EUROPE’S SUSTAINABILITY PUZZLE

Broadening the Debate
Opportunity ahead

Not so long ago, ‘sustainable development’ was considered to be exclusively an environmental issue or an agenda primarily targeted at developing countries. The adoption of the 17 Sustainable Development Goals (SDGs) in September 2015 by the 193 Member States of the United Nations marked a real turning point in this regard – a collective recognition of the need for a new approach in the face of the testing structural challenges that are reshaping the world.

Contrary to their predecessors – the Millennium Development Goals (MDGs), which focused on developing economies – the SDGs offer a universal agenda, addressed to all countries, regardless of their level of economic advancement. They also extend well beyond development aid and environmental protection.

For Europe, the SDGs offer an opportunity for profound economic and societal transformation, with a view to securing the long-term prosperity and well-being of both present and future generations of Europeans in a way that is compatible with planetary boundaries.

Against this backdrop, in January 2019, the European Commission presented a Reflection Paper ‘Towards a Sustainable Europe by 2030’, aimed at stimulating further reflection on the EU’s vision and strategy for the long-term implementation of the SDGs, as part of the broader debate on the ‘Future of Europe’ launched in March 2017 by European Commission President Juncker. This note aims to accompany and feed into these reflections.

No More Business as Usual

Historically, the EU has been a global driving force in the fight against environmental sustainability risks: global warming, air pollution, deforestation, ocean acidification or the depletion of natural resources. Much of the EU’s sustainable development agenda has focused on these challenges, namely with the adoption of flagship climate change and energy packages.

However, in addition to these significant environmental risks, Europe also faces a number of related economic and social sustainability challenges that are frequently swept under the carpet in public debate. Many of these are not that new: demographic and social change, shifts in global economic power, climate change and resource scarcity, technological breakthroughs and rapid urbanisation have been unfolding for decades. However, they are becoming increasingly intertwined and dependent on each other. And, at a time when environmental degradation and pressures on planetary boundaries are far from abated, new challenges are emerging, placing intense pressure on governments and policymakers, as well as on the private sector and civil society.

In many cases, the EU has taken pioneering action. Yet, it has also often been the case that its policies remained overly constrained within silos, or rooted in traditional economic premises based on linear development approaches and a prevalence of short-term concerns – thereby failing to address the root causes of these problems.
The relationship between economic growth and planetary boundaries; the long overlooked societal effects of the transition to a low-carbon economy; the continued outsourcing of unsustainable practices; the need to revisit the social contract as populations age, non-standard work rises, and opportunities remain unevenly distributed across Europe – these are just some of the issues at the core of a growing malaise.

As more and more Europeans are left feeling disorientated and disempowered by the pace and scale of the changes affecting their societies and economies, the ‘business-as-usual’ approach needs to be put into question. Just as sustainable development has increasingly meant more than ‘protecting the environment’, policy action directed at capturing the multiple dimensions of sustainability needs to overcome the often silo-ed approach pursued by most actors at all levels of government.

The starting point for the EU should be to recognise that any strategy for the SDGs must reflect Europe’s unique characteristics, global role, and sustainability dilemmas – broadly conceived. It must echo the priorities of a highly-advanced economy in which citizens have become accustomed to high levels of social protection and private consumption, but which today faces significant structural challenges.

The 2030 sustainability agenda is an opportunity to highlight the risks ahead, as well as to demystify some of the policy choices that will have to be made in coming years. It is now more urgent than ever to acknowledge the interrelated pressures that fall under ‘sustainable development’ and to acknowledge that a revised societal model will be indispensable to help Europeans weather the winds of change, and to deliver on the promises of prosperity, wellbeing, security and empowerment.

This paper zooms in on the pressing and sometimes sensitive choices that Europe faces, posing questions and exploring solutions to some of the paradoxes that lie at the heart of its current socio-economic model and its long-term sustainability.
The issues at stake

• One of the defining questions of modern society is how to keep the beneficial outcomes of growth – jobs, rising living standards, innovation and progress – while discarding the negatives – fossil fuel dependency, carbon emissions, growing inequality, and unsustainable resource use.

• So far, high growth and prosperity have tended to come with higher levels of pollution and unsustainable resource use. In fact, the only countries currently living within the planetary boundaries are ones considered to be low on the human development index. Achieving fair and sustainable growth, in respect of human dignity and well-being, and in respect of nature, is the most fundamental, existential challenge that all countries and communities around the world currently face.

• Yet, convincing all actors of society that sustainable development is a crucial long-term investment rather than a sunk cost, and vital for the development of an inclusive society, remains a challenge. Investments in ‘business-as-usual’ infrastructure and economic models, focused on minimising costs and maximising short-term gains, remain common-place, due to skewed incentive structures that mostly still allow for, or even favour, polluting and energy and carbon-intensive consumption and investment patterns. Yet, such investments will only result in more stranded assets and additional losses down the line.

• Europe has already shown itself capable of decoupling GDP growth from emissions growth, thanks to significant progress on energy efficiency and investments in the clean economy. Since 1990, EU GDP has risen by 58% while emissions decreased by 22%.

Yet, decoupling remains a challenge in the context of attempting to shift to a net-zero emissions society and staying within planetary boundaries. This is particularly true given that current efficiency gains are more than compensated by increasing consumption levels enabled by economic growth.

The pathway to sustainable growth

**SHORT TERM**
Sustainability will likely spur growth in GDP initially. The push to transform energy systems over a short period of time in order to avert climate breakdown would bring a global pickup in GDP, jobs, and consumption.

**MEDIUM TERM**
Sustainability will change consumption levels. Current consumption pathways are incompatible with long-term sustainability: from ‘fast fashion’, to the exponential growth of air travel, to meat consumption, individual resource use will have to change – especially among high-income groups.

**LONG TERM**
In a sustainable future, GDP growth will no longer singularly define progress, instead measures can focus on rising wellbeing – including from non-economic developments – and fully integrate planetary and social impacts.

Source: United Nations Development Programme, Global Footprint Network
Exploring policy responses

- Looking ahead, Europe’s growth challenge is multi-fold. It involves developing a socio-economic model that combines high standards of living with addressing concerns about climate change, industrial pollution, food safety, natural resource depletion and social equity, as well as staying ahead of surging competitors in the green economy, all the while convincing its global partners to remain engaged and committed to the transition.

- The sustainability of the European growth model will be a function of how successful Europe is in replacing high levels of material consumption and fossil fuel-based production with new sources of growth, which are equitably shared. In practice, this would mean implementing a circular economy, thereby reducing Europe’s ecological footprint, but also creating new jobs. Indeed, extending the lifecycle of products through repair, maintenance, upgrading and remanufacturing is far more labour-intensive than mining or manufacturing in increasingly automated facilities. The growing sharing economy, enabled by the spread of digitalisation, also offers opportunities for greater social equity, helping citizens gain access to products and services they would be unable to afford in the linear economy (e.g. car-sharing).

- For these models to be successful, a profound transformation of the fundamentals of society is needed, from changing the way we live and work, to making cities smarter, with improved communications and digital networks, to planning mobility systems and constructing buildings that are more energy-efficient, and developing new business models across all sectors.

- Underlying this shift, Member States will have to invest massively in sustainable physical infrastructure. Today, some 2% of the EU’s GDP is invested annually in the energy system and related infrastructure. This would have to rise to 2.8% – or around 520-575 billion euro annually, excluding investments related to the vehicle stock – in order to contribute to a net-zero greenhouse gas economy.

- Attracting sufficient levels of private investment will require putting in place sustainable finance systems that fully factor in environmental, social and ethical risks – not just in spirit, but also in stock prices.

- All of this requires adopting metrics – and language – for the type of economy Europe wants, i.e. one that better defines human progress and the planet’s ability to sustain it, namely taking into account quality of life, wellbeing, and natural resource accounting. The Organisation for Economic Cooperation and Development’s (OECD) ‘Framework for Measuring Well-Being and Progress’ is relevant in this context as it brings together material conditions, quality of life and sustainability. So is the ‘Beyond GDP’ work that was initiated by the EU institutions, the Club of Rome, the OECD and the World Wide Fund for Nature (WWF) over a decade ago, as well as the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz-Sen-Fitoussi Report).

Sustainable growth hinges on staying competitive in clean technologies

Global markets for climate-friendly businesses and technologies have already risen to close to one trillion euro annually. The European battery market alone is projected to be worth 250 billion euro per year by 2025.

This trend is expected to accelerate, driven by strong growth in emerging economies. The opportunities for the African continent – which is a natural fit for renewable energies given the available resources there, and where some 650 million people still do not have access to electricity – are also immense.

Yet, if the EU slips behind, it risks missing out on these lucrative business opportunities, and seeing entire markets shift to Asia – including the production of next-generation electric vehicles.

China dominates electric vehicle sales

Annual sales of electric vehicles

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<tr>
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<th>Europe</th>
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<th>China</th>
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Source: Joint Research Centre, Bloomberg New Energy Finance
The issues at stake

• The transition toward a climate-compatible and sustainable economy comes at a significant **socio-economic cost** – a cost that is unevenly borne by different regions, industrial sectors and individuals.

• Climate change itself is already increasingly disrupting contemporary societies and economies. A significant proportion of Europeans have already been affected by natural hazards such as forest fires, floods, droughts and storms. Farming is particularly affected with the European continent recording large-scale crop losses. An increase of more than 2 degrees Celsius will have even more dramatic consequences and costs, in particular for coastal areas and Southern Europe, which is most at risk of heat-related deaths and forest fires.

• What is more, although **policies intended to curb climate change and environmental degradation** will pay off in the long-term, they also come with **short-term costs** that may seem bearable for wealthier segments of society, but are a heavy burden for lower-income individuals, businesses or regions – in some cases sparking strong social contestation.

• It is clear that, on the one hand, there remains a lack of understanding among some actors that the repercussions of failing to address climate and planetary breakdown overshadow by far any short-term economic concerns.

• Yet, on the other, there needs to be a questioning of the way the costs of the transition – as well as the resources to manage the transition (e.g. climate adaptation measures or reskilling workers for a climate-friendly economy) – are currently allocated.

• As an illustration, pricing ‘negative externalities’ of products and services, such as greenhouse gas emissions and other pollutants, is one of the most powerful tools available to drive the transition. However, a **large proportion of these costs disproportionally affects lower-income households**, compared to the rich ones, because the former spend a larger percentage of their income on energy and other basic consumption needs. Similarly, renewable energy subsidies aimed at easing the transition (e.g. for placing solar panels) are often taken up first by wealthy and middle-class citizens.
who can actually afford to make these investments. As such, they essentially function as wealth transfers to those households, while the costs of such policies (in the form of taxes) are regressively socialised among all users. The same applies to early adopters of electric cars: more affluent first-movers receive tax incentives, while others are confronted with the increase of fuel taxes. Similar challenges also impact entire regions; while urban centres tend to be faster in transitioning to a cleaner economy, carbon-intensive regions – which are often already the victims of Europe’s deindustrialisation – face much larger costs in their transition. So far, incentive structures or tax instruments have largely tended to overlook the distribution of short- and longer-term costs across different population segments. France’s experience with a fuel tax in late 2018, and the mass protests it triggered, is a case in point.

Exploring policy responses

- Europe needs a systemic policy mix that acknowledges environmental and social progress as two sides of the same coin. This means not only taking into account pre-existing inequalities when incurring new costs on citizens, but also finding ways to empower people to participate in a bottom-up transition.

- Pollution can and should be abated equitably. For the time being, society largely pays for these costs, rather than the user or polluter. At the same time, policymakers have to pay more careful and comprehensive attention to how additional measures and taxes may impact already vulnerable households and regions. For example, the way in which revenues from carbon pricing are used can have a significant distributional impact. Research also shows that lump-sum rebates could offset a carbon tax burden for low- and middle-income taxpayers while placing greater responsibility on high-income families. Transitional measures and regional differentiation, taking into account the availability of alternatives or differences in purchasing power, should be part of the equation.

- Where the intention is for measures to shift consumer behaviour – for example away from driving polluting vehicles – sustainable alternatives, such as well-run public transport, must be accessible and affordable in line with the expected consumption change.

- Policymaking should also go beyond top-down taxation and subsidies and look at supporting grassroots efforts. Citizen-led initiatives and localised action – such as distributed energy projects, recycling and reuse schemes, and shared communal resources – will play a big role going forward, and will need the active participation and buy-in from individuals, households, and communities – not just the ability to absorb new taxes.

- A common approach between the EU and Member States, as well as regions and local stakeholders, such as universities and the business community, would be crucial to accompany industrial transition, and avoid relocation risks and loss of competitiveness. The establishment and strengthening of a culture of social dialogue is thereby one key element.
The issues at stake

- The last two decades have seen major shifts in labour markets and issues related to employment and social security have continuously topped Europeans’ concerns – not least following the fallout from the economic crisis, but also from globalisation and technological change.

- The days of ‘a stable job for life’ are largely gone. People today often go through a large number of job transitions, while forms of employment other than full-time, open-ended contracts have grown to encompass 40% of European labour market. These include temporary, part-time, on-demand, or voucher-based work, as well as self-employment – or indeed combinations of these.

- The emergence of varied contractual forms is in itself not necessarily undesirable. Indeed it gives some workers much-valued independence and self-determination, while also potentially enabling a more flexible workforce to respond to the needs of new industries and emerging services created by the digital economy, as well as by the clean transition.

- Yet currently, these forms of work are also associated with greater insecurity for many. The problem lies in the fact that non-standard work and social protection systems are currently not fully compatible. People in these types of contracts often fall through the cracks when it comes to basic needs such as healthcare, parental leave, unemployment benefits and adequate pay. As a result, the risk of in-work poverty is about twice as high for those working part-time than for those working full-time, and almost three times greater for employees with temporary jobs than for those with permanent jobs.

- The type of employment contract that individuals hold has wider economic and societal knock-on effects as well. For instance, employees in non-standard contracts have reduced access to training and skilling opportunities and thus fewer means to invest in their human capital development. Feelings of insecurity are also significant, with only 1% of the EU population reporting the highest level of security in the combined areas of personal security and housing, healthcare, employment and old-age income. In addition, employment and economic insecurity are also associated with higher rates of mental and physical health problems, and can have damaging effects on family relationships.

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**Unemployment and social security top lists of Europeans’ concerns**

‘What do you think are the two most important issues facing your country at the moment?’ (Two answers maximum, six most mentioned items)

- Unemployment
- Rising prices / inflation / cost of living
- Immigration
- Health and social security
- Economic situation
- Pensions

Source: Eurobarometer 2018

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**Intergenerational divide: the incidence of non-standard employment**

Share of non-standard employment, in percentage, per age group

**Southern Europe**

- 20-24
- 25-29
- 30-34
- 35-39
- 40-44

**Western Europe**

- 20-24
- 25-29
- 30-34
- 35-39
- 40-44

Note: Southern Europe includes GR, IT, PT, ES, CY, MT. Western Europe includes AT, BE, FR, DE, IE, LU, NL, UK.

Source: World Bank, 2018
The cumulative effects of disparities in access to social protection and continuous learning, combined with other knock-on effects linked to this insecurity, are likely to give rise to new inter- and intra-generational inequalities between those who have or manage to gain employment on contracts with full social rights and those who do not. They may, in particular, constitute an indirect discrimination against women, young and foreign-born people, who are more likely to be hired on non-standard contracts.

Importantly, non-standard work contracts often fall outside the scope of contributions to social protection systems, resulting in lower government tax revenues, which can also ensue in a lowering of the quality and/or scope of public service provision. The result can be to usher in a ‘dual system’: one of faltering public services for those most in need, versus growing private provision for those able to afford it. This not only leads to an erosion of trust in institutions and the social contract, it also generates a political feedback loop, where those who opt for private services prefer to be taxed less and to reduce the scope of government intervention; leaving those unable to afford private provision struggling in a deteriorating system.

Exploring the policy responses

Europe has been investing in building effective and inclusive social protection systems for decades already. However, a review of how systems in place are responding to both old and emerging social risks – in particular the onset of new forms of work that will inevitably continue to prevail across Europe – is needed to provide insights on how to move ahead.

As the share of non-standard work rises, social security contributions need to be harmonised across forms of employment as much as possible. There is already broad consensus on this priority across the EU. Various suggestions have been put forward for those working flexible hours or on the border between dependent and independent work; e.g. the introduction of a wage premium for flexible work as a compensation for assuming part of the entrepreneurial risk linked to demand fluctuations.

Policies need not be limited to redistribution or top-down investment in human capital. European citizens should be seen as key players in Europe’s sustainable transition, exploring and scaling up innovative models of work such as worker cooperatives, and reduced or shared hours, or even experimenting with different forms of basic income.

The future of work and social systems also relies on shaping education and lifelong learning to facilitate effective skill use and match skills to evolving labour markets, as well as investing in outcomes that will give people the critical and creative skills to forge new pathways.

Employment status impacts perceptions of inequality

Declining job security has been identified as an important source of dissatisfaction among middle class workers. Surveys that examine perceptions of inequality across advanced economies indicate that individuals who are not in stable, full-time employment are more likely to report that they feel poor compared to those in the same income group, but who are in stable, full-time employment.

Perceptions of inequality

![Chart showing change in probability of feeling poor due to lack of full employment](chart)

Source: World Bank, 2018
The issues at stake

- Demographic change has long been recognised as a ticking time bomb for fiscal sustainability. But Europe faces a set of broader developments that could challenge the long-term viability of its public finances.
- With a fast-greying population and a shrinking workforce, much of the focus in past years has been on Europe’s worsening ‘old-age dependency ratio’ (i.e. the share of people aged 65, compared to the share of working-age population, aged 15-64). This ratio has already increased steeply and is projected to continue doing so in coming decades, with the share of those aged 80 years or older forecast to more than double between 2017 and 2080, from 5.5% to 12.7% of total population.
- This not only risks slowing economic growth, but it places a significant strain on governments’ abilities to sustain pension systems and uphold current levels of social protection over the long term. The share of old-age pensions and health-related social protection has already increased from 25.4% of total government expenditure in 2007 to 28% in 2016 – though variations among countries are significant.
- Most Member States have started preparing for this, implementing significant – albeit often unwelcome – reforms to their pension systems. As a result, while public pension expenditure in the EU is projected to rise by 0.8% of GDP between 2016 and 2040, it is then expected to decline by 1% of GDP from 2040-2070.
- However, important question marks remain. First and foremost, a number of Member States have already reversed their pension reforms, or are promising their electorate to do so, often in response to strong citizen discontent, thus reverting to systems that are fiscally unsustainable. In the current context of growing support to populist, anti-establishment movements, there is a risk that more countries follow suit. Indeed, for many, the effects of pension reforms still appear distant. But hostility could grow as more and more people find themselves faced with the concrete obligation of working longer (current reforms are expected to increase the participation rate of workers aged 55-64 by 12% for men and 16% for women), yet with a lower public pension benefit ratio (the average pension in relation to average wage is due to be cut by 10% over the course of 2016-2070). A further concern in this regard is whether pensions will adequately cover the needs of older Europeans. 17.5 million people aged 65+ were at risk of poverty or social exclusion in 2017 (compared to 16.3 million in 2014 and 2015), with women at greater risk than men.
• Secondly, reforms have often focused rather narrowly on the issue of pension sustainability. Yet, other demographic and societal changes, as well as shifts in the world of work in contemporary European societies, are opening up a raft of other critical needs that will increase pressure on social protection budgets. These include rising numbers of single parents, the growing need to reconcile work and family life, fewer continuous careers, more precarious contracts, the rise of in-work poverty, and the growing need to reskill today’s workers for the jobs of tomorrow. To date, these emerging needs are increasingly unmet, with the potential to create significant sustainability and cohesion challenges down the road.

• Thirdly, even as costs of social protection continue to swell (reaching an average of 41.2% of total government expenditure for the EU 28 in 2016 – up from 38.5% in 2005 – and amounting to 19.1% of GDP – up from 17.6% in 2005), sources of revenue are coming under ever greater pressure.

• The digitalisation of the economy has led the share of labour in the economy to drop, to the benefit of capital. Not only does this put a large share of workers on the losing end of the economy, it also increases pressure on government revenues, as labour is currently the source of 50% of total tax revenues in the EU.

• Capital taxation has failed to make up for these losses, as jurisdictions have actually been applying laxer rates in competition to attract investment. Where regressive forms of general taxation (e.g. VAT) have been raised to fill the gap, these hit middle- and low-income households hardest.

• Pressure on revenues is set to increase as new forms of work continue to be left out of the scope of social security contributions, and as EU Member States struggle to agree on appropriate forms of gathering tax revenues from online activities. Currently, while traditional companies pay on average 23% tax in the EU, digital companies pay only 8% or 9%.

• Finally, failure to adequately address tax or VAT fraud and evasion in the EU – in particular cross-border tax evasion and profit-shifting as the tax base becomes more mobile – contributes to significant lost revenue each year: in the rounds of 187-217 billion euro annually in the EU 28.

• A recent European Commission report on fiscal sustainability found that five Member States were subject to short-term vulnerabilities, while seven presented high risks for the medium term and six for the long term.

• It will be all the more important to manage these strains on Member States’ public finances with GDP growth hovering around the 1% mark and in the context of the transition to a low-carbon economy, which will require significant public (and private) investments.

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Corporate tax rates falling, while employment tax stable and VAT rising across rich countries

Evolution of taxes over time, OECD countries, indexed to 2000

<table>
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Note: The tax wedge is the ratio between the amount of taxes paid by an average single worker (at 100% of average earnings) with no children and the corresponding total labour cost for the employer. Source: Organisation for Economic Cooperation and Development

Labour is losing out

The share of national income paid to workers has been declining in many countries

Source: International Monetary Fund, 2017

Exploring the policy responses

• A more strategic fiscal approach centred around the modernisation of taxation tools and public services can yield lasting societal and economic returns.

• On the expenditure side, the needs of an ageing population and of those most vulnerable to the effects of the transition must be adequately addressed. Transitions in energy, social and economic systems – and the necessary education and training to facilitate them could be considered as outcome-oriented investments, rather than costs.

• On the revenue side, as labour’s share of income declines while capital’s rises, public authorities will have to explore fairer ways to adequately target both wealth owners and income earners.

• The proposed Common Corporate Tax Base and a Common Consolidated Tax Base (CCCTB) would go a long way in addressing the core issues of tax avoidance, base erosion and profit-shifting by multinational enterprises, suggesting a single set of rules to calculate companies’ taxable profits in the EU. Reigniting this initiative would contribute to a more sustainable Europe.
The issues at stake

• There is broad recognition that addressing climate change requires a concerted global effort. Dangerous levels of global warming can only be averted if all countries succeed in limiting their emissions.

• Yet today, there remain important disparities across countries, in terms of emissions levels, capacity to take climate and environmental action, and exposure to the effects of global warming. Some economies have achieved high standards of living and have the resources to invest in clean technologies. Many of these are already less reliant on industrial manufacturing, shifting to low-carbon, service sector activities. Others have more limited resources, meaning that they currently emit far less, but also generally have fewer alternatives besides relying on pollution-intensive processes to generate well-being. These are also the ones that are likely to suffer the greatest impacts from global warming due to their geography and lack of resources to adapt.

• What is often overlooked is the role of advanced, post-industrial economies in locking in this dichotomy, by shifting emission-intensive production to developing countries and emerging regions. Even as the former move away from carbon-intensive manufacturing, they continue to generate a strong demand for such products – the manufacturing of which is outsourced to the latter.

• As a result, countries like China and India rapidly became the world’s largest exporters of trade-embedded emissions, also in response to demand from the US and Europe. In turn, China and India are now starting to pass the buck, outsourcing emission-intensive industries to Indonesia, Vietnam or Thailand. In some advanced economies, it is estimated that up to 75% of the emissions embodied in the final consumption of goods and services are emitted elsewhere in the world. This number is less than 10% for other countries. In other words, developed countries are increasing their consumption-based emissions – often faster than they are reducing their production-based emissions.

China and India produce carbon-intensive products for consumption by Americans and Europeans

Purple bars show embodied imports; yellow bars show exports – Purple shaded countries are predominantly importers, yellow are primarily exporters.

Balance of trade in embodied CO₂
Imports
Exports
Giga tonnes

Climate change places the largest burden on already vulnerable regions

Note: Risk refers to climate impacts such as extreme weather, sea level rise, agricultural productivity loss.
Source: Centre for Global Development

- As global value chains become more complex, tracing trade-embodied emissions or other externalities will become ever more difficult.
- In the past, international cooperation has been the way to address such inherently international challenges. Today, this proves particularly difficult at a time when multilateral institutions are being questioned.

Exploring the policy responses

- There is undoubtedly scope to improve the tracking and pricing of externalities. To date, only 20% of the world’s greenhouse gas emissions are priced. Yet extending carbon pricing schemes risks placing an even greater burden on low- and middle-income countries, and should therefore go hand in hand with other mitigating initiatives. For instance, revenues from carbon pricing could be earmarked for climate adaptation or to support the transition in developing economies. Introducing ‘consumption-based’ accounting for emissions, in complement to (or instead of) current production-based methods, also holds potential for a more equitable approach. Some countries already use such methods for voluntary reporting and, at the very least, it can serve as a monitoring and diagnostic tool – both for countries and for multinational organisations involved in global value chains.32
- Strong global collaboration will also be needed to help poorer countries grow on sustainable development pathways and enable them to leapfrog over polluting infrastructure, while continuing to climb up the human development index. The rapid drop in technology costs (solar panels, windmills, batteries, etc.) will open up new opportunities in this respect, but significant investments will still be needed.
- All areas of public and multilateral spending must be aligned with the strategic, long-term societal objectives embodied in the Sustainable Development Goals. The World Bank’s recent announcement that it will double climate investments to help developing nations deal with global warming is a promising example.33 Similarly, the European Commission has introduced the concept of ‘climate proofing’ investments.34
- But the scale of investment is so big that it will inevitably have to rely on large-scale private sector engagement. To stimulate funding from often risk-averse institutional investors, concrete barriers to the ‘bankability’ of projects must be lowered. Tailored regulation and public finance must come together to set out a stable path that will provide the necessary direction and confidence for the private sector to pitch in. Multilateral financial organisations can play an important role via drivers such as reducing political risk, providing liquidity, or assisting with preparatory reports.
- Finally, as cooperation in international fora risks becomes more challenging, bottom-up cooperation should be leveraged. Momentum has been gaining at sub-national level. Around the world over 9,000 cities and municipalities from 128 countries (16% of the world’s population) have confirmed their commitment to the Paris Agreement. 6,225 companies across 120 countries, with 36.5 trillion US dollars in revenue (more than the combined GDP of the US and China), have also pledged to contribute to the Paris goals.35 Although the vast majority of these are located across Europe, hubs of activity are also present in the US, Asia and Africa.
The issues at stake

- **Widespread lifestyle change is the most difficult frontier of sustainability:** on the one hand, rising consumption has typically served as a benchmark of progress and prosperity, while on the other, it is at the core of unsustainable development. This conundrum is reflected in the Sustainable Development Goals too, where there are no real targets on dealing with overconsumption, aside from limiting food waste and raising awareness about unsustainable consumption patterns.

- Of course, consumption patterns are extremely uneven across the globe and within countries, with the lion’s share of responsibility lying with relatively few high emitters: the richest 10% of people in the world are responsible for 49% of all lifestyle emissions.

- The biggest determinants of a person’s carbon footprint are, in order of importance: per capita living space, energy used for household appliances, meat consumption, car use, and vacation travel. In practical terms, this means that, as an individual’s income rises, so does his or her environmental footprint, as it tends to be associated with where they live, how they move, and what they eat. Typically, annual carbon emissions per household can range from 1.29 tonnes in a car-free urban environment up to 8.47 tonnes in an exurban one.

- There is today a growing awareness of these differences and of the impact that individual choices can have both in decreasing individual carbon footprints and in pressing for wider structural changes in neighbourhoods or cities. For example, while owning a car used to be an automatic choice for the overwhelming majority of households in advanced economies, more recently there is growing trend to consider the environmental and economic downsides of car usage. Indeed, mobility captures 13% of an average European household budget, and cars are particularly inefficient: not only are they parked 92% of the time, but, when used, fewer than two of five seats are occupied on average. Shifts towards car-sharing options or alternative means of mobility are picking up speed as citizens change behaviours and cities invest in infrastructure that offers alternative choices.

- Nonetheless, consumption patterns are difficult to shift, and in some cases they move in the wrong direction: in 2017, a record 1 billion passengers travelled by air in Europe: a 39% rise since 2009.
The majority of advanced economies have diets that could not be sustained at a global level

Colours indicate how much global habitable land area would be needed for agriculture if the total world population were to adopt the average diet of that given country. Data for 2011, when 50% of habitable land was already used for agriculture.

- **Food choices are also central to sustainability.** Throughout modern times, prosperity has been reflected in greater meat consumption. While younger population groups in many advanced economies are moving away from meat choices, the average European still consumes 80 kilogrammes of meat per year while an average Ethiopian consumes under 7 kilogrammes.

  If everyone’s diet were to converge upwards to that of the average American, all habitable land would have to be converted to farming and the world would still fall 38% short of feeding the entire global population.

- **Exploring the policy responses**

  - Although individual consumption is at the heart of the issue, it is important to move away from treating over- or carbon-intensive consumption as a mere question of individual responsibility and see it as a broader set of questions concerning inequality, distribution and collective societal responsibility.

  - Indeed, public policies have a defining role on individual consumption patterns. Spatial planning and public transport policies are, for instance, critical in determining the carbon footprint of inhabitants and can create unsustainable lock-ins. Think, for example, of the way that cars in the US shaped a self-perpetuating and eventually international system: from sprawling suburbs detached from public transport arteries, to a pervasive culture of linking status to car ownership, all the while giving rise to an all-powerful fossil fuel lobby.

  - With this in mind, policy should aim for a new form of ‘public luxury and private sufficiency’: by strengthening the quality and availability of shared goods, services and networks, public policy can reduce duplication of resources across individual households, thereby favouring efficiency, as well as strengthening community involvement and collective responsibility.

  - Public procurement, budgeting and taxation also present key tools that should be streamlined to consider not just market costs, but key environmental and social externalities such as pollution and resource use. Perverse incentives such as fossil fuel subsidies or indirect support for unsustainable practices will have to be identified and tackled. Counter-productive tax incentives (e.g. for company cars) can be replaced by more sustainable ones (e.g. mobility budgets that stimulate a shift in mobility behaviour).

  - There is also a role for research and innovation. New models of producing, consuming and recycling can bring people closer to sustainable lifestyles (e.g. breakthroughs in plant-based meat substitutes hold considerable potential).

  - There is nonetheless a need to be clear-headed about the scale of change needed: incremental tweaks will not suffice. To date, there is no better way of reducing emissions from air travel than by taking fewer flights, or from agriculture than by eating less meat. Those consumption areas that are the most problematic are already widely known. A targeted policy response, coupled with awareness-raising and ‘nudging’ techniques, could work within these parameters to effectively and collectively alter harmful consumption patterns without diffusing responsibility to a purely individual choice.
The issues at stake

- **Innovation-powered change is and will remain one of the main ingredients for a sustainable transition** – both in terms of technology and social systems. Indeed, given the scale and urgency of the challenges, innovation will both have to be more disruptive than incremental, and more systemic than technological. The type of transformation needed to avert ecological and social breakdown is one that fosters cumulative impacts across society and the economy – not just a set of discrete innovations making gains in one area while backtracking in others.

- **This requires a vibrant research and innovation sector.** Yet, the latest figures show that Asian players such as China, Japan and South Korea are investing in R&D at a rate that eclipses both the EU and US.

- **At the same time, even where innovation is taking place, it can fail to translate into socially or environmentally sustainable outcomes.** For one, obsolescence is a direct result of innovation, as new products emerge to replace old ones that are outperformed. The more innovative (and wealthy) an economy becomes, the more economic obsolescence accelerates, and the more resources are consumed and waste generated. Perhaps more surprisingly, the collaborative economy itself – despite its great potential for creating socio-economic efficiencies – is also giving rise to a number of unintended consequences, e.g. as ride-sharing apps lead to a rise in overall mileage, and home-sharing platforms create upward pressures on housing costs.

- **And, in an era of increasing customisation,** where innovation increasingly targets a ‘segment-of-one’, unsustainable outcomes are all the more likely to arise – at the very least until people start becoming more concerned about the environment than they are about their budgets, well-being or emotional fulfilment.

- **This means that innovation needs to be driven in the right direction.** Yet, a burdensome regulatory mix – even if well-intentioned in social and environmental terms – can backfire if it weighs down the innovation ecosystem.

China is investing in R&D at a rate that eclipses both the EU and US

Total R&D expenditure in billions of current purchasing power standards (PPS€), 1981-2017

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Notes: (1) China does not include Hong Kong. (2) EU27: The UK is not included. (3) Data for India are not available for 2012, 2013 and 2014.

Source: Values extracted by DG Research and Innovation, European Commission, based on data from Eurostat, OECD, UNESCO.

Exploring policy responses

- **Mission-oriented innovation** is needed to move beyond unsustainable behaviours and introduce sustainability across economic innovation. **It involves focusing not only the direction, but also the rate, of innovation**, allowing economic growth in Europe to be harnessed toward sustainable and equitable outcomes in line with the Sustainable Development Goals. By putting the onus on forward-looking objectives that are to the benefit of all society, this approach can put in motion a system-wide innovation effort, mobilising researchers in areas ranging from energy, mobility and food systems, to construction materials, or social and behavioural sciences.

- **Such an approach is currently being considered for the next iteration of Europe’s research and innovation framework programme, Horizon Europe,** where it could help to reduce the fragmentation of Europe’s innovation capabilities by allowing Member States and regions to experiment within larger EU-wide missions.

- **However, any attempt to ’harness’ innovation should be paired with the application of the ‘innovation principle’, ensuring that the impact on innovation is fully assessed across all stages of the innovation process – from research and development, to diffusion, commercialisation, uptake and beyond.**
This will serve to **reduce unnecessary regulatory burdens and ensure that the entire economy is more conducive to change**. To this end, innovation-enabling legislation is crucial at all stages of the innovation cycle, reflecting a process of policymaking that fully internalises its impact on innovation and experimentation.50

- Next to this, **public funding** will continue to play a key role in de-risking and leveraging private investments, and steering them in the right direction, as well as in bridging the gap from labs to commercialisation.

### Proposed ‘mission’ themes for Horizon Europe

<table>
<thead>
<tr>
<th>Theme</th>
<th>Share of proposals received (%)</th>
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<td>Digitalisation</td>
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<tr>
<td>Sustainable production</td>
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<tr>
<td>Diseases</td>
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<tr>
<td>Energy production and consumption</td>
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<tr>
<td>Healthcare</td>
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<tr>
<td>Food and agriculture</td>
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<td>Transport and mobility</td>
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<tr>
<td>Health and wellbeing</td>
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<tr>
<td>Biodiversity and natural capital</td>
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<td>Bioeconomy</td>
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<tr>
<td>Climate science and solutions</td>
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<tr>
<td>Security</td>
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<tr>
<td>Social and economic transformations</td>
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<tr>
<td>Communities and cities</td>
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<tr>
<td>Industry and manufacturing</td>
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<tr>
<td>Artificial intelligence and robotics</td>
<td>3%</td>
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<tr>
<td>Sea and oceans</td>
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<tr>
<td>Culture</td>
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<td>Democracy</td>
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Source: European Commission, 2018

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### Innovating for sustainability

**There are already** a host of bold examples illustrating that **innovation oriented toward sustainable outcomes can and does serve as an engine for positive change.**

**Blockchain for sustainable supply chains:** In a global economy, it has become difficult – for companies and consumers alike – to track responsibility and sustainability across lengthy and complex supply chains. By the time products reach their consumer, neither buyers nor sellers know their true origins or profile. Many unsustainable practices could by that point be nested in the purchase: from human rights abuses to pollution, waste and fraud. By enabling unprecedented levels of transparency, vastly reducing paperwork, and linking customers with information on sourcing and production, blockchain-based supply chain management software holds the potential to revolutionise supply chain management, paving the way for more accountability and consumer choice when it comes to sustainable practices.54

**Big data for better healthcare:** With health and long-term care costs set to rise significantly in the context of an ageing European population, combining big data with healthcare offers a major opportunity for enhancing both social and fiscal sustainability. Indeed, the more personalised the healthcare approach, the more likely it is to succeed. By comparing large amounts of data, prescriptive analytics can be developed to determine what treatments will work best for each patient, and deliver on the promise of precision medicine.52 In addition, adaptive intelligence could help to reduce waiting times in hospitals by optimising schedules for physicians and patients, while personal fitness trackers could connect wearers to nearby public health facilities and provide tailored preventative healthcare tips with the aim of improving health outcomes and reducing the impact of lifestyle choices on public health systems.
Consistent with its active part in the negotiations of the Sustainable Development Goals, the EU needs to remain an inspirational and exemplary frontrunner in implementing the sustainability agenda. To shift away from a world built on hundreds of years of fossil fuel use, a near-simultaneous shift is needed in markets, policymaking, industry, science, and even culture. Deep, all-encompassing change implies changes throughout and across all market sectors and value chains, from product design and business models to service provision and trade. Indeed, government interventions that alter only one part of the system are likely to produce costs and benefits elsewhere, generating an uncertain mixture of feedbacks, trade-offs and outcomes.

Furthermore, these shifts will have to happen from the very local level up to the European level and beyond and will require efforts and long-term actions from all stakeholders. This implies a different mind-set, a new ‘culture’ and new skills, and therefore needs to be incorporated in education and vocational training systems, and in schools of business and government so that citizens, organisations, businesses, bankers, insurers and public administrations apply sustainable thinking in their everyday actions. Not least, it requires breaking free from current ‘lock-ins’ imposed either by incumbents through decades of intense lobbying, or by our own selves due to habits that are difficult to dislodge.

Of course, such a transition will inevitably benefit some more than others, as some economic sectors will grow while others will have to undergo deep restructuring. But these changes are more likely to happen, and the associated risks are more likely to be well-managed, if there is consistent leadership and oversight at a higher – EU – level. This can be achieved under the framework of an overarching and integrated strategy for a Sustainable Europe 2030, linked to the next Multiannual Financial Framework, and based on new metrics that are less about linear growth and more about sustainability, progress, convergence and forecasting.

**TIME FOR SYSTEMIC CHANGE**

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**FROM**

- Natural resource and habitat over-exploitation, fossil fuel-based economy
- Produce-consume-dispose (linear) model
- Focus on GDP growth
- Society based on growing private resource consumption (cars, unused properties)
- One-size-fits-all environmental policy
- Labour market ‘insiders’ covered by social protection vs ‘outsiders’ living precariously
- Minimising fiscal expenditure even in difficult times
- Treating emissions as geography-constrained (each country has its own independent targets)
- Profit-driven innovation and investment
- Box-ticking silos that miss the bigger picture and fail to achieve synergies

**TO**

- Respect for planetary boundaries and climate-neutral economy
- Circular economy (closed loop) and restoration of ecosystems
- Moving beyond GDP to welfare and sustainability oriented metrics
- Shared public consumption of limited resources (public transport, efficient housing)
- Inequality-sensitive policy, multilevel and multi-stakeholder approach
- Integrating all forms of work into fortified social protection systems
- Focus on strengthening the revenue base (addressing tax dodging, taxing capital rather than labour)
- Addressing emissions outsourcing to poorer countries via trade
- Mission-oriented innovation and sustainable finance
- System-wide approach to change

Source: European Political Strategy Centre
The European Political Strategy Centre (EPSC) is the European Commission’s in-house think tank. It reports directly to President Juncker and operates under his authority.

The mandate of the EPSC includes strategic analysis and policy advice, both short- and long-term, to the President and the College on issues related to the policy priorities of the Juncker Commission (as defined by the President in his political guidelines presented to the European Parliament on July 15 2014); and outreach to decision-makers, think tanks and civil society at large.