



**LEAVES, A Newsletter of the  
INTERNATIONAL  
ENVIRONMENT FORUM**  
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**International Environment Forum** a Baha'i inspired organization addressing  
the environment and sustainable development

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Article submission	<a href="mailto:newsletter@iefworld.org">newsletter@iefworld.org</a>	
Secretariat Email	<a href="mailto:ief@iefworld.org">ief@iefworld.org</a>	General Secretary Emily Firth
President Email	<a href="mailto:ief@iefworld.org">ief@iefworld.org</a>	Arthur Lyon Dahl Ph.D.
Postal address	12B Chemin de Maisonneuve, CH-1219 Chatelaine, Geneva, Switzerland	

### **From the Editor, Request for information for upcoming newsletters**

**This newsletter is an opportunity for IEF members to share their experiences, activities, and initiatives that are taking place at the community level on environment, climate change and sustainability. All members are welcome to contribute information about related activities, upcoming conferences, news from like-minded organizations, recommended websites, book reviews, etc. Please send information to [newsletter@ief.org](mailto:newsletter@ief.org)**

**Please share the Leaves newsletter and IEF membership information with family, friends, and associates and encourage interested persons to consider becoming a member of the IEF.**

### **PERL meeting in Sligo, Ireland**



The International Environment Forum participates in the Partnership for Education and Research about Responsible Living (PERL), which held its annual joint meeting of workgroups in Sligo, Ireland, on 2-5 April. PERL is a partnership of educators and researchers from over 140 institutions in more than 50 countries that are working to empower citizens to live responsible and sustainable lifestyles. PERL aims to advance education for responsible living by focusing on consumer citizenship, education for sustainable consumption, social innovation and sustainable lifestyles. PERL partners undertake research and discussion, and develop teaching methods and materials.

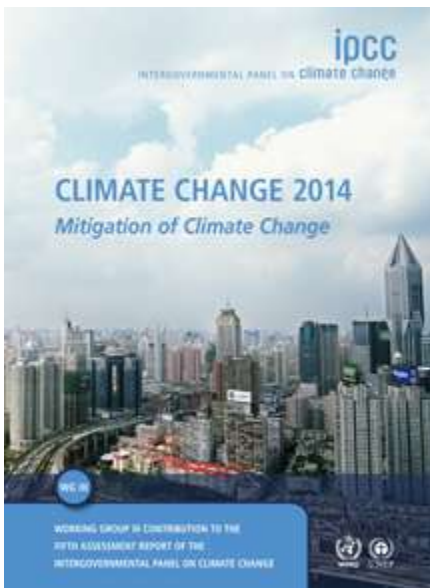


PERL is coordinated by IEF board member Victoria Thoresen from Norway. She opened the meeting along with the president of the college that hosted us and the Irish Minister of State for Training and Skills. While we were waiting for the delayed arrival of the Minister, IEF member Ismael Valesco delighted the audience with a performance around the moth and the flame about experience and sacrifice, inspired by the Baha'i writings. Another mime performance later based on the lost lover pursued by the watchman was equally well received. Ismael also led a workshop on the digital revolution.

Other IEF members participating in the meeting included Arthur Dahl, who leads a PERL workgroup preparing toolkits for values-based education in secondary schools, and Onno Vinkhuyzen, a member of the workgroup. Two other researchers on values-based indicators from the University of Brighton, Gemma Burford and Tiina Jaatinen, also contributed to the workgroup. After the meeting, Arthur Dahl stayed on a few days in Ireland to give public lectures on climate change, energy and human rights organized by the Baha'i communities in Ennis, Limerick and Dublin.

## Governments Advance on Sustainable Development Goals

The UN Open Working Group on Sustainable Development Goals (SDGs) met at the beginning of April to begin the process of defining focus areas and target areas for SDGs from the many suggestions available. The co-chairs will produce a revised focus area document for discussion at the next OWG on 5-9 May. A further OWG meeting on 16-20 June will produce refined SDGs and targets, and the final OWG on 14-18 July should agree and adopt a report to a stocktaking event for Heads of State on 25 September. This will lead to a synthesis report by the Secretary-General in November, and another round of negotiations from January to September 2015.



<http://mitigation2014.org/>

### Climate Change 2014: Mitigation of Climate Change

IPCC Working Group III Contribution to AR5

Concluding four years of intense scientific collaboration by hundreds of authors from around the world, this report responds to the request of the world's governments for a comprehensive, objective and policy neutral assessment of the current scientific knowledge on mitigating climate change. The report has been extensively reviewed by experts and governments to ensure quality and comprehensiveness. The quintessence of this work, the Summary for Policymakers, has been approved line by line by member governments at the 12th Session of IPCC WG III in Berlin, Germany (7-11 April 2014).

**Worldwide Scientific Collaboration:**

235 authors, 58 countries, 38,315 comments



### American Association for the Advancement of Science (AAAS) Kicks Off Initiative to Recognize Climate Change Risks

18 March 2014

AAAS is announcing the launch of a new initiative to expand the dialogue on the risks of climate change. At the heart of the initiative is the AAAS's "What We Know" report, an assessment of current climate science and impacts that emphasizes the need to understand and recognize possible high-risk scenarios.

"We're the largest general scientific society in the world, and therefore we believe we have an obligation to inform the public and policymakers about what science is showing about any issue in modern life, and climate is a particularly pressing one," said Dr. Alan Leshner, CEO of AAAS. "As the voice of the scientific community, we need to share what we know and bring policymakers to the table to discuss how to deal with the issue."

Nobel laureate Dr. Mario Molina, distinguished professor of chemistry and biochemistry at the University of California, San Diego and Scripps Institution of Oceanography and co-chairs, Dr. Diana Wall, distinguished professor of biology and director at Colorado State University's School of Global Environmental Sustainability and Dr. James McCarthy, Alexander Agassiz Professor of Biological Oceanography at Harvard, chaired the climate science panel that generated the report.

They, along with the 10 panelists spanning climate science specialties, will engage in the initiative in various ways, from speaking engagements to testimonials on a forthcoming interactive web site to knowledge sharing with other professionals. The initiative encourages Americans to think of climate change as a risk management issue; the panel aims to clarify and contextualize the science so the public and decision-makers can be more adequately informed about those risks and possible ways to manage them.

The report provides three key messages for every American about climate change:

- Climate scientists agree: climate change is happening here and now.
- We are at risk of pushing our climate system toward abrupt, unpredictable, and potentially irreversible changes with highly damaging impacts.
- The sooner we act, the lower the risk and cost. And there is much we can do.

"This new effort is intended to state very clearly the exceptionally strong evidence that Earth's climate is changing, and that future climate change can seriously impact natural and societal systems," Dr. McCarthy said. "Even among members of the broader public who already know about the evidence for climate change and what is causing it, some do not know the degree to which many climate scientist are concerned about the risks of possibly rapid and abrupt climate change — that's something we are dedicated to discussing with multiple audiences, from business leaders and financial experts to decision makers in all walks of life."

Bob Litterman, former Goldman & Sachs Co. executive and senior partner at Kepos Capital, has participated in discussions with the panel on how to accurately measure climate-related risks and the need for a language to talk about climate change through the lens of risk management.

"Scientists have developed a solid understanding of how the climate is responding to the build-up of greenhouse gases, but they recognize the considerable uncertainty about the long-run impacts — especially potential economic damages. Economists understand how to create incentives to limit pollution production with maximum effect and minimum collateral damage, but crafting the appropriate response is a complex valuation process that requires quantifying those same uncertainties," Litterman said. "To do so requires scientists and economists to work together, ask tough questions, and break the boundaries of their professional silos. That's what's this initiative aims to do."

## **What We Know**

Based on the evidence, more than 97% of climate scientists agree that human-caused climate change is happening.

## The Reality, Risks and Response to Climate Change

The overwhelming evidence of human-caused climate change documents both current impacts with significant costs and extraordinary future risks to society and natural systems. The scientific community has convened conferences, published reports, spoken out at forums and proclaimed, through statements by virtually every national scientific academy and relevant major scientific organization — including the American Association for the Advancement of Science (AAAS) — that climate change puts the well-being of people of all nations at risk.

Surveys show that many Americans think climate change is still a topic of significant scientific disagreement.<sup>lii</sup> Thus, it is important and increasingly urgent for the public to know there is now a high degree of agreement among climate scientists that human-caused climate change is real. Moreover, while the public is becoming aware that climate change is increasing the likelihood of certain local disasters, many people do not yet understand that there is a small, but real chance of abrupt, unpredictable and potentially irreversible changes with highly damaging impacts on people in the United States and around the world.

It is not the purpose of this paper to explain why this disconnect between scientific knowledge and public perception has occurred. Nor are we seeking to provide yet another extensive review of the scientific evidence for climate change. Instead, we present key messages for every American about climate change:

**1. Climate scientists agree: climate change is happening here and now.** Based on well-established evidence, about 97% of climate scientists have concluded that human-caused climate change is happening. This agreement is documented not just by a single study, but by a converging stream of evidence over the past two decades from surveys of scientists, content analyses of peer-reviewed studies, and public statements issued by virtually every membership organization of experts in this field. Average global temperature has increased by about 1.4° F over the last 100 years. Sea level is rising, and some types of extreme events – such as heat waves and heavy precipitation events – are happening more frequently. Recent scientific findings indicate that climate change is likely responsible for the increase in the intensity of many of these events in recent years.

**2. We are at risk of pushing our climate system toward abrupt, unpredictable, and potentially irreversible changes with highly damaging impacts.** Earth's climate is on a path to warm beyond the range of what has been experienced over the past millions of years.<sup>liii</sup> The range of uncertainty for the warming along the current emissions path is wide enough to encompass massively disruptive consequences to societies and ecosystems: as global temperatures rise, there is a real risk, however small, that one or more critical parts of the Earth's climate system will experience abrupt, unpredictable and potentially irreversible changes. Disturbingly, scientists do not know how much warming is required to trigger such changes to the climate system.

**3. The sooner we act, the lower the risk and cost. And there is much we can do.** Waiting to take action will inevitably increase costs, escalate risk, and foreclose options to address the risk. The CO<sub>2</sub> we produce accumulates in Earth's atmosphere for decades, centuries, and longer. It is not like pollution from smog or wastes in our lakes and rivers, where levels respond quickly to the effects of targeted policies. The effects of CO<sub>2</sub> emissions cannot be reversed from one generation to the next until there is a large-scale, cost-effective way to scrub carbon dioxide from the atmosphere. Moreover, as emissions continue and warming increases, the risk increases.

By making informed choices now, we can reduce risks for future generations and ourselves, and help communities adapt to climate change. People have responded successfully to other major environmental challenges such as acid rain and the ozone hole with benefits greater than costs, and scientists working with

economists believe there are ways to manage the risks of climate change while balancing current and future economic prosperity.

As scientists, it is not our role to tell people what they should do or must believe about the rising threat of climate change. But we consider it to be our responsibility as professionals to ensure, to the best of our ability, that people understand what we know: human-caused climate change is happening, we face risks of abrupt, unpredictable and potentially irreversible changes, and responding now will lower the risk and cost of taking action.

**Download the Full Document »** <http://whatweknow.aaas.org/wp-content/uploads/2014/03/AAAS-What-We-Know.pdf>

- [i] Leiserowitz et al. (2013). “Climate change in the American mind: Americans’ global warming beliefs. Yale Project on Climate Change Communication and the George Mason University Center for Climate Change Communication. <http://environment.yale.edu/climate-communication/files/Climate-Beliefs-April-2013.pdf>
- [ii] National Research Council (2013). *Abrupt Impacts of Climate Change: Anticipating Surprises*, Washington, DC: The National Academies Press.

## Climate Change: Evidence and Causes



An overview from the Royal Society and the US National Academy of Sciences

**Download the Booklet**

- **Download the full booklet**
- **Download only the Q&A section of the booklet**
- **Download only the Climate Basics section of the booklet**
- **View a gallery of figures from the booklet**

The U.S. National Academy of Sciences and The Royal Society released “*Climate Change: Evidence & Causes*,” a new publication produced jointly by the two institutions, on February 27, 2014 at an event hosted by Miles O’Brien of the PBS Newshour.

## About the Document

The leadership of the U.S. National Academy of Sciences and the U.K.'s Royal Society convened a UK-US team of leading climate scientists to produce this brief, readable reference document for decision makers, policy makers, educators, and other individuals seeking authoritative information on the some of the questions that continue to be asked.

The publication makes clear what is well-established and where understanding is still developing. It echoes and builds upon the long history of climate-related work from both national academies, as well as on the newest climate-change assessment from the United Nations' Intergovernmental Panel on Climate Change. It touches on current areas of active debate and ongoing research, such as the link between ocean heat content and the rate of warming.

## **A report on the Climate Change Special Interest Group (CC-SIG) meeting, Abingdon, 23 February 2014: 'Greening the Soul: Responding to the BIC's Seven Year Action Plan of Action on Climate Change'**

A one day school on climate change from a Baha'i perspective was held in Abingdon and attended by 29 participants from 20 communities – mainly from south central England. The day started with a devotional (prepared by Phil Koomen) on the themes of Nature and Creation, Interconnectedness in Nature and God's Purpose for Humanity, and included cello accompaniment by Sharlie Hawkins.

This was followed by a review (by Michael Richards) of Baha'i involvement in environmental and climate change issues starting with the inspiration of the Central Figures and Richard St Barbe Baker. There has been international institutional involvement in UN meetings on the environment and sustainable development since 1972 when the Faith was represented at a major UN conference on sustainable development, at which the BIC issued the statement 'The Environment and Human Values – a Baha'i View'. From 1987 the Faith has taken part in various global interfaith initiatives on the environment. Promotion of a Baha'i perspective at international meetings was greatly enhanced by formation of the International Environment Forum (IEF) in 1997 as a non-government organisation accredited by the United Nations; the activities, monthly newsletter and website ([www.iefworld.org](http://www.iefworld.org)) of IEF continue to be a major source of guidance for Baha'is concerned about the environment.

Some short videos were shown on climate change science, revealing a consensus view among scientists that a rise in temperature of two degrees above pre-industrial levels will be 'dangerous' for humanity. At current rates this could be reached by 2040 – among other results would be an end to coral reefs. One aspect of climate change of great importance for Baha'is is that it is now regarded as the biggest cause of world poverty (talk by President of World Bank to world leaders at Davos, January 2014). Therefore our daily actions are affecting not 'just' the environment and our own descendents, but are increasing the suffering of the most vulnerable members of our human family. This reinforces the message that climate change and its impacts are about the central tenets of the Faith - justice, equity and unity.

Recent guidance to the global Baha'i community was presented (by Adam Thorne and Becky Vickers) through key extracts from the 2009-2016 Seven Year Plan of Action on Climate Change of the Baha'i International Community and the 2008 BIC statement 'Seizing the Opportunity: Redefining the challenge of climate change' in which specific suggestions were made for action at individual, community, national and international levels. The Seven Year Plan of Action is a commitment by the Faith to a broader 2009 pledge by the world's religions for action on climate change.

A striking suggestion of the 2008 statement was on the importance of women in the context of climate change: 'one of the most pervasive social challenges besetting communities around the world ... is the marginalization of girls and women ... Around the world, women are largely responsible for securing food, water and energy for cooking and heating. Scarcity of resources arising from climate change intensifies the woman's burden and leaves less time to earn an income, attend school or care for the family.....Women represent perhaps the greatest source of untapped potential in the global effort to overcome the challenges of climate change ... Women's distinct knowledge and needs complement those of men, and must be duly considered in all arenas of community decision-making. The United Nations must include a gender dimension in their response to climate change.'<sup>1</sup>

The themes of a Baha'i inspired, interfaith course called "Spiritual and Scientific Dimensions of Climate Change", developed under the auspices of the IEF, were outlined by Phil Kooman, who facilitated this course at the Baha'i Summer School, 2011. This course is now being offered as a 7 week online distance-learning course by the Wilmette Institute from 10th March. Phil asked participants to reflect on personal and local initiatives that the friends had initiated that could inspire others to adopt to a more sustainable way of living, consistent with Baha'u'llah's teachings that we are interdependent with the environment. The many suggestions included:

- Adopting acts of service in the core activities that either raise our awareness of our interdependence or have a direct environmental benefit.
- Examining our lifestyles to ensure we don't unwittingly adopt accepted but corrupt practices such as paying in cash to avoid paying VAT.
- Working with community action groups (CAGs) to encourage sustainable lifestyles and other efforts to our carbon footprint
- Buying from local charity shops, increasing the vegetarian proportion in our diet, and buying locally produced and 'in season' vegetables and fruits
- Car sharing or using public transport
- Making ethical investments
- Buying fair trade products

Using a gigantic display board full of post-it notes, lines and arrows, Susie Howard gave a diagrammatic representation of how the 'Abingdon carbon cutters' was set up in 2006 and its development since then. It arose from a local man, Francis Standish, was invited to a joint IEF and BASED-UK conference at Balliol College, Oxford, in 2006 called 'Science, Faith and Global Warming'; on his return he, along with other local residents were the driving force for the 'carbon cutters' group.' This now has a steering committee of 12 local people representing a variety of Christian denominations, those of no particular persuasion and one Baha'i. There are various action groups, including 'Food', 'Education in schools', and 'Energy and Travel'. What has developed is an effective grass roots community project to address the effects of climate change in one town.

A presentation was also given by Ali Jay who works in Dorset to encourage local schools to gain an 'Eco School' mark. To do this the schools have to plan their curriculum around many environmental issues such as water, waste, transport, energy and global citizenship. The activities in an 'Eco' school are often pupil led and involve the whole school and the local community.

After lunch, Ali tested the friends' knowledge of the cost of using carbon-based fuels with a quiz, an example of such a question was: What uses the most energy? A) Sending an email; B) Googling a subject; C) a 2-minute mobile phone call. It's the phone call. Ali also spoke about Transition Together - more details of this initiative, which has been adopted in many places, can be found by visiting the website at the end of this report.

The afternoon began with the friends being spilt up into groups and participating in ‘carbon conservation’ games which involved some spirited consultation on the many complex issues. The day was rounded off by group discussions of important issues. These resulted in a number of suggestions for individual, community and national action, including:

- There was a strong feeling that leadership on climate change needs to come from the NSA to get the wider community on board as has happened in the United States where the NSA has written to the Baha’is in each year of the 7 year plan (to date) reminding the friends of this commitment, and providing suggestions for study and activities.
- The national community's commitment to the 7 year plan needs to be highlighted. It was felt that we should raise this with the NSA in 2 ways: a) Write b) to the NSA Delegates to raise the topic at National Convention. In both cases, we should emphasise the binding nature of the commitment and lack of action so far. We can suggest referring to the US community’s response to the 7 year plan for guidance.

Suggestions for actions within the community included:

- Running the Wilmette course at a summer school again but giving it better publicity and endorsement.
- Bringing environmental awareness into our core activities e.g. trips outdoors for children's classes, local and ethical choices when catering, considering transport alternatives when arranging events. It was noted that the US community has developed resources for children, youth and communities relating to the environment/climate change.
- Using Oxfordshire as an example /case study for environmental action.
- Bahá’is should know about and follow best practice as regards carbon cutting and being environmentally savvy. Environmental concerns should ALWAYS be considered when planning meetings, gatherings, etc. A summary of relevant websites and organisations that could be helpful in understanding climate change should be made available. Links should be made between those with knowledge and who can enthuse others about protecting the environment and responding to climate change, and those running junior youth and children's classes. This could lead to young people carrying out projects and having a deeper understanding of the problems and solutions.
- Bahá’is need to find about their local Community Action Groups (CAGs) so they can connect with them and support actions that are already happening. There is a need to see protecting the environment as a normal part of service to the community, and for information and knowledge of groups and schools like this to be shared with the wider Baha’i community.

The general consensus was that this was an extremely worthwhile day and it could be held on a regular basis as the issues raised become more urgent in an increasingly uncertain world. As Baha’u’llah said: “Be anxiously concerned with the needs of the age ye live in, and centre your deliberations on its exigencies and requirements.”

### Suggested web sites

**International Environment Forum :** [www.http://iefworld.org](http://iefworld.org)

**Carbon Conversations :** <http://carbonconversations.org/>

**Transition Town Network:** <http://www.transitionnetwork.org/>

<sup>1</sup> *Seizing the Opportunity: Redefining the challenge of climate change*, BIC statement, Dec 2008.



## **‘Save Guggal Movement’: an inspiration from nature-loving-nature of Swiss people**

The depletion of plant biodiversity is a matter of global concern. The problem is more severe in developing countries and regions of extreme climates, as such regions are poor in biodiversity. Rajasthan, the arid and semi-arid zone and largest state of India, is stated to have a large number of species that are endemic to this region. Extinction of plant diversity in such extreme regions may be an irreversible loss from socio-economic, scientific and utility point of view. Therefore, my research work is focused on conservation of threatened plant species using the biotechnological as well as community-based strategies. My research team has successfully developed the *in vitro* method to propagate many plant species such as *Commiphora wightii*, *Barleria prionitis*, *Asparagus racemosus*, *Phyllanthus amarus*, *Plumbago zeylanica* etc.



Vineet Soni discussing local villagers about the conservation and importance of plant species

During my Post-Doctoral research at the University of Geneva (Switzerland), I was highly inspired by the nature-loving-nature of Swiss people. Citizens of other countries should learn from them that how to maintain the biodiversity with *increasing industrialization and population*. In my opinion, unawareness is the root cause of plant biodiversity loss in developing countries. Upon returning home in November 2007 from Switzerland, I was struck by the fact that many plants were becoming scarce, yet

nobody seemed to care. That is when I decided to found the ‘Save Guggul Movement’, to conserve the *Commiphora wightii*, locally known as ‘Guggal’ or ‘Guggul’.



Education and awareness program at rural and tribal areas of Rajasthan (India) to conserve the threatened

A number of activities have been identified and conducted through the close co-operation of the village level communities who lives around the Aravali Hills of Rajasthan state.

Community-groups are also prepared of different age, to disseminate conservation message. A campaign is started with series of local workshop, with a motive to conserve the Guggal plants and their habitat, their relationship with other wildlife and roll in daily life of locals, and also highlighted as a key indicator of desert ecosystem. Through meetings, talks and discussions,

the local communities are now more aware of the threats faced by guggul plants and how endangered they are. Subsequently, several workshops are being organizing which includes slide shows and poster exhibitions at different villages and in local schools.

Really! Community-based conservation can never fail. Efforts should be made to mobilize local people to conserve areas of high biodiversity, and thereby improve the natural resource assets of rural populations. By engaging local people to conserve biodiversity, a broad-based, long-term strategy can be formulated for the conservation of globally threatened biodiversity.

**Contact IEF member: Dr Vineet Soni, M.Sc., Ph.D., PostDoc (Switzerland), FBS, FLS**  
**Department of Botany, University College of Sciences, Mohanlal Sukhadia University, Udaipur-313001,**  
**INDIA      Mob: +91-9782012276 , Email: [vineetsonijnu@gmail.com](mailto:vineetsonijnu@gmail.com)**



## Climate Efforts Falling Short, U.N. Panel Says

By JUSTIN GILLIS April 13, 2014

[http://www.nytimes.com/2014/04/14/science/earth/un-climate-panel-warns-speedier-action-is-needed-to-avert-disaster.html?emc=edit\\_th\\_20140414&nl=todaysheadlines&nid=48444646&r=0](http://www.nytimes.com/2014/04/14/science/earth/un-climate-panel-warns-speedier-action-is-needed-to-avert-disaster.html?emc=edit_th_20140414&nl=todaysheadlines&nid=48444646&r=0)

A power station in Sofia, Bulgaria. The Intergovernmental Panel on Climate Change found that atmospheric carbon dioxide levels rose almost twice as fast in the first decade of this century. Credit Dimitar Dilkoff/Agence France-Presse — Getty Images

BERLIN — Delivering the latest stark news about climate change on Sunday, a United Nations panel warned that governments are not doing enough to avert profound risks in coming decades. But the experts found a silver lining: Not only is there still time to head off the worst, but the political will to do so seems to be rising around the world.

In a report unveiled here, the Intergovernmental Panel on Climate Change found that decades of foot-dragging by political leaders had propelled humanity into a critical situation, with greenhouse emissions rising faster than ever. Though it remains technically possible to keep planetary warming to a tolerable level, only an intensive push over the next 15 years to bring those emissions under control can achieve the goal, the committee found.

“We cannot afford to lose another decade,” said Ottmar Edenhofer, a German economist and co-chairman of the committee that wrote the report. “If we lose another decade, it becomes extremely costly to achieve climate stabilization.”

The good news is that ambitious action is becoming more affordable, the committee found. It is increasingly clear that measures like tougher building codes and efficiency standards for cars and trucks can save energy and reduce emissions without harming people’s quality of life, the panel found. And the costs of renewable energy like wind and solar power are falling so fast that its deployment on a large scale is becoming practical, the report said.

Moreover, since the intergovernmental panel issued its last major report in 2007, far more countries, states and cities have adopted climate plans, a measure of the growing political interest in tackling the problem. They include China and the United States, which are doing more domestically than they

have been willing to commit to in international treaty negotiations.

Yet the report found that the emissions problem is still outrunning the determination to tackle it, with atmospheric carbon dioxide levels rising almost twice as fast in the first decade of this century as they did in the last decades of the 20th century. That reflects a huge rush to use coal-fired power plants in developing countries that are climbing up the income scale, especially China, while rich countries are making only slow progress in cutting their high emissions, the report said.

The report is likely to increase the pressure to secure an ambitious new global climate treaty that is supposed to be completed in late 2015 and take effect in 2020. But the divisions between wealthy countries and poorer countries that have long bedeviled international climate talks were on display yet again in Berlin.

Some developing countries insisted on stripping charts from the report’s executive summary that could have been read as requiring greater effort from them, while rich countries — including the United States — struck out language that might have been seen as implying that they needed to write big checks to the developing countries. Both points survived in the full version of the report, but were deleted from a synopsis meant to inform the world’s top political leaders.

The new report does not prescribe the actions that governments need to take. But it does make clear that putting a price on emissions of carbon dioxide and other greenhouse gases, either through taxes or the sale of emission permits, is a fundamental approach that could help redirect investment toward climate-friendly technologies.

If climate targets are to be met, the report said, annual investment in electrical power plants that use fossil fuels will need to decline by about 20 percent in the coming two decades, while investment in low-carbon energy will need to double from current levels.

The report warns that if greater efforts to cut emissions are not implemented soon, future generations seeking to limit or reverse climate damage will have to depend on technologies that permanently remove greenhouse gases from the air; in effect, they will be trying to undo the damage caused by the people of today.

But these technologies do not exist on any appreciable scale, the report said, and there is no guarantee that they will be available in the future, much less that they will be affordable.

The intergovernmental panel warned that the longer countries delayed aggressive action, the more difficult it would be to limit global warming to the level that the international community has agreed to, namely a rise in the global average temperature of no more than 3.6 degrees Fahrenheit (2 degrees Celsius) above the preindustrial level.

Scientists fear that exceeding that level could produce drastic effects, such as the collapse of ice sheets, a rapid rise in sea levels, difficulty growing enough food, huge die-offs of forests, and mass extinctions of plant and animal species.

The Intergovernmental Panel on Climate Change is a United Nations body that includes hundreds of scientists, economists and other experts. The group periodically reviews the science and economics of climate change and issues major reports every five or six years. Along with Al Gore, it was awarded the Nobel Peace Prize in 2007 for calling attention to the climate problem.

The new report, dealing with ways to limit the growth of the emissions that are causing climate change, is the third in recent months. A report released in Stockholm in September found a certainty of 95 percent or greater that humans were the main cause of global warming, and a report released in Yokohama, Japan, two weeks ago said profound effects were already being felt around the world, and were likely to get much worse.

The latest report found that if countries keep stalling on tougher climate rules, trillions of dollars will be invested in coming years in power plants, cars and buildings that use too much energy from fossil fuels. The result, the report said, would be an emissions path that would be almost impossible to alter in time to get to the very low carbon pollution levels that scientists think are necessary by 2050.

The authors found that tackling the problem in a serious way would carry large costs, shaving a few hundredths of a percentage point off global economic growth each year. By the end of the century, societies would most likely be far richer than today, but almost 5 percent poorer than they would have been had they not spent the money to protect the climate, according to the study.

“Climate policy is not a free lunch,” Dr. Edenhofer said at a news conference Sunday in Berlin.

Against those costs, the economic benefits of acting are essentially impossible to calculate, the report found. The biggest reason is that scientists do not know how likely it is that unchecked global warming could cause some sort of wildly expensive calamity, such as a rapid melting of ice sheets that would drown the world’s major coastal cities. This and other disasters are distinctly possible, the authors found.

In essence, the committee described money spent fighting climate change as a form of insurance against the most severe potential consequences. “It is up to the public and up to decision makers to decide if it is affordable or not,” Dr. Edenhofer said.

The report was quickly welcomed in Washington, where President Obama is trying to adopt aggressive climate policies despite congressional

opposition. His science adviser, John P. Holdren, said the report showed that “the longer society waits to implement strong measures to cut greenhouse gas emissions, the more costly and difficult it will become to limit climate change to less than catastrophic levels.”

Coral Davenport contributed reporting from Washington.

A version of this article appears in print on April 14, 2014, on page A1 of the New York edition with the headline: Climate Efforts Falling Short, U.N. Panel Says

## IPCC climate change report: averting catastrophe is eminently affordable

<http://www.theguardian.com/environment/2014/apr/13/averting-climate-change-catastrophe-is-affordable-says-ipcc-report-un>

Landmark UN analysis concludes global roll-out of clean energy would shave only a tiny fraction off economic growth



Photograph: AFP/Getty Images

Catastrophic climate change can be averted without sacrificing living standards according to a UN report, which concludes that the transformation required to a world of clean energy is eminently affordable.

“It doesn’t cost the world to save the planet,” said economist Professor Ottmar Edenhofer, who led the Intergovernmental Panel on Climate Change (IPCC) team.

The cheapest and least risky route to dealing with global warming is to abandon all dirty fossil fuels in coming decades, the report found. Gas – including that from the global fracking boom – could be important during the transition, Edenhofer said, but only if it replaced coal burning.

The authoritative report, produced by 1,250 international experts and approved by 194 governments, dismisses fears that slashing carbon emissions would wreck the world economy. It is the final part of a trilogy that has already shown that climate change is “unequivocally” caused by humans and that, unchecked, it poses a grave threat to people and could lead to wars and mass migration.

Diverting hundred of billions of dollars from fossil fuels into renewable energy and cutting energy waste would shave just 0.06% off expected annual economic growth rates of 1.3%-3%, the IPCC report concluded.

“The report is clear: the more you wait, the more it will cost [and] the more difficult it will become,” said EU commissioner Connie Hedegaard. The US secretary of state, John Kerry, said: “This report is a wake-up call about global

economic opportunity we can seize today as we lead on climate change.”

The UK’s energy and climate secretary, Ed Davey, said: “The [report shows] the tools we need to tackle climate change are available, but international efforts need to significantly increase.”

The IPCC economic analysis did not include the benefits of cutting greenhouse gas emissions, which could outweigh the costs. The benefits include reducing air pollution, which plagues China and recently hit the UK, and improved energy security, which is currently at risk in eastern Europe due to the actions of Russia – a large producer of gas – in Ukraine.

The new IPCC report warns that carbon emissions have soared in the last decade and are now growing at almost double the previous rate. But its comprehensive analysis found rapid action can still limit global warming to 2C, the internationally agreed safe limit, if low-carbon energy triples or quadruples by 2050.

“It is actually affordable to do it and people are not going to have to sacrifice their aspirations about improved standards of living,” said Professor Jim Skea, an energy expert at Imperial College London and co-chair of the IPCC report team. “It is not a hair shirt change of lifestyle at all that is being envisaged

and there is space for poorer countries to develop too,” Skea told the Guardian.

Nonetheless, to avoid the worst impacts of climate change at the lowest cost, the report envisages an energy revolution ending centuries of dominance by fossil fuels – which will require significant political and commercial change. On Thursday, Archbishop [Desmond Tutu called for an anti-apartheid style campaign against fossil fuel companies](#), which he blames for the “injustice” of climate change.

Friends of the Earth’s executive director, Andy Atkins, said: “Rich nations must take the lead by rapidly weaning themselves off coal, gas and oil and funding low-carbon growth in poorer countries.”

Along with measures that cut energy waste, renewable energy – such as wind, hydropower and solar – is viewed most favourably by the report as a result of its falling costs and large-scale deployment in recent years.

The report includes nuclear power as a mature low-carbon option, but cautions that it has declined globally since 1993 and faces safety, financial and waste-management concerns. Carbon capture and storage (CCS) – trapping the CO<sub>2</sub> from coal or gas burning and then burying it – is also included, but the report notes it is an untested technology on a large scale and may be expensive.

Biofuels, used in cars or power stations, could play a “critical role” in cutting emissions, the IPCC found, but it said the negative effects of some biofuels on food prices and wildlife remained unresolved.

The report found that current emission-cutting pledges by the world’s nations make it more likely than not that the 2C limit

will be broken and it warns that delaying action any further will increase the costs.

Delay could also force extreme measures to be taken including sucking CO<sub>2</sub> out of the air.

This might be done by generating energy by burning plants and trees, which had absorbed carbon from the atmosphere, and then using CCS to bury the emissions. But the IPCC warned such carbon removal technologies may never be developed and could bring new risks.

“This is a very responsible report,” said Professor Andrew Watson, an atmospheric scientist at the University of Exeter who was not part of the IPCC team. He said there were economic and social risks in transforming the energy system to cut carbon. “However, there are even bigger risks if we do nothing and rely exclusively on being able to ride out climate change and adapt to it.”

Environmental campaign groups, which have previously criticised the IPCC for being too conservative, welcomed the new report. WWF’s Samantha Smith said: “The IPCC report makes clear that acting on emissions now is affordable, but delaying further increases the costs. It is a super strong signal to [fossil fuel] investors: they can no longer say they did not know the risks.”

Kaisa Kosonen, at Greenpeace International, said: “Renewable energy is unstoppable. It’s becoming bigger, better and cheaper every day. Dirty energy industries are sure to put up a fight but it’s only a question of time before public pressure and economics dictate that they either change or go out of business.”