists from across the world and is subject to a rigorous peer-review process. More than 9000 individual scientific papers are cited as evidence within the latest IPCC report.
- This report shows that almost the entire globe has warmed, including the land surface, oceans and atmosphere, whilst the extent of ice cover has also decreased and sea level has risen. The report clearly states *“warming of the climate system is unequivocal and since the 1950s, many of the observed changes are unprecedented over decades to millennia”*.
- Global average surface temperature has increased by 0.85°C since 1880 and by about 0.6°C to 0.7°C since 1950 according to the latest IPCC report. Globally, 12 of the 13 warmest years on record have all occurred from 2000 onwards. The IPCC report also notes that 1983-2012 was likely the warmest period of the last 1400 years.



Source: <http://www.lse.ac.uk/GranthamInstitute/publications/Policy/docs/changes-in-global-and-uk-climate-low-res.pdf>

- The report states that the atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased to levels unprecedented in at least

the last 800,000 years. Carbon dioxide concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land-use change emissions.

- The report records that the world's glaciers are losing about 275 billion tonnes of ice per year; the annual amount of ice lost by the Greenland Ice Sheet has increased to about 215 billion tonnes per year; the annual amount of ice lost by the Antarctic Ice Sheet has increased to about 147 billion tonnes per year; and the Arctic sea ice extent is shrinking by 3.5 to 4.1 percent every decade.
- Global sea level has increased, due to melting of glaciers and land-based ice sheets and the thermal expansion of ocean water, by about 19 centimetres since 1901, and is rising by about 3.2 millimetres per year. The oceans have also become more acidic by dissolving carbon dioxide from the atmosphere, with the pH of seawater having decreased by 0.1 since the beginning of the industrial era.
- The IPCC report also states that many changes in extreme weather have also been recorded since 1950, such as increase in the frequency of heat waves in large parts of Europe, Asia and Australia, and a rise in the number of heavy rainfall events in many land regions, including North America and Europe.
- The authors of the IPCC report conclude that it is extremely likely (or 95% probable) that most of the warming of about 0.6°C to 0.7°C since 1950 is due to human activities, such as the burning of fossil fuels and deforestation. This is an expert judgement based on all of the available evidence and research at the time the report was drafted in 2013. In comparison, the previous report in 2007 stated this was 90% probable – so scientists are more certain than ever that humans are responsible.

Carbon dioxide levels in the atmosphere are now about 390 parts per million, about 40 percent higher than they were in 1750, before industrialisation (when they were about 280 parts per million), due to the burning of fossil fuels and deforestation. Concentrations of other greenhouse gases, such as methane, have also risen during this period due to human activities. Aerosols of particles such as carbon and sulphur dioxide that are emitted by volcanoes and industrial processes have offset a lot of the warming effect that is caused by the rising greenhouse gas concentrations in the atmosphere.

The UK:

- Temperatures in the UK have risen by about one degree since the 1970s and, given the levels of greenhouse gas already in the atmosphere, further warming is inevitable over the next three decades or so.
- The global trends in climate are reflected in the UK Met Office's rainfall and temperature records which began in 1910. The average annual UK temperature has increased by about 0.589°C between 1910-1939 and 1983-2012, and the seven warmest years on record have all occurred since 2000. Average annual rainfall has also been increasing since about 1970 and six of the ten wettest years on record have all occurred within the last 15 years.
- In addition, a preliminary analysis by the Met Office in 2013 also indicates that 1-in-100-day extreme rainfall events may have become more frequent

since 1969. Others such as Jones et al (2013) found evidence of increase in extreme rainfall in many UK regions between 1961 and 2010.

Read more:

- Grantham Research Institute policy brief: recent and future changes in the global and UK climate (PDF): <http://www.lse.ac.uk/GranthamInstitute/publications/Policy/docs/changes-in-global-and-uk-climate-low-res.pdf>
- IPCC summary for policy-makers (PDF): <http://www.climate2013.org/spm>
- IPCC headline statements (2 page summary of report's key findings, PDF): http://www.climatechange2013.org/images/uploads/WG1AR5_Headlines.pdf

Global climate change impacts

- The latest report by the IPCC (2013) touches on some of the possible climate change global impacts the world may face. A further, forthcoming report, known as "Working Group II" is due for publication at the end of March 2014 and will document the latest evidence of impacts of climate change in more detail.
- Based on future emission concentration scenarios cited in the latest IPCC report of September 2013, in the lowest concentration scenario, there is a 66% or higher probability that sea level in 2081-2100 could be 26 to 56 centimetres higher than in 1986-2005, while in the highest emissions scenario, sea levels could be 45 to 82 centimetres higher. The rise could be tens of centimetres larger if parts of the Antarctic Ice Sheet above the ocean collapse.
- In the highest concentration scenario, the IPCC estimate there is a 66% or higher chance that the Arctic Ocean could be nearly ice-free in summers by 2050 and glacier volumes could reduce by between 35 and 85 percent.
- The Atlantic Meridional Overturning Circulation (AMOC) is a major ocean current that operates in the Atlantic Ocean, acting as a heat conveyor belt to transport heat from the warmer southern hemisphere and tropics to the northern hemisphere, helping to keep the UK's climate warmer than it would otherwise be. As such, fundamental changes such as a slowdown or abrupt halting of the AMOC could affect the UK's climate given its role in the movement and redistribution of heat, which is transferred subsequently into the atmosphere.
- The latest IPCC report states that there is also a 90 percent or higher chance that the Atlantic Meridional Ocean Circulation, which, for instance, means the UK climate is much warmer than it would otherwise be, will weaken by 2100 and although it is only 10 percent probable that it will collapse during this century, it cannot be ruled out if global warming continues beyond the 21st century.
- The IPCC report records a 66% chance that the Arctic Ocean could be nearly ice-free in September by 2050 under the highest emissions scenario

modelled in the report. Glacier volumes could also reduce by between 35% and 85% by 2100 under the highest emissions scenario.

- The report also notes it is very likely that snow cover in the Northern Hemisphere will reduce this century, and that the spring snow covered area could decrease by 25% by the end of the century under the highest emissions scenario.
- The 2013 IPCC report also indicates that there is a 90 percent probability that increases in Northern European winter rainfall by the end of this century will result from more precipitation from storms. The tracks of storms in the North Atlantic could also shift, and some models indicate that storm activity over Western Europe could increase by 50 per cent. Intense cyclones could also become more frequent.
- According to reports by the European Commission, if the 2°C threshold is exceeded, the world could see *“...an increasing and unacceptably high risk of large-scale irreversible effects, for example on biodiversity and ecosystems, and significant negative impacts on global food production for example. Should temperature increases move towards 2°C, ecosystems such as coral reefs, the arctic and alpine ecosystems and tropical forests would be likely to see severe impacts. Additionally, severe biodiversity loss could occur above two degrees, where “a global mean temperature increase exceeding 2-3°C would increase the risk of extinction for about 20-30% of species and have widespread adverse effects on biodiversity and ecosystems”.*

The 2 degrees Celsius warming threshold

- The United Nations Framework on Climate Change (UNFCCC) seeks to agree international action to limit greenhouse gas emissions at a level which avoids *“dangerous interference with the climate system”*. In 1996, the 2°C maximum warming threshold was first established, based on the scientific evidence available, as a policy target by the European Commission and then reaffirmed in 2003, 2005 and 2007 by the European Council as a *“climate protection target”* to avoid dangerous climate change.
- Based on the scientific evidence collated from thousands of studies, the European Commission argues the evidence base has only continued to grow and has consequently strengthened its *“view that 2°C is an appropriate target”*. Indeed, in its 2007 communication to the European Council, the European Commission stated that *“The EU must adopt the necessary domestic measures and take the lead internationally to ensure that global average temperature increase do not exceed pre-industrial levels by more than 2 degrees”* (p.2), and that staying within two degrees *“...will limit the impacts of climate change and the likelihood of massive and irreversible disruptions of the global ecosystem”*.
- By 2009 at the Conference of Parties in Copenhagen (COP-15), 114 parties internationally (including the UK), followed by 27 parties post-conference, agreed the Copenhagen Accord, which clearly states according to the scientific evidence, including the previous IPCC report in 2007, that *“to achieve the ultimate objective of the convention to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, we shall, recognising the*

scientific view that the increase in global temperature should be below 2°C, on the basis of equity and in the context of sustainable development, enhance our long-term co-operative action to combat climate change”.

- The commitment to two degrees as an acceptable maximum warming threshold was reaffirmed in 2010 at COP-16 in Cancun, where governments recognised and agreed that “*emissions need to be reduced so that global temperature increases are limited to below 2°C*” and that, according to the science, deep and urgent cuts to emissions were needed to stabilise concentrations at a safe level. Parties in Cancun agreed in 2010 “*to commit to a maximum temperature rise of 2°C above pre-industrial levels and to consider lowering that maximum to 1.5 degrees in the near future*”. More recently in Durban, COP-17 (2011), international member governments noted action was a long way off the emission cuts needed to stay below the 2°C trajectory.
- A report in 2013 by the World Bank found that current international pledges to cut emissions do not add up to staying within 2°C of warming, and indeed that “even with current mitigation commitments and pledges fully implemented, there is roughly a 20percent likelihood of exceeding 4°C by 2100. If they are not met, a warming of 4°C could occur as early as the 2060s” (p.xiii).
- In the UK context, the UK’s Climate Change Act, which sets the world’s first legally binding climate change targets, requires the UK to cut greenhouse gas emissions by 2050 compared to 1990 levels. This target, based on the scientific recommendations of the independent Committee on Climate Change in consistent with the global of limiting global warming by no more than 2°C and in creating a low probability of warming of 4°C.
- The IPCC report (2013) considers four different scenarios for how greenhouse gas levels might change over this century. In the three highest concentration scenarios, carbon dioxide levels continue to increase beyond the end of the century, whereas in the lowest scenario, concentrations peak and then start to decline before the end of the century.
- In the lowest scenario, there is a 33% or lower probability of global average surface temperature increasing to more than 2°C above late 19th century levels by 2100. In the two highest greenhouse gas concentration scenarios, global average temperature has a 66% or higher chance of exceeding global warming of 2°C by 2100, and in the other scenario modelled, global average temperature has a 50% or higher probability of exceeding global warming of 2°C by 2100.
- The report shows that only an aggressive mitigation scenario where emissions are sharply cut can help the world *likely* stay within 2°C of warming. For the first time in the history of the IPCC assessments, the 2013 IPCC report sets out a global carbon budget for CO₂ emissions that the world must not exceed in order to stay within the 2°C temperature threshold. It observes that just over half of this budget has already been used, but that an aggressive mitigation scenario where emissions are rapidly and substantially cut still offers the potential to remain within the 2°C warming threshold.

Read more:

Commission of the European Communities Communication (2007) report on Limiting Global Climate Change to 2 degrees Celsius: http://eur-lex.europa.eu/LexUriServ/site/en/com/2007/com2007_0002en01.pdf

European Commission (2008) reference document on the 2°C target: http://ec.europa.eu/clima/policies/international/negotiations/future/docs/brochure_2c_en.pdf

IPCC Summary for Policy-Makers: <http://www.climate2013.org/spm>

World Bank report (2013) executive summary pp.1-21:
[http://climatechange.worldbank.org/sites/default/files/Turn Down the heat Why a 4 degree e centrigrade warmer world must be avoided.pdf](http://climatechange.worldbank.org/sites/default/files/Turn%20Down%20the%20heat%20Why%20a%204%20degree%20centigrade%20warmer%20world%20must%20be%20avoided.pdf).



The UK context

Briefing Note 4

1. The main risks posed to the UK by climate change

- The government's latest climate change risk assessment identifies flood risk, and particularly flooding from heavy downpours, as one of the key climate threats for the UK, alongside stresses on water resources, threats to biodiversity and natural habitats, and the repercussions for the UK from climate change impacts abroad.
- Computer models that simulate the climate suggest that, as a result of warming, extremely wet winters could become up to five times more likely over the next 100 years, with more intense downpours in the winter months driving a greater risk of flash floods and river flooding, alongside risk from sea-level rise. Extreme flood events such as those in the summer of 2007 could become more frequent and severe; putting homes, businesses and infrastructure at greater risk.
- The government estimates that annual damages from flooding alone could increase to between £2bn and £12bn by the 2080s, an increase of about two to 10 times compared with current-day estimates. Critical infrastructure, including water-pumping stations, water treatment works, transport and electricity systems, and schools and hospitals sited in flood-risk areas could also be threatened, while heavy rainfall events could increase the risk of water contamination should sewers overflow. Current government estimates suggest about 330,000 properties are currently at risk of flooding, and climate change could increase this to between 630,000 and 1.2m by the 2080s.
- Conversely, the models suggest that the UK could experience warmer, drier summers in the future. While that may bring some benefits, it could mean increased risk of drought, and extreme events such as the 2003 heat wave could be the norm by the end of this century. Heat waves could also heighten pressure on healthcare services, because older populations are more vulnerable to extreme heat, and impact on transport, as higher summer temperatures bring the threat of rail buckling and associated travel delays.
- The UK could also face threats to its water security and supply. Declining summer river flows, reduced groundwater replenishment and increased evaporation could all contribute to water loss, which could result in water shortages and restrictions on usage. The government estimates that 27-59 million people could be living in areas affected by water supply deficits by the 2050s, even before considering increasing populations and rising water demand.
- Ecosystems are also highly vulnerable to climate change, which can aggravate existing stress factors such as pollution, land conversion and invasive non-native species. While some species could benefit from climate change, far more are set to lose out, according to the latest government estimates.

- The UK may see changing patterns of wildlife and plants as species try to adapt by moving northwards, or have to compete with new non-native species. Habitats may come under increasing pressure – from salt marsh habitats threatened by sea-level rise to beech woodland susceptible to summer droughts. Species could also experience reduced food supply if earlier breeding periods are at odds with the food available at the time.
- According to the UK's own climate impact projections, published in 2009, under a medium emissions scenario, all areas of the UK could be warmer by the 2080s, and temperatures would rise faster in summer than in winter. In southern England, there would be a 50% probability that average summer temperature would be 4.2°C warmer than the baseline average for the period 1961-1990, with smaller increases elsewhere in the UK. The models indicate no clear changes in annual rainfall, although winter precipitation would increase by about 33 percent along the western side of the UK.
- The rise in global sea level will have varying effects on local sea level around the coast of the UK. For instance, local sea level rise will be larger in south-east England, which is currently sinking at a rate of about 1.5 millimetres a year due to on-going adjustments of the land following the retreat of the ice sheets at the end of the last Ice Age.

Read more:

- Adaptation Sub-Committee report (2012) Is the UK preparing for flooding and water scarcity? Executive summary of full report:
http://archive.theccc.org.uk/aws/ASC/2012%20report/1586%20ASC_ES_Summary.pdf
- UK Climate Change Risk Assessment (Government document, PDF):
http://randd.defra.gov.uk/Document.aspx?Document=10067_CCRAEvidenceReport16July2012.pdf

2. A note on model uncertainty and predictions of climate impacts

- None of the model predictions used to examine potential climate impacts are certain. There is a lot that science does not yet know, and wider social and economic trends will also affect the UK's vulnerability to the effects of climate change.
- These range from an ageing population – with greater vulnerability to extreme heat – to population growth and increasing household and industry demand for water, which is expected to be 5% higher by 2020 compared with today. With 13% of new homes built since 2000 constructed on floodplains (that's about 10,000–16,000 new homes a year), planning decisions are another factor that can worsen the UK's existing vulnerabilities.
- As with climate predictions, there are still many uncertainties over the extent and distribution of climate impacts. Model predictions are based on a number of assumptions about factors ranging from future rates of warming and economic growth to the technological and social achievability of different levels of emissions cuts. Regional impacts are particularly difficult to predict,

though some work has been done to map the risks in different areas of the UK. For example, see [this map](#) (p329).

Read more:

- Information on the uncertainty in climate models used to predict potential impacts (from the UK Climate Impacts Programme, UKCIP): <http://ukclimateprojections.metoffice.gov.uk/22553>
- UK Climate Change Risk Assessment (Government document, PDF): http://randd.defra.gov.uk/Document.aspx?Document=10067_CCRAEvidenceReport16July2012.pdf

3. Indirect impacts of climate change on the UK

- Recent reports by the UK Government Foresight programme and PricewaterhouseCoopers (PWC) suggest that the impacts of climate change outside the UK could have a larger effect on the British economy than the impacts directly within the country. If, for example, climate impacts led to international instability or reductions in the supply raw materials or commodities, the UK could experience effects ranging from increased food price volatility (if crop patterns change globally) to changing migration patterns as environmental refugees move from areas affected by extreme weather events.
- Nevertheless, the UK could see some gains from climate change. While summer deaths could increase given the predicted increase in hot days and heat waves, the country could see a fall in the number of cold-related deaths – estimated to be in the region of 3,900 to 24,000 premature cold deaths avoided each year by 2050. Providing water is available in sufficient supply, the UK could also see new crop types, or increased yields of crops such as wheat or sugar beet. For some areas of the UK, climate change could also offer wider opportunities for tourism. And for wildlife warmer temperatures could increase survival rates for offspring born in winter.
- Climate policy to cut global greenhouse gas emissions could have a tangible effect on future climate impacts, not only offering governments a way to avoid the most extreme impacts, but also providing them with more time to prepare and adapt to those that are unavoidable.

Read more:

- Foresight report (outlining the indirect effects of climate change on the UK, PDF): <http://www.bis.gov.uk/assets/foresight/docs/international-dimensions/11-1042-international-dimensions-of-climate-change.pdf>. Executive summary p.7-13.
- PWC report: international threats and opportunities of climate change for the UK (PDF): <http://www.pwc.co.uk/sustainability-climate-change/publications/international-threats-and-opportunities-of-climate-change-to-the-uk.jhtml>

4. What does the UK have in place in terms of legal commitments and obligations to tackle climate change?

The section below sets out some of the key climate change policies in the UK.

4.1 The UK Climate Change Act (2008)

- The Climate Change Act was passed in November 2008 with an overwhelming majority across parties. It sets out emission reduction targets that the UK must legally comply with. It represents the first global legally binding target set by any country.
- The Act commits the UK to reducing its greenhouse gas emissions by 80 per cent by 2050, compared to 1990 levels. The Act also provides a system of carbon budgeting, to help the UK meet its targets through a series of five year carbon budgets.
- The latest legislated carbon budget (the fourth carbon budget) commits the UK to a 50 per cent reduction in greenhouse gas emissions (compared to 1990 levels) for the period of 2023 to 2027.
- The Act establishes the Committee on Climate Change, an independent body to provide evidence-based advice to the UK Government and Parliament on the mandatory carbon budgets. The Act also includes a requirement for the Government to develop a National Adaptation Plan to manage the effects of unavoidable climate change.

Read more:

- Grantham Research Institute briefing note on the UK's Climate Change Act: <http://www.lse.ac.uk/GranthamInstitute/publications/Policy/briefingNotes/PDFs/climate-change-act-briefing-note.pdf>
- Government carbon budget factsheet: <https://www.gov.uk/government/policies/reducing-the-uk-s-greenhouse-gas-emissions-by-80-by-2050/supporting-pages/carbon-budgets>
- Committee on Climate Change webpage on the Climate Change Act: <http://www.theccc.org.uk/tackling-climate-change/the-legal-landscape/global-action-on-climate-change/>

4.2 Carbon budgets

The UK government sets a series of legally-binding limits on greenhouse gas emissions in the UK for a five year period, to help the UK stay on track with meeting its overall emission reduction commitments.

Each carbon budget provides a total cap on emissions, which should not be exceeded in order to meet the UK's emissions reduction commitments under the 2008 Climate Change Act. The independent Committee on Climate Change advises the Government on the levels that carbon budgets should be set at, based on the latest evidence available.

The first four carbon budgets have been set in law to date, covering the period from 2008 to 2027. Emission reductions set out in each carbon budget are as follows:

- 1st carbon budget (covering 2008-2012): 23% reduction below base-year level*
- 2nd carbon budget (2013-2017): 29% reduction below base-year level
- 3rd carbon budget (2018-2022): 35% reduction below base-year level
- 4th carbon budget (2023-2027): 50% reduction below base-year level
- *Base year level is 1990 for carbon dioxide, nitrous oxide and methane and 1995 for hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride).
- The UK Government is currently reviewing the fourth carbon budget and is due to announce in the spring of 2014 whether any adjustments will be made. The independent Committee on Climate Change who conducted a formal review of the fourth carbon budget specified in its advice that *"there has been no significant change in circumstances as specified in the Climate Change Act and therefore the budget should not and cannot be changed under the terms of the Act"*.

Read more:

- Committee on Climate Change 4th carbon budget review (executive summary, PDF): <http://www.theccc.org.uk/wp-content/uploads/2013/12/1785a-CCCAdviceRepExecSum1.pdf>
- The UK's Carbon Plan (executive summary, PDF): https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/47614/3751-carbon-plan-executive-summary-dec-2011.pdf

4.3 The Energy Act (received Royal Assent 18 December 2013)

- Initially introduced in November 2012 and passed by the House of Commons in June 2013, the Energy Bill was introduced to provide the legislative framework to enable the UK to virtually decarbonise its energy sector by 2030, in order to meet its legally binding emission reduction commitments set out in the 2008 Climate Change Act. It was given Royal Assent on the 18th of December 2013.
- The Act includes a number of measures aimed to ensure security of energy supply, cut emissions, and to encourage investment in cleaner, lower-carbon energy sources, across renewables, nuclear, carbon capture and storage (or CCS) and gas.
- Themes covered in the Act range from measures to encourage large-scale investment to upgrade the UK's current power generation infrastructure (through Electricity Market Reform), to a simplification of energy tariffs to increase fairness for consumers, by simplifying the number of tariffs energy companies can offer alongside provision of clear information for consumers.
- When first laid before the House of Commons, the Bill did not include a decarbonisation target for 2030. When later debated in the House of Commons in June 2013, a proposed amendment to the Bill, tabled by Tim Yeo and other MPs for the inclusion of a decarbonisation target for 2030 was voted down by 290 votes to 267, a difference of 23 votes. Further details on the proposed decarbonisation target (which was defeated) are outlined below.

Read more:

- Government information on the UK's Energy Act:
<http://services.parliament.uk/bills/2013-14/energy.html>
- Government webpage on the Energy Act:
<https://www.gov.uk/government/collections/energy-act>

4.4 Proposed amendments to the UK Energy Bill and a decarbonisation target (in November 2013)

- In November 2013, the House of Lords voted on a proposal to include a clean-power decarbonisation target in the UK's Energy Bill.
- The proposed amendment, which would have required the Government to set a target next year to all but decarbonise the UK power sector by 2030 was dismissed by just 14 votes, meaning the inclusion of a target is now unlikely to be reconsidered until after the next general election.
- The Government argued that setting a specific target in 2014 was not in the best interests of consumers and should instead be reviewed after the next General Election. This came at a time of increasing scrutiny over Government commitments to emission reductions, as the Committee on Climate Change recently reviewed the UK's fourth carbon budget, which sets out a total cap on emissions not to be exceeded if the UK is to meet its emission reduction commitments under the 2008 Climate Change Act.
- A number of proponents of the 2030 decarbonisation target highlighted its key role in helping the UK Government to meet its legally-binding emission reduction commitments, which are formally set out in the 2008 Climate Change Act. The Committee on Climate Change suggested that such a target could offer cost savings, acting as a "stepping-stone towards the cheapest possible route to cutting emissions". Such a target could help keep the UK on track to meet its commitments to move to cleaner, low-carbon power sources which emit far less greenhouse gases.
- Decarbonisation of the power sector could have wider spin-off effects, offering emission reduction opportunities to other sectors, through the advent of clean electricity sources to power cars and rail travel for example.
- A decarbonisation target is also thought to provide greater policy certainty for investors, enabling greater long-term planning by helping to "provide private investors with greater confidence about the direction of public policy" when it comes to future power generation and commitments to emission reductions.
- Such a decarbonisation target could encourage investment in renewables and low-carbon energy over higher-emitting fossil-fuel plants. This could prove crucial given investors are reviewing future investments in electricity generation infrastructure now, and if the UK appears to dither, the money could be invested elsewhere. Much of the UK's power-generating infrastructure needs replacing over the next 15 years to keep the lights on, as fossil-fuel and nuclear power stations reach the end of their lifespan. Replacing these now with high-emitting power sources (such as fossil-fuel power stations) would require a more rapid and costly move to less-emitting

power infrastructure further down the line if the UK is to meet its commitments to cut greenhouse gas emissions and limit the worst impacts of climate change. Selecting high-emitting fossil-fuel plants could result in a later scrapping in order to cut emissions in line with the UK's legally binding commitments.

- Alternatively, having a 2030 decarbonisation target in place to steer decision-making in favour of cleaner, low-carbon energy, could avoid a costly later transition to low-carbon energy sources and avoid the need for large-scale abandonment of highly-emitting fossil fuel power plants.
- Nevertheless, the 2030 decarbonisation target was voted down in the House of Lords and was not included in the final Energy Act.

Read more:

- Government information on the status/progress of the UK's energy bill: <http://services.parliament.uk/bills/2013-14/energy.html>
- Business Green summary media article: <http://www.businessgreen.com/bg/news/2303531/decarbonisation-target-narrowly-defeated-in-house-of-lords-vote>
- Carbon Brief blog on the decarbonisation target: <http://www.carbonbrief.org/blog/2013/06/the-decarbonisation-target-didnt-pass-what-now>
- Grantham Research Institute press statement from Lord Stern re: the decarbonisation target <http://www.lse.ac.uk/GranthamInstitute/Media/Releases/2013/MR281013-lord-stern-energy-bill-amendment-decarbonisation-target.aspx>

4.5 The EU's 2030 energy and climate package: (proposals announced in January 2014):

- In January 2014 the European Commission unveiled its proposed package of energy and climate policies up to 2030, with the aim of ensuring a secure, cost-effective energy supply and continued transition to a low-carbon economy.
- Setting the trajectory of travel for EU climate policy up to 2030, the proposals seek to build on the existing climate and energy package, which runs up to 2020.
- Policies in place up to 2020 include a target to reduce greenhouse gas emissions by 20% below 1990 levels, a target of 20% of energy from renewable sources in 2020 and to be 20% more energy efficient by 2020. Overall, the EU has committed to emission reductions of 80-95% compared to 1990 levels by 2050.
- The new proposals to 2030 released last week cover a broad range of policy themes, ranging from fracking regulation to revisions to the EU's emission trading system to help address issues of a permit allowance surplus and a low carbon price. Among these wide measures set out in the proposals, two core policies particularly captured headlines: the introduction of a 2030 emissions reduction target and a European-wide renewables target.

- The European Commission first proposed an EU-wide target to cut emissions by 40% by 2030 (compared to 1990 levels), to be met through domestic cuts by member states. For the UK this would probably translate into a 50% target under usual burden-share arrangements, consistent with the ambitions of the fourth carbon budget.
- Second, they set out an energy generation target from renewables of at least 27% by 2030; a further 7 percentage points compared to the 2020 commitments. Introduced to help meet emission reduction commitments to encourage investment in renewables by offering some investor certainty, the proposal does not translate the European-wide binding renewables target into binding national targets. Instead member states “can transfer the energy system in a way that is adapted to national preferences and circumstances” and in the most cost-effective way for individual countries.
- The newly unveiled proposals do not include an energy efficiency target; instead deferring a decision on this to later in the year, whilst the European Commission completes a progress review on its 2020 energy efficiency targets in 2014.
- The proposals received a mixed response; with some noting the targets were “a step in the right direction” with the UK Government also welcoming the flexibility offered for countries to choose their own cost-effective paths to meeting the 2030 renewables target. For many NGO’s the proposals were still well off the mark in terms of required commitment and seen as the minimum ambition the EU should adopt as it gears up for an active year of negotiations on global climate action.
- Lord Stern, Chair of the Grantham Research Institute at LSE, noted the proposed target should be seen as the minimum level of ambition for the European Commission’s March summit to agree on, and in particular highlighted the need to give a clear policy signal for the pace of decarbonisation needed across the EU to unlock substantial investment for the low-carbon transition.
- EU analysis shows if countries continue to deliver their energy and climate policies, emission cuts of around 32% could be feasible; illustrating that the newly proposed 40% target does not represent a rapid ramping up of commitment. Others raised concerns that the new targets sent an insufficiently clear signal to other key players in the world economy of the need for rapid global decarbonisation.
- So where next? The newly proposed 2030 framework goes to the European Council and the European Parliament at its spring meeting in March for further consideration, where parties may also consider whether to include the 40% emission reduction target as the basis of an offer for the 2015 global climate deal negotiations. The EU will also publish an Energy Efficiency Directive in June this year, as it reviews its progress on energy efficiency.

Read more:

- Lord Stern’s response to the proposed EU 2030 package:
<http://www.lse.ac.uk/GranthamInstitute/Media/Releases/2014/Nicholas-Stern->

[comments-on-European-Commissions-proposals-for-European-Union-2030-energy-and-climate-package.aspx](#)

- UK Government's response to the proposed EU 2030 package: <https://www.gov.uk/government/news/response-to-the-european-commission-2030-white-paper-on-climate-change>
- European Commission's policy summary: http://ec.europa.eu/clima/policies/2030/index_en.htm
- Jeffrey Sachs FT article on the EU 2030 package: <http://blogs.ft.com/the-a-list/2014/01/28/europe-still-sets-the-standard-for-a-low-carbon-future/?Authorised=false%20-%20axzz2sHMPK8EA>

4.6 The EU Energy Roadmap (2050):

- Adopted in December 2011, the EU Energy Roadmap 2050 sets out aspirational targets for the European power sector to achieve 54-68% decarbonisation by 2030, and between 93-99% decarbonisation by 2050.
- It examines how to make Europe's energy production carbon-free by 2050, whilst ensuring a secure and competitive energy supply. The Roadmap examines a range of potential decarbonisation routes and scenarios, including energy efficiency, nuclear, renewables and carbon capture and storage (CCS).



Non-Climate Change Issues

Briefing Note 5

1) ECONOMY

Global

- The global economy has generally experienced strong growth over the course of the baby boomers' adult lives. This has been accompanied by an associated improvement in living conditions around the world, including health, education and employment.
 - Global GDP rose to US\$ 73.5 trillion in 2013 [[IMF](#)], from around US\$ 3.4 trillion in 1970.
 - Over the two decades prior to the onset of the global economic crisis, real disposable household incomes increased by an average of 1.7% a year in OECD countries. [[OECD](#)]
 - The 2015 UN Millennium Development Goal on undernourishment was hit seven years ago. Also, the goal to halve the number of people without access to drinking water by 2015 was achieved last year. [[The Spectator](#)]
 - The UN also aimed to improve the lives of 100 million slum dwellers — with water supply, sanitation and better housing — by 2020. This target has been met ten years early. There are still huge problems; it is true that 400 million children still live in poverty. But at the current trajectory, the World Bank's target to all but eliminate poverty by 2030 looks like being achieved early. [[The Spectator](#)]
- However, global growth, at least in the Western world, slowed markedly during the financial crisis of 2008/09, and the economic recovery in the UK is still in its early stages. Moreover, the acceleration in global output has seen a corresponding increase in the gap between the rich and the poor.
 - In the two decades before the financial crisis, the household incomes of the richest 10% in a large majority of OECD countries grew faster than those of the poorest 10%, so widening income inequality. [[OECD](#)]
 - The Gini coefficient, a standard measure of income inequality that ranges from 0 (when everybody has identical incomes) to 1 (when all income goes to only one person), stood at an average of 0.29 in OECD countries in the mid-1980s. By the late 2000s, however, it had increased by almost 10% to 0.316. [[OECD](#)]
 - The 85 richest people in the world are worth more than the poorest 3.5 billion people. [[Oxfam](#)]
 - The lower half of the global population possesses barely 1% of global wealth, while the richest 10% of adults own 86% of all wealth, and the top 1% account for 46% of the total. [[Oxfam](#)]
 - The richest one percent increased their share of income in 24 out of 26 countries studied between 1980 and 2012. [[Oxfam](#)]
 - In the US, the wealthiest one percent has captured 95 percent of post-financial crisis growth, while the bottom 90 percent became poorer. [[Oxfam](#)]
 - Basic food insecurity still affects 1 billion people, as many as in 1970. [[UN](#)]

UK

- In the UK there has been a similar exponential rise in income and general standards of living since the late 1970s and early 1980s.
 - GDP per capita in the UK has quadrupled from US\$ 9,623 in 1980 to US\$ 39,093 in 2012. [[World Bank](#)]

- However, the UK's wealth is now disproportionately held by a number of select groups, foremost among which is the baby boomer demographic.
 - In 2010, more than 80% of the nation's £6.7 trillion in wealth was owned by baby boomers (those born between 1946 and 1964). [*Pinch*, by David Willetts / [The Telegraph](#)]
 - Collectively, the UK owns £2.6 trillion in shares and savings – and those aged 50 to 64 own £1 trillion of this. A third of the £1.8 trillion held in pension funds is owned by this age group, and they own 40% of the £2.5 trillion tied up in property.
 - Although levels of identified wealth have increased by 5.8 percent between 2005 to 2007 and 2008 to 2010, the distribution of wealth by wealth decile is broadly unchanged. [[ONS](#)]
 - Average household income in the UK has remained the same over the decade between 2002 and 2012. [[Inequality Briefing](#)]
 - The richest households currently have 850 times more wealth than those at the bottom. [[Inequality Briefing](#)]. In 2011, three million people in the UK experienced severe material deprivation (around 5% of the population). [[Inequality Briefing](#)]
- On the other hand, it has recently been reported that we have the baby boomers' spending power to thank for dragging us out of the financial crisis.
 - A recent study by the Centre for Economic and Business Research (CEBR) states that the generation born between 1945 and 1965, which began to reach state retirement age during the financial crisis, played a crucial part in lifting the UK out of recession. The CEBR's research shows older Britons, proportionally, are wealthier and are increasing spending at a faster rate than those under 50. [[This Is Money](#)]
 - The 'grey pound' now accounts for £320 billion a year - up by £100 billion in nine years. [[This Is Money](#)]

Government debt/spending

- In the 1950s and 1960s, UK national debt was under £50 billion. Today it is about £1.2 trillion. [[MoneyWeek](#)]
- Public sector net debt as a % of GDP fell from a debt level pre-1977/78 that was above 50%, to a low of 26% at the end of 1990/91. It then grew until it reached a peak of 42% of GDP at the end of 1996/97, before falling back to 30% of GDP by the end of 2001/02. [[ONS](#)]
- Since 2001/02 public sector net debt has been increasing. At the end of March 2002 net debt was 30% of GDP. From 2008 public sector net debt increased sharply, rising from 45% of GDP at the end of March 2009 to 74% of GDP at the end of March 2013. [[ONS](#)]

Personal debt/spending

- People in the UK now owe £1.43 trillion including mortgage lending, an average of £54,000 per household, up from £29,000 a decade ago. [[Centre for Social Justice](#)]
- Consumer debt has trebled since 1993, reaching £158 billion in 2013. [[Centre for Social Justice](#)]
- More than 8 million households now have no savings at all, affecting around 50 per cent of low income households. Each year more than 130,000 people declare bankruptcy or some other form of insolvency. [[Centre for Social Justice](#)]
- An estimated 1.1 million people over 50 years old are in problem debt. [[Centre for Social Justice](#)]
- In 2012, there were arrears on 300,000 mortgages with 34,000 homes being repossessed, down 30 per cent since the peak of recession in 2009, but up 60 per cent overall since 2006. [[Centre for Social Justice](#)]
- More than 5,000 people become homeless each year because of rent or mortgage debts. [[Centre for Social Justice](#)]
- In 2011, almost half of households in the lowest income decile were spending more than a quarter of their income on debt repayments. Outstanding debt on credit

cards has almost trebled since 1998, reaching £55.6 billion in 2012. [\[Centre for Social Justice\]](#)

Economic Gender Equality

- The biggest shift in women's economic rights happened 1971-1991. [\[ONS\]](#)
 - The Equal Pay Act 1970, for instance, prohibited any discrimination between men and women in terms of pay.
 - The Employment Protection Act 1975 made it illegal to sack a woman due to pregnancy and introduced statutory maternity provision.
 - The official figures show that in April to June 2013 around 67% of women aged 16 to 64 were in work, a staggering increase from 53% in 1971. But the percentage for men was 76% in 2013, a massive fall from 92% in 1971. [\[ONS\]](#)
- However, almost 40 years since the Sex Discrimination Act 1975 was passed, women are unrepresented in 'high flying' sectors [\[Fawcett Society\]](#)
 - Women make up only 22.5% of MPs (the fourth lowest proportion in Western Europe) and only 13.6% of the senior judiciary. [\[Fawcett Society, 2013\]](#)
 - Women are in particularly short supply within the finance and economic sectors: there are no women at all on the Bank of England Monetary Policy Committee, women hold 11.1% of Chief Executive positions in UK banks and 17.3% of FTSE 100 Director positions [\[Fawcett Society, 2013\]](#).
- Women's unemployment has risen to a 26 year high whilst men's is decreasing [\[Fawcett Society, 2013\]](#)
 - Almost three times as many women as men have become 'long term' unemployed in the last two and a half years – 103 000 women in comparison to 37 000 men. [\[Fawcett Society\]](#)
 - If the current pattern (of women making up the majority of those losing their jobs but the minority of those benefitting from new employment opportunities) continues, the worse case scenario would see some 1.48 million women unemployed by 2018. [\[Fawcett Society\]](#)
 - The Government's plans for growth are leaving women behind: 60% of 'new' private sector jobs have gone to men. [\[Fawcett Society\]](#)
 - The TUC analysis shows that in September 2013 total unemployment for women (2.42m) is more than twice the size of headline unemployment (1.07m). Total unemployment for men (2.36m) is 64% higher than headline unemployment (1.48m). [\[TUC, 2013\]](#)
 - Britain's jobless rate for the first three months to February 2012 dropped by 35,000, figures on Wednesday showed, but the number of women out of work rose by 8,000 to 1.14m - the highest figure since November 1987. [\[IPPR Think Tank\]](#)
- The TUC has calculated the gender pay gap by comparing the mean hourly pay, excluding overtime, of full-time men and women provided by [ONS](#). Mean hourly full-time pay for men is £16.91 an hour, and £14.25 for women. This hourly pay gap of £2.66 adds up to £5,187 over the course of a year for a full-time worker. [\[TUC, December 2013\]](#)

(2) PENSIONS

Current pensioners (the earliest baby boomers) enjoy better pensions...

- National Association of Pension Funds: a third of those aged 45 to 54, and almost one in five of those aged between 55 and 64, have some kind of earnings-linked pension scheme. [\[NAPF, 2013\]](#)
- Between 1977 and 2010-11, the incomes of pensioners rose by two and a half times in real terms, outstripping the growth in the economy. The average

disposable income for retired households was £17,700 in 2010-11 compared with £35,000 for households in work. In 1977, pensioners received incomes around one third of the average working person's pay, but today the figure is closer to half. Over the same period working people saw their income grow just two times. [Office for National Statistics, 2012]

- The baby boomer generation are now receiving final salary pensions no longer open to workers behind them. For example, Royal Dutch Shell, which had been the last of the FTSE 100 to offer defined-benefit pensions, announced the end of the scheme in January 2012. [Telegraph]
- Under current government policy, state pension entitlements for individuals born in the 1960s and 1970s will tend to replace a smaller proportion of prior earnings than is the case for those currently above, or around, the state pension age (with the exceptions of lower-earners and those who took a career break for childcare). [IFS, 2013]

The rest of the baby boomer's pensions take a hit...

- A report from McKinsey shows Quantitative Easing is causing a pension crisis for baby boomers: Since 2007, the world's four most influential central banks have injected more than \$4.7 trillion of new money into the world economy. The effect has been to help drive both short- and long-term interest rates to record lows, particularly affecting annuities which hold more interest-bearing assets than liabilities. [McKinsey, November 2013]
- The retirement and state pension ages are rising: Default retirement age (formerly 65) has been phased out and the state pension age is currently 61 (women) and 68 (men), however the government has proposed to introduce a flat rate (single-tier) State Pension from April 2016 and raise the State Pension age from 66 to 67 gradually between 2026 and 2028. [Department of Work and Pensions]

Current pensioners in difficulties...

- In 2011/2012 1.8 million pensioners (15% of the population bracket) are living in poverty [Department for Work and Pensions]

(3) CORPORATE GOVERNANCE

Tax

- Corporate tax raised around £43 billion, or 8% of total revenue in 2010-11. Corporate tax revenues (in cash terms) peaked in 2007-8, and fell in each of the two following years. Corporate tax receipts from North Sea oil companies fell particularly sharply. This trend was reversed in 2010-11 when corporate tax receipts increased by 18%. [Institute for Fiscal Studies]
- Corporate multinationals operating in the UK have recently been subjected to increased scrutiny by the IRC following reports of surprisingly low tax contributions over the past few years. Given the incumbent government's ongoing policy of austerity, this apparent irregularity has attracted widespread criticism in the media and among the general public. [The Guardian]
- An HMRC report published in 2012 revealed the following [HMRC]:
 - Starbucks has reported an annual loss in the UK for 14 of the 15 fiscal years since it set up operations here. The current CEO of Starbucks is Howard Schultz (born in 1953).
 - Amazon reported sales worth £3.35 billion from the UK in 2011, but a tax expense of £1.8 million. The current CEO of Amazon is Jeff Bezos (born in 1964).

- Google recorded revenue of £396 million in the UK in 2011, and paid corporation tax of £6 million. The current CEO of Google is Eric Schmidt (born in 1955).

Bonus culture

- The financial crisis has also increased public scrutiny of bankers' pay, which is frequently seen as excessive, particularly given that the UK government has had to bail out numerous financial institutions since the nationalisation of Northern Rock in 2008.
- Only last week, Barclays Bank plc announced that it was increasing bonuses for its investment bankers, despite reporting a 37% slump in profits for 2013 and revealing plans to cut 12,000 jobs over the coming year. [Reuters] Barclays' current CEO is Antony Jenkins (born in 1961).

High profile corporate incidents since 2000:

• Enron

- On 2 December 2001, Enron Corporation filed for Chapter 11 bankruptcy, becoming the largest corporate bankruptcy in US history at the time. The collapse of the company cost shareholders around US\$ 63 billion, as well as billions of dollars' worth of employee pensions. Jeffrey Skilling (born in 1953) was the CEO of the company leading up to its fall from grace (he resigned in August 2001) and was later charged on numerous counts of fraud and insider trading. He was eventually convicted in 2006 of conspiracy, insider trading and securities fraud.

• Lehman Brothers

- The collapse of Lehman Brothers became the largest bankruptcy in US history in 2008, triggering a crisis of confidence in banks across the world and playing a major part in the escalation of the credit crisis. The CEO at the time of the bankruptcy was Dick Fuld (born in 1946). Of the people named in Time Magazine's "25 People to Blame for the Financial Crisis", 14 are baby boomers (born between 1946 and 1964). [Time Magazine]

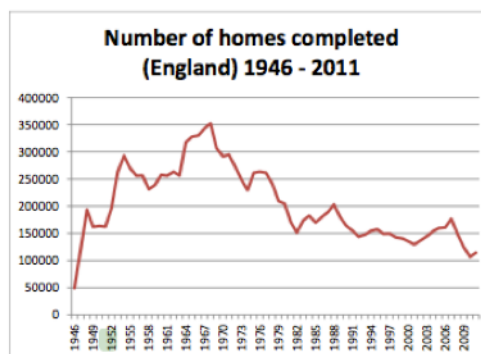
• British Petroleum

- In 2010, BP's Deepwater Horizon oil rig exploded, discharging an estimated total of 4.9 million barrels into the sea over 87 days. The environmental consequences of the oil spill were devastating, and it is believed that the damage will affect food chains in the area for several generations to come. [CBS News] BP's CEO at the time of the spill was Tony Hayward (born in 1957).

(4) HOUSING

Housing Build (average annual totals)			
	PRIVATE	SOCIAL	TOTAL
1940s	30,390	101,065	131,453
1950s	82,261	150,894	233,157
1960s	177,594	123,546	301,138
1970s	141,303	116,235	257,537
1980s	136,249	44,068	180,317
1990s	124,704	25,716	150,419
2000s	127,947	18,999	146,947
2010	84,440	23,660	108,150

Source: <http://www.communities.gov.uk/documents/housing/xls/2145753.xls>



Source: http://research.dwp.gov.uk/asd/asd4/budget_2012_300712.xls

Historical Synopsis [Housing Voice, 2012]

- In the post war period councils were directed to build homes that would be let at low 'social' rent. For many years during this period the number of new homes built, under Conservative and Labour governments, exceeded 250,000.
- This was followed by a period during which tax relief on mortgage interest payments (1963 -2000), Right to Buy (1979 – present) and measures which led to a growth in the availability of credit opened the door to homeownership for many and a belief that the housing market would respond to need. During this period the UK witnessed a reduction in the number of homes built overall, as the government switched the emphasis of public expenditure from capital (e.g. new council and housing association homes) to revenue (Housing Benefit).
- The total number of new homes completed in 2011 was just 114,000 (86,000 by the private sector and 28,000 for social housing, increasingly at higher rents that creates further upward pressure on Housing Benefit and with less secure tenancies). This is nearly 240,000 less than the 353,000 reached at the peak in 1968 (203,000 by the private sector and another 150,000 by councils and housing associations).

Current statistics

- Over 1.7 million households are currently waiting for social housing [Shelter UK]
- Second home ownership is pricing local people out of many rural areas. [Shelter UK] For example, in the South West many second homes are used up to three or four times a year, yet account for 50% of all homes that are built. [Housing Voice]
- A total of 42,830 affordable homes were provided during 2012-13, compared with 58,100 in the previous financial year. The number of affordable homes created in England plummeted by 26% in 2012-13, while the number of new homes in the social rented sector dropped by a third, according to official figures which underline the country's housing crisis. [Department for Communities and Local Government (DCLG)]
- The shortfall in housing is projected to be 750,000 by 2025, the average house price more than 8 times the average salary, more than 1.8 million households on waiting lists, the average age of a first time buyer being 37 and rents in the private rented sector continuing to grow faster than incomes in many parts of the country [Housing Voice]
- In England more than two million people find their rent or mortgage a constant struggle or are falling behind with payments [Shelter, 2008]
- 3.3 million people aged 20–34 are currently still living at home, an increase of 25% since 1996 [ONS]
- 2010-11 25% of people advised by the Citizens' Advice Bureau (circa 0.5million people) were related to Housing Benefit enquiries. [Housing Voice]
- In England there are over one million fewer homes available to rent than in 1979 and waiting lists, at 1.8 million households, are up 80% since 1997. [Housing Voice]
- Robert Gardner, the chief economist at Nationwide: "The baby boomer generation benefited from significant house price rises – in some cases over 100pc in real terms. Housing was also more affordable during the mid Seventies and the Eighties, with a much lower house-price-to-earnings ratio than today." [Telegraph]

Baby boomers versus subsequent generations:

- Individuals born in the 1970s are taking longer than their predecessors to get on the housing ladder.
- 66% of individuals born between 1970 and 1976 owned a home at age 35, compared with 71% of those born in the 1950s and 1960s. In recent years, the homeownership rate among the 1970s cohort appears to have stopped rising

- altogether, remaining at around two-thirds – far below the 80% rate at which it peaked for those born in the 1940s and 1950s. [IFS, 2013]
- According to a Post Office Mortgages survey the age at which the average prospective buyer expects to buy their first home is 35 years old; this compares to 30 five years ago; 28 years ten years ago; and 24 years old in the early 1960s. [Telegraph, 2012]
 - Today's first-time buyers are operating in what is unequivocally a far more hostile environment than was the case 30 years ago: the average property price is over eight times higher, the average cost of a deposit is almost thirty times higher, the typical deposit is now worth 82% of the purchase price of the property instead of 12%, and the average borrower has to borrow 3.36 times their salary as opposed to 1.92 times [HSBC]
 - HSBC predicts that current house owners will finish paying off their mortgage at 60, compared with at least 67½ for typical property 'have-nots'. This will make it harder for them to retire, not to mention that holding on to mortgage debts for longer will present an additional barrier towards saving into a pension. [HSBC]
- The private rented sector in Britain has witnessed enormous growth since it was deregulated under Thatcher government. This disproportionately affects younger generations.
- According to the Department for Communities and Local Government, it now accounts for 16.5% of all households – roughly 3.8 million homes in England.
 - A 2013 report by IF shows, the age profile of tenants is heavily skewed towards young workers in their 20s and 30s, many of whom would like to purchase their own homes one day and are trying to save up enough money to afford a deposit.

The affordability crisis is most acute in London:

- Homes bought as commodities are a far more serious issue in London than elsewhere. The Smith Institute found that investment in luxury homes has doubled to over £5bn a year, accounting for five times more than the annual investment in affordable homes in London and a third of all loans made for house purchases. [Housing Voice, 2012]
- In total over 60% of new homes in central London are currently being bought by overseas investors. Anecdotal evidence suggests that a high proportion are kept empty. [Housing Voice, 2012]
- In London the number of affordable homes has dropped by around 30%. [The Guardian, 2013]

(5) HEALTH

Health spending

- Public spending on the UK NHS has increased faster than economy-wide inflation since the 1950s, with an average real growth rate of 4.0% a year between 1949/50 and 2010/11 (when spending reached £137.4 billion). This is significantly greater than growth in the economy over this period and as a result spending on the UK NHS as a share of national income has increased from 3.5% in 1949/50 to 7.9% 2007/08 (before the financial crisis and associated recession struck). Spending increased particularly rapidly under the last Labour Government, with an average real growth rate of 6.4% a year between 1996/97 and 2009/10. [Nuffield Trust]
- The National Health Service could be facing a funding squeeze which will see the amount of money spent per person fall by 9% over the next four years, according to a new projection from the Institute for Fiscal Studies [IFS].
- Nearly a third of English NHS trusts are already forecasting that they will end the current year (ending March 2014) with a financial deficit, a finding which raises fresh doubts about the sustainability of the current NHS financial model. [BBC]

- Britain's baby boomers have, over the course of their lives, taken £6 out of the welfare state for every £5 they put in, according to Demos [[The Independent](#)]

Demographic pressures

- NHS spending is weighted heavily towards the elderly (with 50% of the total budget going to the over-65s), so the problem is demographic: the number of people aged 85-plus, currently about 1.3 million, is set to almost triple by 2035. [[IF](#)]
- Baby boomer ageing could put the NHS and social care systems under a great deal of strain. For example, Unless some medical breakthrough occurs, about 1 million of these will have dementia, requiring long-term, personalised care. [[IF](#)]
- With drug prescriptions soaring across the board (they tripled between 1995 and 2009), it looks like healthcare costs will at least double by 2035. [[IF](#)]
- The Office for Budget Responsibility has forecast that, even if NHS productivity growth keeps pace with that seen across the economy, an increase in health spending in line with national income would not be sufficient to keep up with demographic pressures. [[Nuffield Trust](#)]
- Contributions by younger generations – who fund the NHS through their taxes – will therefore have to rise substantially to sustain the NHS in its present form.
- Drawing on official data the [House of Lords](#) predicts that by 2020-30 there will be:
 - 51% more people aged 65 and over in England¹ in 2030 compared to 2010
 - 101% more people aged 85 and over in England in 2030 compared to 2010
 - 10.7 million people in Great Britain can currently expect inadequate retirement incomes
 - over 50% more people with three or more long-term conditions in England by 2018 compared to 2008
 - over 80% more people aged 65 and over with dementia (moderate or severe cognitive impairment) in England and Wales by 2030 compared to 2010

However...

- The traditional assumption that everyone over state pension age automatically becomes a burden on the younger generation should be questioned. This view is based on the idea of the dependency ratio usually expressed as the number of pensioners divided by the number of people of working-age (16-64 years). [[Spijker and MacInnes, BMJ, 2013](#)]
- The fairer way to measure the dependency ratio of a society is to compare the number of people who are in the final 15 years of their life (according to assumptions about average life expectancy), because there is a body of evidence which shows that this is when the typical individual consumes the vast majority of their lifetime healthcare resources, and dividing this figure by the total number of people who are workers of any age. [[Spijker and MacInnes, BMJ, 2013](#)]
- Using this measure, the ratio of old-age dependents to contributors has actually been *improving* over recent years in Britain and several other Western countries, and is forecast to continue becoming more favourable in the future. [[Spijker and MacInnes, BMJ, 2013](#)]

Mental Health: 'Quarter-Life crisis'

- In 2010, research carried out by The Vodafone Foundation found that 73 per cent of Britons between the ages of 26 and 30 felt they were experiencing a quarter-life crisis [[Vodafone World of Difference, 2010](#)].
- Evidence suggests that the mental health of young people in the UK is deteriorating [[YoungMinds, 2006](#)], with 25 to 29 being the average age of those first experiencing major depression [[Tyrrell, 2011](#)].
- Generation Y (born in 1980s and 1990s) remain in the shadow of the lives their parents had. The onset of a quarter-life crisis is often related to the pressure from

baby boomer parents to settle down, be married, have children, own a property and be in a stable career before the age of 30 as they did (Panchal & Jackson, 2007). However, due to the 2008/9 recession graduate unemployment at its highest level in 15 years [Office of National Statistics, 2011].

- The modern era is one where budget airlines and information technology have widened communities and increased our awareness and access to a vast number of life options [Panchal & Jackson, 2005; 2007]. However, this instant access and creation of multiple choices is leaving Generation Y feeling utterly lost and paralysed [Robbins & Wilner, 2001; Panchal & Jackson, 2007].

(6) EDUCATION

Global

- In 2011, the global adult literacy rate for the population aged 15 years and older was 84%, up from 76% in 1990. [UNESCO]

UK

- The number of out-of-school children in the UK rose from 2,597 in 2002 to 13,333 in 2011. [UNESCO]
- With an average higher education tuition fee of just over £8,000, England has the second highest (average) fees in the developed world and the highest in any 'public' system. [UK Parliament]
- England charges twice as much on student loans (6.6%) as the OECD average (3.3%) [Intergenerational Foundation]
- Timeline of major changes to the provision of higher education in the UK [The Telegraph]:
 - **1980** Student grants increased from £380 to £1,430 (when a large number baby boomers were in, or about to enter, higher education);
 - **1998** The Teaching and Higher Education Act passed into law, setting an annual tuition fee for England of £1,000;
 - **2003** Less than two years after pledging not to introduce top-up fees, Labour published a white paper setting out proposals to allow universities to set their own tuition fees up to a cap of £3,000 a year;
 - **2010** In November the new Coalition government outlined plans to raise the cap on tuition fees in England from 2012 to £6000 and up to £9000 "in exceptional cases".

(7) YOUTH

Unemployment

Global

- The ILO's Global Employment Trends report forecasts that world unemployment will rise to 6.1% this year from 6% in 2013 and will remain well above its pre-crisis rate of 5.5% for several years. [ILO]

UK

- Unemployment amongst 16-24-year-olds has risen by 50% in the last decade to over 1.2 million. [IF]
- One in six young people are now classed as "NEETs" (Not in Employment Education or Training). [IF]
- Unemployment is nothing new – but in the past it was cyclical. Modern circumstances, including the way that many of the old entry-level jobs have now been replaced by machines and technology, suggest that the trend could continue relentlessly downwards.

- Long-term job tenure has fallen by 25% since 1975, and the percentage of jobs now performed as part-time labour has risen correspondingly. [IF]
- In 1974 average 50-59 year old male earned 4% more than 25-29 year old. In 2008 it was 35% more. [Earnings Surveys cited by Willems MP]

Disillusionment with politics

- Voting statistics reveal that Generation Y are disillusioned with politics (cf. Russell Brand's call as guest editor of the *New Statesman* to encourage youth not to vote).
 - The turn-out for 18-24 and 25-34 age brackets tallying in below the national average in recent general elections. 18-24 year old voting turn-out reached its nadir in 2005 at 38.2% and the 25-34 age bracket dipped in 2001 at 45.0%.
 - Note: There are no official figures for voting by age, but a long-running academic study, the *British Election Study* (table below) provides reasonably consistent survey-based data for General Elections since 1964 [UK Parliament Briefing Paper, 2013]

Table 2: Estimated percentage turnout by age at General Elections: 1964-2010

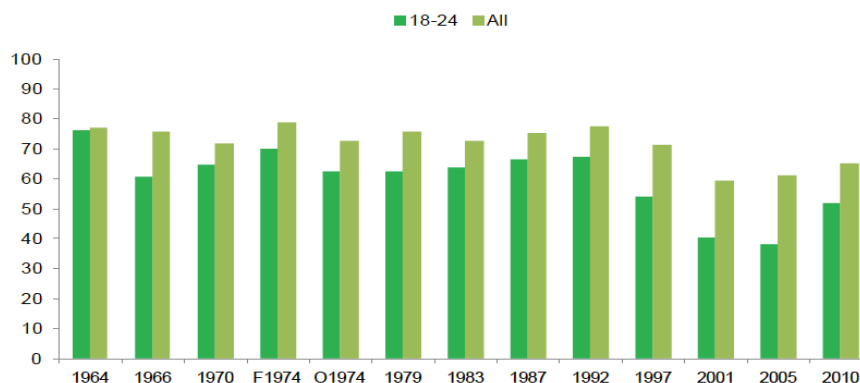
	1964	1966	1970	F1974	O1974	1979	1983	1987	1992	1997	2001	2005	2010
18-24	76.4	60.5	64.9	70.2	62.5	62.5	63.9	66.6	67.3	54.1	40.4	38.2	51.8
25-34	70.7	70.8	66.5	77.2	69.0	72.4	67.6	74.0	77.3	62.2	45.0	47.7	57.3
35-44	79.5	80.0	72.8	78.7	73.9	76.3	76.2	74.9	78.3	70.2	55.7	61.6	64.4
45-54	79.1	79.8	74.9	73.1	76.6	81.2	77.6	79.9	81.8	76.4	63.2	65.5	67.5
55-64	78.4	78.0	74.1	82.2	76.6	81.4	77.2	78.9	78.1	79.9	64.0	72.6	69.8
65+	76.7	75.9	77.2	79.2	76.0	77.7	73.1	76.0	79.2	77.7	70.1	74.3	74.7
All	77.1	75.8	72.0	78.8	72.8	76.0	72.7	75.3	77.7	71.4	59.4	61.3	65.0

Sources: British Election Study (re-analysis of datasets)

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Note: Data for 1964 and 1966 refers to people aged 21-24 as the voting age was 21 not 18

Chart 4: Turnout by age at General Elections



(8) THE WAR ON TERROR

- The baby boomers rose to political power in the West in the 1990s: Bill Clinton (born in 1946) was the first baby boomer to assume the US Presidency in 1993, and Tony Blair (born in 1953) followed suit when he became the first baby boomer Prime Minister of the UK in 1997.
- The immediate post-Cold War period had seen a surge in optimism over the potential role of the West in upholding the international legal order and ending impunity for human rights violators around the world. At first, the baby boomers seemed eager to see this optimism carried through into their domestic and foreign policies.

- In the UK, Tony Blair signalled his commitment to the human rights project with the passing into law of the Human Rights Act in 1998.
 - Meanwhile, on the international stage, the newly-found appetite for international humanitarian intervention can be seen in the US intervention in Somalia in 1993, followed by the NATO intervention in Kosovo in 1998.
- However, Western foreign and domestic policy suffered a remarkable shift away from the rule of law and international legal standards in the aftermath of the 9/11 terrorist attacks on the World Trade Centre. By this stage, George W. Bush (born in 1946) had replaced Clinton as President of the US. Since 2001, both the UK and the US have shown an increasing disregard for the international legal order established after the Second World War and enshrined in the UN Charter and Universal Declaration on Human Rights:
- The establishment and continued use of the detention facilities at Guantanamo Bay are an affront to a plethora of international human rights instruments intended to guarantee *habeas corpus* and fair trial rights. Lord Steyn is thought to be the first to have referred to Guantanamo as a “legal black hole”.
 - In 2002, several memos drafted by the principal legal advisers to the White House were leaked to the press. These memos betray a blatant disdain for international humanitarian law, most notably with regard to the proposed legal definition of “torture”.
 - When the International Criminal Court (ICC) came into being in 2002, the Bush administration almost immediately enacted the American Servicemembers’ Protection Act, with the aim of protecting US military personnel from prosecution by the ICC.
 - The invasion of Iraq by Coalition forces in 2003 was carried out without UN Security Council authorisation, and was therefore *prima facie* in contravention of international law.
 - In the UK, numerous pieces of anti-terrorism legislation have sought to increase police powers and the permitted time for detention without charge. In 2004, the House of Lords issued a declaration of incompatibility in relation to part of the Anti-Terrorism, Crime and Security Act 2001, holding it in breach of the European Convention on Human Rights.
 - The US drone campaign, implemented by President Barack Obama (born in 1961), has attracted controversy for its seeming disregard for international humanitarian law. In October 2013, Ben Emmerson QC, the UN Special Rapporteur on the promotion and protection of human rights and fundamental freedoms, criticised the US drone program for its lack of transparency and the danger of civilian casualties. [[The Guardian](#)]