

# Raising the ambition

How the global climate agreement can affect the achievement of the Sustainable Development Goals

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# 1. About this document

This document explores the implications of a potential climate change agreement in 2015 on the likelihood of achieving the Sustainable Development Goals (SDGs) by 2030.

The research considers impacts on development, including economic impacts, under two scenarios for the 2015 climate change agreement; a high ambition agreement (to minimise global warming to 2°C by 2100) and a low ambition agreement (to minimise global warming to 3-5°C by 2100), with associated policies and levels of investment in mitigation and adaptation.

This document forms part of an ongoing research project being carried out by HR Wallingford and Metroeconomica on behalf of CDKN. The research started in September 2014 and will deliver a final report in Spring 2015. The analysis will examine one country-level case study from each of the three regions in which CDKN is present. This document presents the initial findings from the research.

The research aims to provide decision makers and negotiators at COP with a better understanding, and quantitative evidence where possible, of the implications of the outcome of the climate agreement decisions on the SDGs. It is intended that the final outputs of the research will be useful for negotiators and the development community to advocate for a stronger climate deal and to ensure that the SDGs deliver climate compatible development in the poorest and most climate vulnerable countries.

## Headline messages

- The decisions taken at UNFCCC COP20 in Lima and COP21 in Paris will have a significant impact on global development by 2030, even before the resulting impacts on climate are felt.
- A high ambition agreement that aims to minimise global warming to 2°C by 2100 is essential to have the best chance of achieving the Sustainable Development Goals by 2030.
- The climate agreement is unlikely to impact global warming or the frequency and severity of weather-related disasters in the period up to 2030; it will however play a significant role thereafter.
- A high ambition climate agreement can provide a clear policy framework and the legal basis for action on climate change, incentivise international cooperation, and mobilise additional finance and resources for mitigation and adaptation activities that support climate compatible development.
- This can potentially have a significant impact on the state of the economy and social well-being in the poorest and most climate vulnerable countries before 2030, improving the likelihood that they will achieve the SDGs.
- Initial findings suggest that a high ambition climate agreement is most crucial to achieving the SDGs relating to poverty (SDG 1), inequality (SDG 10), climate change (SDG 13) and global partnerships for sustainable development (SDG 17).

## 2. Climate change and the post-2015 development agenda

Climate change is one of the most pressing challenges the world faces today. It affects all aspects of the development agenda, from poverty eradication to health care, and from economic growth to disaster risk reduction. The poorest and most vulnerable people are likely to be most affected, unless significant efforts are made to create models of development that can mitigate and adapt to the impacts of climate change.

### **Why is this important now?**

In the coming year, negotiations on a new global climate change agreement and final targets for the SDGs are expected to be completed. Yet, largely unconnected parallel processes are being followed for each.

An international post Kyoto agreement on climate change is currently in being negotiated and is set to be finalised at UNFCCC<sup>1</sup> COP21<sup>2</sup> in Paris at the end of 2015. On a related track, the Rio+20 Conference on Sustainable Development in 2012 initiated a UN process to create the post-2015 Sustainable Development Goals (SDGs), which replace the Millennium Development Goals, and which will shape the international and national development priorities for developing countries until at least 2030<sup>3</sup>.

A climate agreement that neglects emerging evidence on the critical links between climate change and development could put many of the most vulnerable nations at risk of failing to achieve the SDG targets by 2030. Likewise, the development of SDGs that do not address climate change or climate resilience could mean that achieving the SDGs would not ensure long term climate compatible development.

### **How can the climate agreement affect the achievement of the SDGs?**

A climate agreement at the end of 2015 will provide the basis for global action to address climate change from 2020 onwards. Depending on the level of ambition, the agreement has the potential to deliver real transformational change, by putting societies on a path to green growth and low carbon development.

A high ambition climate agreement can provide a clear policy framework and the legal basis for action on climate change, incentivise international cooperation, and mobilise additional finance and resources for mitigation and adaptation activities that support climate compatible development. This in turn can have a substantial effect on the development pathways of climate vulnerable countries and therefore the SDGs.

## 3. What is an ambitious climate agreement?

### **Storylines for the scenarios used in the study**

It is challenging to determine what impacts a climate agreement will have in terms of national social, economic and policy responses. This research approaches this challenge by applying two contrasting “what if” alternatives, pairing two greenhouse gas emissions scenarios with two socio-economic development scenarios. The rationale behind this pairing is that a high ambition agreement goes hand-in-hand with robust, climate compatible decisions and national policies and therefore a more sustainable and equitable socio-economic pathway. Conversely, a low ambition agreement provides less impetus for climate compatible development policies and consequently is more likely to lead to a less sustainable socio-economic pathway and to worsening global inequality. The influence of the climate agreement on the SDGs will be strongly dependent on national policy decisions and actions to implement the agreement.

The scenarios of future concentrations of greenhouse gasses are referred to as the Representative Concentration Pathways (RCPs) and future developments in economic growth and development are referred to as the Shared Socioeconomic Pathways (SSPs). It is possible to analyse the implications of different combinations of RCPs and SSPs. This study considers two RCP/SSP combinations (OECD, 2012):

- **High ambition climate agreement scenario:** To describe the high ambition climate agreement, the study considers a combination of RCP4.5 and SSP1 (further information in Box 1). RCP4.5 assumes that actions are taken to reduce emissions sufficiently and keep the planet broadly on course for a 2°C temperature increase by 2100. This is paired with SSP1, where policies are in place for relatively rapid income growth and substantially reduced reliance on natural resources.
- **Low ambition climate agreement scenario:** To describe the low ambition climate agreement, the study considers a combination of RCP8.5 and SSP3 (further information in Box 1). RCP8.5 follows projected temperature increase of between 3°C and 5°C by 2100. SSP3 assumes that economic growth is slow due to lack of international cooperation, slow technological progress and low education levels.

Of course, it is not possible to be certain that SSP1 will be the outcome of a policy that keeps climate on track for RCP4.5, or that SSP3 will be the result of a climate policy that follows RCP8.5. For both a high and low ambition climate agreement, there is a continuum of possible outcomes in terms of the regional and national responses to the agreement and the specific social, economic and climate-related policies that are put in place. Current research indicates, however, that a high ambition scenario combined with the right policies to achieve low carbon growth is indeed compatible with SSP1. This has been convincingly demonstrated in the recent report by the Global Commission on the Economy and Climate (NCE, 2014), which shows that a package of measures including reduced fossil fuel subsidies, the pricing of carbon throughout the economy, innovative finance for low carbon investments, increased subsidies for R&D in low carbon energy and policies to ensure compact city development, will result in sustained green growth of the kind that is characterised by SSP1. At the same time the report argues, as have a number of others, that RCP8.5 will result in lower growth and greater inequality in the medium to long term.

#### Box 1: Description of the Shared Socioeconomic Pathways

##### **Shared Socioeconomic Pathway 1 (SSP1)**

This is a world making relatively good progress towards sustainability, with sustained efforts to achieve development goals, while reducing resource intensity and fossil fuel dependency. Elements that contribute to this include a rapid development of low-income countries, a reduction of inequality, rapid technology development, and a high level of awareness regarding environmental degradation. Rapid economic growth in low-income countries reduces the number of people below the poverty line. The world is characterised by an open, globalised economy, with relatively rapid technological change directed toward environmentally friendly processes, including clean energy technologies and yield-enhancing technologies for land, as well as investments in education.

##### **Shared Socioeconomic Pathway 3 (SSP3)**

The world is separated into regions characterised by poverty, pockets of moderate wealth and a bulk of countries that struggle to maintain living standards for a growing population. There is little progress in reducing resource intensity, fossil fuel dependency, or addressing local environmental concerns. International trade, including energy resource and agricultural markets, is severely restricted. There is little international cooperation and low investments in technology development lead to slow down of economic growth in all regions. Unmitigated emissions are relatively high, driven by use of local energy resources

and slow technological change in the energy sector. Governance and institutions show weakness and a lack of cooperation; effective leadership and capacities for problem solving are lacking. Investments in human capital are low and inequality is high. Policies are oriented towards security, including barriers to trade.

### The impacts of climate change from 2015 - 2030

The physical impacts of climate change are projected to become more acute throughout the 21<sup>st</sup> Century for both the 2°C and the 3°C to 5°C scenarios of warming. The projected trajectories of warming for both scenarios are similar until 2030 irrespective of the outcome of the climate agreement, after which the 3°C to 5°C scenario results in warming at a greater rate. As a result the physical impacts of climate change are projected to be broadly the same for both our scenarios before the 2030s.

Climate change impacts that are projected to occur before the 2030s will have an impact on the progress towards the SDGs. Impacts may include changes in water resources availability, temperature extremes, frequency of floods and droughts, sea level rise and ocean acidification. A high ambition agreement at COP21 will better support countries to deal with these impacts.

### The characteristics of a high and low ambition climate agreement

Using the storylines above we have developed a number of parameters to be able to test the impacts of the different scenarios for climate agreements on the SDGs. As detailed above, the two climate agreement scenarios being considered in this research are:

- A high ambition climate agreement scenario that aims to limit global temperature rise to 2°C by 2100.
- A low ambition climate agreement scenario that aims to limit global temperature rise to between 3°C and 5°C by 2100.

The list of parameters provided in Table 1 aims to identify the main characteristics of the two climate agreement scenarios at the global scale and provide a brief rationale for their relevance to the climate agreement.

**Table 1: Global characteristics of the climate agreement scenarios**

Characteristics	High ambition agreement	Low ambition agreement	Rationale
<b>Climate change mitigation</b>			
Greenhouse gas emissions	Rapid, deep cuts in emissions	Small cuts in emissions	A high ambition climate scenario is associated with a substantial reduction in emissions and high decarbonisation rates.
Average annual rate of decarbonisation (amount of carbon emissions per unit of GDP), 2015 - 2100 <sup>4</sup>	6.2%	0.9%	
<b>Societies and development</b>			
Inequity	Medium	High	Societies with the fewest resources are least able to adapt. A high ambition agreement, by providing more resources to poor countries could help reduce inequalities.
Employment rates	Rapid growth	Slow growth	There is greater potential for job creation and transformation of existing jobs, across all

Characteristics	High ambition agreement	Low ambition agreement	Rationale
			economic sectors under a high ambition agreement, due to additional investment and new green growth policies.
Technological change	Rapid	Slow	A high ambition scenario could bring rapid technological development in order to achieve the required decarbonisation rate, with more investments targeting environmentally friendly industrial processes and renewables.
International cooperation	Strong	Weak	A high ambition scenario could see greater cooperation and assistance from developed to developing countries and facilitate greater south – south cooperation.
<b>Economy</b>			
Income growth	Rapid	Slow	Climate compatible development policy and additional finance facilitate greater investments in technology, energy and infrastructure, boosting economic development. Additional public finance from climate finance and national budget also leverages private investment.
Annual average GDP per capita growth 2010 – 2030 <sup>5</sup>	3.4%	2.3%	
Private investment	High	Low	
<b>Annual average investment in key sectors 2010 – 2030 (US\$ billion / year)<sup>6</sup></b>			
Energy (all sources)	\$758 (22% > low ambition agreement)	\$619	Additional investment is expected to occur across all sectors, irrespective of the ambition. However, in a high ambition scenario investment is expected to be higher and directed towards green growth activities.
Buildings and industry	\$944 (54% > low ambition agreement)	\$613	
Road, rail, port and airport infrastructure	> \$805	\$805	
Telecommunications	> \$600	\$600	
Water	> \$1,320	\$1,320	
Agriculture	> \$125	\$125	
Forestry	\$104 (63% > low ambition agreement)	\$64	
Adaptation in developing countries	\$85 - \$121	> \$85 - \$121	A high ambition agreement will most likely provide more finance and resources to developing countries for adaptation.
<b>Environment</b>			
Quality and stocks of environmental resources	Good	Poor	Shifting to a resource efficient, low carbon and green economy, paves the way to address environmental challenges.
Biodiversity and ecosystem services	Gradual decline	Rapid decline	

Source: Table developed for this document.

## 4. Implications for the SDGs

This section presents initial analyses and hypotheses that will be tested with modelling and analysis as this research progresses. There has been a lot of work by climate researchers to quantify the RCPs and SSPs in terms of climate and economic impacts<sup>7</sup>. Detailed projections from the OECD, IIASA and others are available and have been used in this study to derive links between different climate scenarios and the SDGs. The initial analysis has been conducted at the global scale with some regional specificity, using the 17 draft SDGs proposed in the Zero Draft by the Open Working Group.

### Poverty (SDG 1)

Levels and rates of growth of GDP per capita over the period 2010 to 2030 are slightly higher for the RCP4.5/SSP1 combination (herein referred to as the high ambition agreement scenario) than for the RCP8.5/SSP3 combination (herein referred to as the low ambition agreement scenario). The higher growth in GDP can also be translated into a greater reduction in poverty and estimates have been made of this relationship.

Table 2: Number of people in poverty in 2010 and projected numbers for 2030 under a high and low ambition climate agreement

Region	Number of people in poverty (millions)		
	2010	High ambition 2030	Low ambition 2030
East Asia	208	8	15
South Asia	473	11	27
Sub-Saharan	386	69	119
LAC	28	12	15

Source: Poverty data are from WDI and measured at \$1.25 per day. GDP growth projections are from OECD. Note that in both the high and low ambition agreement scenarios there is projected to be a substantial decline in the number of people in poverty, with greatest reductions for the high ambition agreement scenario.

As a rule, the impacts of growth on poverty depend on how pro-poor the growth is. If growth policies exacerbate inequality, the growth may not reduce poverty by much, or at all. Initial estimates<sup>8</sup> of the impacts of different climate agreement scenarios in poverty change, for East Asia, South Asia, Sub-Saharan Africa and Latin America and the Caribbean, by 2030, are given in Table 2. Poverty reductions are greater under the high ambition agreement. Under the low ambition agreement, poverty levels in 2030 are 80 – 140 percent higher for Asia and Sub-Saharan Africa and 25 percent higher for Latin America and the Caribbean than they are for the high ambition scenario.

### Hunger (SDG 2)

Under a changing climate, food insecurity due to increased risk of crop failure and declining agricultural yields associated with drought-related water shortage are expected to severely impact countries and communities highly dependent on agriculture.

Under a low ambition scenario, access to sufficient food is not guaranteed and targets on eliminating malnutrition might not be met, especially under severe restrictions to international trade, including agricultural markets. Policies oriented towards security, including barriers to trade would not ensure the proper functioning of food commodity markets. This, combined with lower investment in improved technologies, is expected to obstruct increased agricultural productivity. In contrast, a high ambition scenario associated with rapid technology development and enhanced agricultural research is expected to increase the agricultural

productive capacity in developing countries and raise the incomes of small scale food producers. Yield-enhancing technologies for land and resilient agricultural practices could increase food security. Higher investments and policies that secure the proper functioning of agricultural markets could ensure access to sufficient food for all poor and vulnerable people. Adaptation investment can also make a difference to reducing loss of crops from increased climate extremes such as floods and storms and to support more sustainable, climate smart, agricultural practices.

### **Health and wellbeing (SDG 3)**

The health-related impacts of climate change by 2030 are not expected to vary much between a 2°C and a 3-5°C temperature rise. Health impacts include increased cases of malnutrition, diarrhoeal disease, and malaria. In addition, extreme weather events could cause more flood related deaths and injuries, whilst heat related mortality and declining work productivity (e.g. due to dehydration) are expected to rise. Groups that are particularly at risk include agricultural and construction workers as well as children, homeless people, the elderly, and women who have to walk long hours to collect water.

A low ambition scenario linked with low investments in technology development and a slowdown of economic growth could lead to unmet targets for reduced mortality and elimination of epidemic diseases. Reduced health financing associated with reduced access to affordable essential medicines and vaccines, along with lack of early warning systems in developing countries, could cause increased risk of injury and disease related losses. A high ambition scenario followed by higher levels of income and GDP per capita along with higher health spending per capita would be likely to increase life expectancy at birth. Further, providing access to modern energy services, which is a key element of mitigation finance, and associated improvements in air quality due to decarbonisation, will also contribute to achieving the health SDG by reducing indoor and outdoor air pollution in homes and communities that use traditional biomass. Rapid technological change and increased health financing are expected to reduce the number of deaths from illnesses by supporting research and development of vaccines. For the more vulnerable countries, a stronger economy would support development of early warning systems and minimise loss of life from weather related disasters.

### **Education (SDG 4)**

Physical impacts of climate change such as more frequent flooding events and other natural disasters could cause damages in school and transportation infrastructure, whilst leading to an increase in forced family displacement.

Higher levels of poverty associated with a low ambition scenario put extra pressure on children, especially in low income developing countries, to pull out of school and engage in paid employment. The number of skilled people for employment would not increase substantially due to a lack of investment in mitigation technologies, the underpinning R&D and in the education system. Without education one is less likely to escape from the poverty cycle. Conversely, a high ambition scenario with greater investment in education would ensure development of skills for employment and reduced numbers of illiteracy. Rapid economic growth in low-income countries is associated with less people living below the poverty line. This, along with greater availability of food and water (see SDGs 2 and 6), reduced infrastructure damages and less forced migration due to investment in adaptation could increase the number of children that are able to attend school. Finally, mitigation resources that focus on achieving low greenhouse gas development pathways, are expected to provide energy access for the poor and help to build the environment needed to achieve the education SDG, for example, by bringing lighting to more homes to enable children to read and do their homework.

## Gender equality (SDG 5)

Women and children are 14 times more likely to die than men during disasters (Brody *et al.*, 2008), and women in developing countries are especially vulnerable. The ratio of women affected or killed by climate-related disasters is already higher in some developing countries than in developed countries (Wilbanks *et al.*, 2007).

Under a low ambition scenario, slow economic growth and high poverty levels could reduce women's chances of equality and empowerment. Weak social protection policies associated with this scenario are not expected to ensure equal rights and access to economic resources for women. There is already evidence in the literature showing that as countries get richer, their societies become more equal<sup>9</sup>. A high ambition scenario with rapid economic growth and more investments in high levels of education could lead to reduced gender inequalities. Reduced gender disparities in education could give women the opportunity to seek employment, become independent and participate in leadership and decision making in all aspects of life. Investment in mitigation could create greater gender balance in employment opportunities compared to traditional male dominated employment associated with coal sources.

## Water and sanitation (SDG 6)

Water stress is a function of water availability, demand, and water quality. Overall water availability to 2030 under the two scenarios is unlikely to be significantly different but policy responses to the high ambition scenario are more likely to improve water governance than those for the low ambition scenario. Improved water governance could lead to better management of catchments, improved water quality and enhanced ecosystems services to protect against climate variability and extremes. Improved water technologies, and greater investment (domestic, overseas development aid and private) under the high ambition scenario could reduce demand and improve water efficiency and sanitation technologies. Annual global climate change adaptation costs for providing sufficient water to meet future demand for public water supply and industrial demand by 2050 are expected to be US\$12 billion<sup>10</sup>, with 83–90 percent of those allocated in developing countries. The highest costs are in Sub-Saharan Africa (16 percent of the global total). Increased adaptation finance under the high ambition scenario can help to meet the financing gap to 2030. Mitigation actions may influence the water footprint of energy generation and the development of new technologies to meet mitigation needs brings opportunities to reduce water demand in the energy sector and in industrial processes.

## Energy (SDG 7)

An Integrated Assessment Model (GCAM) was run to compare non-fossil energy shares under the two agreement scenarios. Under the low ambition scenario, little progress is made in reducing fossil fuel dependency, which results in an increase of around 12 percent in non-fossil energy by 2030. Local environmental concerns are not addressed, whilst the usage of local energy resources and slow technological change in the energy sector keep emissions at relatively high levels. Countries focus on achieving energy goals within their own region, which means that international trade, including trade in energy resource markets, is severely restricted. The high ambition scenario, associated with rapid technology development and a high level of awareness regarding environmental degradation, leads to increased non-fossil energy to around 21 percent by 2030. Technological change directed towards environmentally friendly processes, including clean energy technologies, leads to improved energy efficiency and increased shares of renewable energy. Enhanced global trade between regions ensures supply of developing countries with modern and sustainable energy services for all. Higher energy investments promote new infrastructure along with clean energy research and technologies.

An important consideration related to energy shifts is the regional distribution of cost. The distribution of costs will depend on the way in which mitigation programmes are financed and in particular how much support is given to developing countries to make the shift to low carbon technologies.

### Sustained economic growth and inequality (SDGs 8 & 10)

SDGs 8 and 10 are closely linked to the level of ambition of the climate agreement and a high ambition agreement is more likely to support their achievement. Under the high ambition agreement, not only do the selected regions have higher growth, they also demonstrate a closing of the gap with the developed regions such as Europe and the USA, compared to the low ambition agreement.

Table 3 shows the per-capita GDP of three regions (developing Asia, LAC and the Middle East and Africa) relative to the OECD 90 countries. Compared to 2010, both scenarios envisage some closing of the gap with the OECD for these regions, but the closure is higher under the high ambition scenario. The difference is greatest for developing Asia, followed by LAC and last is the Middle East and Africa. The high ambition agreement, associated with rapid economic growth in low-income countries and an open, globalised economy, which supports greater investments in technology development, higher levels of international trade and cooperation, points towards reduced inequalities and promotes sustainable economic growth.

**Table 3: GDP per capita in different regions as a percentage of that of the OECD**

	2010	2030	
		High ambition	Low ambition
Asia (excluding Japan)	15	35	29
LAC	30	40	36
Middle East and Africa	13	18	15

Source: Table developed for this document.

### Resilient infrastructure, industrialisation, cities and human settlements (SDGs 9 & 11)

There is evidence of links between SDG 9 (resilient infrastructure, inclusive and sustainable industrialization and innovation) and SDG 11 (inclusive, safe, resilient and sustainable cities and settlements) and the climate agreement. Relevant sources of information include the detailed descriptions of SSP1 and SSP3, the data and discussion in the New Climate Economy Report (NCE, 2014) and the Green Investment Report (World Economic Forum, 2013) on cities and infrastructure. Both reports and especially the former make the case that the development path consistent with SSP1 requires major new investments in infrastructure (around \$90 trillion in the next 15 years) to support urbanisation, improve agricultural productivity and provide the energy needs of a growing world economy. If this investment can be accompanied by the right policies, then at least half the reductions in emissions of greenhouse gases for a 2°C track will come at no additional cost. That figure could rise to over 90 percent with “strong and broad implementation, rapid learning and sharing of best practice” in the main policy areas (NCE, 2014). Thus one can argue that: (a) SDG 9 is strongly tied to sound climate policies and there are strong synergies between the two, and (b) the direct costs of low carbon development are small and outweighed by the indirect benefits of green growth.

### Sustainable consumption and production (SDG 12)

The high ambition agreement is associated with low material growth, less energy-intensive consumption and more sustainable production, in part due to reductions in resource intensity to meet decarbonisation targets. Natural resource management is therefore likely to be more efficient under the high ambition than the low ambition scenario. The high ambition agreement is likely to foster policies for rationalising inefficient fossil fuel subsidies that encourage wasteful consumption, whereas there is little incentive to restructure taxation of

phase out subsidies under the low ambition agreement. The high ambition agreement is likely to lead to technology innovations for moving towards more sustainable patterns of consumption and production.

### Action to combat climate change (SDG 13)

Taking urgent action to combat climate change and its impacts relates to both adaptation and mitigation. The UNEP Adaptation Gap report estimates that funding for developing countries for adaptation is currently around \$19-21 billion. This is considerably less than the estimated amount needed to meet adaptation needs, which was put at between \$70-100 billion for developing countries in a World Bank study in 2010. Since then, more detailed national estimates indicate that adaptation costs could be considerably higher (Watkiss *et al.*, 2014). More recent work on the adaptation gap that has tried to estimate the costs as a function of different climate scenarios, suggests that there is little difference in adaptation expenditures between the 2°C and 3-5°C scenarios up to 2030. However, by 2050 a low ambition agreement has very fast rising costs, and is estimated to cost around \$66 billion/year, compared to \$46 billion/year that is the estimated cost of a high ambition agreement. The main issue, however, is that all the estimates of adaptation needs for the current period are above the amount currently allocated, which was around \$19-21 billion in 2012/2013. Therefore, a lot depends on future increases of these adaptation funds, along with the application of mitigation measures that are consistent with sustainable development priorities (i.e. better environmental policies, carbon finance, energy efficiency). If the needs are met and there is no adaptation gap, it is likely that there will not be a substantial climate impact on vulnerable groups and on poverty<sup>11</sup>. Otherwise, there could be an impact on poor and vulnerable communities and this would be much larger after 2030 for the low ambition climate agreement.

### Marine and terrestrial ecosystems (SDGs 14 & 15)

According to the IPCC AR5, the main physical impacts of climate change with reference to marine and terrestrial ecosystems include coral reef reduction, fall in fishery catch potential at low latitudes, ocean acidification, reduced biodiversity, coastal inundation and habitat loss due to sea level rise, tree mortality and forest loss and risk of species extinction.

Under a high ambition agreement, large investments would be directed towards environmentally friendly processes, new technologies that could prevent marine pollution from land-based activities, whilst additional funds would be directed towards coral reef and forest restoration and conservation. For example, the Reducing Emissions from Deforestation and forest Degradation (REDD+) mechanisms, a critical element of the climate deal, will bring additional finance for conservation and sustainable management of forests. A low ambition agreement would not be able to meet the targets for protection and sustainable management of ecosystems, as the financial resources would be significantly decreased, and global support is anticipated to be less favourable.

### Social justice and global partnerships (SDGs 16 & 17)

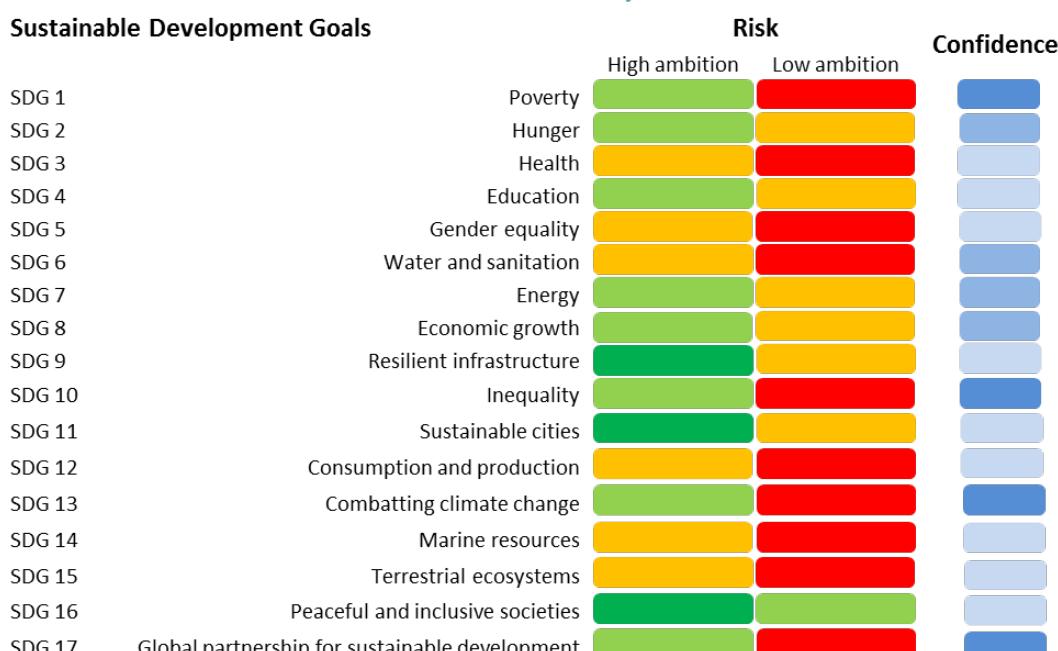
Under the high ambition agreement, there is likely to be greater investment in human capital and sustainable development driven by greater global collaboration in order to meet the target rates of decarbonisation. This scenario is associated with sustained efforts to achieve gender equality, to ensure access to education for all, along with increased international cooperation and high trade flows. The low ambition agreement is likely to be associated with limited progress in reducing resource intensity or addressing environmental concerns as the rate of decarbonisation would be substantially lower and therefore there would be less incentive or need to reduce resource intensity. International collaboration is restricted, inequalities at a global level and within countries are high, there is lack of cooperation between governance and institutions, whilst policies are more security oriented. The characteristics of the high ambition agreement scenario are therefore more likely to support the achievement of these SDGs than the low ambition agreement.

## 5. Links between climate ambition and development

The initial analyses and hypotheses presented in this document demonstrate a link between the level of ambition in the climate change agreement and the achievement of the SDGs by 2030. The interconnections between the outcomes of the UNFCCC process and the UN-SDG process should be carefully considered by negotiators in reaching agreement on the climate change deal. The level of ambition is critical. A high ambition agreement is likely to provide significant benefits to both the climate and development agendas over the next two decades.

Table 4 summarises the influence of the level of ambition of the climate agreement on the risk of failure to achieve the SDGs and gives the level of confidence in the estimate of the magnitude of risk. Note that this summary is based on evidence supported interpretations and initial economics analysis. For some SDGs, the high and low ambition scenarios have substantially different outcomes in terms of the risk of failure to achieve the SDGs by 2030. Notable examples are poverty (SDG 1), inequality (SDG 10), combatting climate change (SDG 13) and global partnerships for sustainable development (SDG 17), for which the low ambition agreement is projected to result in a significantly greater risk of not achieving the SDGs than the high ambition agreement.

**Table 4: Risk of failure to achievement of the SDGs by 2030**



*Source: Prepared for this document, as a product of evidence based interpretation of the SDGs analysis. This presents initial findings of the ongoing research.*

## Next steps

This document presents initial findings from ongoing research. Further analysis and evidence will be gathered to provide insights at regional, sub-regional and country scales. The research will aim to further quantify the impacts of a climate agreement on achievement of the SDGs at a country level. The findings will be available in Spring 2015.

## 6. References

**NCE (2014)** Global Commission on the Economy and Climate. The New Climate Economy Report: Better Growth, Better Climate.

**OECD (2012)** Long-Term Economic Growth and Environmental Pressure: Reference Scenarios For Future Global Projections, Working Party on Climate, Investment and Development, ENV/EPOC/WPCID(2012)6, Paris: OECD.

**Ravillion, M. (2004)** 'Pro-poor Growth: A Primer', World Bank Policy Research Working Paper No 3242, Washington DC: The World Bank (2006). World Development Report 2006: Equity and Development: Washington DC.

**Watkiss, P. et al. (2014)** "The Adaptation Funding Gap" in UNEP Adaptation Gap Report. UNEP.

**Wilbanks, T.J., P. Romero Lankao, M. Bao, F. Berkhout, S. Cairncross, J.-P. Ceron, M. Kapshe, R. Muir-Wood and R. Zapata-Marti (2007)** Industry, Settlement and Society. In: Climate Change 2007: Impacts, Adaptation and Vulnerability . Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

**World Economic Forum (2013)** The Green Investment Report: The ways and means to unlock private finance for green growth. World Economic Forum.

## Endnotes

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<sup>1</sup> United Nations Framework Convention on Climate Change

<sup>2</sup> The 21<sup>st</sup> session of the Conference of the Parties

<sup>3</sup> It is important to note that the SDGs are still under discussion and a final agreement has yet to be reached on precisely what form they should take. In this report we work with the Outcome Document of the UN Open Working Group on Sustainable Development Goals, which provides the latest information on what the goals and associated targets. See <http://sustainabledevelopment.un.org/focussdgs.html>.

<sup>4</sup> Figures are from PwC (2014) *Two degrees of separation: ambition and reality. Low Carbon Economy Index 2014*. These figures compare to figures of 0.9% decarbonisation per year from 2000 to 2013 and 1.2% for 2014.

<sup>5</sup> Figures calculated from IIASA projections for SSP1 and SSP3, <https://secure.iiasa.ac.at/web-apps/ene/SspDb/dsd?Action=htmlpage&page=welcome>

<sup>6</sup> Figures are taken from World Economic Forum (2013) *The green Growth Investment Report: the ways and means to unlock private finance for green growth*.

<sup>7</sup> For details see <https://secure.iiasa.ac.at/web-apps/ene/SspDb/dsd?Action=htmlpage&page=series>.

<sup>8</sup> Some studies based on World Bank data show that, while the poverty 'elasticity' of growth is 2 on average and 4 in countries with an income 'Gini' coefficient of 0.3 and lower, it is zero in countries with a 'Gini' coefficient of 0.6 and higher (Ravillion, 2004). Our estimates are based on this relationship.

<sup>9</sup> Data Source: UNDP GII, World Bank, <http://blogs.ft.com/beyond-brics/2011/09/30/chart-of-the-week-gender-inequality-and-income/>

<sup>10</sup> The baseline scenario (excluding climate change) costs are estimated to be US\$73 billion.

<sup>11</sup> This assumes that adaptation budgets cover not only the direct costs of adaptation measures such as flood prevention etc., but they also compensate individuals who suffer any 'residual' damages - i.e. damages that the adaptation cannot eliminate.

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