E3G

TOWARDS A CLIMATE-NEUTRAL EU BY 2050
AN E3G SERIES

REPORT APRIL 2019

MANAGING CLIMATE RISK FOR A SAFER FUTURE

A NEW RESILIENCE AGENDA FOR EUROPE

LUCA BERGAMASCHI, NICK MABEY, CAMILLA BORN & ADAM WHITE

Cover Image: A flooded St Mark's Square **by Jonathan Ford on Unsplash.com**

About E3G

E3G is an independent climate change think tank operating to accelerate the global transition to a low carbon economy. E3G builds cross-sectoral coalitions to achieve carefully defined outcomes, chosen for their capacity to leverage change. E3G works closely with like-minded partners in government, politics, business, civil society, science, the media, public interest foundations and elsewhere. In 2018, for the third year running, E3G was ranked the fifth most globally influential environmental think tank.

www.e3g.org

Berlin office
Neue Promenade 6
Berlin, 10178 – Germany
Tel: +49 (0) 30 2887 3405

Brussels office
Rue du Commerce 124
1000 Brussels, Belgium
Tel: +32 (0)25 800 737

London office
47 Great Guildford Street
London SE1 0ES, UK
Tel: +44 (0)20 7593 2020

Washington DC office
2101 L St NW
Suite 400
Washington DC, WA 20037
United States
Tel: +1 202 466 0573

Copyright

REPORT APRIL 2019

MANAGING CLIMATE RISK FOR A SAFER FUTURE

A NEW RESILIENCE AGENDA FOR EUROPE

LUCA BERGAMASCHI, NICK MABEY, CAMILLA BORN & ADAM WHITE

CONTENTS

EXECUTIVE SUMMARY

Climate risk is an existential threat to Europe. Impacts throughout 2018 were a stark reminder of the vulnerability and unpreparedness that Europe faces, with the most vulnerable bearing the highest costs. This needs to change if Europe wants to effectively protect its citizens.

Without increasing commitments and accelerating their implementation, the world will continue to move towards 3°C of warming by the end of the century. Some regions will be hit harder than others, with Southern Europe projected to be a hotspot for impacts.

Without deep change, an unprecedented level of disruption is expected in Europe throughout this century – annual damages from coastal floods could be as high as €1 trillion per year affecting over 3.5 million people, drought-hit cropland could increase 7-fold, agricultural yields could decline by up to 20%, and the land burnt by forest fires could double, while almost one in two Europeans would be affected by water scarcity.

However, real-life impacts and consequences are set to be worse than estimated as second and third order effects, which are hardly captured by existing socio-economic assessments, will fundamentally alter the lives of all Europeans and transform European politics. These include food shocks, trade disruptions, increased migration flows, the potential of new conflicts and the material impacts of climate "tipping points".

As the earth system heats up, the risk that its vital organs – such as the polar ice sheets, the Amazon forest, the coral reef and permafrost – act in non-linear and abrupt ways significantly grows. When this behaviour is triggered is uncertain, yet as tipping elements are interconnected once the process starts it may be very difficult or impossible to stop, pushing the earth system irreversibly onto an unmanageable "hothouse earth".

Overshooting 1.5°C could fundamentally undermine Europe's security and prosperity for centuries to come as there is a higher risk of triggering tipping points. Europe cannot afford to take this risk. Also, relying on unproven technology for future large scale "negative greenhouse gas emissions" is too risky to inform current action.

Keeping temperatures below 1.5°C is technically and economically feasible, but that will require deep changes in all countries on an unprecedented timescale. For the European Union, this means delivering net-zero GHG emissions well before 2050 and revising upwards the target for 2030 into the range of 55 to 65% cut below 1990 levels.

Fundamentally and in the face of uncertainty, Europe needs a new approach to managing climate risk. When dealing with an existential threat, the uncertainty of future developments and the full degree of risks must be taken into account and

integrated into all aspects of policy-making. The generation and availability of updated and detailed information is as important as systematically use and communicate them. This is key to inform policy making, disaster risk reduction agencies and private sector decisions.

Meeting this need will require a new approach to policy making through the creation of a new independent institution – the European Energy and Climate Risk Observatory – that provides the necessary substance, monitoring and assessment to ensure robust and accountable policy making.

Next European Commission has the opportunity to make the European institutions fit for purpose by delivering on a new resilience agenda that put a new approach to climate risk management at the heart of the policy-making, protects on the basis of fairness and solidarity to all affected communities, builds a new economy and develops a new diplomacy. Member States should empower the European Commission to prepare a Europe-wide resilience plan for managing the social transition effectively, through:

- **Embedding a new climate risk management framework at all level of the policy-making system.** This should aim to deliver net-zero GHG emissions well before 2050 and stress-test existing and new policies against the delivery of 1.5°C; budget, plan and build resilience against the impacts of 3°C to 4°C of warming; and develop contingency plans for a rapid onset of warming of 5°C driven by climate tipping points with higher, runaway impacts, such as rapid sea level rise driven by the collapse of polar glaciers.
- **Shifting the EU approach to disaster risk from reaction to prevention**. In the next Commission the portfolio for managing climate and disaster risks should be joined up and coordinated centrally under the direction of the First Vice President. The European Environment Agency should be empowered, and funded accordingly, to conduct more comprehensive monitoring and assessment exercises of internal and external climate vulnerabilities and risks. This substance should feed directly into the work of the new European Energy and Climate Risk Observatory.
- **Closing the protection gap**. The majority of economic losses from climate impacts since the 1980s were uninsured and therefore unrecoverable. Rising insurance prices will widen the protection gap between who can afford insurance and cannot. Next EU budget should support projects that aim to close the protection gap of vulnerable populations.
- **Climate-proofing the EU budget and infrastructure planning**. All EU spending and infrastructure plans should be proofed against the goal of 1.5°C – and the corresponding scenarios of the EU long-term strategy – and against resilience measures capable to withstand warming level of 3-4°C. All EU funds should be required to have a resilience strategy in place before issuing the funds, exclude all fossil fuels and integrate the “energy efficiency first principle”.

- **A fair and deep decarbonisation through innovation and real-life transition labs**. Reaching carbon neutrality requires public investment to focus on zero-carbon solutions which requires "system level" innovation with digitalisation at its heart. Mission-oriented programmes and large real-life laboratories are key to demonstrate that it is possible to deal with complex problems in a just way and to overcome social, political and cultural barriers.
- **Building resilient infrastructure requires new assessments to understand how existing infrastructure will be affected under different level of warming.** "Green infrastructure" solutions must also play a more central role, including landscape conversation, afforestation, and wetland restoration to tackle flooding, and managed retreat in coastal areas to adapt to rising sea levels.
- **Reforming the financial system is fundamental to address systemic financial risk.** The EU needs to start at the firm level taking forward measures for mandatory disclosure in line with the recommendations of the Taskforce on Climate-related Financial Disclosures. Stronger standards and frameworks for action are also required through quickly approving a new financial taxonomy of economic activity aligned with a 2050 strategy compatible with 1.5°C.
- **Developing a new EU climate and energy diplomacy.** The European External Action Service should allocate new resources to scale up its climate diplomacy capacity and develop a "whole-of-EU approach" for aligning all EU external policies with 1.5°C and building resilience. The EU energy diplomacy and security strategies need to be redesigned around climate objectives and developing and accessing clean markets and supply chains, while helping fossil fuel producing countries diversify their economies and make them more resilient to future climate shocks.
- **Developing and adopting Paris-compatible rules for trade**. Trade agreements should make the implementation of the Paris Agreement binding on trading partners and ensure the protection of the highest environmental and labour standards. Procurement procedures should put sustainability as the core criterion for awarding public contracts and procurement guidance should be designed around the use of the most sustainable goods and services. Anchoring compliance assessments to recognised independent institutions is key for strengthening enforcement mechanisms and resolving investment disputes. In parallel to trade policies, comprehensive packages for just transition and ambitious zero-carbon transitions should be in put in place where communities are most affected by unbalanced trade outcomes.
- **Make the United Nations fit for purpose.** The next Commission should make reforming the UN to face climate risk a regular item of the EU Foreign Affairs Council to further consolidate the ongoing efforts by Member States. In parallel, reforms to the own EU's peace and security practices to integrate climate-related security risks can help facilitate innovation and learning to cope with emerging risks.

CHAPTER 1
CLIMATE RISK IS AN EXISTENTIAL THREAT TO EUROPE

Climate change is everyone's security

Climate impacts throughout 2018 were a stark reminder of the vulnerability and unpreparedness of the European economic, social and institutional structures in dealing with unprecedented change. This affects all sectors and communities, contributing to the loss of lives, causing billions of damages and disrupting the livelihood of millions of people. 2018 was another year of extreme weather events, and the fourth warmest on record[1], following decades of increasing and worsening impacts. Since the 1980s climate extremes have caused almost €500 billion in economic losses.[2]

BOX 1: Extreme weather events in 2018

The summer heatwave of 2018 brought severe climate impacts to Europe. The European Commission's European Drought Observatory shows much of Northern Europe is under some form of dryness. This is putting vegetation under stress across a broad swath of the continent covering Denmark, England, Netherlands, Belgium, France, Norway, Sweden, Estonia and Latvia.[3] Farmers across the EU expect a decrease in crop yields of some vegetables of up to 50%. Sweden's wheat harvest could decrease by over 40%. Poland has observed drought on almost 65% of its arable lands. Germany expects its grain harvests to be 20% less than normal. In Estonia, it is expected that between 30 and 70% of the summer crops could fail. In Denmark, the spring harvests of vegetables and grains were down by 40 to 50%.[4] The European Association of Fruit and Vegetable Processors described the situation as the most serious that has been experienced in the last 40 years.[5]

All these extreme - yet not totally unexpected changes - forced the European Commission to advance direct payments to EU Farmers under the Common Agricultural Policy and to allow them to use fallow land that normally would not be used for production to feed their livestock.[6] The impact on agriculture has also been felt by households in their food bills with the expectation in the UK

[1] European Centre for Medium-Range Weather Forecasts (2019) **Last four years have been the warmest on record – and CO2 continues to rise**

[2] European Environment Agency (2018) **Economic losses from climate-related extremes**

[3] US National Oceanic and Atmospheric Administration (2018) **A hot, dry summer has led to drought in Europe in 2018**

[4] Ibid

[5] Euronews (2018) **Heat, hardship and horrible harvests: Europe's drought explained**

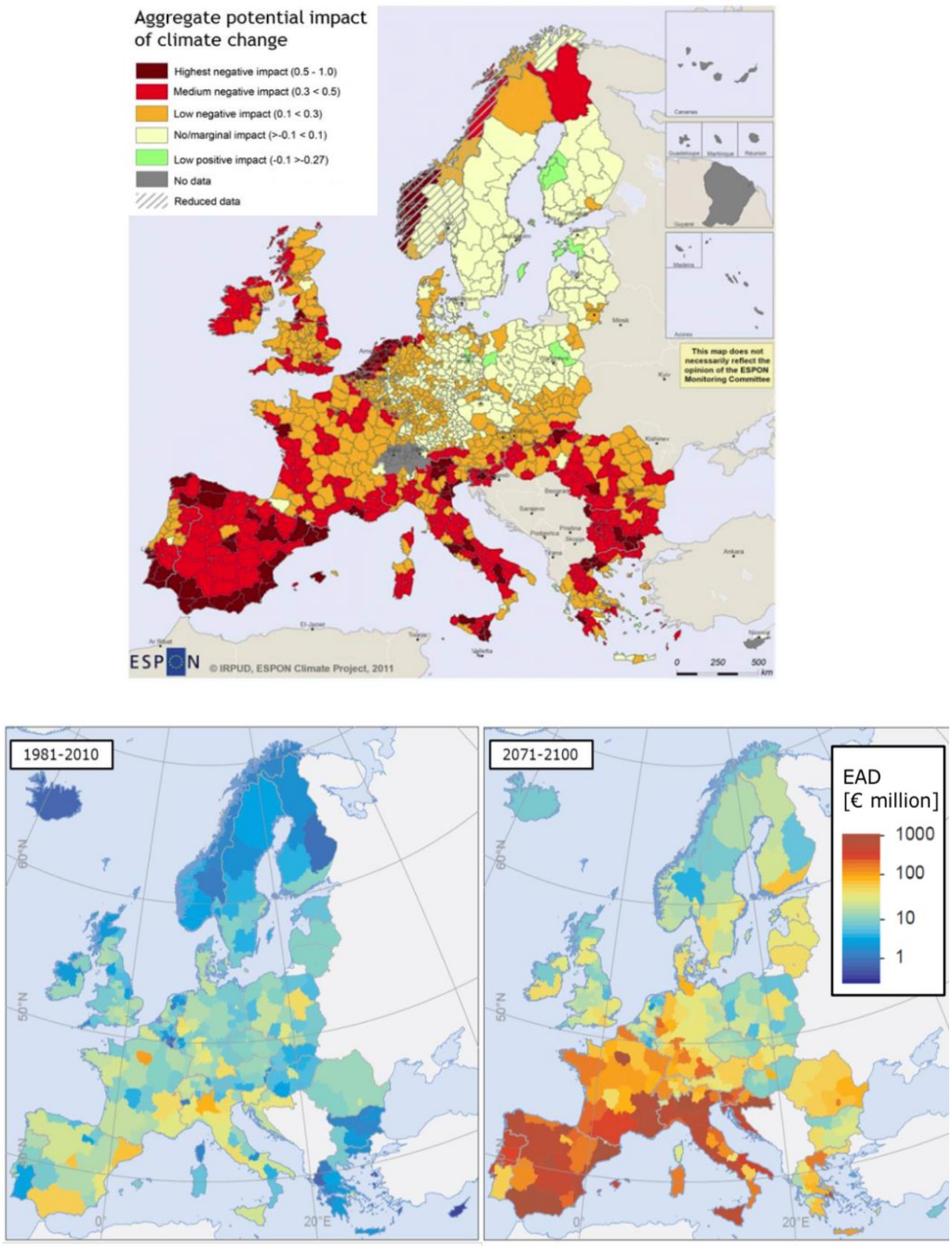
[6] Ibid

that food bills are likely to rise by 5%.[7] Sweden also suffered the worst outbreak of forest fires on modern record.[8] Other fires became deadly as they were fanned by extremely high winds and killed dozens of people near Athens in one of Greece's worst tragedies for years.[9] The Baltic sea was even turned poisonous for both people and animals by the most severe algae blooming for decades.[10] And extreme flooding in Italy meant that over 30 people lost their lives between September and November 2018, with abnormal high wind in the Alps caused the loss of 14 million trees within a few weeks, the most devastating loss of wood ever recorded.

Climate change is first and foremost a matter of security and should be treated with the same attention and urgency as other security threats, such as war, terrorism or organised crime. However, **there is still a fundamental lack of urgency and prioritisation compared to other security threats.** Climate impacts are manifesting themselves with a frequency and intensity much worse than expected and which is expected to worsen over time. **Without increasing commitments to reducing emissions and implementing them, the world is expected to warm up by 3°C on average by the end of the century.[11] Some regions will be hit harder than others, raising the essential question of equity**. Geographical differences mean that summer temperatures in the Middle East and North Africa will rise over twice as fast as the global average, making some places uninhabitable and exacerbating existing political, economic and social instability.[12] Strong disparities also exist within regions. **In Europe the hotspots of climate impacts are mostly in the South**, in particular around the big agglomerations and tourist resorts at the coastline (Figure 1).[13]

[7] The Independent (2018) **Food to increase in price because of extreme conditions**
[8] Financial Times (2018) **Scorched earth: the world battles extreme weather**
[9] World Meteorological Organisation (2018) **July sees extreme weather with high impacts**
[10] Ibid
[11] IPCC (2018) **Global Warming of 1.5°C, Chapter 4, Strengthening and Implementing the Global Response**
[12] The Economist (2018) **Too hot to handle - Climate change is making the Arab world more miserable**
[13] Espon Climate (2011) **Climate Change and Territorial Effects on Regions and Local Economies**

Figure 1: Aggregate potential impact of climate change (top) and Expected Annual Damage to critical infrastructure by 2100 in million € (bottom)



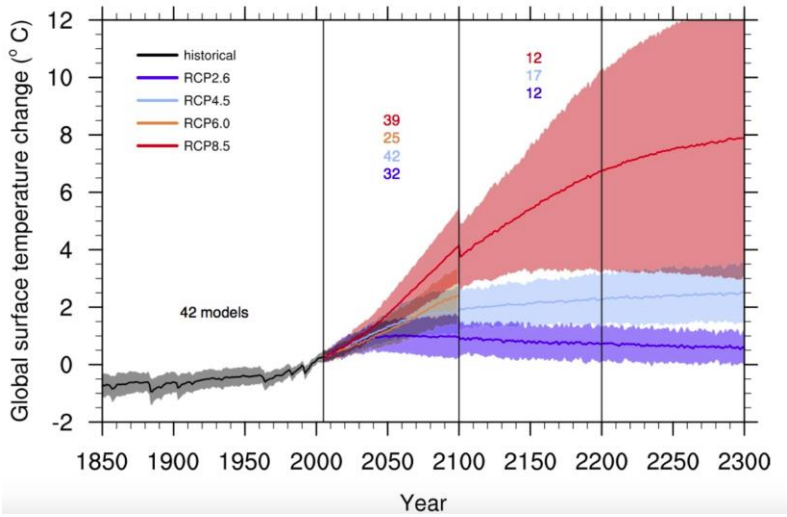
Source: *ESPON (top) and JRC (bottom)*[14]

[14] Forzieri et al. (2018) **Escalating impacts of climate extremes on critical infrastructures in Europe**, Global Environmental Change 48 97–107

What does 3°C by 2100 mean?

Assuming countries deliver their current climate commitments – the Nationally Determined Contributions (NDCs) submitted under the Paris Agreement – and mitigation efforts continued on an incremental, business-as-usual basis after 2030, the world is expected to reach a mean global temperature of 3.2°C.[15] This is the mid-point of climate modelling scenarios while the range of global average temperatures varies between 2.7°C and 3.7°C in 2100 with a probability of staying within this range of 50%.[16] This is within the range of the red area of Figure 2. Temperatures and sea levels will continue to rise well after 2100 due to inertia in the earth system, even if global emissions are rapidly brought to zero.

Figure 2: Time series of global annual mean surface air temperature anomalies relative to 1986–2005



Source: *IPCC (2013)*[17]

BOX 2: BEYOND 3°C IN EUROPE

Over the past decade, the European Commission has undertaken a rich set of research[18] to understand the consequences of future global warming in Europe, including under the high warming scenario RCP8.5 (red line in Figure 2). This projects the average global surface air temperature to reach 3.7°C by 2100 compared to 1986-2005 which is consistent with current national climate commitments. The findings include:

[15] United Nation Environment Programme (2018) **Emissions Gap Report 2018**
[16] World Resource Institute (2015) **Why Are INDC Studies Reaching Different Temperature Estimates?**
[17] The Intergovernmental Panel on Climate Change (2013) **Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change** pages 1054-1055
[18] The European Commission Joint Research Council (2018) **PESETA III Project: Climate Impacts in Europe** The third series of the PESETA project (PESETA III) by the Joint Research Centre – the EU Commission's science and knowledge research centre – was released in November 2018 with the overall scope of contributing to the EU 2050 strategy and the EU Adaptation strategy.

> Coastal and river floods. One third of Europeans live within 50 km of the coast. Annual damages from coastal floods could be as high as €1 trillion per year affecting over 3.5 million people each year. Continued unsustainable economic development and urbanisation will further increase exposure. Without adaptation, river flood risk could more than triple and 700,000 people could be exposed to floods each year, amounting to €17.5 billion of annual losses. Over half of the economic damages would affect the four largest countries in Europe: Germany, France, the UK and Italy.

> Droughts and forest fires. EU cropland and number of people affected by droughts is projected to increase 7-fold, equivalent of an area twice the size of Germany and 153 million people per year, half of which are located in Southern Europe.[19] Forests cover around 33% of the total European land area. The amount of land burnt by forest fires could double in the EU, mainly in Southern Europe, covering an area of about the size of Belgium.[20]

> Water resources. The number of people affected by water scarcity, especially in Southern Europe, could reach almost 300 million.

> Agriculture and habitat loss. Yields would decline by up to 20% from today, in large part due to a shortening of the growing season. The Mediterranean climate zone may reduce by 16%, equivalent to an area half the size of Italy, due to the projected doubling of the arid zone. This would decrease in biodiversity due to migration or local extinction of species.

> Infrastructure. Economic losses will be highest for industry, transport and energy, which are projected to face a 15-fold increase in economic damages, with Southern European countries most affected. The strongest increase in climate damages (over €8 billion per year) is projected for the energy sector, including power plants and electricity and gas networks.[21] Cooling demand could more than double (mostly in Southern and Central Europe) and heating demand dropped by a third. As for transport, 196 airports and 852 seaports across Europe could face the risk of inundation due to higher sea levels and extreme weather events.[22]

> Labour productivity. Human performance deteriorates with increasing air temperature. Daily average outdoor labour productivity could decline in Southern Europe by up to 17%. Countries in Northern Europe could also see declines up to 4%. The majority of outdoor workers affected would be in the agriculture and construction sectors.

> Mortality due to heat. Mortality significantly increases by a factor of 50 compared to today, with around 132,000 additional deaths, most of which occur in Southern and Central Europe regions.

[19] The European Commission Joint Research Council (2014) **PESETA II Project: Climate Impacts in Europe**
[20] Ibid
[21] Forzieri et al. for the European Commission (2016) **Resilience of large investments and critical infrastructures in Europe to climate change**
[22] The European Commission Joint Research Council (2018) **PESETA III Project: Impacts of Climate Change on Transport Theme 9: Extreme Weather and Climate Events**

> **Tourism.** Tourist spending in the EU could fall by €15 billion a year.[23]

Critically, however, **most of the current research on climate impacts provides only a partial understanding of climate impacts and risks, as it does not include the potential material impacts of climate "tipping points" as well as second and third order effects.** These effects include key socio-economic, health, ecological, transnational and political changes, such as trade and financial disruptions, employment losses, food shocks, the spread of vector- and waterborne infectious diseases, the loss of insects which is vital for the food chain and the ecosystem stability, migration flows, conflicts and the failure of institutions to deal with climate instability, resulting in a backlash against the established order.

For example, the global food system is under increased stress. Rising incomes and dietary preferences increase food demand – growing faster than cereals yields – while water scarcity and soil depletion exacerbate competition over resources from urbanisation and energy production. With climate change harvests become more variable, crop yields fail, and food prices and supply disruptions increase. A compounding threat to global stability is when shocks happen simultaneously around the world.[24] At the same time farms all around the world are becoming increasingly industrialised and focused on monoculture production, which has led 75% of global food to depend only on twelve plants and five animal species.[25] This is exacerbated by the collapse of 75% in insect populations that are critical to food systems.[26]

In 2016 alone, extreme weather events around the world forced 76% of the 31 million people to move from their homes.[27] Future forecasts for climate migrants vary from 25 million to 1 billion by 2050, moving either within their countries or across borders on a permanent or temporary basis, with 200 million being the most widely cited estimate.[28] **Even under a moderate emissions scenario, asylum applications in the EU are projected to increase by 28% due to climate impacts by the end of the century**.[29] The trend of refugees and migrants coming to the EU would further drive moves to the political extremes and go so far as to put the fundamental European social and liberal democratic project under threat. Member State will struggle to cope with such an influx on its own without a serious reform of the EU migration and asylum-seeking policy as well as tackling the root causes of migration.

[23] The European Commission Joint Research Council (2014) **PESETA II Project: Climate Impacts in Europe**

[24] Chatham House (2017) **Chokepoints and Vulnerabilities in Global Food Trade** "If a hurricane comparable in ferocity to Hurricane Katrina in 2005 were to shut down US exports from the Gulf of Mexico at the same time as extreme rainfall rendered Brazil's roads impassable (the latter happened in 2013), up to 50% of global soybean exports could be affected. If this in turn occurred in conjunction with a Black Sea heatwave similar to the one recorded in 2010, around 51% of global soybean shipments, together with 41% and 18% of global maize and wheat exports respectively, could be halted or delayed."

[25] United Nations Food and Agriculture Organisation (1999) **Women: users, preservers and managers of agrobiodiversity**

[26] Hallmann et al. (2017) **More Than 75 Percent Decline over 27 Years in Total Flying Insect Biomass in Protected Areas**

[27] Internal Displacement Monitoring Centre (2017) **Global Report on Internal Displacement**

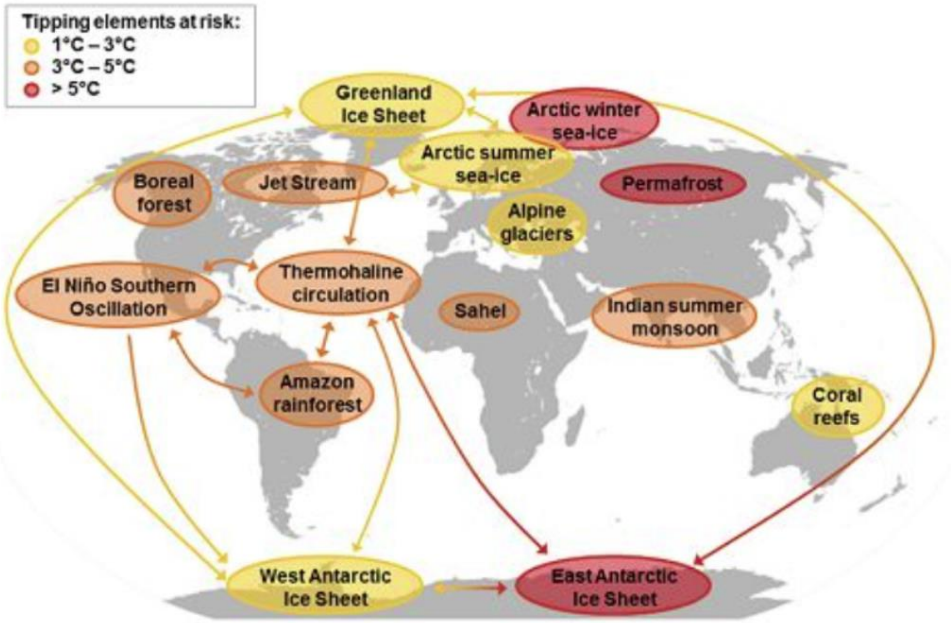
[28] United Nations International Organisation for Migration (2018) **Webpage: Migration and Climate Change**

[29] A. Missirian and W. Schlenker (2017) **Asylum applications respond to temperature fluctuations**, Science Vol. 358, Issue 6370, pp. 1610-1614

Climate tipping points

Assuming countries deliver their current climate commitments – the Nationally Determined Contributions (NDCs) submitted under the Paris Agreement – and Climate change won't be a slow, linear and predictable process of increasing warming. The earth system is a complex one which often acts and reacts in non-linear and abrupt ways. As a consequence, major climatic subsystems might exhibit non-linear threshold responses to warming, described as "tipping elements".[30] The precise moment of when and where tipping points are triggered is uncertain, yet **as the planet warms and the average temperature rises beyond 1.5°C, the risk of breaching significant "tipping points" that could lead to irreversible climate change significantly grows.** Tipping points are interconnected and can act like a row of dominoes. Once one is pushed over, it pushes the Earth towards another. Once this process starts it may be very difficult, or impossible, to stop (Figure 3).

Figure 3: Global map of potential climate tipping points



Source: *Potsdam Institute for Climate Impact Research*[31]

Tipping points include the extinction of coral reefs, uncontrolled methane emissions from melting Arctic Tundra and the irreversible instability of Antarctic ice sheets. Crossing these thresholds would lead the world to a much higher global average temperature (over 4°C of warming above the pre-industrial age) than at any time in the past 1.2 million years and to sea levels significantly higher (10-60 metres) than

[30] Potsdam Institute for Climate Impact Research (2019) **Tipping Elements - the Achilles Heels of the Earth System**

[31] Steffen et al. (2018) **Trajectories of the Earth System in the Anthropocene**

now.[32] Ultimately, even if the targets of the Paris Agreement are met, we cannot exclude the risk that a cascade of feedback could push the earth system irreversibly onto a "hothouse earth" in which large swaths of the planet become uninhabitable.

1.5°C world for a safer Europe

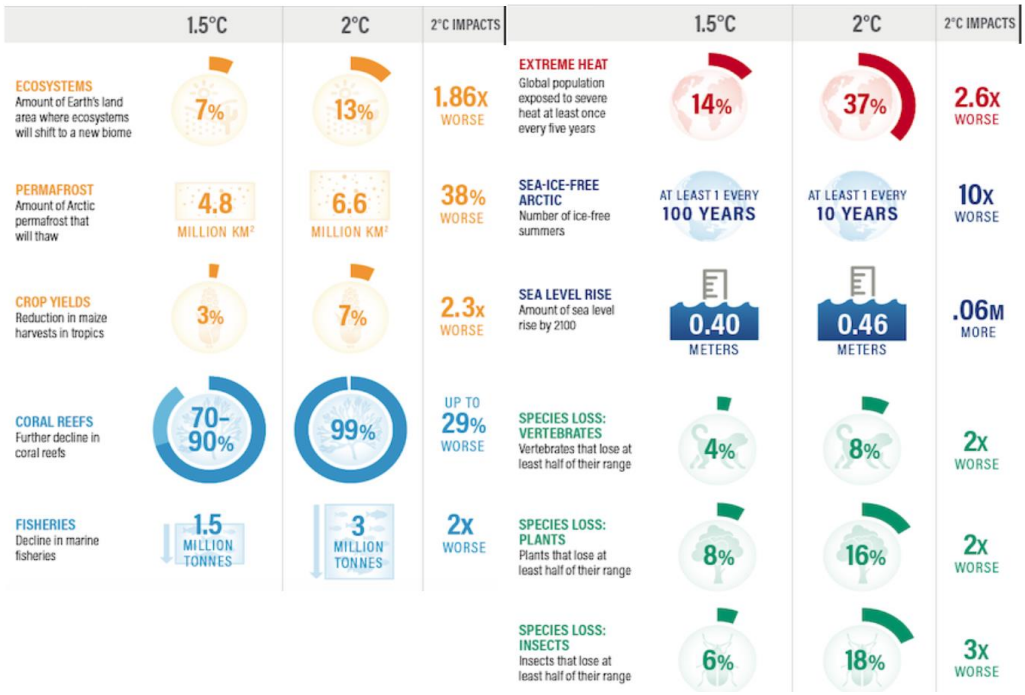
Time is running out to avoid the worst impacts of climate change and stabilize the average global temperature to the safer threshold of 1.5°C.[33] Already with only 1°C of average global warming above pre-industrial levels – for Europe the rise was almost twice as strong between 1.6°C and 1.7°C – Europe is seeing far greater risks of extreme weather events than predicted even five years ago. This trend is expected to worsen. The 2018 European heatwave is twice as likely today than without human-induced climate change, while it could happen every other year under 1.5°C, or two of every three years in a 2°C world.[34]

The IPCC Special Report on 1.5°C report shows that we have far less time than thought, climate risks are greater than previously assessed and half degree of warming makes a huge difference (Figure 4). At the same time, action to tackle climate change will bring significant immediate benefits, particularly in reducing health impacts from air pollution and heatwaves as well as generating economic gains from the more efficient use of resources. **Keeping temperatures below 1.5°C is technically and economically feasible, but that will require fundamental changes in all countries on an unprecedented timescale.** [35] **For developed countries, like the European Union, this means producing net-zero GHG emissions well before 2050 and revising upwards the target for 2030, into the range of 55 to 65% of GHG emissions cut**.[36]

The report provides the basis why Europe must aim to limit the temperature rise to 1.5°C with no or limiting overshooting. **Overshooting 1.5°C could fundamentally undermine Europe's ability to protect the security and prosperity of European citizens for centuries to come as there is a higher risk of triggering some tipping points. Europe cannot afford to take this risk.** The report also cautions against relying on technology to deliver unproven, large scale "negative greenhouse gas emissions" sometime in the future. Such technologies may emerge, but they are too risky to inform current action.

[32] Ibid
[33] The Intergovernmental Panel on Climate Change (2018) **Global Warming of 1.5°C, Chapter 4, Strengthening and Implementing the Global Response**
[34] World Weather Attribution (2018) **Heatwave in northern Europe, summer 2018** and King & Donat for Carbon Brief (2018) **Guest post: Unprecedented summer heat in Europe 'every other year' under 1.5°C of warming**
[35] United Nation Environment Programme (2018) **Emissions Gap Report 2018** The report suggests that countries must raise their ambition by three times to meet 2°C and by five times to meet 1.5°C.
[36] European Climate Foundation (2018) **Net zero by 2050: From whether to how – Zero emissions pathways to the Europe we want**

Figure 4: Half a degree of warming makes a big difference



Source: *World Resources Institute*[37]

BOX 3: 1.5°C and tipping points

In order to limit climate risks to safer levels it is critical to avoid overshooting 1.5°C – this means first exceeding 1.5°C and then going back down to it – because it lowers the risk of breaching unmanageable and irreversible tipping points. Overshooting is a too risky strategy. Getting back to lower levels after an overshoot will be extremely difficult, and as a result we may never get back to safer levels of warming. Climate risks are larger during overshooting and some impacts may be long-lasting or irreversible:[38]

- **overshooting 1.5°C could trigger multi-meter sea level rise over hundreds to thousands of years due to instability in Antarctica and/or Greenland;**
- **coral reefs and other marine and coastal ecosystems might reach extinction at 2°C.**

One tipping point that the IPCC might be underestimating is the thawing of permafrost. New studies show that the effect of thawing permafrost can become significant for overshooting period as rising temperatures lead to further permafrost thawing which in turn releases more carbon that will need to be removed.[39]

[37] World Resource Institute (2018) **Half a Degree and a World Apart: The Difference in Climate Impacts Between 1.5˚C and 2˚C of Warming**

[38] The Intergovernmental Panel on Climate Change (2018) **Global Warming of 1.5°C, Summary for Policymakers**

[39] IIASA (2018) **Paris climate targets could be exceeded sooner than expected**

CHAPTER 2
A NEW APPROACH TO MANAGING UNCERTAINTY

"It is in the very nature of probability that improbable things will happen" – Aristotle, Prior Analytics

Leveraging data for effective climate risk management

The knowledge and research developed about climate science, including through increasingly sophisticated physical climate models, is unprecedented. This provides a high degree of confidence about the causes and drivers of climate change as well as an ever better forecast ability to understand the evolution of climate change and its future risks. Over the years, tools – such as Integrated Assessment Models (IAMs) – have been developed to help decision-makers better understand and prepare for future climate impacts by integrating physical climate models with socio-economic models that attempts to represent human systems. While IAMs can be a useful tool for policy-making, they also have important limitations in capturing the complex interaction between the earth and the human system and in replicating human choices.[40] Thus they fail to capture the full range of possible outcomes. However, this uncertainty should neither be used as an ungrounded attempt to undermine the solidity of climate science nor as an excuse for ignoring all possible scenarios, including the worst-case ones. **When dealing with an existential threat, the uncertainty and the full degree of risks must be taken into account and integrated into policy-making.**

One pillar of effective risk management is the generation and availability of updated information as well as complementary tools for supporting decision-makers. While the EU is a leader in cutting-edge climate research, **most of this vast amount of data, including from satellites and ground-based, airborne and seaborne measurement systems, are yet not systematically used and integrated to effectively inform policy making, the work of disaster risk reduction agencies or private sector decisions.**[41]

[40] Carbon Brief (2018) **Q&A: How 'integrated assessment models' are used to study climate change**

[41] Other examples of EU support for climate risk research, beyond the PESETA projects, includes HELIX (High-End Climate Impacts and Extreme), IMPRESSIONS (Impacts and Responses from High-end Scenarios: Strategies for Innovative Solutions); and RISES-AM (Responses to coastal climate change: Innovative strategies for high-End scenarios - adaptation and mitigation).

BOX 4: Copernicus[42]

Copernicus is the European Union's Earth Observation programme: a user-driven space programme under civil control. Copernicus monitors the Earth using its own dedicated constellation of satellites – the Sentinels – complemented by other satellites provided by Member States and other third parties, as well as utilising a range of non-space data sources. The Copernicus programme supports the protection of the environment, the efforts of Civil Protection and civil security, and contributes to European participation in global initiatives. Copernicus offers six different service lines: Emergency Management, Atmosphere Monitoring, Marine Environment Monitoring, Land Monitoring, Climate Change, and services for Security applications. The Copernicus Emergency Management Service has been in operation since April 2012. The service provides maps and analyses based on satellite imagery (before, during or after a crisis) as well as early warning services for flood and fire risks. Through these services, it supports crisis managers, Civil Protection authorities and humanitarian aid actors dealing with natural disasters, man-made emergency situations, and humanitarian crises, as well as those involved in recovery, disaster risk reduction and preparedness activities. As an EU service, Copernicus Emergency Management Service's first priority is responding to EU needs and interests, whether within the EU or abroad.

Given the uncertainty of modelling future climate change and the complexity of integrating all possible impacts, it is critical that anyone presenting modelling exercises think carefully about how to communicate uncertainty and risks to policy makers, including through the wording of any recommendations. **Effective risk management depends not only on using the best available data but also on planning for low probability/high impact events, such as tipping points, as well as on being aware of what we do not and cannot know.** It accounts for biases in the data and considers how it is being analysed and used. It requires complex, and often unquantifiable, trade-offs between different strategies to prevent, reduce and respond to risks.[43]

EU decision-makers need to be better able to understand, digest, and act upon the available data if they are to design effective policy and adequately manage future climate risks. While the IPCC Report does a good job at communicating the impacts and opportunities of climate action at global and regional level, relevant data for local, national and European policy-makers are too often expressed and communicated in ways that fail to provide the information and analysis they need

[42] European Commission (2018) **An introduction to Emergency Management Service**

[43] E3G (2011) **Degrees of Risk | Defining a Risk Management Framework for Climate Security**

when facing complex and difficult decisions on climate mitigation and resilience. **Actionable climate data need to be interpreted and communicated in ways that reflect the priorities, timeframes and geographic scales that policymakers work with and understand**. Meeting this need will be key to ensuring that considerations of climate change are fully integrated into existing decision-making systems. Modelling climate impacts should also go beyond the exploration of the different physical impacts of temperature change and include how this interacts with socio-economic scenarios, such as changes in industry, trade, employment, human mobility and land use.[44]

BOX 5: A new approach to EU policy making[45]

The current process for developing EU climate and energy policy has involved establishing a number of policy levers and obtaining political agreement to progressively increase the impact of these levers over time. This incremental approach has delivered considerable success. However, as it stands, this approach will not be capable of delivering the policy innovation required to address the increasingly complex and interrelated landscape of policy challenges. Without change, there is a risk that significant money will be wasted, and key policy objectives will not be delivered. The new opportunities and risks that are emerging require new thinking with a broader scope that is based on more rigorous analytical foundations.

The creation of a new independent institution – the European Energy and Climate Risk Observatory – would provide the necessary substance to ensure robust and accountable policy making. It would be responsible for monitoring systemic risks, making sense of them and recommending appropriate policy responses with a view to building a broad consensus on the nature of the risk landscape through objective and evidence-based analysis. Most of this analysis and monitoring exercise should be carried out by the newly empowered, and properly funded, European Environment Agency. There is no need for the new Observatory to affect the balance of responsibilities between the EU and Member States. It would be a means to improve the robustness and evidence base of decision-making at all levels. Moreover, it would provide a much-improved basis for achieving wider stakeholder buy-in to EU climate and energy policy and has the potential to dramatically reduce the chilling effect on investment caused by uncertainty about the future which threatens the ability to respond to security concerns and challenges Europe's growth prospects.

[44] Harrison (2018) **Differences between low-end and high-end climate change impacts in Europe across multiple sectors**
[45] For the full and detailed proposal see E3G (2015) **The Energy Union needs a new approach to policy making – A proposal to place risk management and evidence-based analysis at the heart of a European energy policy**

CHAPTER 3
A RESILIENCE AGENDA FOR THE NEXT EUROPEAN COMMISSION

Climate impacts are happening faster and more severely than we thought. The scale and synchronicity of impacts, interdependencies and shared vulnerabilities within Europe and with the rest of the world mean that no Member State, region or local community can cope with climate impacts on its own. Member States should therefore empower the European Commission to prepare a Europe-wide resilience plan for managing climate risk and the social transition effectively, and in particular protect the most exposed citizens which often happen to be the most vulnerable and excluded in society.[46] The European Court of Auditors warned that Member States are not sufficiently prepared to cope with the expected impacts of climate change.[47] At the same time, we are on track to reaching warming levels of over 3°C that would make these impacts unmanageable. The resilience agenda of the next Commission should be driven by a climate risk management approach – with prevention at its heart – that aims to transitioning fast enough to keep 1.5°C within reach as well as preparing for the impacts that will nevertheless come.

1. A climate risk management framework for Europe

Next European Commission should assign to the First Vice President the political responsibility for embedding a comprehensive risk management approach to climate risk[48] at all levels of the policy-making system – and task the Secretariat General with its implementation – that:

A. aims to deliver net-zero emissions well before 2050 and stress-test existing and new policies against the delivery of 1.5°C with no overshooting;

B. budget, plan and build resilience against the impacts of 3°C to 4°C of warming;

C. develop contingency plans for a rapid onset of warming of 5°C driven by climate tipping points with higher, runaway impacts, such as rapid sea level rise driven by the collapse of polar glaciers.

Effective climate risk management will enable policy makers, and the political debate more generally, to account rigorously for the full range of possible outcomes, to understand the limitations of our current institutional, social and economic systems and to recommend adequate responses for both mitigation and resilience.

[46] European Environment Agency (2019) **Unequal exposure and unequal impacts: social vulnerability to air pollution, noise and extreme temperatures in Europe**

[47] European Court of Auditors (2017) **Landscape review: EU action on energy and climate change**

[48] For more background see E3G (2011) **Degrees of Risk | Defining a Risk Management Framework for Climate Security**

2. A Europe that protects

Whilst mitigation is fundamental to limit future climate risks, it won't eliminate them as climate change will continue for many decades to come. Because the effect of GHG emissions on temperature is delayed by a number of years, the impacts we see today are the results of past emissions and will worsen over time, even if all global emissions ended today. The EU must therefore have a clear plan to protect EU citizens and businesses from the full range and the inequality of impacts we will face. **Ultimately, Europe must ensure adequate protection on the basis of fairness and solidarity to all affected communities as the climate changes**.

2.1 Shift the EU approach to disaster risk from reaction to prevention

Climate and disaster risks are two sides of the same coin. Despite the large consensus[49] that prevention is fundamental for reducing risks and provides huge savings – every €1 invested in risk prevention saves up to €7 in disaster-response efforts[50] – the approach of the EU on climate risk management continues to be reactive, focusing on emergency response rather than prevention. Worsening impacts are putting under stress existing EU's disaster response instruments, especially when similar disasters happen simultaneously across different Member States. The Commission has warned that funds for the EU Civil Protection Mechanism are insufficient, the more so as impacts increase and civil protection becomes more complex.[51] At the end of 2018, a political agreement was secured on the revision of the EU Civil Protection Mechanism, known as rescEU.[52] Although it was initially framed around climate risk (as a direct response to the devastating forest fires of 2017) the end result will contribute little to improving climate risk management. The negotiations and the final agreement centred around short term, emergency response and procuring firefighting planes, while the provisions on risk assessments were significantly weakened. Also, the EU Strategy on Adaptation to Climate Change adopted in 2013 fails to provide an overarching system to manage climate risk effectively and to generate the political attention needed to deliver. Its non-binding character and the lack of data availability on investment needs, planned investments and actual expenditure for resilience results in significant flaws.[53] In November 2018, the European Commission published an evaluation of the adaptation strategy which highlights critical gaps.[54] However, there is no commitment to revise or update the Commission's approach.

There needs to be a fundamental shift in the EU approach to climate and disaster risk management from reaction to prevention. The political priorities and mandates of the Commission departments responsible for managing climate risk, currently mostly

[49] EU Forum for Disaster Risk Reduction (2018), **Rome declaration of stakeholders. Securing Europe's prosperity – Reducing risk of disaster**
[50] European Commission (2018) **Website: Disaster Risk Reduction**
[51] E3G (2017) **Climate risk and the budget – Investing in resilience**
[52] European Commission (2018) **rescEU: A stronger collective European response to disasters**
[53] Trinomics (2017), **Assessing the state-of-play of climate finance tracking in Europe.**
[54] European Commission (2018) **Evaluation of the EU Strategy on adaptation to climate change**

under DG Clima, are weak and fragmented. In the next Commission, **the portfolio for managing climate and disaster risks should be joined up and coordinated centrally under the direction of the First Vice President. As part of this approach, immediate domestic climate risks (such as an extreme drought in Southern Italy) should be treated in conjunction with the impact of external risks (such climate-driven migration flows). In addition, the European Environment Agency should be empowered, and properly funded, to conduct new exercises of more comprehensive monitoring and assessment of internal and external climate vulnerabilities and risks. This substance should feed directly into the work of the new European Energy and Climate Risk Observatory.**[55]

2.2 Close the protection gap

Climate change has the potential to deepen geographical disparities and social inequalities within Europe. Impacts will be unequally distributed across Europe. Rising insurance prices will widen the protection gap between insured and uninsured. Already, out of all economic losses from climate impacts in the EU since 1980, two thirds were uninsured and therefore unrecoverable.[56] This protection gap is especially alarming for most exposed sectors, such as farming and fishing, for vulnerable assets, such as coastal properties, and for low income households.

One way to address this is to **allocate EU funds in the post 2020 Multi-annual Financial Framework (MFF) to support projects that aim to close the protection gap of vulnerable populations**. Civil society and the insurance sector can help develop and identify projects with the greatest potential for improving access to climate risk insurance and for leveraging private investments. Also, ensuring social acceptability and effective implementation of climate policy requires improving their impact assessment through better screening and assessing local impacts, and presenting more clearly information about who is affected and how.[57]

2.3 Climate-proof the EU budget and infrastructure planning

Climate proofing the EU budget and infrastructure planning is key to ensure that each euro allocated and spent does not undermine EU mitigation commitments. Achieving such coherence is essential to reduce future risks and prepare the European society to face climate change. **All EU spending and infrastructure plans should be proofed against the goal of 1.5°C – and the corresponding scenarios of the EU long-term strategy – and against resilience measures capable to withstand warming level of 3-**

[55] New risk assessments by the EEA should include non-climatic factors, such as social vulnerability to better understand the social justice implication of climate change; cross-sectoral interactions and international cross-border impacts; common metrics for impacts and vulnerability; the expression of uncertainties to test the robustness of action; support for long-term and transformational resilience through assessments of climate impacts over time for different warming scenarios and of best available measures; and the targeting of communications activities to a range of audiences. See European Environment Agency (2018), **National climate change vulnerability and risk assessments in Europe**

[56] European Environment Agency (2017), **Climate change, impacts and vulnerability in Europe 2016**

[57] European Commission (2018) **The principles of subsidiarity and proportionality: Strengthening their role in the EU's policymaking**

4°C. Infrastructure projects should be required to have a resilience strategy in place before receiving EU funds.

In addition, and in line with its own G7 and G20 commitments of phasing out fossil fuels subsidies[58], **excluding fossil fuels from receiving EU funds** through climate proofing across next MFF would be a significant step forward. Equally, **promoting the "energy efficiency first principle" across the budget and infrastructure choices** would ensure a more systematic emissions savings and increase welfare and economic growth, while managing the risks of stranded assets and carbon lock-in, especially for gas investment.[59]

3. Building a New Economy

To reduce future climate risks and create new sustainable wealth, Europe must transform its economy, infrastructure and finance much faster and in ways that benefit everyone. This chapter highlights three key actions, among others, particularly needed to strengthen resilience. Investing in research and innovation for a fair and deep decarbonisation in all sectors, including heavy industry and land, is needed to support a sustainable economic reindustrialisation. Building resilient infrastructure and reforming the financial system to account for climate risks are fundamental for effective climate risk management.

3.1 Climate-proof the EU budget and infrastructure planning

Making Europe a leading technology maker while including all its citizens is key to create new markets and industries, provide quality and sustainable employment and enhance the EU global competitiveness. The 2018 report by the High-Level Panel of the European Decarbonisation Pathways Initiative for the European Commission set out key recommendations for an EU Research & Innovation strategy for a 1.5 degree world. [60] Key results show that:

> **Reaching carbon neutrality requires public investment that focus on zero-carbon solutions.** The carbon budget is too small for low-carbon technologies, such as gas, that only reduce but not eliminate GHG emissions and would lock-in the system in lower emissions. Relying too much on negative emissions implies difficult and risky land use choices.

> **Zero-carbon solutions requires "system level" innovation, and for this the role of digitalisation is fundamental.** Promoting sector coupling – that is the interplay between zero-carbon energy generation and the electrification of industry, mobility and heat – is key to link together the individual elements of

[58] OECD (2017) **Towards a G7 target to phase out environmentally harmful subsidies**

[59] Defined in the Governance regulation as: "(17a) 'energy efficiency first' means taking utmost account, in energy planning, policy and investment decisions, of alternative cost-efficient energy efficiency measures to make energy demand and energy supply more efficient, in particular by means of cost-effective energy end-use savings, demand-side response initiatives and more efficient conversion, transmission and distribution of energy, whilst still achieving the objectives of the respective decisions". See Official Journal of the European Union (2018) **Regulation 2016/0375 (COD)**

decarbonisation and reduce overall costs. The integrated nature of clean and digitalised energy networks has blurred the traditional boundaries between infrastructures, stretching the limits of existing regulatory frameworks. Also, the traditional narrow definition of energy security must be redefined in light of the new energy system. This will increasingly depend more on the availability of flexible resources, smart consumer participation, access to renewables, deployment of energy efficiency and being resilient against worsening climate impacts and cyber-attacks, than on access to fossil fuels.[61]

> **Delivering a fair and deep transition in a short period of time will require mission-oriented programmes and large real-life laboratories capable to deal with complex problems** and **demonstrate that the transition is possible.** Such programmes could include turning the power system into an "Internet of Electricity" and making European soils a key contributor of carbon sinks by 2050. Strategic partnerships with industry to decarbonise heavy economic sectors, such as steel, chemistry and cement, will be key to develop zero-carbon solutions.

The success of the transformation will depend on the ability of overcoming the social, cultural and political resistance of fossil-fuels-based economies. Launching transition labs in large territories for the real-life management of transitions, especially in critical locations such as mining complexes, agricultural regions, and metropolitan areas, would provide flagship demonstration projects to conceptualise, implement, monitor and revise fair and deep decarbonisation efforts in practice.

BOX 6: New Energy Zones

Building a new economy requires the deployment of measures that change the amount of energy and the way people consume it. Whilst the technology exists, we don't know how to deploy at the necessary scale – it needs innovation in governance, markets and regulation. The EU Commission can use innovation policy and missions to provide how to deliver measures at scale in rural and urban constituencies. Fundamentally, this is about **making deployment more predictable and appealing to consumers as well as improving the lives of citizens by providing fair access to service and technology in ways that include consumers and reduce inequality**. This would involve setting up a number of "New Energy Zones" with the objective of creating the energy system of the future in a consumer-focused way. This is an effort to carry out large demonstration projects designed to test the integration of individual zero-carbon and digital technologies. These zones should involve heat, transport and power sectors and drive growth and jobs in a range of energy-related industries,

ensuring a managed transformation and avoiding risks to costs and the security of the system. These projects must operate within a governance framework that specifies the learning requirements, supports project delivery and uses the lessons learnt to inform the next phase of demonstration, wider rollout or recommendations for changes to the regulatory and market framework. Indeed, the successful engagement of most consumers might require changes to the fiscal regime, product standards and regulatory incentives. The involvement of large numbers of consumers mean that the governance process must provide a strong protection framework to replace those aspects of the regulation and markets that are being suspended for the purposes of the trial. This process could also begin to build a pipeline of projects whose risk profile would be attractive to the investment community.

3.2 Build resilient infrastructure

There is no resilient economy without resilient infrastructure. **The threat from climate risks to the built environment will require new infrastructure to be built, such as flood defences, drainage and heating/cooling solutions, and new assessments of how existing ones will be affected under different level of warming.** High temperatures are already adding pressure to power plants located in areas under water stress and more and more regions are experiencing reductions in power availability as water resources available for cooling power plants are decreasing.[62] Disruption to energy distribution networks are becoming increasingly frequent due to lightning, high wind speeds and flooding. With a broader range of extremes and higher uncertainty, the EU Commission needs to review which metrics are adequate for infrastructure planning.

"Green infrastructure" solutions must also play a more central role. These include landscape conversation, upland afforestation, and wetland restoration to tackle flooding, and managed retreat in coastal areas to adapt to rising sea levels. These solutions also have important co-benefits, such as increased biodiversity, reduced damage to ecosystem services and increase carbon sequestration in soils through better land management.[63]

4.1 Reform the financial system

To address systemic financial risk the EU needs to start at the firm level, **taking forward measures for mandatory disclosure in line with the recommendations of the Taskforce on Climate-related Financial Disclosures** (TCFD).[64] This disclosure is particularly important in sectors with high exposure to fossil fuels, and in the financial sector where risks from across the economy come together. Current EU regulations in this area are very limited, relying on non-binding guidelines and a perspective that is

[64] Taskforce on Climate-related Financial Disclosures (2017) **Final Report: Recommendations**

rooted more in corporate social responsibility than hard-headed financial or risk management considerations. This needs reform and a holistic approach involving all participants in the investment chain.

Stronger standards and frameworks for action are also required so that the financial sector has the tools to make sustainable investments. In this context **next Commission should quickly complete the process of approving a new financial taxonomy of economic activity which is aligned with a 2050 strategy compatible with 1.5°C.** The combination of clear definitions through the taxonomy and disclosure requirements in line with TCFD will provide the necessary foundation to build a strong financial architecture that can fund the infrastructure Europe needs for a prosperous future.

4. Developing a new European Diplomacy

Without a diplomatic strategy to support countries to ramp up their climate ambitions in 2020 and 2025 and align them as closely as possible to a 1.5 pathway, individual efforts of the European Union to transform its economy – however ambitious – will be insufficient to protect its citizens from climate risks. **Europe's security fundamentally depends on the scale and pace in which other countries, in particular the bigger emitters, deliver on their climate commitments. Europe needs a new diplomacy to shape global affairs at a time of increasing fragmentation, and to rebuild trust in the multilateral order.**

While multilateral cooperation is increasingly under strain, global consensus for the Paris Agreement is proving resilient to geopolitical instability as demonstrated at 2018 G20 Summit in Argentina and at COP24 in Poland. Given the shared mutual interest of countries in avoiding the worst impacts of climate change and building prosperous economies, climate change can become the connective tissue of renewed international cooperation.

4.1 Develop a new EU climate and energy diplomacy

Building effective diplomacy to cut global emissions and improve climate resilience outside European borders can no longer be seen solely as humanitarian action. It must be placed at the heart of European security. **The European External Action Service (EEAS) must allocate new resources to scale up its climate diplomacy capacity and develop a "whole-of-EU approach" that aligns all EU external policies and investment packages with the goals of stabilising global temperature at 1.5°C and building resilience, especially in those countries most exposed and vulnerable to climate risk**. This will also provide a benchmark for Member States' external activities. Fragmented approaches driven by the more powerful Member States, which tend to put commercial priorities and bilateral relationships in front of delivering outcomes, will not be enough to protect European citizens.

The EEAS will also need to better understand how European foreign policy priorities change as Europe sets itself on net-zero emission pathway by 2050. **The EU energy diplomacy and security strategies must be redesigned around climate diplomacy objectives and the new economic priority of developing and accessing clean markets and supply chains**, as fossil fuels imports sharply decline leading to cumulative savings of €2-3 trillion between 2031 and 2050.[65] This also means that the EU needs a new approach to fossil fuel producing countries. Europe has a strategic interest in their orderly and peaceful transition as most of the EU oil and gas suppliers are fragile states whose instability will be exacerbated by climate change. Instability in those states threatens not only EU fossil fuel supplies but also risks feeding broader conflicts and displacement of people. Instead of promising new import demand that will not materialise as Europe decarbonises its economy, the **EU should work together with fossil fuel producing countries to help diversify their economies and make them more resilient to future climate shocks.**

Achieving global growth expectations will require $90 trillion in infrastructure investment by 2030. Failing to align this to the Paris Agreement goals will fundamentally undermine Europe's ability to manage climate risk.[66] Infrastructure diplomacy should therefore have priority. The new Commission proposal on Sustainable Connectivity to connect Europe with Asia is a promising start for building a new approach to infrastructure, in particular in the context of China's Belt & Road Initiative.[67] **The EU should build its leverage by adopting and requiring principles for all external infrastructure choices – in terms of policies, plans and budget – that build resilience to climate risks and are in line with the Paris goals.**

4.2 Develop and adopt Paris-compatible rules for trade

To rebuild citizens' trust in multilateral rules and build strong open markets the new Commission must rethink global trade rules in ways that deliver fairer outcomes for all, is resilient to disruptions of critical infrastructure and supply chains and is designed to scale up the uptake of clean technologies and build resilience. Trade deals connect us to the global economy and their effects have consequences for every European business and citizen. While the approach to trade has significantly increased opportunities and wealth, these have not been shared equally and it has generated unintended negative consequences for the most vulnerable communities, especially low-income and rural ones. The removal of non-tariff barriers – which directly affects consumers – has also contributed to undermining public trust as it hinders the Governments' ability to protect the interest of citizens when adopting rules.

Upholding all Multilateral Environmental Agreements, including the Paris Agreement, and better protecting workers' rights will require a deep overhaul of trade policies, the development of new principles, new applicable rules and a reform of the World

[65] European Commission (2018) **A Clean Planet for all A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy**
[66] New Climate Economy (2016) **The Sustainable Infrastructure Imperative**
[67] EU Commission (2018) **Connecting Europe and Asia - Building blocks for an EU Strategy**

Trade Organisation. Negotiators and policy makers should be held accountable to European consumers and workers – not only to commercial interests – through territorial impact assessments and more effective and inclusive consultations with environmental and worker groups. To regain public trust, **future trade policy must serve the achievement of public interest goals in line with the UN Agenda 2030 and the Paris Agreement, and set this as a priority over removing or avoiding regulatory barriers to trade.**

Trade agreements should make the implementation of the Paris Agreement binding on trading partners and ensure the protection of the highest environmental and labour standards. To scale up the deployment of clean and climate resilient goods and services, the EU should revise rules for both its own public procurement market (worth 16% of EU GDP) and the international one (worth 15-20% of global GDP or more than €1.3 trillion a year), including the WTO Government Procurement Agreement. **Procurement procedures should put sustainability as the core criterion for awarding public contracts and procurement guidance should be designed around the use of the most sustainable goods and services.** This is key for building a Paris-compatible world trade, create global clean markets, and protect the public interest.

Effective rules need effective enforcement mechanisms. One way to strengthen enforcement could be to **anchor compliance assessments to recognised independent organisations**, such as the UN International Labour Organization for worker rights violations. In addition, the new Commission should **open up and deepen the discussion about its proposed Multilateral Investment Court initiative** for the creation of a permanent multilateral body to resolve the investment disputes.[68] The adoption of such a Court would need to be anchored in a properly safeguarded system of law that applies public law related principles of openness and independence – especially concerning access for third parties and appointment of independent members – if it is to add real value.

One key aspect of a new trade approach that effectively protects citizens is the recognition that trade deals cannot exist in a vacuum. Action needs to go beyond trade in two ways:

- **Rules needs to be applied to every aspect of the global economy that is not in line with the Paris Agreement goals, increases inequality and fails to protect rights.** This includes ending tax havens and currency manipulation, reforming financial institutions, shifting from high carbon to zero carbon and resilient investment, and preventing corporates and state-owned enterprises from suppressing innovation and distorting markets.
- **Member States should be encouraged to put in place comprehensive packages for just transition and ambitious zero carbon transitions.** Trade agreements need to be accompanied by social protection measures to strengthen wages, benefits and skills in order to help communities and

[68] European Commission (2018) **The Multilateral Investment Court project**

workers cope with the transition and be ready for new activities. Economic development requires attracting new investment and unlocking new economic opportunities that are fit for the future, such as new digital and energy infrastructure and services as well as the carbon neutral transformation of energy-intensive industries through large-scale pilot projects for reindustrialisation. Key for just economic development is to make new markets and technology work for all communities, not against them.

4.3 Make the United Nations fit for purpose

The EU depends on the UN to maintain international peace, rights and security. Many European allies depend on the frontline services the UN provides. However, climate impacts are already disrupting the UN's operating assumptions and compounding humanitarian, poverty and security risks. Today, the UN's humanitarian and development agencies are arguably the largest institutions for managing climate impacts collectively. Yet if climate risks go unmanaged, the UN's ability to operate will be overwhelmed by the scale and intensity of needs.

The EU and its Member States make up the largest contributor to the UN and have significant potential to help strengthen the UN approach to managing climate risk. The EU has reiterated calls for the UN to improve its approaches to integrating climate risk management through its operations, including through the UN Security Council.[69] However, the EU has yet to come up with a shared vision or action plan to support these activities. Several EU member states are already working in this area, including Sweden, Germany, France, the Netherlands, Italy, Poland and Romania. **The next Commission should make climate risk management, including on how to make the UN fit for purpose, a regular item of the EU Foreign Affairs Council to further consolidate progress. In parallel, reforms to the own EU's peace and security practices to integrate climate-related security risks can help facilitate innovation and learning to cope with emerging risks.**

[69] Council of the European Union (2018) **Council Conclusions on Climate Diplomacy**

CONCLUSION

As the 2019 European Parliament elections loom and a new European Commission takes office, climate action can become a key driver of a reformed European project for more solidarity, protection and innovation. Climate change and the risks it brings are not confined to any one economic sector, social group, or environmental context. It is all encompassing and so must be the EU's response – from adopting a new framework to managing climate risk and its uncertainty to delivering solutions that build resilience in the economy to any warming scenarios in a socially sustainable way. Fundamentally, this is about redefining the social contract between citizens and institutions in a climate changed world.

No aspect of our lives as Europeans will be untouched. This system approach is a direct response to the rise of new nationalistic politics emerging in several EU democracies. Under increasing pressure, democratic societies are fracturing into segments based on ever-narrower defined interests, threatening the possibility of evidence-based deliberation and collective action by society as a whole. Climate change represents an opportunity to bring people together as a collective citizenry and work together for a common goal. Climate action needs strong European institutions as much as Europe needs strong climate action to be safe. Climate action should contribute to improving the trust Europeans have in their institutions to deliver security and prosperity. By effectively engaging its citizens in a shared mission-oriented transformation for their own well-being, next EU Commission can strengthen the core mission of the European project of securing peace and prosperity for all. This should be done through a new political agenda for resilience to be adopted by the new Commissioners in 2019 as set out in this paper.

This project has received funding from the European Commission through a LIFE grant. The content of this report reflects only the authors' views. The Commission is not responsible for any use that may be made of the information it contains.