



The right climate for development: why the SDGs must act on climate change

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Cover photo: Villagers from Lorengippi, Turkana County, Kenya, help to build solar water pumps for irrigation and clean drinking water.

Practical Action Kenya

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Executive summary

Climate change, poverty eradication and sustainable development cannot be tackled as separate entities. Climate change is rapidly becoming the greatest threat to poverty eradication, having an impact on many aspects of development and making existing gender and other inequalities worse. It is essential that the Sustainable Development Goals respond to this urgently.

This briefing outlines the findings of the Intergovernmental Panel on Climate Change (IPCC) Assessment Review (AR5) that climate change is already affecting poverty reduction and sustainable development. If action is not taken to cut emissions and to support communities to adapt to the changes that they are already experiencing, its impacts will only increase.

The new UN Post-2015 development Framework, to be agreed in September 2015, will include a set of Sustainable Development Goals (SDGs). These offer a crucial opportunity to ensure the threat to poverty reduction from climate change is adequately addressed. Robust action to achieve emissions cuts and resilience to the impacts of climate change must be integrated throughout the SDGs and reinforced in a strong standalone goal on climate.

AR5 shows that climate change will affect the success of almost all the development goals proposed in July this year by the UN Open Working Group (OWG) on SDGs. In turn, the SDGs will either reduce or increase the risk to the world's poorest people – who, according to the IPCC, are the most vulnerable to climate change.

Rising sea levels and more frequent and intense extreme-weather events, for instance, are worsening poverty in many regions, destroying or damaging homes and property and reducing crop yields. Both rural and urban poverty are worsening due to impacts on farming and rising food prices. This will undermine progress on SDGs on poverty and on hunger, food security and nutrition. Health is also affected by climate change, because of increasing malnutrition and changes to disease vectors. The risk is increasing

for populations not previously highly exposed to diseases like malaria and cholera.

According to the IPCC, there is a great deal the world can do to adapt to climate change now. Most importantly, if global greenhouse gas (GHG) emissions peak in 2020 and then decline steeply, the increasingly damaging impacts of climate change can be avoided. The choices governments make about new energy investments and infrastructure over the 15-year timeframe of the SDGs will determine whether emissions are cut fast enough and the climate change threat is contained.

The IPCC argues that if cutting GHG emissions is integrated with social objectives, it can also bring many development co-benefits – promoting sustainable livelihoods, health, nutrition, ecosystems, gender equality and economic growth. One example is increased investment in universal access to renewable energy. It empowers poor communities and spurs inclusive growth, at the same time as cutting pollution, creating decent jobs and improving energy security globally.

Both the SDGs and an agreement on climate action under the United Nations Framework Convention on Climate Change (UNFCCC) are to be agreed in 2015. A set of SDGs that integrates climate change goals and targets will complement the climate action agreed under the UNFCCC. Furthermore, it will increase momentum to mitigate and adapt prior to 2020, when the new UNFCCC deal is due to be implemented.

In the Philippines, more than 3 million informal settlers live on Metro Manila's riverbanks. Most of them have migrated from the countryside in search of work. The area is sandwiched between the sea and a large lake, and surrounded by a vast and complex river system that swells in the monsoon and typhoon seasons.

Christian Aid/Matthew Gonzalez-Noda



Introduction

Climate change is rapidly becoming the greatest threat to poverty eradication. The latest review from the Intergovernmental Panel on Climate Change (IPCC) highlights how climate change is already affecting many areas of sustainable development – from food and water security to livelihoods and health – and is exacerbating gender and other inequalities.

We must tackle it by shifting to an economy that is not dependent on fossil fuels and by integrating resilience into policy frameworks. Without this, current gains in poverty reduction will be undone and future development become impossible.

The new global Sustainable Development Goals (SDGs) offer a crucial opportunity to ensure the climate change threat is adequately addressed. The IPCC findings make it even more urgent to integrate robust action on climate change into these goals. The July 2014 *Proposal for Sustainable Development Goals* – the final outcome document of the Open Working Group (OWG) for SDGs – recognises that ‘the global nature of climate change calls for the widest possible cooperation by all countries, and their participation in an effective and appropriate international response.’

The SDGs and the next United Nations Framework Convention on Climate Change

(UNFCCC) agreement have similar timeframes – agreed in September and December 2015, respectively. This presents a unique opportunity for the two frameworks to be mutually reinforcing. A set of SDGs that integrate climate change goals and targets can set the stage for an ambitious deal at the UNFCCC and also help to incentivise climate action prior to 2020, when the new deal is due to be implemented.

The IPCC review is too large to be covered comprehensively here, but this paper outlines the implications for the SDGs of the IPCC’s Working Group I (WGI) report on the science of climate change, the Working Group II (WGII) report on climate change impacts, vulnerability and adaptation, and the Working Group III (WGIII) report on mitigation. With reference to the OWG’s document, this paper highlights the IPCC’s ‘lessons learned’ to ensure the new goals deliver sustainable development for future generations.

‘If we don’t confront climate change, we won’t end poverty’

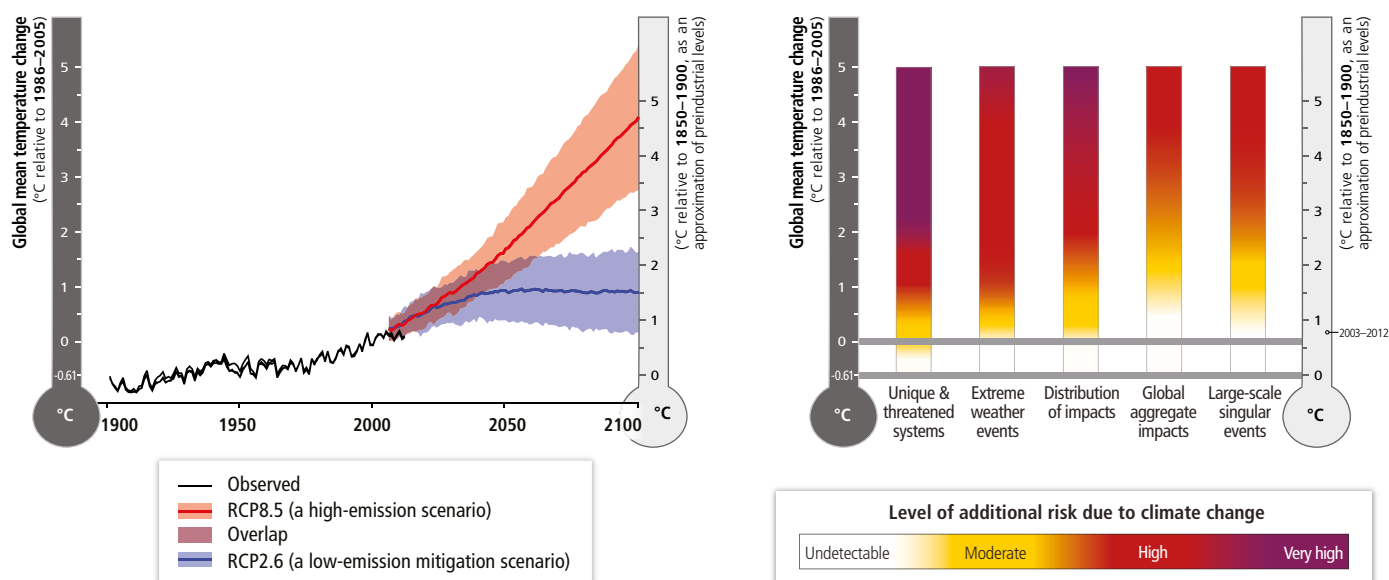
Jim Yong Kim, President of the World Bank

About the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Review (AR5)

The IPCC is an intergovernmental body set up at the request of UN member governments. The IPCC's AR5 report, published in 2013-2014 and approved by over 120 governments, describes policy-relevant science on recent-past and projected-future effects of climate change over the 21st Century and actions relevant to reducing risks associated with further changes. It is the 5th in a series of reports synthesizing and assessing the most recent evidence of the physical science of climate change (Working Group I); climate change impacts, vulnerability and adaptation (Working Group II); and climate change mitigation (Working Group III). Thousands of scientists from around the world, working on a volunteer basis, make up the report's authors and contributors.

It is important to note that the IPCC reports are an assessment at a given point in time, and their summaries for policymakers are negotiated documents. It is therefore also crucial to take more recent evidence into account when considering policy options.

All evidence in this paper is taken from the IPCC AR5 except where otherwise indicated.



Assessment Box SPM.1 Figure 1 | A global perspective on climate-related risks. Risks associated with reasons for concern are shown at right for increasing levels of climate change. The color shading indicates the additional risk due to climate change when a temperature level is reached and then sustained or exceeded. Undetectable risk (white) indicates no associated impacts are detectable and attributable to climate change. Moderate risk (yellow) indicates that associated impacts are both detectable and attributable to climate change with at least *medium confidence*, also accounting for the other specific criteria for key risks. High risk (red) indicates severe and widespread impacts, also accounting for the other specific criteria for key risks. Purple, introduced in this assessment, shows that very high risk is indicated by all specific criteria for key risks. [Figure 19-4] For reference, past and projected global annual average surface temperature is shown at left, as in Figure SPM.4. [Figure RC-1, Box CC-RC; WGI AR5 Figures SPM.1 and SPM.7] Based on the longest global surface temperature dataset available, the observed change between the average of the period 1850–1900 and of the AR5 reference period (1986–2005) is 0.61°C (5–95% confidence interval: 0.55 to 0.67°C) [WGI AR5 SPM, 2.4], which is used here as an approximation of the change in global mean surface temperature since preindustrial times, referred to as the period before 1750. [WGI and WGII AR5 glossaries]

What the climate change science tells us

Scientists are now more than 95% certain that human activity is responsible for the rapid increase in global temperatures experienced since the 1900s. The IPCC's latest report finds that, without an aggressive strategy to start cutting global greenhouse gas (GHG) emissions immediately, global temperature will significantly exceed 2°C warming above pre-industrial levels by 2100.

Since 1900, the earth's average temperature has increased by 0.8°C (1.4 °F).¹ If emissions continue to rise at the current rate, the IPCC projects a rise in the global average temperature of between 2.5 and 7.8°C (from the 1986-2005 reference period) by the end of the 21st century, with a rise of between 2.6 and 4.8°C most likely.

Under the UN Framework Convention on Climate Change (UNFCCC) in 2009, countries agreed a target of keeping below a 2°C rise. Exceeding this is expected to increase the risk of severe and dangerous impacts and trigger 'tipping points' such as melting of the Antarctic and Greenland ice sheets, which will lead to sea-level rises and accelerated warming. The IPCC report also states that some of these risks increase in any rise between 1 and 2°C, which is why many vulnerable developing countries are calling for a limit on warming to below 1.5°C. By 2011, we had already emitted two-thirds of the total GHG emissions possible to have a reasonable chance of keeping below the 2°C target.

Climate change anywhere on the scale predicted by the IPCC will have substantial to severe negative impacts on food and water resources, ecosystems, economic growth, population dynamics and health, undermining and often reversing gains made through development.

The effects of climate change are already being felt, contributing to increasing heat waves and droughts, which in turn affect poverty, livelihoods and health. These are projected to worsen over the SDGs' 15-year timeframe, regardless of the extent of emissions cuts now, because there is a delayed warming effect from past emissions. Keeping the world below a 2°C or even 1.5 °C temperature rise in the long-term, at the same time as building resilience to climate change

impacts already 'locked-in' by past emissions, will depend on the development pathways that countries take now. There is increased need to address the loss and damage that emission mitigation and adaptation measures can no longer remedy. Critically for the SDGs, global development over the next 15 years is likely to determine whether we can cut emissions fast enough to avoid catastrophic climate change later this century. Urgent action is required to achieve a peak and decline of emissions before 2020.



In Malawi, farmers from Nkana Khoti Village show their destroyed maize crop. Severe drought in the region leads to malnutrition and widespread hunger.

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Greenpeace

¹ To have a strong chance of limiting warming below 1.5°C, NGOs are calling for phasing out all fossil-fuel emissions and phasing in a 100% renewable-energy future with sustainable energy access for all, as early as possible but not later than 2050. See: climatenetwork.org/publication/can-position-long-term-global-goals-2050

Climate change: impacts and adaptation

A key finding of the WGII report on impacts, adaptation and vulnerability is that climate change is already reducing food production in some areas, increasing disaster losses and most affecting those already living in poverty. The costs of building resilience and adaptive capacity vary considerably, and the worst-affected countries – low-lying developing countries such as Bangladesh, Vietnam and small island states – all have high rates of poverty.

There is likely to be substantial and widespread worsening of poverty and hunger, and greater degradation of ecosystems, but these impacts can be reduced with investment in adaptation. If the rise in average temperatures is kept relatively low, action by societies around the world, over the next 15 years, can considerably reduce the negative impacts of climate change. In addition to adaptation, climate action should

be made a priority across the SDGs framework and through a standalone goal. Sufficient finance for adaptation must also flow to developing countries now to help them respond.

This section outlines in more detail some of the projected impacts of climate change on areas covered by the SDGs and highlights the need for the SDGs to include provisions to tackle it.

Ending poverty in all forms and reducing inequality

Climate change is characterised by the IPCC as a 'threat multiplier', most affecting people whose livelihoods are already vulnerable. It is expected to make overcoming poverty more challenging in developing countries and create new pockets of poverty in all countries with growing inequality – which is most middle and high-income countries. The IPCC finds poverty and persistent inequality to be the most important factors causing climate-related vulnerability.

Losses from climate-related extreme events can push people from temporary into chronic poverty. Poor urban settlements, for example, are often built in risk-prone areas such as floodplains and hillsides susceptible to erosion and landslides. Increasingly, such events are destroying homes and disrupting water and sanitation services in many African and Latin American cities.

The loss of physical assets in poor areas, after disasters, is often followed by displacement. Regional studies suggest a likely increase in displacement over the SDGs timeframe and beyond, due to floods and droughts. For example, the impact of reduced rainfall on rice yields in Indonesia may lead to mass migration. In the most extreme cases, on some islands and in coastal regions, people face the complete loss of their land.

Loss of farm income and jobs is another growing problem. Extreme weather events, compounded by other stressors, such as greater competition for water, lead to declining crop yields that erode farming livelihoods. This, in turn, affects households' ability to pay for basic services. This puts at risk successful delivery of several SDGs – on poverty reduction, health and wellbeing, and education.

The urban poor are particularly vulnerable to spikes in food prices following crop failures. This leads to undernourishment and chronic hunger for those on low incomes. Bangladesh, a net food importer, is projected to see a 15% rise in poverty by 2030 due to climate-related food price rises. In all cases, the initial losses can and do push people from temporary into chronic poverty. Social processes such as discrimination on the basis of gender, class, ethnicity, age, and (dis)ability are further causes of increased vulnerability. Female-headed households, children, people in informal settlements and indigenous communities are also particularly at risk, due to the impact of other stressors such as lack of governmental support, poor urban infrastructure and insecure land tenure.

Because there are higher rates of poverty among women, and because more smallholder farmers are women, reducing gender inequality is identified by the IPCC as a key way to reduce vulnerability to climate change impacts. The report highlights 'agricultural policies that address gender inequalities' as an adaptation strategy in Africa, and also the value of gender equity in education. Since, worldwide, mortality

due to natural disasters is higher among women than men, climate change may also contribute to increasing gender inequality.

Implications for the SDGs

SDGs on cutting poverty and inequality will be harder to achieve because of the disproportionate impacts of climate change on poorer people. The threat is recognised explicitly in the OWG's proposed Goal 1 - to 'end poverty in all its forms everywhere' - which includes a target on building resilience to 'climate related extreme events'.

However, the multiple impacts that climate change can have on the poor and most vulnerable will increase up to and beyond 2030 unless ambitious action to reduce climate risk and vulnerability is taken across all goal areas. Beyond 2030, the scale of the impacts will be determined by whether global emissions cuts happen at a speed and scale fast enough to avoid further temperature rises (see the 'Low carbon development' section, below).



A woman working in a tree nursery in Northern Darfur, Sudan - an area affected by conflict and drought. The nursery is part of a natural resource management project.

Practical Action Sudan

Hunger, food security and improved nutrition, and sustainable agriculture

Climate change is already affecting crop and food production in several regions, predominantly with negative effects. Some northern latitudes will benefit from increased yields but, within the SDGs timeframe, local temperature increases of more than 1°C are projected to reduce yields for the major crops (wheat, rice and maize) in tropical and temperate regions without adaptation. By 2030, it is likely that even adaptation (through, for example, turning to crops that are more resilient to temperature extremes, such as cassava) will not be enough to counter the effects of climate change. This is in the context of rising crop demand, which is projected to increase by about 14% per decade until 2050. In addition, the nutritional quality of food – its proteins and micronutrients – is adversely affected by high levels of CO₂.

Climate change is projected to have numerous other effects on crops – increasing weeds and changing the ranges of pests and diseases. Along with decimating crop yields, drought also threatens to reduce livestock in Africa, where extensive rangelands in the north and south are becoming drier. Vector-borne livestock diseases may expand their range with rising temperatures. Poor pastoralists are already being affected by such impacts, losing livestock and facing increased poverty.

Tropical and sub-tropical countries are set to experience the worst losses and they also have some of the highest poverty rates, meaning their communities are the least able to cope.

Following regional temperature extremes linked to climate change, there have already been several periods of rapid food-price increases. By 2050, the IPCC projects climate change will increase global food prices by up to 84%, pushing many people, particularly in urban areas, into food poverty.

Climate and poverty are the two dominant causal factors in food insecurity in southern Africa, and across the continent climate change is projected to contribute to declining nutrition: the number of under-nourished children under five years of age is projected to rise from around 5 million to around 52 million by 2050, due to climate change and other socio-economic factors.

Implications for the SDGs

The OWG's proposed Goal 2 – to 'end hunger, achieve food security and improved nutrition, and promote sustainable agriculture' – includes a target on strengthening 'capacity for adaptation to climate change' to create resilient agriculture. While this is welcome, the framework also needs to address the impacts climate change is already having. Ambitious and measurable targets can help ensure that goals on poverty and health are not missed because of the growing impacts of climate change on food systems and nutrition.

'The impacts could roll back decades of development gains and push millions of people back into poverty within our lifetimes'

Jim Yong Kim, President of the World Bank

Healthy lives and wellbeing

Over the next century, climate change is expected to increase ill health everywhere but especially in developing countries. It is projected to drive increased risk from diseases including cholera, malaria, dengue and yellow fever. Cases of malaria have already increased in several Amazonian regions over the last 50 years and increased dengue fever in tropical America, affected by climate, is estimated to have resulted in \$2.1bn in economic losses over the last 25 years. Heavy rainfall is also projected to increase cholera in several regions of Africa.

Heatwaves and other extreme weather events are increasingly resulting in direct injuries and deaths, and in disease outbreaks such as those that followed Hurricane Mitch in 1998 and the floods in Colombia in 2010-2012. Health may also be damaged by the displacement of populations that typically follows such catastrophic events. Under-nutrition, resulting from diminished food production in poor regions, is a further growing risk, with negative impacts on health expected to occur mainly in areas that are already food-insecure. Growing urbanisation in conditions of rising temperatures poses further problems, by contributing to chronic respiratory and cardiovascular disease and morbidity from asthma and rhinitis.

There are some projected positive effects, such as reduced cold-related deaths, but these will be outweighed worldwide by the magnitude and severity of the negative effects of climate change.

The report finds that poverty reduction and cutting inequality are the best adaptive response to reduce negative health impacts: 'If economic growth does not benefit the poor, the health effects of climate change will be exacerbated.'

Public health measures and disaster preparedness and response are also critical.

However, the worst long-term risks can only be avoided by drastic emissions cuts. This can also bring significant health co-benefits: in 2010, more than 7% of disease globally was due to inhalation of climate altering pollutants (CAPs) other than CO₂. The IPCC has highlighted several ways to reduce local emissions, through improved energy efficiency and a shift to renewable energy sources; shifting consumption away from animal products in societies consuming a lot of meat toward less CAP-intensive healthy diets; and designing transport systems that support healthier lifestyles. These can all lead to lower emissions and better health, through improved air quality, diet or more physical activity.

Implications for the SDGs

The target of ending disease epidemics under the OWG's proposed Goal 3 - to 'ensure healthy lives and promote wellbeing for all at all ages' - will be directly affected by climate change. In addition to other threats to health, the impacts outlined above - from climate-related disasters, diminished food production and urbanisation in conditions of rising temperatures - need to be tackled in the framework, to achieve success in improving health and ending poverty. The goal can also support and promote the shift to low carbon development by calling for delivery of the health benefits associated with cutting indoor and outdoor air pollution.

'The shift to such a 4°C world could cause mass migration of hundreds of millions of people away from the worst-affected areas. That would lead to conflict and war, not peace and prosperity'

Professor Lord Stern

Availability and sustainable management of water and sanitation for all

Climate change is affecting water in many ways. Floods are projected to increase with impacts on homes and infrastructure, agriculture and water quality. Elsewhere, climate change is also likely to increase the frequency of droughts in presently dry regions. Both these impacts threaten the success of several SDGs including those on poverty reduction, health and economic growth.

Success of SDG targets on access to water and sanitation are also threatened by the projected reduction in raw water quality from climate change. Both heavy rainfall and drought can increase water pollution. Water-treatment facilities are disrupted by floods, posing risks to drinking water quality even with conventional treatment. Across Africa, lakes including Tanganyika, Victoria and Malawi are already getting warmer, degrading water quality and harming fisheries. Compounded with other stressors – pollution, land-use change and over-extraction of water – this threatens future supply.

The impacts of climate change on water also threaten peace and stability. Competition for access to water will be a growing challenge over the SDGs' timeframe, compounded by many other stressors. For instance, in the Middle East and North Africa (MENA), growing demand for water alongside declining rainfall and rising temperatures is projected to lead to 30-70% less water per person by 2025. In arid or semi-arid regions in the global South, water supply for cities, hydropower generation and agriculture are all projected to decline. As temperatures rise over the 21st century, water scarcity is likely to lead to growing competition for the resource.

Implications for the SDGs

Success of the OWG proposed Goal 6 – to 'ensure availability and sustainable management of water and sanitation for all' – is vulnerable to the projected growth in floods and droughts due to climate change. These can affect water supply, drinking-water quality and pollution unless appropriate adaptive actions are taken to address these effects.

The framework should support substantially reducing water-related vulnerability to climate change, because it puts goals on poverty, health, economic growth, and potentially peace and security, at risk.



Pollution is a serious problem in Kathmandu, Nepal. The city lies in a valley and pollution often hangs over the city, affecting the population.

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WWF-UK

Making cities and human settlements resilient and sustainable

By 2030, urban areas are expected to triple – most of the world's urban areas and their infrastructure have yet to be built. Rapid urbanisation, especially in the global South, presents many challenges to climate resilience but the SDGs can support adaptation to the current level of climate change in many areas.

Poor people are the most vulnerable, since urban poverty is likely to be made worse by the impacts of extreme weather events on housing, infrastructure and on food prices. Wage labourers (typically in urban environments) are particularly vulnerable because their financial capital is eroded by food-price rises. These factors are projected to contribute to a growing number of urban poor in low and middle-income countries across the global South, with people moving from temporary to chronic poverty.

The IPCC describes how social inequality can

exacerbate climate change risks because government policies often favour the more affluent over the less powerful. For instance, after extreme events, unlike poor residents, higher-income households can often afford insurance and can lobby for protective policies. However, it is not just poor people who are at risk: rising temperatures are contributing to disease-growth across urban populations (see above).

Sea-level rises and more frequent and intense storms are increasing flood risk. They are projected to cause rising flood losses in the global South, and resettlements are already planned for some African and Asian river deltas. The potential scale of displacement, however, is beyond the capacities of many countries to adapt: small island states may become uninhabitable, while India and Indonesia are projected to experience an 80% and 60% increase, respectively, in the number of people



Water scarcity and lack of access to clean drinking water are common problems in Benin City and other urban centres in Nigeria.

© Sandra Mbanefo Obiagio/WWF-Canon

at risk from sea-level rise. This will put more than 58 million people at risk, in those two countries alone, by 2050.

A high level of warming will mean that, by the end of the century, the number of people annually exposed to a '100-year flood' is projected to triple. Particularly at risk are the world's many densely populated coastal cities. Among others, Alexandria and Port Said in Egypt, and Lagos and Port Harcourt in Nigeria, are already affected by floods and at risk of submersion.

The exposure of people and assets to coastal risks has been growing rapidly. This trend is expected to continue, compounded by urbanisation, population and economic growth. This is because sea levels will continue to rise for centuries, due to the delayed effect of past emissions on sea temperatures. So, even with radical global emissions cuts over the next 15 years, this trend will continue beyond the SDGs timeframe. Without drastic emissions cuts, by 2100 hundreds of millions of people will be affected by coastal flooding and will be displaced due to land loss – the majority of them in Asia.

Implications for the SDGs

The OWG's proposed Goal 11 – to 'make cities and human settlements inclusive, safe, resilient and sustainable' – includes a target on increasing adaptation and implementation of 'policies and plans... towards mitigation and adaptation to climate change'. This is welcome, but the framework needs to incorporate clearer and more ambitious targets to promote adaptation to the substantial impacts climate change is already having on human settlements. Flood protection and relocation of vulnerable populations, even with a very small rise in global temperature, will be critical to the sustainability of cities and settlements. Urban development – infrastructure, building, consumption patterns and the transport sector – also plays a major role in generating GHG emissions (see the 'Low carbon development' section, below), so the role of cities in mitigation should also be addressed in the goal.

Conservation and sustainable use of the oceans, seas and marine resources

Marine ecosystems are very sensitive to rising ocean and freshwater temperatures, so the impacts of climate change are already apparent, exacerbated by other pressures, including over-exploitation and pollution. This is projected to worsen over the SDGs timeframe, as even a low temperature rise (1°C) increases the extinction risk.

Adaptation is challenging or impossible at higher levels. Many poor communities depend on fisheries for their livelihoods and will be increasingly affected by climate change impacts on yields, which are already falling in some areas. With 2°C of warming, yields are expected to drop 40-60% in the tropics, leading to substantial impacts on income and employment.

Coastal and ocean systems are also being affected, through sea-level rise, increased storm surges, flooding, and ocean acidification. Warming ocean temperatures and ocean



River catfish and Mekong giant catfish are harvested when they migrate from lake to river at the end of the rainy season. The Mekong giant catfish occurs naturally only in the Mekong basin, Cambodia, and it is critically endangered.

© Zeb Hogan/WWF-Canon

acidification are expected to continue to damage coral reefs, which have already seen a 50% decline globally since 1970, with substantial impacts on livelihoods and the economies dependent on them.

Many ecosystems and species will become

extinct under the current projected rates and magnitudes of climate change in the 21st century. The survival of these ecosystems, and the livelihoods of the people that rely on them, will depend on shifting to low carbon development pathways fast enough to avoid further temperature rises.

Implications for the SDGs

The SDGs can provide a framework for their sustainable and adaptive management of marine ecosystems. However, the OWG's proposed Goal 14 – to 'conserve and sustainably use the oceans, seas and marine resources for sustainable development' – does not address the impacts of climate change, even though this is probably the goal that will be most affected by it.

Supporting communities whose livelihoods are dependent on marine resources to adapt to climate-change impacts will be critical for achieving the framework's wider purpose of ending poverty. The oceans goal can also support mitigation ambition by highlighting the profound impact that the failure to cut emissions is already having on marine resources.

Sustainable use of terrestrial ecosystems and forests, and combating desertification, land degradation and biodiversity loss

On land, ecosystem changes threaten to make climate change even worse: there is a great risk that a high temperature rise – combined with other factors of human influence – will result in abrupt and irreversible changes to terrestrial ecosystems this century, especially in the Amazon and Arctic. This will lead to substantial additional climate change as the carbon stored in peat-lands, permafrost and forests is released into the atmosphere. The recent loss of forests in North America has been attributed to climate change. A projected increase in severe drought in the Amazon, together with land-use changes and forest fires, would result in further loss of biodiversity and damage to forest-dependent livelihoods.

Implications for the SDGs

The OWG's proposed Goal 15 – on terrestrial ecosystems and forests – does not reference the projected impacts of climate change. Incorporating climate change adaptation for land ecosystems and forest-dependent livelihoods into the goal is critical to reaching targets for biodiversity loss reduction, as well as to the framework's overall objective of ending poverty. As with the goal on oceans, recognition of the impacts of climate change on ecosystems can also help drive increased mitigation.

'If climate change gets dropped from the list of goals I will never refer to them again, they will be unusable'

Jeffrey Sachs

Low carbon development to 2030

The Working Group III report outlines options for reducing GHG emissions and the likely impact of these. GHG emissions have been growing in almost all sectors over the last decade and are still on an upward path. While population growth has contributed to this, economic growth has been a much bigger driver. Emissions growth has outpaced improvements in energy intensity and, in recent years, increased use of coal has reversed a long-term trend towards decarbonising the world's energy supply. About half the emissions growth has come from the energy-supply sector, but industry (30%) and transport (11%) are also major contributors.



A member of the Darfur Women's Development Association with a sapling for the 'greening Darfur' project.

© Practical Action Sudan

Importantly for the SDGs, if current trends continue, CO₂ in the atmosphere is expected to reach 450 parts per million by 2030 – the maximum level considered likely to keep below a 2°C temperature rise. There is a need for substantial additional action to cut emissions now, to ensure that, by 2050, global emissions are 40-70% below 2010 levels. This is the level required to have a reasonable chance of avoiding 2°C warming. To keep warming below a 1.5°C temperature increase, the few studies available suggest even greater cuts by 2050

(70-95% below 2010 levels) and negative emissions thereafter.

The 2015-2030 SDGs timeframe is also critical because delaying mitigation efforts until 2030 will make the transition to a low-emissions pathway much more difficult and will narrow the options for keeping below a 2°C temperature rise. If emissions do not peak by 2020, the long-term economic costs and the risk of exceeding the 2°C target are much higher.

The IPCC also finds that 'some mitigation efforts could 'undermine action on [...] sustainable development, and on the achievement of poverty eradication and equity.' Some mitigation activities can risk worsening local-poverty impacts in the short-term, unless adequate attention is paid by policy makers to integrate climate action with social inclusion. The SDGs can play a critical role in ensuring that the global response to climate change promotes an approach to low carbon

development that ensures poor men and women benefit. Crucial to this are democratic and inclusive planning processes, and careful consideration of any potentially negative impacts on poor and vulnerable groups of 'trade offs' and the greening of particular sectors. The needs of communities must be addressed through adequate technological, institutional and financial support, and policies that maximise social and environmental co-benefits.

Implications for the SDGs

An SDG specifically on climate change has the potential to support rather than disrupt or prejudge the UNFCCC negotiations and bring all countries on a low carbon development pathway. It is unthinkable to aim at low carbon development without addressing climate-change mitigation and adaptation head on.

An assertive approach to climate change action in this voluntary framework comes at the right time to set an ambitious tone for the UNFCCC climate deal in Paris in 2015. However the climate change goal proposed by the OWG has very weak and vague targets compared to other goals. Because the targets do not outline concrete timelines and action, the goal is unlikely to lead to concrete action.

The target in the OWG proposal on integrating climate-change measures into national policies, strategies and planning, has the potential to support mitigation as well as adaptation action, but the suggested target is currently too vague. The target on strengthening resilience and capacity is a top priority for poverty eradication, but the target needs to be strong enough to lead to firm action. The goal could be further enhanced with targets that incentivise mitigation action across all sectors, in support of the mitigation action to be agreed under the UNFCCC ongoing negotiations.



Every year, the changing climate brings less rain to Dogondoutchi, Niger, and greater challenges. Most of the farming, on the hard land, is done by hand and takes many hours. Now the farmers have been given ploughs, to increase farming and allow more time for other activities.

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Energy: affordable, reliable, sustainable and safe for all

Negative emissions technologies, which remove carbon dioxide from the earth's atmosphere, could play a role in reducing CO₂ levels but are not currently deployed at a scale to have any impact. There is no immediate prospect of substantial investment in negative emission technologies and there is limited understanding of potential adverse effects of their large-scale application. This is something governments will have to consider further, in the future. The IPCC report makes a clear case for investment in renewables, as they are ready for use and significantly more cost efficient than other technologies.

The energy supply sector is the largest contributor to GHG emissions. The growth rate in the sector's emissions has nearly doubled in the last decade, mainly due to increased demand (driven largely by economic growth) and a growing use of coal.

Despite increased renewable energy investment and energy efficiency improvements, on current trends the sector's CO₂ emissions are projected to almost double, or even triple, again by 2050. A 2014 report from ECOFYS (subsequent to the AR5) states that to have a good chance of keeping below a 2°C rise the 'energy sector needs to decarbonise rapidly and reduce to zero emissions as early as 2040 but no later than 2070', given that emissions cuts in other sectors are harder to make.

The IPCC finds that a 'fundamental transformation of the energy supply system' is needed. Improving the efficiency of fossil power plants or shifting from coal to gas will not be sufficient. A substantial shift in annual investment flows between 2010 and 2029 is also required, cutting fossil-fuel investments by \$30bn per year while more than doubling the investment in renewables.

A rapid reduction in coal-power generation is achievable due to big advances in the performance and cost of renewable-energy technologies (including wind, solar and sustainable hydro). Large-scale investment in renewables needs support in the form of feed-in tariffs and quota obligations, a high carbon price and the 'internalisation of externalities' – that is, high-emissions energy infrastructure paying for its pollution costs. Greater technology transfer is also needed to ensure that sustainable and efficient energy technologies are accessible and affordable for developing countries.

Shifting to renewable energy offers co-benefits that are crucial to success in several SDG goal areas. These include reducing outdoor and indoor air pollution, which will improve health outcomes and lower the incidence of respiratory disease. This is particularly pertinent to women and children's health in poorer countries. Provision of more sustainable and efficient



A solar panel in the Vodlozerskiy national park, Karelia region, Russian Federation.

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WWF-Russia

cooking solutions would benefit the millions, of mostly women and children, affected by indoor smoke pollution.

1.2 billion people currently do not have access to electricity and 2.8 billion do not have clean cooking facilities (Best, 2013). Boosting investment in renewable energy – especially decentralised (off-grid) – could help the billions of people currently without access to sustainable, affordable, reliable and safe energy, particularly in rural areas without electrification, and also build low carbon development globally. Access to power for education and health facilities, as well as for productive uses such as farming and running small and micro businesses, is crucial for empowering poor men and women.

However, simply connecting a power cable to a home does not ensure reliability, affordability or safety. Any electrification scheme must be accompanied by clear definitions and standards

to ensure meaningful and comprehensive energy access, to deliver the energy needs of the target communities.

Other benefits of investment in renewables include the fact that workers in the renewable energy sector have fewer severe accidents than those working with fossil fuels, and new renewable energy infrastructure creates new local employment opportunities.

It is nevertheless important to consider the sustainability of potential energy sources holistically. Large-scale change in land use for biomass for energy generation, for instance, entails risks of increasing competition for land, water and other resources. The IPCC also reports that land acquisition for biofuel production has had negative impacts on the lives of poor people, particularly indigenous peoples and (female) smallholders.

Implications for the SDGs

Energy access is crucial for achieving the SDGs as a whole, and shifting to a low carbon global energy system is also crucial for tackling climate change – which threatens the SDGs' success. The next 15 years are critical for decarbonising the energy system, so the SDGs need to promote universal access to sustainable energy along with investment in renewables and energy efficiency. Removal of subsidies for fossil-fuel production and consumption, at the same time as adequately protecting poor and vulnerable groups, is another vital step. Poorer countries must also have the means of implementation to incentivise adoption of low or zero carbon energy systems.

The OWG's proposed Goal 7 – to 'ensure access to affordable, reliable, sustainable, and modern energy for all' – does not include a sufficiently ambitious and specific target for renewable energy, calling only to 'increase substantially' the share of renewables in the energy mix. To decarbonise electricity by up to 100% by 2050 (ECOFYS, 2014) most of the new infrastructure will need to be built or in development during the SDGs timeframe. A more measurable and robust target of tripling the share of renewables in the energy mix by 2030 is needed, along with a target for tripling

the rate of annual increase in energy efficiency by 2030 (see the 'sustainable consumption and production' section, below).

A more measurable and ambitious target for removing incentives for fossil-fuel production and consumption is also needed, including one that excludes support for 'cleaner' fossil fuels (currently included in the OWG proposal).

The many co-benefits of increased access to sustainable, affordable, reliable and safe energy for achievement of other SDGs, including on poverty reduction, education, health, women's empowerment and sustainable livelihoods, should be explicitly recognised in the framework.

The OWG's proposed goal on sustainable economic growth and productive employment should also address the impacts that growth has on increasing climate change risk through driving increased energy use. The growth and employment goal can also be supported by recognising the benefits that low carbon development, particularly investment in renewable energy production and energy efficiency, can have for creating decent employment.

Ensuring sustainable consumption and production (SCP) patterns

To tackle climate change, the rate of growth in global consumption has to fall in the next decade. Energy efficiency is a key element of transforming our energy systems and is a proven and immediate, cost-effective option (UNIDO, 2011), which can also reduce energy costs for consumers and increase energy productivity.

Reducing energy demand through greater efficiency and behavioural changes is key. The IPCC finds that emissions can be substantially lowered through changes in consumption patterns, such as transport modes and demand, household energy use, dietary change and reducing food waste. Waste is another major contributor to unsustainable consumption and production; globally only about 20% of municipal waste is recycled – waste reduction,

re-use and recycling, and energy from waste can significantly reduce GHG emissions.

Consumption patterns have an impact on several SDG goal areas. As mentioned, cutting meat consumption in high-consuming societies helps tackle climate change and improves health.

Implications for the SDGs

The OWG's proposed Goal 12 – to 'ensure sustainable consumption and production patterns' – needs to expressly address the role that unsustainable consumption and production in richer societies plays in driving climate change, which impacts most on poor and vulnerable groups.



A small refuse tip at Polvora, on the west fringe of Mexico City, Mexico.

Paul Forster/WWF-Canon

Promoting resilient infrastructure and inclusive and sustainable industrialisation

The projected growth in urban development up to 2030 offers opportunities for building low carbon infrastructure and reducing future emissions. Urban areas account for 70% of global energy use. Emissions-intensive infrastructure, for energy generation or manufacturing, could be made less emissions intensive (that is, reducing the ratio of emissions to output). Combined with low-energy building codes, retrofitting and more use of already existing technologies, this offers the means of 'locking-in' low carbon development.

However, without the right policies in place, there is a high risk of locking-in high carbon development with infrastructure developments that may be difficult or very costly to change. The IPCC reports that 'lock-in related to infrastructure and spatial planning is the most difficult to reduce.' This is important because the building sector accounts for about a third of energy demand. The associated emissions from the sector are set to increase 50-150% by 2050, due to economic growth and urbanisation.

More than 30% of global GHG emissions come from industry and this could grow by up to 150% by 2050, unless energy efficiency improvements are accelerated significantly. Improved energy intensity, through use of the best available technologies, could reduce this by 25%; innovation can also improve efficiency. Recycling and efficiency improvements can also contribute. Many emission-reducing options

are cost-effective, profitable and have several co-benefits in terms of local environmental impacts and health, including for the poorest and most vulnerable. The sector has a high potential for reducing its energy consumption, but it depends on governments putting the right regulations and incentives in place. This includes considering not only exporting of processing to developing countries but also export of modern, efficient, zero-carbon production technologies. The SDG targets on growth and industry, along with means of implementation, can promote these aims.

Implications for the SDGs

The OWG's proposed Goal 9 – on resilient infrastructure – does not include a climate change target. As buildings and infrastructure have long lifespans, this goal needs to address the role that new development plays in driving climate change risk. As with tackling the climate-related impacts on health, action to promote more low carbon infrastructure brings many co-benefits for other goal areas, including improving energy security, health, environmental outcomes, and workplace productivity, reducing fuel poverty and net employment gains. Studies that have monetised co-benefits often find that their value exceeds energy cost savings and possibly climate benefits.

'Climate change may be the world's "most fearsome" weapon of mass destruction and urgent global action is needed to combat it'

John Kerry, US Secretary of State

Sustainable transport

More than a quarter of energy is used for transport, a sector that also generates substantial direct emissions. The drive for growth is projected to double transport-sector emissions by 2050. Promoting measures like fuel carbon-and-energy-intensity improvements, infrastructure development and behavioural change to reduce emissions is therefore essential to balancing this with tackling climate change.

More sustainable urban development can play a critical role. Public transport investment, building compact urban areas that support walking and cycling, and investing in high-speed rail systems to reduce demand for short-haul air travel could, at scale, cumulatively reduce the sectors emissions by up to 50% by 2050. Systemic change is harder where infrastructure is established, but for all economies, especially those with high rates of urban growth, investment in public transport systems and low carbon infrastructure can avoid lock-in

of carbon-intensive modes. There are also social, environmental and economic co-benefits to public transport investment and promoting walking, which can support goals on poverty and health.

Implications for the SDGs

The current proposed goals from the OWG do not expressly recognise the role that the transport sector plays in driving climate change risk or the immediate public health benefits of shifting to low carbon transport systems. A shift to low carbon public transport infrastructure should be incentivised. As with energy, the impact that the proposed SDG to promote economic growth will have on increasing transport sector emissions should also be addressed.

The development of a solar-powered micro-grid electrifies the entire village of Dharnai, Biha, India. It powers around 400 households and 50 commercial establishments around the clock.

© Vivek.M/Greenpeace



Forest management and agriculture

Deforestation and agriculture account for about a quarter of GHG emissions. There is potential for these to be reduced substantially, with forestry and agriculture even becoming a net carbon sink by the end of the century. However, in the forests sector this depends on government efforts to promote afforestation and sustainable forest management, and on temperatures remaining low enough to prevent forest die-back (see 'Climate change: impacts and adaptation', above). Forests and agriculture are areas where it is vital to consider adaptation and low carbon development together.

Implications for the SDGs

The Proposed SDGs from the OWG on terrestrial ecosystems (Goal 15) and on food security and agriculture (Goal 2) should tackle the impacts of forest degradation and agricultural practices on GHG emissions. When they are implemented well, activities to reduce deforestation can achieve co-benefits for several SDG areas, for example conserving biodiversity and water resources. Targets on agriculture should recognise how to reduce the sector's emissions through agro-ecological practices. Linked to SCP, demand-side measures such as diet changes and reducing losses in the food supply chain can also reduce emissions from food production.



Women farmers walk through dry, barren fields, past remnants of their failed crops. This area of Malawi, although extremely poor, had been self-sufficient with food. Now communities suffer from malnutrition.

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Greenpeace

Conclusion

Tackling climate change is critical to the success of the SDGs, as the OWG proposal itself highlights. The latest IPCC Assessment Report finds that 'limiting the effects of climate change is necessary to achieve sustainable development and equity, including poverty eradication.' It repeatedly finds that poor and marginalised people are most vulnerable to suffering losses to their homes, livelihoods and negative impacts on their health due to climate change – often leading to a deepening of poverty that is, and should be, avoidable.

The need to scale-up efforts to tackle climate change is urgent – significant transformation is required for global emissions to decline steeply from 2020 onwards. In the next 15 years, the world needs to clean up its energy system and avoid lock-in of high-carbon infrastructure. This will not happen without appropriate and fair mechanisms for designing and transferring technology, so that poorer countries can build low carbon infrastructure and adapt to unavoidable climate change.

Achieving truly climate-resilient development will require an SDG framework that recognises the scale of the threat to poverty eradication and sustainable development posed by climate change, and the role that all goal areas can play in tackling it. There are many co-benefits for poverty and equality, sustainable growth, health, food and nutrition, education, women's empowerment, water and biodiversity.

Poverty and inequality, including gender inequality, are also the biggest causes of climate vulnerability, so poverty eradication and reducing inequality, including empowering women and girls, will be critical to reducing the negative impacts of climate change.

The push for economic growth without recognising planetary limits and social impacts is a key underlying cause of rising emissions. An integrated approach to poverty eradication, economic growth and climate change is needed so that progress on one objective does not undermine progress on another, and to achieve truly sustainable development. So rather than delivering 'growth at all costs', a goal

should focus on economic development that is both sustainable and inclusive. This means integrating social, economic and environmental objectives, through targets for actions to maximize co-benefits, decouple environmental degradation from economic growth, and ensure that the poorest and most vulnerable groups are protected from any negative impacts of greening policies.

Success on eradicating poverty within the SDGs is necessarily linked to the success of the UNFCCC process on tackling climate change. Commitment to tackling climate change in the SDGs will send a crucial signal on the importance of an ambitious climate change agreement at the 2015 UNFCCC COP. If a lack of political will in the UNFCCC process means that emissions growth continues, climate impacts will rapidly and increasingly undermine progress on SDG objectives on poverty eradication and sustainable development. The costs of adaptation and resilience building will also escalate and, given the limits to adaptation above a 1-2°C temperature rise, there will be a growing need to deal with climate change losses through initiatives such as a UNFCCC Loss and Damage Mechanism.

During discussions in the Open Working Group on SDGs, support has increased for a dedicated climate change goal, and numerous countries have also referred to the need for comprehensive mainstreaming of climate action throughout the goals and targets. However, while some goals contain explicit links to aspects of building resilience, much greater action is needed overall to adequately address the threat from climate change, both in a measurable and ambitious climate goal and through comprehensive integration of mitigation and adaptation in other goals.

The UN discussions around the SDGs have so far failed to adequately take into account the massive threat that climate change poses to their overall purpose – eradicating poverty as an indispensable requirement for sustainable development. If we do not address climate change within the timeframe of the SDGs, there will be no future sustainable development.

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The Sustainable Development Goals (SDGs)

One of the main outcomes of the United Nations Conference on Sustainable Development (Rio+20), held in Rio de Janeiro in June 2012, was the agreement by member states to launch a process to develop a set of sustainable development goals (SDGs).

The UN Secretary General will produce a report in late 2014, which will be the basis for intergovernmental negotiations up until the UN General Assembly Summit in September 2015. At this summit, governments will agree a new (post 2015) set of sustainable development goals (SDGs) to replace the Millennium Development Goals (MDGs), which expire that year.

The UN Open Working Group (OWG) on SDGs

Established in January 2013, a 30-member Open Working Group (OWG) of the UN General Assembly was tasked with preparing a proposal on the SDGs, co-chaired by representatives from Hungary and Kenya and involving representatives of 70 countries. After 13 sessions, in July 2014 the OWG published an outcome document proposing 17 SDGs and specific targets under each goal. The document can be found at: sustainabledevelopment.un.org/focussdgs.html

The UN Framework Convention on Climate Change (UNFCCC)

The UNFCCC is a UN treaty with 196 parties. The objective of the treaty is to 'stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.' The parties meet annually at the Conferences of the Parties (COP) to assess progress in dealing with climate change. In 2010, the COP adopted an agreement stating that future global warming should be limited to below 2°C (3.6 °F) relative to the pre-industrial level.

The 21st COP will be held in Paris in December 2015, with the objective of achieving a legally binding and universal agreement on climate, which will come into action from 2020. unfccc.int/

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