Talanoa Dialogue: Wrap-up of preparatory phase
COP24, Thursday 6 December 2018

Presentation by IPCC Chair Hoesung Lee

Thank you for this opportunity to share our report on Global Warming of 1.5ºC with you.

As you know this report was prepared at the invitation of the COP when you adopted the Paris Agreement.

The IPCC Plenary accepted the invitation and framed it in the context of sustainable development and efforts to eradicate poverty, as you can see from the full title.

You asked for the report this year, in time for what has become the Talanoa Dialogue.

I would therefore like to present key findings of the report in terms of the three Talanoa questions:

- Where are we?
- Where do we want to go?
- How do we get there ?

But first, let me give you four key messages from the report:

- Climate change is already affecting people ecosystems and livelihoods around the world
- Limiting global warming to 1.5ºC is not impossible, but it would require unprecedented transitions in all aspects of society
- There are clear benefits to keeping warming to 1.5ºC rather than 2ºC or higher
- Limiting warming to 1.5ºC can go hand in hand with achieving other world goals

Or, to be even more succinct:

- Every bit of warming matters
- Every year matters
- Every choice matters

So, to the first of the Talanoa questions: Where are we?

Since pre-industrial times, human activities have caused approximately 1ºC of global warming.

We are already seeing the consequences of this 1ºC of warming through more extreme weather, rising sea level and diminishing Arctic sea ice, among other changes.

We are already seeing consequences for people, nature and livelihoods.

At the current pace of global warming, 0.2ºC per decade, we would enter a 1.5ºC warmer world between around 2030 and 2050.

However, we are not yet committed to 1.5ºC of global warming.

Past emissions will continue to cause changes in the climate system, and sea level will continue to rise.
But past emissions alone are unlikely to cause warming to reach or overshoot 1.5ºC: we still have a window for action to limit warming to 1.5ºC by reducing greenhouse gas emissions in the coming years.

This leads us to the second Talanoa question: Where do we want to go?

Climate projections show clear differences between today, a 1.5ºC warmer world and a 2ºC warmer world.
Each half a degree of global warming leads to further warming over land and in oceans, increased average precipitation in cold regions, and reduced precipitation in regions of Mediterranean climate.

Differences for each additional half a degree of global warming are even stronger for extreme events, especially increases in the number of hot days and intensification of temperature extremes.
The intensity of extreme rainfall will increase with each additional half a degree of global warming in several regions.
The risks from drought and precipitation deficits also increase between global warming of 1.5ºC and 2ºC.

There are thus clear differences in mean climate and extremes between a 1.5ºC versus a 2ºC warmer world.

And with 1.5ºC warming, sea level rise by 2100 will be around 10 cm less, exposing 10 million fewer people to the risk of rising seas, and giving more time for adaptation.

Even though a 1.5ºC warmer world is not a safe haven, our report clearly shows many avoided risks compared with global warming of 2ºC or more.

At 1.5ºC rather than 2ºC:

- There are smaller reductions in yields of key crops such as maize, rice, sorghum and wheat
- The global population exposed to increased water stress is up to 50 percent less
- Up to several hundred million fewer people are exposed to climate-related risk and susceptible to poverty by 2050
- There is a lower impact on biodiversity and ecosystems

Let me give one example.
Even in a 1.5ºC warmer world, with more frequent and intense marine heat waves, there is a high risk of losing 70 to 90 percent of coral reefs and, importantly, their services to humanity such as coastal protection and harbouring biodiversity for fisheries.

While this is serious, almost all tropical coral reefs would be severely degraded at 2ºC of global warming.

We should also consider that at 1.5ºC and even more so at 2ºC of global warming there is a disproportionately high risk for the Arctic, dryland regions, small island developing states and least developed countries.

Our assessment clearly shows that:

- Risks are lower for health, livelihoods, food security, water supply, human security and economic growth for global warming of 1.5ºC compared to 2ºC.

- A wide range of adaptation options can reduce climate risks; there are fewer adaptation needs at 1.5ºC.

We have established where we are in terms of human-induced climate change, and provided new knowledge for you to consider where we want to go.

So how do we get there?
Limiting warming to 1.5ºC is not impossible but implies change on an unprecedented scale. It would mean deep emissions reductions in all sectors and rapid and far reaching transitions in energy, land, urban, industrial and infrastructure systems.

Limiting global warming to 1.5ºC implies reducing emissions of carbon dioxide by about 45 percent by 2030 compared with 2010 levels.

And in 1.5ºC pathways, global emissions of carbon dioxide would fall to net zero around 2050, so that any remaining emissions would need to be balanced by removing carbon dioxide from the air.

By comparison, in most pathways limiting warming to 2ºC, carbon dioxide emissions fall by about 25 percent by 2030 and reach net zero around 2070.

This slide shows key energy -related indicators for the years 2030 and 2050 in two of the pathways compatible with global warming of 1.5ºC highlighted in the report.

These are the central pathways, pathways 2 and 3, associated with sustainable patterns of consumption and more middle-of-the-road development.
I don't have time to go through all the indicators but would like to draw your attention to some key points:

Fossil fuel use declines substantially in both scenarios unless, as in the case of natural gas in pathway 3, it is associated with high volumes of carbon capture and storage as shown in the last line.

Coal use falls by at least 50 percent by 2030 and by three quarters by 2050.

There is a very large upscaling of renewable electricity generation, which meets 70—85 percent of electricity demand across all pathways compatible with global warming of 1.5ºC.

Nuclear energy doubles in pathway 2 and increases six-fold by 2050 in pathway 3.

This is all in spite of the fact that final demand for energy stays roughly level in pathway 2 and increases in pathway 3.
In both pathways, there is improved access to energy but declines in energy demand in more developed economies.

The widespread use of biomass energy with carbon capture and storage carries large risks for food security and for the preservation of biodiversity.

What transitions occur in pathways compatible with 1.5ºC warming?
Firstly by decarbonizing the electricity supply through greater use of renewables and a reduction in coal and other fossil fuels.
This in turn reduces emissions of other sectors by electrifying other energy end users such as vehicles, industry and building.
Increased energy efficiency across all sectors is also a potent source of emissions reduction.

And this energy infrastructure must be designed to be resilient to changing climate conditions.

Again, in industry, electrification and energy efficiency allow us to cut emissions.
Techniques such as carbon capture and storage also play a role.
And industry can reduce its carbon footprint by a less wasteful use of materials by developing the circular economy.

With over half the world's population now living in urban areas, and huge investments in future urban areas planned, cities offer enormous potential to reduce greenhouse gas emissions.
This involves developing low-carbon transport systems, including urban planning that supports low carbon and public transport.
Smart grids for urban power and low or zero carbon buildings are among other cities and infrastructure solutions.
Green infrastructure can improve the adaptive capacity of cities while the use of building codes and standards can help minimize risk and loss of infrastructure.

Changes to agricultural practices and land management and the deployment of nature-based solutions can allow us to reduce emissions, increase the role of land as a sink for carbon, and provide adaptation benefits.
This area includes afforestation and reforestation and livestock management.
Soil management to enhance carbon storage can also bring the co-benefit of improving the quality of soil to improve crop cultivation.

To be effective, these transitions should be integrated and coordinated across all systems.
Business can be motivated to invest in innovative low-carbon products and services.
This means redirecting financial flows towards low-carbon assets.
The transition to a low carbon world would address social protection for the poor and vulnerable.
And it requires international cooperation.

Individual adaptation or mitigation measures to address climate change could lead to co-benefits or trade-offs with the other dimensions of sustainable development goals.

Our report shows that adaptation and mitigation measures, when carefully chosen and implemented, would allow us to follow pathways that support the sustainable development agenda, promoting social wellbeing, economic prosperity and environmental protection.

Pathways with low energy demand, low material consumption and low carbon food have the highest co-benefits with sustainable development.

Sustainable development in turn supports the transitions and transformations required for a 1.5ºC world.

The feasibility of the adaptation and mitigation options that allow us to limit warming to 1.5ºC are determined by a number of enabling conditions.
These include strengthening institutional capacity, technological innovation, changes in lifestyle and behaviour, and transfer and mobilization of finance.

When designed and implemented with specific attention to those must vulnerable to climate change and to the consequences of climate policies, these transitions can be ethical and fair, leading to low-carbon, climate-resilient development pathways.
The careful mix of policies to deliver adaptation, mitigation and development needs cooperation, multi-level governance, innovation and investment.

Let me conclude by highlighting some key conclusions.
In all pathways compatible with limiting warming to 1.5ºC, global carbon dioxide emissions peak before 2030.
Emissions of carbon dioxide fall by 45 percent by 2030 compared with 2010, reaching net zero by around 2050, with deep cuts in methane and other emissions.
By paying special attention to the poor and vulnerable, rapid and far-reaching transitions can be fair and ethical.
As we show clearly – limiting warming to 1.5ºC is not impossible, but political and societal will to accelerate the transition is critical.

And rapid action is needed to secure emissions reductions before 2030 to leave the possibility to stabilize global warming at 1.5ºC.

The scientific message is clear.
It is now up to society, governments and policymakers to act.