

Climate inaction to be 'catastrophe'

By Matt McGrath Environment correspondent, BBC News, Yokohama, Japan



warming on humans

Scientists fear a growing impact of global

The costs of inaction on climate change will be "catastrophic", according to US Secretary of State John Kerry.

Mr Kerry was responding to a major report by the UN which described the impacts of global warming as "severe, pervasive and irreversible".

He said dramatic and swift action was required to tackle the threats posed by a rapidly changing climate.

Our health, homes, food and safety are all likely to be threatened by rising temperatures, the report says.

Scientists and officials meeting in Japan say the document is the [most comprehensive assessment to date](#) of the impacts of climate change on the world.

In a statement, Mr Kerry said: "Unless we act dramatically and quickly, science tells us our climate and our way of life are literally in jeopardy. Denial of the science is malpractice.

"There are those who say we can't afford to act. But waiting is truly unaffordable. The costs of inaction are catastrophic."

Rajendra Pachauri, chair of the Intergovernmental Panel on Climate Change (IPCC), which produced the report, told BBC News: "Even in rich countries, the impacts of climate change could lead to greater incidents of pockets of poverty, even in rich countries could lead to impoverishment of some particular communities.

"However there is an equity issue, because some of the poorest communities in the poorest countries in the world are going to be the worst hit."

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“Start Quote

Nobody on this planet is going to be untouched by the impacts of climate change”

Rajendra Pachauri Chairman, IPCC

Some impacts of climate change include a higher risk of flooding and changes to crop yields and water availability. Humans may be able to adapt to some of these changes, but only within limits.

An example of an adaptation strategy would be the construction of sea walls and levees to protect against flooding. Another might be introducing more efficient irrigation for farmers in areas where water is scarce.

Natural systems are currently bearing the brunt of climatic changes, but a growing impact on humans is feared.

Members of the IPCC say it provides overwhelming evidence of the scale of these effects.

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Analysis



Roger Harrabin Environment analyst

The prognosis on the climate isn't good - but the doctor's changing his bedside manner with the people in charge of the planet's health.

The report's chair, Dr Chris Field, is worried that an apocalyptic tone will frighten politicians so much that they'll abandon the Earth to its fate.

There is nothing inevitable about the worst impacts on people and nature, Dr Field says. We can cut emissions to reduce the risks of catastrophe and adapt to some changes that will inevitably occur.

We have to re-frame climate change as an exciting challenge for the most creative minds.

Cutting local air pollution from, say coal, can also reduce carbon emissions that cause warming; creating decent homes for poor people in countries like Bangladesh can improve lives whilst removing them from the path of flood surges.

Some will criticise Dr Field for being too upbeat. But many politicians have gone deaf to the old-style warnings. Maybe it's worth a new approach.

The report was agreed after almost a week of intense discussions here in Yokohama, which included concerns among some authors about [the tone of the evolving document](#).

This is [the second of a series](#) from the UN's climate panel due out this year that outlines the causes, effects and solutions to global warming.

This latest Summary for Policymakers document highlights the fact that the amount of scientific evidence on the impacts of warming has almost doubled since the last report in 2007.

Be it the melting of glaciers or warming of permafrost, the summary highlights the fact that on all continents and across the oceans, changes in the climate have caused impacts on natural and human systems in recent decades.

In the words of the report, "increasing magnitudes of warming increase the likelihood of severe, pervasive and irreversible impacts".

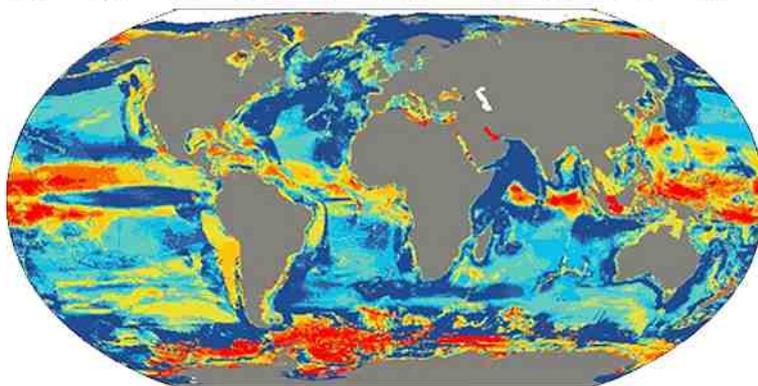
"Nobody on this planet is going to be untouched by the impacts of climate change," said Mr Pachauri.

Dr Saleemul Huq, a convening lead author on one of the chapters, commented: "Before this we thought we knew this was happening, but now we have overwhelming evidence that it is happening and it is real."

Michel Jarraud, secretary-general of the World Meteorological Organization, said the report was based on more than 12,000 peer-reviewed scientific studies. He said this document was "the most solid evidence you can get in any scientific discipline".

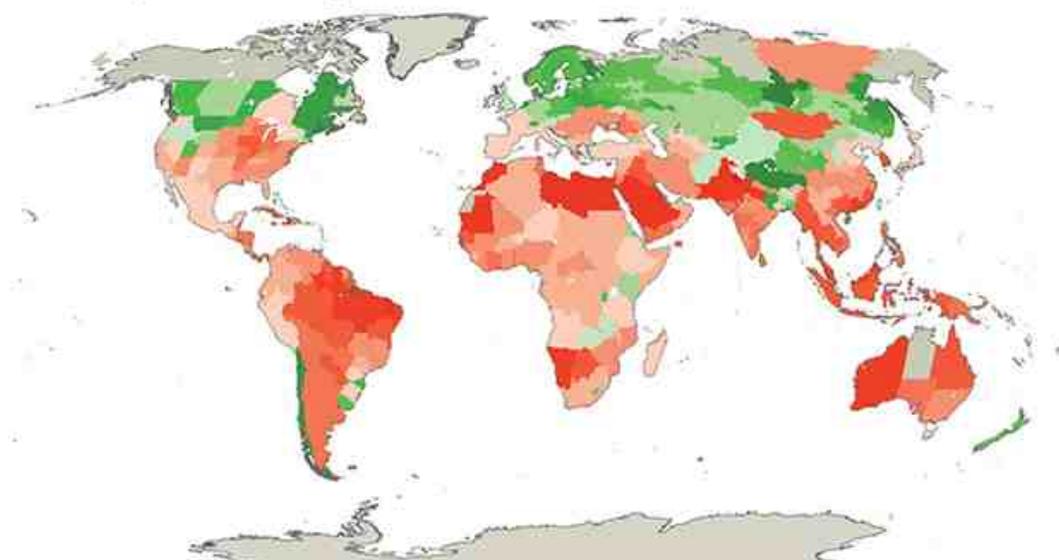
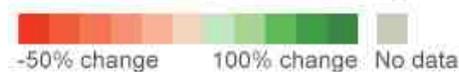
Estimated change in maximum fish catch by 2060

Compares 10 yr average 2001-2010 to projection of 2051-60



Source: IPCC

Estimated impact of +3 degrees C change on crop yields by 2050



Source: World resources institute

Ed Davey, the UK Energy and Climate Secretary said: "The science has clearly spoken. Left unchecked, climate change will impact on many aspects of our society, with far reaching consequences to human health, global food security and economic development.

"The recent flooding in the UK is a testament to the devastation that climate change could bring to our daily lives."

The report details significant short-term impacts on natural systems in the next 20 to 30 years. It details five reasons for concern that would likely increase as a result of the warming the world is already committed to.

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A perspective on the UK [David Shukman](#) Science editor, BBC News
British winters are likely to become milder and wetter like the last one but cold spells still need to be planned for, says the UK Met Office.

Summers are likely to be hotter and drier, but washouts are still on the cards, it adds.

The assessment of future weather extremes finds the role of human influence is "detectable" in summer heatwaves and in intense rainfall.

However, the Met Office says a lot more work must be done to confirm the links.

If the study is correct, it means everything from gumboots to snowploughs and sunscreen to anoraks will still be needed.

- [Read more from David](#)

These include threats to unique systems such as Arctic sea ice and coral reefs, where risks are said to increase to "very high" with a 2C rise in temperatures.

The summary document outlines impacts on the seas and on freshwater systems as well. The oceans will become more acidic, threatening coral and the many species that they harbour.

On land, animals, plants and other species will begin to move towards higher ground or towards the poles as the mercury rises.

Humans, though, are also increasingly affected as the century goes on.

Food security is highlighted as an area of significant concern. Crop yields for maize, rice and wheat are all hit in the period up to 2050, with around a tenth of projections showing losses over 25%.

After 2050, the risk of more severe yield impacts increases, as boom-and-bust cycles affect many regions. All the while, the demand for food from a population estimated to be around nine billion will rise.

Many fish species, a critical food source for many, will also move because of warmer waters.

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What is the IPCC?

In its own words, the IPCC is there "to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts".

The offspring of two UN bodies, the [World Meteorological Organization](#) and the [United Nations Environment Programme](#), it has issued [four heavyweight assessment reports to date](#) on the state of the climate.

These are commissioned by the governments of 195 countries, essentially the entire world. These reports are critical in informing the climate policies adopted by these governments.

The IPCC itself is a small organisation, run from Geneva with a full time staff of 12. All the scientists who are involved with it do so on a voluntary basis.

In some parts of the tropics and in Antarctica, potential catches could decline by more than 50%.

"This is a sobering assessment," said Prof Neil Adger from the University of Exeter, another IPCC author.

"Going into the future, the risks only increase, and these are about people, the impacts on crops, on the availability of water and particularly, the extreme events on people's lives and livelihoods."

People will be affected by flooding and heat related mortality. The report warns of new risks including the threat to those who work outside, such as farmers and construction workers. There are concerns raised over migration linked to climate change, as well as conflict and national security.

Report co-author Maggie Opondo of the University of Nairobi said that in places such as Africa, climate change and extreme events mean "people are going to become more vulnerable to sinking deeper into poverty".

While the poorer countries are likely to suffer more in the short term, the rich won't escape.

"The rich are going to have to think about climate change. We're seeing that in the UK, with the floods we had a few months ago, and the storms we had in the US and the drought in California," said Dr Huq.



IPCC Chairman Rajendra Pachauri said the findings in the report were "profound"

"These are multibillion dollar events that the rich are going to have to pay for, and there's a limit to what they can pay."

But it is not all bad news, as the co-chair of the working group that drew up the report points out.

"I think the really big breakthrough in this report is the new idea of thinking about managing climate change as a problem in managing risks," said Dr Chris Field.

Climate change impacts around the world



Species impacts



Wildfires



Floods/Sea level rise



Water stress



Melting ice



Crop changes

"Climate change is really important but we have a lot of the tools for dealing effectively with it - we just need to be smart about it."

There is far greater emphasis to adapting to the impacts of climate in this new summary. The problem, as ever, is who foots the bill?

"It is not up to IPCC to define that," said Dr Jose Marengo, a Brazilian government official who attended the talks.

"It provides the scientific basis to say this is the bill, somebody has to pay, and with the scientific grounds it is relatively easier now to go to the climate negotiations in the UNFCCC (United Nations Framework Convention on Climate Change) and start making deals about who will pay for adaptation."

Climate impacts 'overwhelming' - UN

By Matt McGrath Environment correspondent, BBC News, Yokohama, Japan



Scientists fear a growing impact of global warming on humans

Scientists and officials meeting in Japan have published the most comprehensive assessment to date of the impacts of climate change on the world.

Members of the UN's climate panel say that their report provides overwhelming evidence of the scale of these effects.

Natural systems are bearing the brunt right now but the scientists fear a growing impact on humans.

Our health, homes, food and safety are all likely to be threatened by rising temperatures, the summary says.

"Going into the future, the risks only increase, and these are about people, the impacts on crops, on the availability of water"

Prof Neil Adger University of Exeter

The report was agreed after almost a week of intense discussions here in Yokohama.

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Speaking to journalists at a news conference in Yokohama to launch the report, Michel Jarraud, secretary-general of the World Meteorological Organization, said that, previously, people could have damaged the Earth's climate out of "ignorance".

"Now, ignorance is no longer a good excuse," he said.

The report details significant short-term impacts on natural systems in the next 20 to 30 years. It details five reasons for concern that would likely increase as a result of the warming the world is already committed to.

These include threats to unique systems such as Arctic sea ice and coral reefs, where risks are said to increase to "very high" with a 2C rise in temperatures.

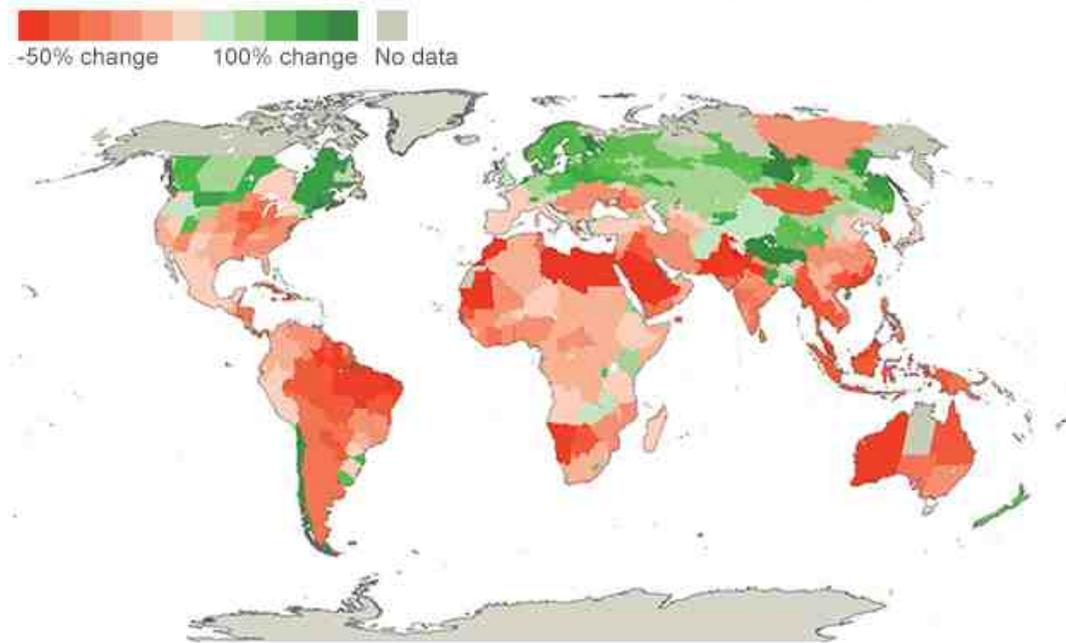
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Estimated impact of +3 degrees C change on crop yields by 2050



Source: World resources institute

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People will be affected by flooding and heat related mortality. The report warns of new risks including the threat to those who work outside, such as farmers and construction workers. There are concerns raised over migration linked to climate change, as well as conflict and national security.

While the poorer countries are likely to suffer more in the short term, the rich won't escape.

"The rich are going to have to think about climate change, we're seeing that in the UK, with the floods we had a few months ago, and the storms we had in the US and the drought in California," said Dr Huq.

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Climate change impacts around the world



-  Species impacts
-  Wildfires
-  Floods/Sea level rise
-  Water stress
-  Melting ice
-  Crop changes

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30 March 2014 Last updated at 00:49

Scientists struggle to complete climate impacts report



By Matt McGrath Environment correspondent, BBC News, Yokohama, Japan



Parts of Asia are expected to be particularly susceptible to future flooding

Negotiators worked through the night here in Yokohama in an effort to complete their review of a key report on the impacts of climate change.

At stake is a dense 29-page summary detailing the effects of climate change on the planet over the next 100 years.

Several hundred members of the UN's climate panel have been deep in deliberations since Tuesday, with many sessions running very late.

The report is the first such assessment since 2007.

"We... have a much sharper focus on the things that can be done to reduce the risks"

Dr Chris Field Co-chair, IPCC working group 2

The tired attendees left the conference centre at eight thirty in the evening as the lights were dimmed to commemorate Earth Hour.

But 60 minutes later they trooped back in to continue their word-by-word analysis of the contents.

The report is the second of three analyses developed by international teams of researchers. The first, published last September detailed the mechanics of climate change, explaining that warming was "unequivocal" and humans were behind it.

This new document being prepared here in Japan will detail the impacts and vulnerabilities to rising temperatures that the world faces over the coming century.

It will also highlight how much we can reduce the scale of these effects by adaptation.

Several versions of the report, called the Summary for Policymakers, have already been leaked but the final version won't be released until everyone - scientists and governments - are agreed on its contents.

There are likely to be a number of significant changes since the previous assessment came out in 2007.

There are now far more observations, more scientific studies on the effects of rising temperatures on humans and the species with which we share the planet. Running to 30 chapters in all, many delegates felt that it was the scale of the data that was causing delays.

There are two new chapters detailing impacts on the oceans. There are chapters on human health, on food security and conflict, but also four chapters on how we can adapt to the effects.

"We have a lot more information," said Dr Chris Field, who is the co-chair of the working group that is behind the report.

"The way I see it, we have a much sharper take on aspects of the issue that are serious but we also have a much sharper focus on the things that can be done to reduce the risks."

The summary is likely to say that the observed impacts of climate change are "widespread and consequential".

Whether it is increased melting of glaciers, or tree mortality, or impacts on rainfall patterns, the report says that the very real effects of warming are happening in the here and now.

Over the next 20 to 30 years, the report highlights some important impacts that we have little chance of avoiding, given the level of warming the world is already committed to, say the scientists.

These include threats to some "unique and threatened systems" even at 1C.

Risks from extreme weather events, including heat waves and flooding are also high at 1C.

At 2C, there are "very high risks" for Arctic sea ice and coral reefs.

The report is, according to authors, likely to be more doubtful of the benefits of warming on agriculture than its predecessor.

It is expected to say that yield losses of up to 2% per decade will occur for the rest of this century, at a time when population is set to rise sharply.

"There is a lot more literature on the response of agriculture to a changing climate and we are able to make a more comprehensive assessment than before, based on observations and model calculations," said Dr Field.

"The science on crop yields and especially on food security is getting to be a lot more actionable and usable."

Flood risks for people living in Asia are highlighted as a particular vulnerability.

The report talks about impacts on human health, how mortality increases with greater heating and how species the world over are likely to respond by moving towards the poles.

Fish will move, some stocks will be significantly impacted and people who depend on them for food will have to find other sources of protein.

The threat of the oceans becoming more acidic is spelled out as are threats to human security and migration.

The report spells out the likely impacts at different levels of warming in different parts of the world.

"We've projected climate change impacts at different levels of temperature rise, at levels of 2C and 4C and now beyond," said Dr Rachel Warren from the University of East Anglia, UK.

"We've also looked at how people and biodiversity can adapt to climate change. This notion of vulnerability is embedded in the concept of the report."

Adaptation is a key element of the report, with clear tables showing that what are currently classed as high-risk impacts could be reduced to low risks, if steps are taken.

Overall there is a greater attempt to set climate change as one of a number of threats facing people now and in the future.

"Once we think of the challenge as one of managing risk, rather than of, oh once we know for sure what's going to happen then we can do something, it becomes much more tractable," said Dr Field.

"It becomes much more a question of figuring out what are the smart and effective things to do."

25 March 2014 Last updated at 02:26

Dissent among scientists over key climate impacts report

By Matt McGrath Environment correspondent, BBC News, Yokohama



The impact of global warming on crop yields is a critical issue for this IPCC report

Senior scientists and government officials are meeting in Japan to agree a critical report on the impacts of global warming.

Members of the Intergovernmental Panel on Climate Change (IPCC) will publish their first update on the scale of the threat in seven years.

Leaked documents speak of significant impacts on economies, food supplies and security.

But some attendees say the summary, due out next Monday, is far too alarmist.

This will be the second of a trilogy of reports on the causes, effects and solutions to climate change, from a body made up of some of the leading researchers in the world.

Long-term perspective

Last September in Stockholm, they produced a [summary on the physical science of climate change](#), arguing that it was real, and humans were the "dominant cause".

Now in Yokohama, the [second IPCC working group](#) will set out the impacts that rising temperatures will have on humans, animals and ecosystems over the next century.

Under the microscope

The previous report on climate impacts released by the IPCC is being remembered for two significant errors that damaged its credibility

The first concerned the disappearance of glaciers in the Himalayas, which the IPCC erroneously said could happen by 2035

The second was a statement that over half the Netherlands lies below sea level; the more accurate figure is 26%.

Dutch scientist Arthur Petersen says that this new summary has been put "under the microscope" to avoid such errors

There are now spreadsheets for every number referenced in the report's underlying chapters

"I think this report will be better than any other climate change report that has ever been produced on the planet"

The scientists and government officials will agree on the exact wording of the final summary over the next few days, with publication coming early next Monday, UK time.

The summary is a short, dense document that sums up the findings of 30 underlying chapters, each made up of detailed assessments of relevant research that has been published since 2007.

A leaked draft of the summary, seen by the BBC, points to a range of negative effects that will in some instances, be "irreversible".

Millions of people living in coastal areas in Asia will be affected by flooding, and displaced due to land loss.

The draft says that crop yields around the world will decline by up to 2% per decade for the rest of the century.

If the world warms by 4C towards the end of this century, this will pose a "significant risk to food security even with adaptation".

The summary says that in the near term, at levels of warming that scientists say we are already committed to, there is a very high risk to Arctic sea

ice and coral reefs.

They warn that the oceans will become more acidic as they warm, and species will move towards the poles to escape the heat.

The researchers say that in this report they have been able to call on a broader range of observations. Instead of just adding up all the impacts saying that together they suggest an influence of climate change, they have been able to look at individual events.

"We've reached the stage where we can go impact by impact, and say is there an influence of climate change?" Dr Chris Field, co-chair of Working Group II told BBC News.



Officials in places like the Marshall Islands blame climate change for recent floods

"We don't see it with every one but we do see it with a lot. It's a real difference. Before it was a very general concept, now it is much more specific."

But some researchers are decidedly unhappy with the draft report.

Prof Richard Tol is an economist at the University of Sussex, who has been the convening lead author of the chapter on economics.

He was involved in drafting the summary but has now asked for his name to be removed from the document.

"The message in the first draft was that through adaptation and clever development these were manageable risks, but it did require we get our act together," he told BBC News.

"This has completely disappeared from the draft now, which is all about the impacts of climate change and the four horsemen of the apocalypse. This is a missed opportunity."

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These are commissioned by the governments of 195 countries - essentially the entire world. These reports are critical in informing the climate policies adopted by these governments

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- [History of climate change](#)

Critics say that some aspects of the projected impacts are "alarmist", such as the effects on conflict and migration caused by climate change.

"You have a very silly statement in the draft summary that says that people who live in war-torn countries are more vulnerable to climate change, which is undoubtedly true," said Prof Tol.

"But if you ask people in Syria whether they are more concerned with chemical weapons or climate change, I think they would pick chemical weapons - that is just silliness."

The assertions that the summary for policymakers is too alarmist has been countered by Dr Arthur Petersen, the chief scientist at the Netherlands Environmental Assessment Agency, who is representing his government in Yokohama.

He said that this working group had to anticipate all the challenges that might arise from a warming world.

"Working group I (the physical sciences) doesn't want to sound alarmist. In working group II, they don't want to chance not having spotted a particular risk so they have a bias in the other direction," he said.

"In this report, they are more honest and open that they have a risk orientation because they do focus more on the risks than the opportunities."

The report is shaping up to be more nuanced, with far more emphasis on adaptation than the last one in 2007.

According to many familiar with the text, it is about managing the risk rather than waiting to see if things get worse.

"We are going to frame the issue of climate change as more of a distributional issue," said Dr Petersen.

"It's not doom and gloom but an additional stress on countries that are already severely stressed."

Big climate report: Warming is big risk for people

5:51 PM Monday Mar 24, 2014



The key message can be summed up in one word that the overall report uses more than 5,000 times: risk. Photo / Thinkstock

Top climate scientists are gathering in Japan this week to finish up a report on the impact of global warming. And they say if you think climate change is only faced by some far-off polar bear decades from now, well, you're mistaken.

In fact, they will say, the dangers of a warming Earth are immediate and very human.

"The polar bear is us," says Patricia Romero Lankao of the federally financed National Center for Atmospheric Research in Boulder, Colorado, referring to the first species to be listed as threatened by global warming due to melting sea ice.

She will be among the more than 60 scientists in Japan to finish writing a massive and authoritative report on the impacts of global warming. With representatives from about 100 governments at this week's meeting of the Intergovernmental Panel on Climate Change, they'll wrap up a summary that tells world leaders how bad the problem is.

The key message from leaked drafts and interviews with the authors and other scientists: The big risks and overall effects of global warming are far more immediate and local than scientists once thought. It's not just about melting ice, threatened animals and plants. It's about the human problems of hunger, disease, drought, flooding, refugees and war, becoming worse.

The report says scientists have already observed many changes from warming, such as an increase in heat waves in North America, Europe, Africa and Asia. Severe floods, such as the one that displaced 90,000 people in Mozambique in 2008, are now more common in Africa and Australia. Europe and North America are getting more intense downpours that can be damaging. Melting ice in the Arctic is not only affecting the polar bear, but already changing the culture and livelihoods of indigenous people in northern Canada.

Past panel reports have been ignored because global warming's effects seemed too distant in time and location, says Pennsylvania State University scientist Michael Mann.

This report finds "It's not far-off in the future and it's not exotic creatures it's us and now," says Mann, who didn't work on this latest report.

The United Nations established the climate change panel in 1988 and its work is done by three groups. One looks at the science behind global warming. The group meeting in Japan beginning Tuesday studies its impacts. And a third looks at ways to slow warming.

Its reports have reiterated what nearly every major scientific organisation has said: The burning of coal, oil and gas is producing an increasing amount of heat-trapping greenhouse gases, such as carbon dioxide. Those gases change Earth's climate, bringing warmer temperatures and more extreme weather, and the problem is worsening.

The panel won the Nobel Peace Prize in 2007, months after it issued its last report.

Since then, the impact group has been reviewing the latest research and writing 30 chapters on warming's effects and regional impacts. Those chapters haven't been officially released but were posted on a sceptical website.

The key message can be summed up in one word that the overall report uses more than 5,000 times: risk.

"Climate change really is a challenge in managing risks," says the report's chief author, Chris Field of the Carnegie Institution of Science in California. "It's very clear that we are not prepared for the kind of events we're seeing."

Already the effects of global warming are "widespread and consequential," says one part of the larger report, noting that science has compiled more evidence and done much more research since the last report in 2007.



If climate change continues, the panel's larger report predicts these harms:

VIOLENCE:

For the first time, the panel is emphasizing the nuanced link between conflict and warming temperatures. Participating scientists say warming won't cause wars, but it will add a destabilising factor that will make existing threats worse.

FOOD:

Global food prices will rise between 3 and 84 percent by 2050 because of warmer temperatures and changes in rain patterns. Hotspots of hunger may emerge in cities.

WATER:

About one-third of the world's population will see groundwater supplies drop by more than 10 percent by 2080, when compared with 1980 levels. For every degree of warming, more of the world will have significantly less water available.

HEALTH:

Major increases in health problems are likely, with more illnesses and injury from heat waves and fires and more food and water-borne diseases. But the report also notes that warming's effects on health is relatively small compared with other problems, like poverty.

WEALTH:

Many of the poor will get poorer. Economic growth and poverty reduction will slow down. If temperatures rise high enough, the world's overall income may start to go down, by as much as 2 percent, but that's difficult to forecast.

According to the report, risks from warming-related extreme weather, now at a moderate level, are likely to get worse with just a bit more warming. While it doesn't say climate change caused the events, the report cites droughts in northern Mexico and the south-central United States, and hurricanes such as 2012's Sandy, as illustrations of how vulnerable people are to weather extremes. It does say the deadly European heat wave in 2003 was made more likely because of global warming.

Read more:

- [UN report: Climate change to alter life as we know it](#)
- [Climate change could cause sea ice growth](#)
- [Seven lost civilisations and how they collapsed](#)

Texas Tech University climate scientist Katharine Hayhoe, who was not part of this report team, says the important nuance is how climate change interacts with other human problems: "It's interacting and exacerbating problems we already have today."

University of Colorado science policy professor Roger Pielke Jr., a past critic of the panel's impact reports, said after reading the draft summary, "it's a lot of important work ... They made vast improvements to the quality of their assessments."

Another critic, University of Alabama Huntsville professor John Christy, accepts man-made global warming but thinks its risks are overblown when compared with something like poverty. Climate change is not among the developing world's main problems, he says.

But other scientists say Christy is misguided. Earlier this month, the world's largest scientific organisation, the American Association for the Advancement of Science, published a new fact sheet on global warming.

It said: "Climate change is already happening. More heat waves, greater sea level rise and other changes with consequences for human health, natural ecosystems and agriculture are already occurring in the United States and worldwide. These problems are very likely to become worse over the next 10 to 20 years and beyond."

Texas Tech's Hayhoe says scientists in the past may have created the impression that the main reason to care about climate change was its impact on the environment.

"We care about it because it's going to affect nearly every aspect of human life on this planet," she says.

- AP