

# Is a UK Government commitment to the Sustainable Development Goals good for the economy and business in general?

Brooklyn Han\*, Patrick Leitloff\*, Sally Yang\*, Eddy Zou\*

## 1 Introduction

In recent years, rising concerns over the environmental sustainability of human-driven economic practices have called for significant action. Lenton et al. (2019) [1] argue that the world may have already crossed several ‘tipping points’ beyond which environmental degradation becomes irreversible, mandating immediate political and economic response. We thus choose to focus on natural-capital-based Sustainable Development Goals (SDGs) in our discussion. Natural capital, defined as ‘stocks of the elements of nature that have value to society’ (HM Treasury, 2018) [2], is used in combination with human, financial and social capital to produce valuable goods and services. It directly sustains human life, is not easily replenished (Neumayer, 1998) [3] and is non-substitutable in certain cases, highlighting the need for sustainable use.

Our SDGs of focus are:

- Goal 12: Efficient use of natural resources and effective waste management

---

\*Department of Economics, The London School of Economics and Political Science, w.zou2@lse.ac.uk

- Goal 13: Climate change mitigation and adaptation
- Goals 14 and 15: Preservation of water and land ecosystems

Henceforth we refer to these goals as NC-SDGs.

We consider Goals 6, 7 and 9 as auxiliary NC-SDGs as they have targets relating to water ecosystems, fossil fuels as subsoil natural resources and ‘environmentally sound technologies and industrial processes’ respectively (UN, 2015) [4]. Figure 1 provides a graphic summary.



Figure 1: Natural-capital-based Sustainable Development Goals (NC-SDGs) and auxiliary NC-SDGs.

We refer to ‘commitment’ as the integration of SDG targets and indicators in the design and evaluation of policies, as well as promoting awareness towards achieving SDGs in the indicated timeframe.

In the following sections, we outline the UK-specific businesses and economy-wide benefits, then examine positive spillovers from current sustainable development policies. After identifying policy gaps, we reflect on the recent develop-

ments in measuring SDGs and conclude.

## 2 Improved Business Performance

There is strong evidence that environmentally sustainable practices improve business performance. Clark et al's 2014 [5] review of 200 studies on sustainability and corporate performance found that high environmental, social and governance (ESG) standards lowered costs of sourcing capital and improved financial performance in 90% of cases. Exploiting plausibly exogenous variation in corporate proposals, Flammer (2015) [6] found that adopting Corporate Social Responsibility (CSR) proposals, such as incorporating SDGs in business operations, can improve accounting performance, labour productivity and business sales.

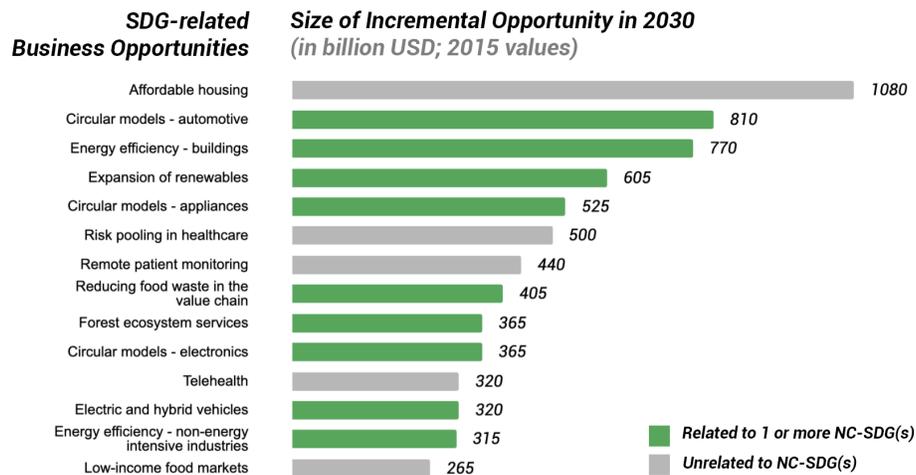


Figure 2: The size of incremental SDG-related business opportunities in 2030.

Only the largest opportunities are shown. Source: Business and Sustainable Development Commission, 2017.

The implementation of SDGs also opens up new markets for UK businesses. A report by the Business and Sustainable Development Commission (2017) [7]

estimates that delivering SDGs in the four ‘economic systems’— food and agriculture, energy and materials, cities, and health — can generate over £10 trillion<sup>1</sup> worth of business opportunities per year by 2030. These closely relate to NC-SDGs (summarised in Figure 2) and are also highly applicable in the UK. For instance, product-reformulation strategies which improve the nutritional content of processed food in the UK and enhance sustainable consumption (SDG 12) is estimated to save 1.7 million disability-adjusted life years and require total business investments of approximately £3.7 billion (MGI Obesity, 2014) [8].

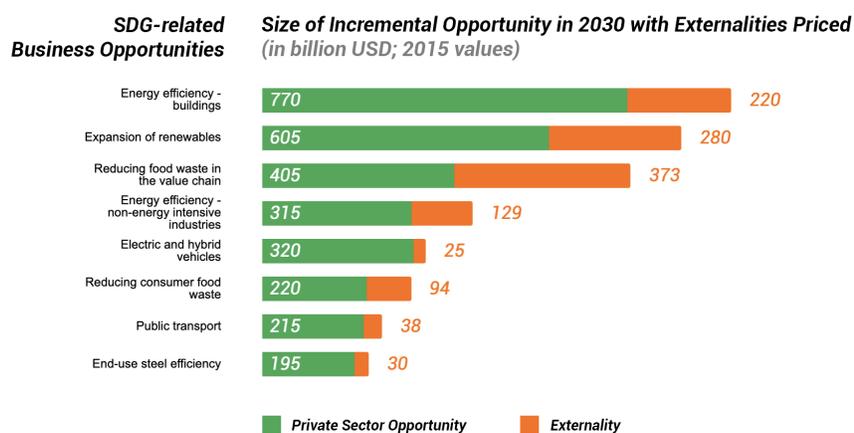


Figure 3: The size of incremental SDG-related business opportunities in 2030, with externalities added. Evidence at the global level suggests that pricing externalities adds market opportunities substantially. Source: Business and Sustainable Development Commission, 2017.

In addition, as shown in Figure 3, adjusting prices to reflect externalities can add up to 40% of business opportunities in the four economic systems identified (Business and Sustainable Development Commission, 2017) [7].

<sup>1</sup>The original data is in USD. We employ an exchange rate of \$1=£1.2

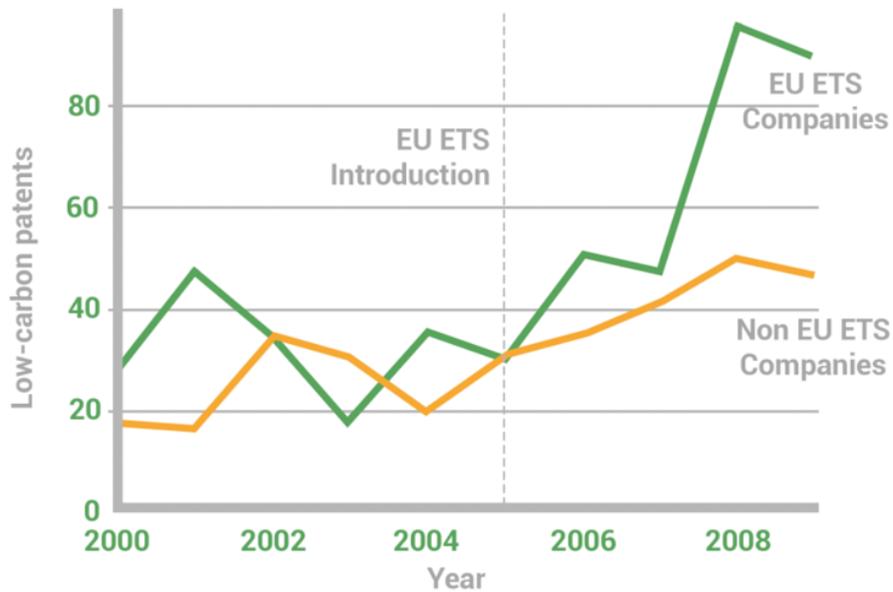


Figure 4: Low-carbon innovation activity of EU ETS regulated companies compared with the counterfactual scenario. Source: Cael and Dechezleprêtre, 2014 [9]

Carbon pricing policies can have a significant effect on business incentives in creating sustainable innovations<sup>2</sup> (Cael and Dechezleprêtre, 2014) [9]. Figure 4 below shows that the introduction of EU ETS has led to an increase in the number of low-carbon patents from companies. If UK government further commits to SDGs through measures not including but not limited to executing its plans of maintaining carbon pricing<sup>3</sup>, there would be even higher benefits from

<sup>2</sup>Around 300 companies regulated under the EU ETS are included in the sample. ‘Non EU ETS companies’ are a group of 3000 European companies that are not regulated under the EU ETS but operated in the same country and the same economic sector and are comparable in size and innovation capacity to companies regulated under the EU ETS.

<sup>3</sup>The UK government is expected to support carbon prices above European levels after Brexit, although there has yet been further agreements about the implementation and details of this plan. Source: <https://www.bloomberg.com/news/articles/2020-03-11/u-k-confirms-plans-to-support-carbon-prices-after-brexit>

investing in new business areas created by delivering SDGs. This would thus reassure businesses of gains from investing in low-carbon innovations.

As Europe’s centre of sustainable funds management, the UK’s financial industry has long incorporated ESG standards into its investment criteria to support the growth of sustainable finance. For instance, HSBC placed £1.85 billion of its UK employees’ pension savings into an eco-friendly fund (Financial Times, 2016) [10]. Businesses also actively and publicly urge the government to further commit to strengthening private-public coordination in delivering SDGs (UKSSD, 2017) [11].

Though SDGs are beneficial to businesses, without an active governmental commitment to NC-SDGs to address market failure, firms and the economy may not fully realise these benefits.

Market failures, whereby markets fail to achieve socially efficient resource allocations, necessitate government intervention. Many green investments are currently uncompetitive as they involve early-stage innovations yet to be commercialised<sup>4</sup>. Furthermore, environmental externalities in current, pollutive technologies are not internalised, leading to overproduction. Greener innovations thus tend to be under-funded by private markets, causing welfare loss (Owen et al., 2018) [14]. Government finance such as the UK Energy Entrepreneurs Fund can support the incubation of businesses before they generate revenues.

In addition, the government can provide a regulatory base to correct imperfect information. Standardisation prevents greenwashing, as exemplified by ASEAN’s adoption of comprehensive Green Bond Standards that categorise projects and specify the exclusion of fossil fuels (ASEAN Capital Markets Fo-

---

<sup>4</sup>The UK Energy Research Centre’s review of evidence on the timescale of technological innovations showed that, across 14 innovations studies, it takes an average time of 39 years for an innovation to be commercialised and deployed (UKERC, 2015 [12]). Furthermore, Gillingham and Stock (2018) [13] suggests that much of the ‘green investments’ in renewable energy suffer from path dependence, whereby rates of return go up in the long run only with sufficiently high inputs.

rum, 2018) [15]. This demonstrates how removing the largest source of investor uncertainty can fuel green bond demand (Climate Bonds Initiative, 2019) [16], its proceeds primarily used to fund projects improving energy efficiency (SDG 7) (International Finance Corporation, 2019) [17].

The government can also help establish common reporting standards to lower the implementation costs of sustainability practices. HSBC found that 26% of the 1000 UK firms surveyed suggested a confusion with ESG reporting undermined their sustainability practices<sup>5</sup> [18]. KPMG also found that one of the biggest barriers to firms in sustainability lay in the lack of common metrics to assess and compare performances<sup>6</sup> [19]. The British Standards Institution<sup>7</sup> proposed common reporting standards on businesses' performance on SDGs [20], showing that country-wide standardisation is only achievable through regulatory changes directed by the government.

The government can also exercise its role as an authority to endorse consistent information and nudge consumer behaviour. For example, mandating businesses to disclose the environmental impact of their products through labelling highlights the impact of consumption choices and addresses consumers' behavioural bias (Ölander and Thøgersen, 2014) [21].

Finally, government commitments to SDGs have the potential to improve coordination in the private sector. An example would be industrial symbiosis, where governments promotes mutual synergies between firms from separate industries. The UK's National Industrial Symbiosis Programme (NISP), matches participating firms that can use each other's by-products with the view that 'one

---

<sup>5</sup>Source: HSBC Navigator 2018: <https://www.business.hsbc.com/navigator/sustainability>

<sup>6</sup>Source: The KPMG Survey of Corporate Responsibility Reporting 2017: <https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/10/kpmg-survey-of-corporate-responsibility-reporting-2017.pdf>

<sup>7</sup>As of 2020, the BSI has launched the first of its 5-year long initiative with UK Government (BEIS) and the UK industry (City of London's GFI) to develop consensus-based standards in sustainable finance.

company’s waste is another’s raw material’. For example, the waste filter cake produced by an air-conditioner manufacturer is used by a fuel manufacturer as an oil absorption agent. In five years, NISP diverted over 47 million tonnes of industrial waste (Industrial Synergies, 2013) [22], contributing to improvements in SDG 12, production expansions and costs reductions.

### 3 Current Policies and Positive Spillovers

In the first year alone, 90% of the actions in the 25 Year Environment Plan have been delivered or are being progressed (UK Government, 2019) [23]. Further, complex interactions and positive spill-overs between goals occur. In the NC-SDGs framework, the key areas include air quality; water quality; urban planning; and waste management.

Commitments to cleaner air show progress. The World Bank suggests that 100% of the UK population is primarily reliant on clean fuels and technology (SDG 7.1.2) (World Bank, 2020) [24]. ONS [25] also finds that the share of renewable energy in total energy consumption rose exponentially from 0.7% in 1990 to 10.3% in 2017 (SDG 7.2.1). This is expected to enhance climate resilience and foster low greenhouse gas emissions development (SDG 13.2.1). Recent policies further support the attainment of NC-SDGs. The Clean Growth Strategy [26] seeks to align economic growth with ‘clean’ development through improving industry efficiency and encouraging the transition to low-carbon transport. Climate change policy may shape incentives in technological change, promoting innovation (SDG 9) and sustainable infrastructural development (SDG 11).

Secondly, a commitment to cleaner water sources is ‘good business’ by raising productivity and cutting costs to firms, according to the water institute SIWI (2005) [27]. Current policies such as the Nitrates Directive and the Water Framework Directive reduce contamination risk to water bodies while enhancing

their quality. 100% of the UK households has access to safe drinking water (WHO/UNICEF 2020) [28] and connections to wastewater treatment stands (OECD 2020) [29]. Access to sanitary drinking water is vital for personal health, and healthy workers make valuable contributions to business and the economy.

Thirdly, urban planning policies encourage infrastructure innovation. Congestion is a huge cost for the economy in terms of lost time spent waiting in traffic and the continuous emission of pollutants from vehicles. To maximise the value of public investment, the UK government has established a Transforming Cities Fund worth £2.5 billion to tackle congestion and promote smart traffic management. Further, as part of the government's Future of Mobility Urban Strategy, new vehicle types and innovative ways to make journey planning and payments simpler are being considered. These are to be tested with a £90 million investment in four 'future mobility zones'. [30] These policies complement the goal of achieving cleaner air; as the transport sector is the largest contributor to greenhouse gas emissions, at 34% (Department for Transport, 2018) [31], efforts to introduce smarter vehicles and finding innovative ways to tackle traffic congestion can help reduce air pollution. Furthermore, there is a strong link between the sustainability of cities and communities (SDG 11) and the sustainability of an ecosystem with which the cities and communities interact (Griggs et al., 2017) [32].

Finally, different dimensions of waste management have also shown promise. Since 2000, the UK's material footprint (amount of resources extracted in order to produce the goods and services demanded by the domestic economy) has shown a downward trend (ONS, 2019) [33]. Plastic waste has been a major area of focus for the government, with an aim to reach zero plastic waste by 2042 (UK Government, 2018) [34]. Better waste management will benefit ecosystems on land and in water and preserve the quality of the resources that are necessary to everyday production and consumption. Further, achieving the sustainable management of natural resources (SDG 12.2) and promoting policies that are

in accordance with this (SDG 12.7) are closely associated with the development of sustainable transport and infrastructure (SDG 9).

## 4 Shortcomings of Current Policies

Despite considerable progress in some areas, there is strong evidence to suggest that gaps still exist, particularly in waste management and energy efficiency. Without imminent address, current trajectories could detriment a breadth of natural capital. Hazardous waste generated, such as used oils and chemical waste, rose by over 10% between 2010 and 2016 (Defra, 2020) [35]. These pollute water bodies and threaten aquatic biodiversity. It necessitates greater purification efforts, resulting in major costs of production (SIWI, 2015) [27]. Energy efficiency is plagued by policy inconsistencies. Relaxations of fracking rules, freezes on fuel duty, uncertainty around the future of carbon pricing, and the end of hybrid vehicle subsidies damage expectations about the government’s commitment to a low-carbon economy (LSE Growth Commission, 2018) [36]. Low per capita spending on improving household energy efficiency and uncertainty in the government’s target to upgrade ‘fuel-poor’ homes have caused the improvement in median energy efficiency ratings to level off (Figure 5). The proportion of households in fuel poverty has not changed significantly despite the fuel poverty gap decreasing since 2014 (Ministry of Housing, Communities and Local Government, 2017) [37].

A combination of slack minimum energy efficiency regulations, high fixed costs and the fact that returns are typically distributed over the long term mean that private incentives, which are based on a series of myopic optimisation, do not bring enough investments to meet current targets (Gillingham and Stock, 2018) [13]. Given that energy efficiency is one of the most effective ways to tackle fuel poverty (UKSSD, 2018) [11], stagnant improvements in this area stall progress in indicators such as 9.4.1 (CO<sub>2</sub> emission per unit of value added).

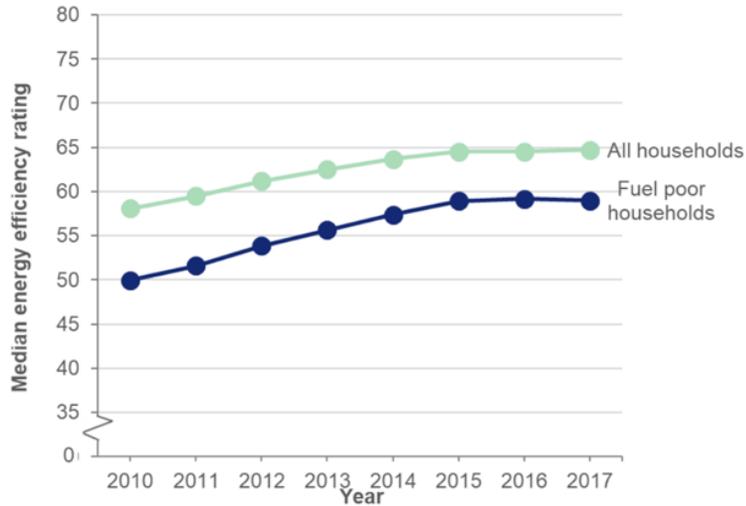


Figure 5: The improvement in median energy efficiency ratings between 2010 and 2015 has levelled off in recent years for fuel poor households and all households. Source: English Housing Survey 2016 to 2017: headline report

## 5 Opportunities from Better Measurement

Existing improvements in the measurements of SDGs enable policymakers to track specific progress, analyse root causes of challenges in delivering SDGs and design policies that address problems for specific stakeholders, to ‘Leave No One Behind’ (ONS, 2019) [38].

For instance, 70% of 180 SDG indicators reported using UK data are disaggregated by at least one variable [39]. This allows the socio-economic impact of policies to be broken down by region and aids in identifying and targeting regional economic disparities. For instance, researchers can use UK regional Google patent rank data to quantify regional distributions of economic spillovers from innovation investments. Policymakers can then identify and direct innovation spending to regions with stagnant productivity.

For NC-SDGs, we argue that the UK government can leverage the 100%

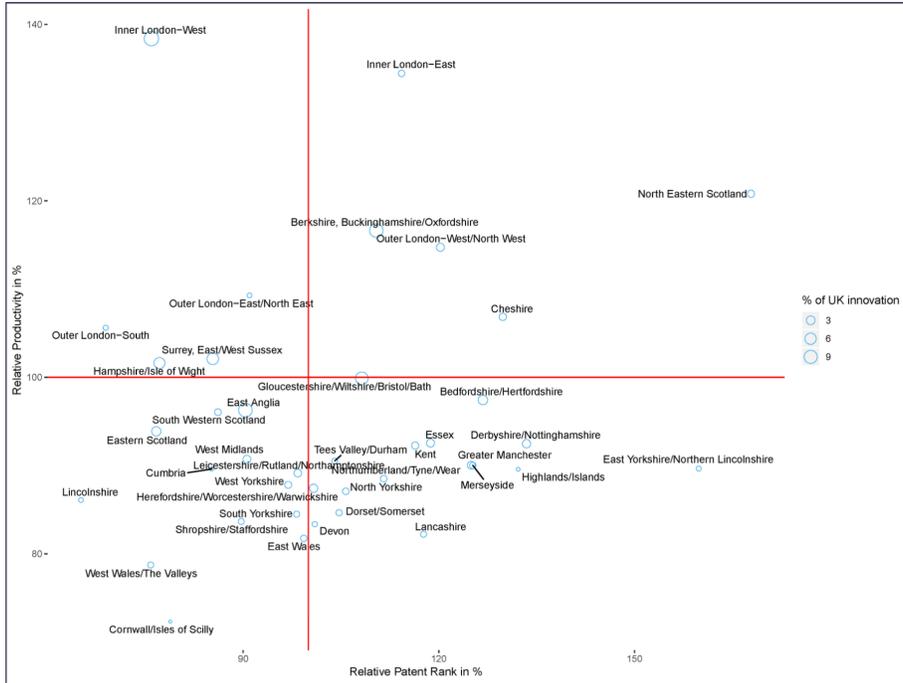


Figure 6: A scatter plot of relative regional productivity and relative regional average spillovers for NUTS2 regions of the UK. From this estimation, it is clear that targeting regions with below national-average productivity and high innovation spillovers can generate higher benefits. Source: LSE Growth Commission, 2018.

coverage of climate action indicator and the availability of micro-level data, to incorporate climate changed-induced dynamics in gains from investing in different parts of the UK<sup>8</sup>.

A further understanding of inter-linkages between SDGs allows policymakers to better understand distributional and long-term consequences of their decisions, thereby avoiding policy conflicts between different departments or omit-

<sup>8</sup>The existing literature suggests that foresighted infrastructure investments that consider dynamic effects of climate change, including inundation, sea-level rises and floods, bring significant long-term economic welfare gains (Balboni, 2019) [40].

ting key areas of policy focus (UN Statistical Division, 2019)<sup>9</sup> [41].

A further government commitment to NC-SDGs is essential to accelerate improvements in data measurement. Among specific goals we focus on, there is substantial scope for improved data availability in Goals 12, 14 and 15.

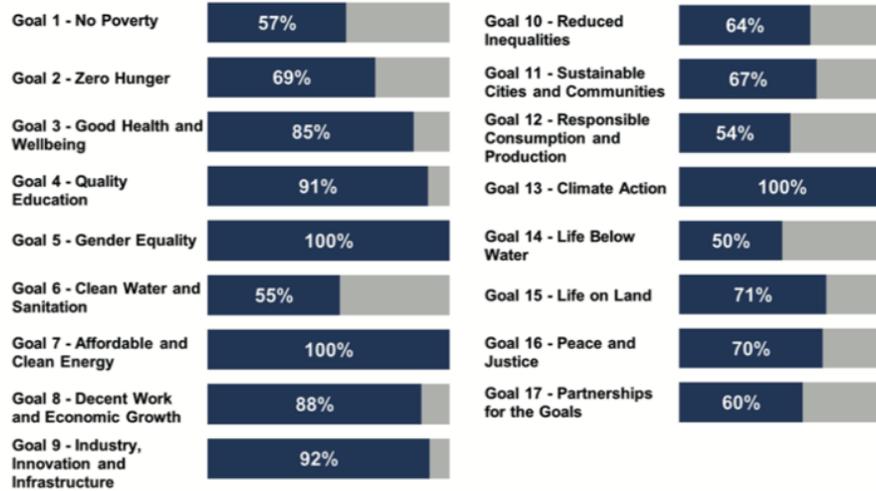


Figure 7: Proportion of Global Indicators for each SDG that have data reported on the UK National Reporting Platform, as of June 2019.

Many indicators require clarification beyond the reach of ONS. For instance, none of the transboundary basin areas in the UK currently have an operational agreement on water cooperation (UNECE, 2018) [42]. In addition to improving local and international water resource management, clarification will also help maintain international ties, the importance of which has increased since the EU referendum.

The ability to establish quantitative targets for indicators that currently lack clarity will enhance government commitment by reducing the propensity to take

<sup>9</sup>For instance, the UN statistical division is collaborating with the ONS and other statistical agencies across developing countries to harmonise the use of indicators in understanding positive linkages between targets, to direct statistical reporting and policies to those with the greatest potential for positive externalities.

discretionary action and exploit the vagueness of said indicator(s).

## **6 Conclusion**

Sustainable growth cannot be left to the private sector alone: a consistent, well-measured UK government commitment helps deepen the symbiotic relationship between stakeholders, addressing market failures such as imperfect information and coordination problems in the private sector where sustainable economic activity has the potential to take place on a large scale. Our assessment of current policies show that a stronger government commitment is consistent with current policy trajectories and that bridging existing policy gaps can deliver large gains.

We have also demonstrated the ways in which SDGs benefit the UK economy and businesses. Environmental sustainability and economic growth are not always on a collision course. Rather, they should be viewed as complementary aims under the overarching goal of sustainable growth. With the advent of improved data collection methods and measurement of SDG indicators, we can more clearly quantify progress towards a more sustainable future that benefits businesses and the economy.

## References

- [1] Timothy M. Lenton et al. “Climate tipping points — too risky to bet against”. In: *Nature* 575.7784 (2019), pp. 592–595. DOI: 10.1038/d41586-019-03595-0.
- [2] HM Treasury. *The Green Book: Central Government Guidance On Appraisal and Evaluation*. URL: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/685903/The\\_Green\\_Book.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf).
- [3] Eric Neumayer. “Preserving natural capital in a world of uncertainty and scarce financial resources”. In: *The International Journal of Sustainable Development & World Ecology* 5.1 (1998), pp. 27–42.
- [4] United Nations General Assembly. *Transforming our world: the 2030 Agenda for Sustainable development, A/RES/70/1*. URL: [https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A\\_RES\\_70\\_1\\_E.pdf](https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf).
- [5] Gordon L Clark, Andreas Feiner, and Michael Viehs. “From the stockholder to the stakeholder: How sustainability can drive financial outperformance”. In: *Available at SSRN 2508281* (2014).
- [6] Caroline Flammer. “Does corporate social responsibility lead to superior financial performance? A regression discontinuity approach”. In: *Management Science* 61.11 (2015), pp. 2549–2568.
- [7] Business, Sustainable Development Commission, et al. “Better business, better world”. In: *GRI, UN Global Compact & The World Business Council for Sustainable Development* (2017).
- [8] Richard Dobbs, C Sawers, F Thompson, et al. *Overcoming Obesity: An Initial Economic Analysis*. McKinsey Global Institute; November 2014. 2015.

- [9] Antoine Dechezlepretre Raphael Calel. “Environmental Policy and Directed Technological Change: Evidence from the European carbon market.” In: (2014).
- [10] Chris Flood. *HSBC’s UK pension scheme to invest £1.85bn in eco-friendly fund*. Nov. 2016. URL: <https://www.ft.com/content/a5af8328-a4ef-11e6-8898-79a99e2a4de6>.
- [11] UKSSD Network. *Measuring up: How the UK is performing on the UN Sustainable Development Goals*. URL: <https://www.ukssd.co.uk/measuringup>.
- [12] Richard Hanna. *Innovation timelines from invention to maturity*. 2015. URL: <http://www.ukerc.ac.uk/programmes/technology-and-policy-assessment/innovation-timelines-from-invention-to-maturity-a-review-of-the-evidence-on-the-time-taken-for-new-technologies-to-reach-widespread-commercialisation.html>.
- [13] Kenneth Gillingham and James H Stock. “The cost of reducing greenhouse gas emissions”. In: *Journal of Economic Perspectives* 32.4 (2018), pp. 53–72.
- [14] Geraldine Brennan Robyn Owen Fergus Lyon. “Filling the green finance gap: Government interventions supporting early-stage low carbon ventures”. In: *Academy of Management Annual Meeting Proceedings* (2018). DOI: 10.5465/AMBPP.2018.16419abstract. URL: [https://www.researchgate.net/publication/326278785\\_Filling\\_the\\_green\\_finance\\_gap\\_Government\\_interventions\\_supporting\\_early-stage\\_low\\_carbon\\_ventures](https://www.researchgate.net/publication/326278785_Filling_the_green_finance_gap_Government_interventions_supporting_early-stage_low_carbon_ventures).
- [15] ASEAN. *ASEAN Green Bond Standards*. URL: <https://www.sc.com.my/api/documentms/download.ashx?id=75136194-3ce3-43a2-b562-3952b04b93f4>.

- [16] Climate Bonds Initiative. *Green Bond European Investor Survey*. URL: [https://www.climatebonds.net/files/files/GB\\_Investor\\_Survey-final.pdf](https://www.climatebonds.net/files/files/GB_Investor_Survey-final.pdf).
- [17] International Finance Corporation. *Green Bond Impact Report*. URL: <https://www.ifc.org/wps/wcm/connect/90e2d0c8-8290-46a9-9e89-85335051c12a/Final+FY19+GBIR+-+6+Sep+2019.pdf?MOD=AJPERES&CVID=mQ7oWOr>.
- [18] HSBC. *HSBC Navigator 2018*. 2018. URL: <https://www.business.hsbc.com/navigator/sustainability>.
- [19] KPMG. *The KPMG Survey of Corporate Responsibility Reporting 2017*. 2018. URL: <https://home.kpmg/xx/en/home/insights/2017/10/the-kpmg-survey-of-corporate-responsibility-reporting-2017.html>.
- [20] *BSI launches first sustainable finance guide setting standards for financial institutions to align to global sustainability challenges*. 2020. URL: <https://www.bsigroup.com/en-GB/about-bsi/media-centre/press-releases/2020/january/bsi-launches-first-sustainable-finance-guide-setting-standards-for-financial-institutions-to-align-to-global-sustainability-challenges/>.
- [21] Folke Ölander and John Thøgersen. “Informing Versus Nudging in Environmental Policy”. In: *Journal of Consumer Policy* 37.3 (2014), pp. 341–356. DOI: 10.1007/s10603-014-9256-2.
- [22] International Synergies. *National Industrial Symbiosis Programme*. 2013. URL: <https://www.international-synergies.com/projects/national-industrial-symbiosis-programme/>.
- [23] UK Government. *First review of 25 Year Environment Plan published*. 2019. URL: <https://www.gov.uk/government/news/first-review-of-25-year-environment-plan-published>.

- [24] World Bank. *Access to clean fuels and technologies for cooking, percentage of population*. 2020. URL: <https://data.worldbank.org/indicator/EG.CFT.ACCS.ZS>.
- [25] *Energy use: renewable and waste sources*.
- [26] *The Clean Growth Strategy: Leading the way to a low carbon future*. 2017. URL: <https://www.gov.uk/government/publications/clean-growth-strategy>.
- [27] SIWI. *Making Water A Part of Economic Development*. 2005.
- [28] UNICEF World Bank WHO. *People using safely managed drinking water services (% of population)*. 2020. URL: <https://data.worldbank.org/indicator/SH.H2O.SMDW.ZS?view=map>.
- [29] OECD. *Wastewater treatment (% population connected)*. 2020. URL: [https://stats.oecd.org/index.aspx?DataSetCode=water\\_treat#](https://stats.oecd.org/index.aspx?DataSetCode=water_treat#).
- [30] *Department for Transport single departmental plan June 2019*. 2019. URL: <https://www.gov.uk/government/publications/department-for-transport-single-departmental-plan/department-for-transport-single-departmental-plan--2>.
- [31] Department for Transport. *Transport Statistics: Great Britain 2018*. URL: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/787488/tsgb-2018-report-summaries.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/787488/tsgb-2018-report-summaries.pdf).
- [32] David Griggs et al. “Integration: the key to implementing the Sustainable Development Goals”. In: *Sustainability Science* 12 (2017), pp. 911–919.
- [33] Office for National Statistics. *Measuring material footprint in the UK: 2008 to 2016*. 2019. URL: <https://www.ons.gov.uk/economy/environmentalaccounts/methodologies/measuringmaterialfootprintintheuk2008to2016>.

- [34] UK Government. *A Green Future: Our 25 Year Plan to Improve the Environment*. 2018. URL: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/693158/25-year-environment-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf).
- [35] Food Rural Affairs Department for Environment. *ENV23 - UK statistics on waste*. 2020. URL: <https://www.gov.uk/government/statistical-data-sets/env23-uk-waste-data-and-management>.
- [36] LSE Growth Commission. *Sustainable Growth in the UK: Seizing opportunities from technological change and the transition to a low-carbon economy*. 2018. URL: [http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2018/12/Sustainable-Growth-in-the-UK\\_Full-Report\\_78pp.pdf](http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2018/12/Sustainable-Growth-in-the-UK_Full-Report_78pp.pdf).
- [37] *English Housing Survey 2016 to 2017: headline report*.
- [38] Fiona Dawe. *UN Sustainable Development Goals: How does climate change jeopardise the chances of a sustainable future?* URL: <https://blog.ons.gov.uk/2019/10/11/un-development-goals-how-does-climate-change-jeopardise-the-chances-of-a-sustainable-future/>.
- [39] UK Government. *Voluntary National Review of progress towards the Sustainable Development Goals*. URL: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/816887/UK-Voluntary-National-Review-2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/816887/UK-Voluntary-National-Review-2019.pdf).
- [40] Clare Alexandra Balboni. "In harm's way? infrastructure investments and the persistence of coastal cities". PhD thesis. The London School of Economics and Political Science (LSE), 2019.
- [41] *Interlinkages of the 2030 Agenda*. 2019. URL: [https://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-08/5a\\_Cara%20Williams\\_Canada\\_Interlinkages\\_Report\\_SlideDoc.pdf](https://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-08/5a_Cara%20Williams_Canada_Interlinkages_Report_SlideDoc.pdf).

- [42] United Nations Economic Commission for Europe. *Progress on Transboundary Water Cooperation*. 2018. URL: [https://www.unece.org/fileadmin/DAM/env/water/publications/WAT\\_57/ECE\\_MP.WAT\\_57.pdf](https://www.unece.org/fileadmin/DAM/env/water/publications/WAT_57/ECE_MP.WAT_57.pdf).