

# Framework for Achieving the Environmental Sustainable Development Goals

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## ENVIRONMENTAL PROTECTION AGENCY

The Environmental Protection Agency (EPA) is responsible for protecting and improving the environment as a valuable asset for the people of Ireland. We are committed to protecting people and the environment from the harmful effects of radiation and pollution.

### The work of the EPA can be divided into three main areas:

**Regulation:** *We implement effective regulation and environmental compliance systems to deliver good environmental outcomes and target those who don't comply.*

**Knowledge:** *We provide high quality, targeted and timely environmental data, information and assessment to inform decision making at all levels.*

**Advocacy:** *We work with others to advocate for a clean, productive and well protected environment and for sustainable environmental behaviour.*

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- large scale industrial activities (*e.g. pharmaceutical, cement manufacturing, power plants*);
- intensive agriculture (*e.g. pigs, poultry*);
- the contained use and controlled release of Genetically Modified Organisms (*GMOs*);
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- Office of Environmental Sustainability
- Office of Environmental Enforcement
- Office of Evidence and Assessment
- Office of Radiation Protection and Environmental Monitoring
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet regularly to discuss issues of concern and provide advice to the Board.

**EPA RESEARCH PROGRAMME 2021–2030**

# **Framework for Achieving the Environmental Sustainable Development Goals**

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## **EPA Research Report**

Prepared for the Environmental Protection Agency

by

University College Dublin

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This report is based on research carried out/data from January 2018 to March 2020. More recent data may have become available since the research was completed.

The EPA Research Programme addresses the need for research in Ireland to inform policymakers and other stakeholders on a range of questions in relation to environmental protection. These reports are intended as contributions to the necessary debate on the protection of the environment.

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# Executive Summary

Sustainable development is thought to be crucial for how humanity plans to develop our economy, society and environment in the future. Indeed, the practice of sustainability is recognised as being crucial to our management of life under water, life on land and the environment, and for societal health and our quality of life and well-being. Sustainable development is both a way of looking at the world through the lens of linkages between the social, economic, environmental and governance spheres, as well as a moral statement on aspirations for a better future for all of humanity.

The United Nations (UN) Sustainable Development Goals (SDGs) lie at the heart of the current international agenda on sustainable development. In 2015, Ireland was one of 193 UN member countries to sign Resolution A/RES/70/1 2030, *Transforming our World: the 2030 Agenda for Sustainable Development*. That agenda incorporated a non-binding commitment to implement the 17 SDGs. Each of the goals can be categorised under social, economic, environmental and governance pillars. In addition, they have associated targets (169) and data indicators (231) that assist with understanding progress towards achieving the SDG targets.

The overall aim of this project is to contribute to the evidence base for assessing how Ireland can deliver on the SDGs, and specifically on the environmental SDGs. Over the course of this project, 83 “environmental” SDG indicators spanning 16 out of the 17 goals were identified. In doing so, the research examined the availability of environmental SDG indicator data for Ireland and the subsequent development of the Irish Environmental SDG Index to benchmark Ireland’s performance against peer nations in the EU. In addition, the project investigated the role of the multi-stakeholder partnership (MSP) approach for achieving the SDGs in Ireland and specifically assessed the evolution of the MSP process from the viewpoint of relevant stakeholders.

The research conducted in this project has resulted in significant results and outputs. Key among them is the development of Ireland’s first Environmental

SDG Index. The index benchmarks Ireland’s progress on environmental SDG indicators for which data are currently available, relative to EU peers. If resourced in the future, this index provides an important template to track Ireland’s progress on SDG implementation. The development of such an index for Ireland is a significant innovation with potential to assist policymakers with developing a more nuanced SDG implementation and, crucially, to understand where Ireland lies with respect to its peers on SDG implementation. Moreover, the index is disaggregated by indicator and thus allows for a micro-assessment of Ireland’s performance in individual areas. Overall, the index shows that Ireland is 64% of the way towards the aggregate best performers in the EU in relation to its performance on the environmental SDGs. This is classified as a neutral performance and suggests Ireland has considerable work to do to become a leader in SDG implementation and environmental sustainability more generally.

Another key output from the index-based research is the disaggregation of the Environmental SDG Index into outcomes, means of implementation (Mols) and linkages. This work reveals that Ireland’s current performance is weakest on Mols (index score of 0.34) and strongest on linkages (index score of 0.87). This suggests that Ireland’s capacity-building for the SDGs (i.e. Mols), which will ultimately dictate future capability to develop more sustainably, is poor. The implication is that considerable attention and investment is required to improve Ireland’s performance in this area. The implication for policy is to determine what Ireland is doing to reach the status of a good performer with respect to linkage targets and transfer these approaches to areas of weak performance.

The MSP research can be considered initial exploratory work. It elucidates stakeholder perceptions of the SDG and national stakeholder process in Ireland, the complexity of the SDGs and the lack of MSP experience in Ireland. Furthermore, it highlights the perceived lack of transparency and poor information flow in relation to Ireland’s SDG

implementation, and the perception that participation in the National Stakeholder Forum lacks meaning and does not represent a true partnership. Overall, the research identified how stakeholders perceive

MSPs in Ireland and the key challenges to SDG implementation. The identification of these conditions is necessary to assist with the future planning of SDG implementation among the whole of society.

# 1 Introduction

## 1.1 The UN Sustainable Development Goals

Sustainable development is currently at the very heart of global research and policy agendas. In particular, the Sustainable Development Goals (SDGs) are now encapsulated in Agenda 2030 (UNGA, 2015), an ambitious United Nations (UN) global public policy agreement for achieving sustainable development by 2030. The ambition of Agenda 2030 is rivalled by the global challenge posed by the unsustainable practices that are embedded in our existing economic models of production and consumption, as well as our human–environment interactions. The practice of sustainability is now recognised as being crucial to our management of life under water, life on land and for societal health and well-being (Sachs, 2015; UNGA, 2015). Achieving the SDGs is likely to mitigate the climate crisis, along with many economic and societal ills. Therefore, it is fair to say that successful implementation of the SDGs is crucial to the survival of humanity on our planet. Cooperation, including the formation and development of partnerships for sustainable development, is central to the economic, social, environmental and

governance domains of society, making it an important entry point for understanding how the SDGs can be achieved in the future.

In 2015, the heads of states of 193 member countries of the UN signed Resolution A/RES/70/1 2030, *Transforming our World: the 2030 Agenda for Sustainable Development* (henceforth UN Agenda 2030), which focuses on a more holistic development that rests on the pillars of social, economic and environmental sustainability, with each pillar being underpinned by good governance. The preamble to the UN Agenda 2030 recognises people, planet, prosperity, peace and partnership as five areas of particular importance for humanity and the planet (UNGA, 2015). A list of 17 goals, known popularly as the SDGs, was identified by experts from UN agencies, nations, civil society organisations, academia and other experts. A (non-binding) agreement was reached among world leaders to strive towards the achievement of the SDGs by 2030 (Figure 1.1). As a consequence, the SDGs are perhaps the latest and most significant concerted



Figure 1.1. The 17 UN Sustainable Development Goals. Source: UN (<https://www.un.org/sustainable-development/news/communications-material/>).

effort by all of the nations of the world to ensure a sustainable future for present and future generations.

Each of the 17 SDGs can be categorised under social, economic, environmental and governance pillars. For example, SDGs 1 to 6 belong to the social pillar, SDGs 7 to 12 fall under the economic pillar, and SDGs 13 to 15 constitute the environmental pillar. The governance pillar comprises SDGs 16 and 17. The goals falling under this last pillar recognise that peace, justice, strong institutions, means of implementation and partnerships between national, transnational and international organisations are required to accomplish the SDGs. A robust performance in the governance pillar is critical to achieving all the SDGs.

The SDGs represent an improvement on the Millennium Development Goals (MDGs), as the social and economic MDGs eclipsed those related to the environment. The SDGs build on the experience of the MDGs, recognising the need for a strongly interlinked and interconnected system that stresses how social and economic prosperity cannot be achieved by degrading the environment. This interconnectedness creates synergies and trade-offs among the goals; benefits that arise from the strong performance in one goal can enhance the accomplishment of other

SDGs. As a corollary, none of the SDGs can be singularly reached if the performance in other goals is weak. Such interlinkages draw attention to the need to maintain a balance between the goals to minimise any negative externalities of pursuing one goal at the expense of achieving another. None of the goals under any of the four pillars can be achieved in isolation. The Inter-agency and Expert Group (IAEG) on the SDGs (IAEG-SDG) has constructed a list of 169 targets to direct progress on each of the goals. The performance of these 169 targets can be tracked with 231 unique indicators that the IAEG-SDG has further classified into three tiers based on data availability (UNSD, 2021). Box 1.1 provides an overview of each tier classification. Existing research shows strong interconnections between many of these targets. For example, 19 of the targets have been linked with at least three unique SDGs (Le Blanc, 2015).

The SDGs also differ comprehensively from the previous version of development goals, the MDGs, in terms of scope, scale and structure. Although the primary aim of the MDGs was to ameliorate socioeconomic conditions in developing countries, the SDGs are applicable to all nations, regardless of their development status. The premise of the SDGs is

**Box 1.1. UN SDG tier classifications (as of December 2019)**

Tier I: The SDG indicator is conceptually clear, has an internationally established methodology and standards, and data are regularly produced by countries (for at least 50% of countries) in every region where the indicator is relevant.

Number of indicators in this tier: 115.

Tier II: The SDG indicator is conceptually clear, has an internationally established methodology and standards are available, but the data are not regularly produced by countries.

Number of indicators in this tier: 92.

Tier III: No internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested by the UN agency responsible for the specific indicator.

Number of indicators in this tier: 20.

Note: four indicators are classified in multiple tiers.

Source: UN Statistical Division (<https://unstats.un.org/sdgs/iaeg-sdgs/tier-classification/>); accessed 19 December 2019.



that no country in the world has yet achieved all the parameters of sustainable development; much remains to be done. Therefore, since 2015, developed nations such as Ireland are expected to achieve the SDGs alongside developing nations. The implementation of the SDGs is expected to be carried out at the national level following traditional public policy cycles of agenda-setting, formulation, implementation, monitoring and evaluations.

Although many of the areas covered under the SDGs fall into the space in which government policies have traditionally been successful, the nature and scope of the SDGs, along with their interconnectedness, make achieving the goals a complex task. In other words, the goals stand on an intricate architecture of interrelationships that is further complicated by the sheer number of targets and indicators. Many of the indicators have only recently been developed, and some indicators do not yet have a robust internationally recognised data collection methodology. Furthermore, data for some indicators are not collected regularly in all countries.

The IAEG on the SDGs has categorised SDG targets into three tiers, as shown in Box 1.1. As can be seen, almost half of the indicators fall into Tier II or Tier III, indicating either that transparent methodologies for data collection are lacking or that data are not produced regularly by most countries. Consequently, tracking SDG progress is a daunting task. To ease the challenge in implementing the SDGs, various “means of implementation” (Mols) targets were embedded in the SDG target list by the UN Open Working Group. As a result, each of the first 16 SDGs includes two- to four-letter designated Mol targets (e.g. 1a, 6b). Along with these goal-specific Mols, SDG 17, “Partnerships for the Goals”, is specifically concerned with how the SDGs will be achieved. In explaining SDG 17, the UN points out that:

A successful sustainable development agenda requires partnerships between governments, the private sector, and civil society. These inclusive partnerships built upon principles and values, a shared vision, and shared goals that place people and the planet at the centre, are needed at the global, regional, national, and local levels. (UN, undated)

In the above quote, the UN points out that implementation of the SDGs, although officially the responsibility of national governments, needs to be shared among all domains of society: the state, the market and civil society. In other words, a whole-of-society approach is required for SDG implementation. As indicated in targets 17.16 and 17.17 of SDG 17, a successful strategy to ensure the multi-domain participation necessary to achieve the sustainable development agenda requires effective public–private and civil society partnerships that can mobilise and share knowledge, expertise, technology and financial resources. In other words, partnerships are enablers of achieving the goals. Along with the critical role of partnerships, targets 17.18 and 17.19 of SDG 17 point toward the importance of data gathering, monitoring and accountability. These four targets of SDG 17 (Box 1.2) are central to the significance of the research conducted in this project.

The above discussion indicates that the setting up of appropriate governance and data monitoring systems are among the critical first steps towards SDG implementation. Throughout the SDG agenda there is an emphasis on multi-stakeholder partnerships (MSPs), with the targets and indicators of SDG 17 specifically focused on them. Different countries have adopted different ways of establishing effective partnerships (Galli *et al.*, 2018; Islam and Shamsuddoha 2018; Haywood *et al.*, 2019). However, it may be sufficient to adjust, rather than to overhaul, pre-existing governance systems to enable a more whole-of-society approach to the implementation of the SDGs.

As a signatory country of the UN 2030 Agenda, Ireland has made commitments (albeit non-binding) to achieve the SDGs. For Ireland, achieving the SDGs will require the continuous monitoring of the SDG indicators and the creation of effective methods to engage and promote partnerships between state and non-state actors. Owing to the interconnected and complex nature of the SDGs, groups of stakeholders will need to participate in collaborative work. For many of the goals and targets, non-state actors may have greater expertise and resources than government agencies. A whole-of-society approach is required for achieving targets that cannot be fulfilled by the government alone.

### Box 1.2. Goal 17 targets central to the research project

#### Multi-stakeholder partnerships

17.16 Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries

17.17 Encourage and promote effective public, public–private, and civil society partnerships, building on the experience and resourcing strategies of partnerships

#### Data, monitoring and accountability

17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts

17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries

Source: UN Statistical Division (<https://unstats.un.org/sdgs/iaeg-sdgs/tier-classification/>); accessed 22 September 2021.

Given this background, the primary motivation of this EPA-funded research project was to create metrics to monitor progress on the SDGs using country-specific data and to examine how a public governance approach can be created that will help Ireland achieve the SDGs, especially the environmental dimension of the SDGs. The reasons for concentrating on the environmental dimension of the SDGs are as follows:

- Despite being ranked 13th on the country performance index in the Sustainable Development Solutions Network (SDSN) Sustainable Development Report, Ireland's performance on the environmental pillar, as well as on partnerships for the goals, is considered poor (Sachs *et al.*, 2021).
- In particular, Ireland has been labelled red, meaning that major challenges remain, with respect to SDG 12, responsible consumption and production, and SDG 13, climate action (Sachs *et al.*, 2021).

## 1.2 The Project: Rationale, Objectives and Components

The overall aim of the project is to contribute to the evidence base for assessing how Ireland can deliver on the environmental SDGs. In doing so, the research examines the availability of environmental data for Ireland and the MSP approach required to achieve the SDGs. The project addresses concepts such as data gaps, environmental indices, policy gaps, governance and multi-stakeholder processes at the international and national levels, to inform the Irish policy context. Within this broad overarching aim, the project had more specific objectives, as follows:

1. to review international best practice on governance for the SDGs, in particular MSPs;
2. to synthesise environmental data on the official UN and EU SDG indicators and create a national environmental data map for Ireland, to identify

data availability, crucial data gaps and current monitoring challenges;

3. to construct a national environmental SDG index for the purpose of understanding current progress relative to peer nations and identifying priority areas for action;
4. to develop practical recommendations and guidelines for inclusive institutions and MSPs for environmental policy formulation and implementation at the national level;
5. to build capacity, knowledge and awareness among key policymakers and professional stakeholders regarding the emerging needs of SDG implementation, monitoring and reporting in Ireland.

To achieve these objectives, the research underpinning this report consists of four interrelated work packages (WPs), which act to guide the conduct of the research. They are as follows:

- **WP1: Literature Review and Identification of Data Gaps.** This WP provides a review of existing academic literature on MSPs for policy formulation and implementation. It also provides an initial review of data availability and gaps for environmentally related SDG indicators in Ireland.
- **WP2: SDG Indicators and Indices.** This WP involves collecting, synthesising and classifying data for environmental SDG indicators. In doing so, a review of existing methodologies for constructing international composite SDGs indices was conducted to inform the approach for Ireland. Ultimately, this WP led to the development of an Irish environmental SDG index.
- **WP3: Governance for the SDGs.** This WP analysed current national policy structures for

SDG stakeholder engagement, its evolution, and its success. In addition, interviews were undertaken with key stakeholders with experience in MSPs to identify current attitudes to SDG stakeholder engagement, to identify factors that contribute to successful/unsuccessful MSPs and to identify opportunities for the improvement of current structures.

- **WP4: Recommendations, Knowledge Gaps and Future Research Needs.** This WP provided a synthesis of the results emerging from WPs 1–3. In addition, the knowledge acquired in WPs 1–3 was translated into policy briefs with practical recommendations for inclusive institutions and multi-stakeholder processes that formulate and implement environmental policy. Furthermore, the WP provided guidance on the future development of an environmental SDG data monitoring framework.

Accordingly, the remainder of this report is structured into five chapters. Chapter 2 provides a literature and state-of-the-art review of MSPs and a state-of-the-art review in relation to environmental indices. Chapter 3 provides an outline of the methodologies adopted for (1) the development of an Irish Environmental SDG Index and (2) the assessment of MSP processes for understanding partnerships and SDGs in Ireland. Chapter 4 outlines the results generated from the Irish environmental index, placing Ireland's environmental SDG progress firmly within the context of its EU peers. Additionally, results are presented that outline the evolution of the Irish stakeholder consultation process, its success or otherwise, together with the results of MSP stakeholder interviews. Chapter 5 provides an overall discussion of the key findings emerging from the project while Chapter 6 outlines the project's conclusions and policy recommendations.

## 2 Literature Background: Indices and Multi-stakeholder Partnerships

This chapter provides a review of the current available academic research undertaken to understand the two core components of the project: the creation of an index to track the progress on SDGs in Ireland and the MSPs approach. Each is discussed in turn.

### 2.1 Environmental Indices

The standard approach to measuring development is to combine normalised indicators in different dimensions into a single composite index. Prominent examples of this approach include the Human Development Index, the Multi-dimensional Poverty Index and the SDSN SDG Index (Deaton, 2011; Alkire *et al.*, 2015; Sachs *et al.*, 2019). This aggregation requires a weighting of different dimensions that implicitly allows for trade-offs between these dimensions (Alkire *et al.*, 2015). Some indices, such as the Climate Change Performance Index, assign more weight to indicators deemed to be more important for the environment such as greenhouse gas emissions (Burck *et al.*, 2019). Similarly, Yale's Environmental Performance Index uses a hierarchical weighting system based on the variance of the data for specific indicators, the distribution of global disability-adjusted life-years (DALYs) lost due to particular issues and the authors' subjective opinions on the "relative gravity" of other indicators (Wendling *et al.*, 2018). However, the norm in the development of a composite index is to ascribe equal weight to each dimension and to then apply a linear aggregation function (OECD, 2016; Sachs *et al.*, 2019).

The closest example to a national SDG index that synthesises data related to the IAEG's global indicator framework is presented in the SDSN report *Achieving a Sustainable Urban America 2019* (Lynch *et al.*, 2019). It uses over 50 indicators to develop a US Cities SDG Index, which provides a snapshot of where over 100 American cities stand on overall SDG implementation and a framework for action that can be used by policymakers and stakeholders to address implementation challenges across US cities. The index is used to rank findings by goal, indicator and city,

from best to worst. The index presents regional snapshots and identifies emerging trends. Its methodology is based on the approach established by SDSN SDG index (Sachs *et al.*, 2017). Each indicator is equally weighted and normalised in accordance with the SDSN model. The upper limit is calculated by using the absolute quantitative thresholds outlined in the SDGs and targets, for example universal access to clean water, gender equality or halving the proportion of the population in poverty. If no such explicit SDG target exists, the upper bound is set to universal access or zero deprivation for the indicators that deal with issues such as public service coverage (preschool coverage), access to basic infrastructure (broadband access) and the "no-one-left-behind" concept of the SDGs (school poverty disparity). Otherwise, science-based targets, should they exist, are used as the upper bound. For example, a target value for CO<sub>2</sub> emissions per capita by 2050 that was outlined in a *Deep Decarbonization Pathways* report for the USA is used as an upper bound for one SDG 13 indicator in the US Cities Index (Lynch *et al.*, 2019). Should the upper bound of an indicator not be available through the three methods mentioned above, the average of the top five performers in the indicator is used. Lower bounds are based on either science-based thresholds or expert advice for the lowest acceptable or safe performance, where such data are available. However, for the majority of indicators this is not the case and the lower bounds are set as the bottom 2.5 percentile of the values obtained for that indicator (Lynch *et al.*, 2019).

Although the overall principles are the same, the foregoing methodology diverges slightly from the one adopted for the Irish Environmental SDG Index outlined in this report, in so far as the upper and lower bounds for an indicator in our index are set as the values achieved by the best and the worst performers, respectively, in the EU. This permits the determination of Ireland's performance relative to its EU peers. However, it does not explicitly calculate Ireland's progress towards achieving the SDG targets. The obvious disadvantage of this method is that, in

some cases, the best performer may not be on track to achieve a specific SDG target and, therefore, setting this as the upper bound may not demonstrate progress towards full SDG implementation.

Despite this potential disadvantage, the method of calculating Ireland's Environmental SDG Index outlined in this report has a number of benefits. First, it allows a determination of how close or far away Ireland is to what can be reasonably expected in an EU context from countries with similar economic (per capita), political and social resources. Decades of analysis of Yale's Environmental Performance Index have shown that a nation's environmental progress benefits from peer comparisons (Bell and Morse, 2018). In addition, there are only a few environmentally related indicators for which a specific UN target or an unsustainable threshold exist. Consequently, the score of the best performer is usually the only upper bound that can be used reliably. Indeed, a recent index developed at the national level for Italy uses a similar approach, in so far as each city is compared with the average performance, but not with a fixed sustainable/unsustainable level (Farnia *et al.*, 2019).

Once the upper and lower bounds have been determined, the US Cities Index approaches normalisation in a similar manner to the approach used in the Irish index. Using the arithmetic mean, each indicator is given a score from 0 (lower bound) to 100 (upper bound); in the case of the Irish index created in this project, the score is bound between 0 and 1. Goal scores were created by taking the arithmetic average of the normalised indicator scores. In the US Cities Index, the overall composite value was calculated by averaging the score for the 15 SDGs that were included in the study (Lynch *et al.*, 2019). In our case, the index has been developed using "environmentally related" indicators. Consequently, this research is less concerned with Ireland's performance in individual SDG goals; rather, it focuses on Ireland's progress in three classifications of environmentally related SDG indicators: outcome, Mols and linkage indicators.

Some indices, such as the SDSN SDG Index and the Climate Change Performance Index, use historical data trends to estimate a country's future performance in an indicator (Burck *et al.*, 2019; Sachs *et al.*, 2019). Regarding the SDSN SDG Index, to estimate the trends of a country's performance in an individual

indicator the linear annual growth rates needed to achieve the target by 2030 are calculated. These "optimum growth rates" are then compared with the average annual growth rate over the most recent period. SDSN then uses a four-arrow system to visualise this future trend calculation: a downward-pointing red arrow indicates a decreasing score; a horizontal orange arrow means that the score is stagnant or increasing at a rate below 50% of the growth rate needed to achieve the SDG by 2030; a yellow arrow increasing at a 45° angle means a country is showing moderate improvement on in the indicator (the score is increasing at 50% of the required growth rate); and, finally, a green arrow pointing straight up means that the score in the indicator is increasing at the rate required to achieve the target or has already exceeded the required threshold. The trend for the overall goal is then calculated as the arithmetic average of all trend indicators for that goal. In 2019, SDSN was able to calculate the trend indicators for a selected set of indicators using data from 2015 to 2018, allowing a determination of how a country's situation has changed since the adoption of the SDGs in 2015 (Sachs *et al.*, 2019). In theory, the same trends could be calculated for our index. Historical data are available for most of the indicators used in Ireland's Environmental SDG Index. This historical data could be used to determine how Ireland's performance in specific indicators, or in the environmental dimension as a whole, has changed over the years (if at all).

### 2.1.1 SDG interactions and weights

A key issue for environmental sustainability, and a long-standing debate in the environmental management literature, is the relationship between economic growth and environmental degradation. The environmental Kuznets curve (EKC) suggests that environmental degradation increases up to a point as economies grow but then decreases as income exceeds a threshold level. However, critics disagree about the possibility of economic growth as a solution to environmental degradation; not only are we in danger of exceeding planetary boundaries, but unrestrained growth is in fact the source of, rather than the solution to, environmental degradation and unsustainability (Conrad and Cassar, 2014). Put differently, this raises the question as to whether human capital is a substitute for or complement of

natural capital. This relationship has some serious implications for the selection of weights in a national environmental SDG index and thus the assessment of progress on the environmental SDGs (Herlitz and Horan, 2017). The relationship determines whether or not and what trade-offs can be made between the three pillars (Adams, 2006). A distinction has been made between strong and weak sustainability, which dictates whether such trade-offs are allowed or not. The index presented in the SDSN Sustainable Development Reports accommodates these perspectives by presenting both a composite SDG index for overall country rankings and a dashboard approach that uses a concept known as “limited substitutability”, in which overperforming in one target does not substitute for underperforming in another. With respect to the development of the SDSN dashboard, the normalised indicator values were first rescaled from 0 to 3, where 0 corresponds to the lower bound, 1 to the value of the threshold between red and orange (“red threshold”), 2 to the value of the threshold between yellow and green (“green threshold”) and 3 to the upper bound. For all indicators, the yellow/orange threshold was set halfway between the red and green thresholds (1.5). Each interval between 0 and 3 is continuous (Sachs *et al.*, 2019, 2021). The Irish Environmental SDG Index developed in this report uses a similar “traffic light” system.

The equal weighting of each indicator could potentially result in goals with a large number of indicators having a disproportionate influence on the overall composite value. This problem is particularly obvious in the case of some of the goals; for example, SDG 3 has 27 indicators whereas SDG 7 has only six. In this case, if each goal were to be weighted solely by the number of indicators present, SDG 3 would exert an influence on the overall composite index that would be over four times greater than that of SDG 7. A recent SDG index for Italian cities (Farnia *et al.*, 2019) overcame this problem by disproportionately weighting goals once the indicators had been aggregated so as to balance the goals’ influences on the final index. The index developed in this report for Ireland is not concerned with such issues given that the index is developed in a manner that is indicator driven rather than goal driven. Nevertheless, in theory, the Environmental SDG Index developed in this report could be criticised for focusing too narrowly on the environment and not recognising the importance

of other factors, such as the economy or society (Kwatra *et al.*, 2020). However, it is safe to say that such criticism can be avoided since each of the pillars of sustainable development contributes approximately the same number of indicators to the composite index. Since each indicator is equally weighted, each pillar has roughly the same influence on the composite value.

The relationships between targets and goals are likely to be complex and non-marginal. To help map more nuanced interactions between SDGs, Nilsson *et al.* (2016) developed a method of rating relationships between targets that goes beyond simple trade-off or synergy characteristics to help highlight priorities for integrated policy development. The highlighting of such interlinkages between the SDGs allows siloed thinking to be reduced, which is pivotal to SDG achievement (UNGA, 2015). According to Nilsson’s framework, relationships between targets or goals can be positive or negative and can be scored on a 7-point scale ranging from –3 (the target makes it impossible to achieve another target) to +3 (the target is inextricably linked to the achievement of another target). This system allows policymakers to easily identify co-benefits while also identifying areas/departments that they will need to cooperate with (Nilsson *et al.*, 2016). Building on this framework, Nilsson *et al.* (2018) developed a cross-impact matrix of 34 × 34 SDG target interactions using the 7-point scale while looking specifically at Sweden. Network theories and systems analysis were used on the matrix to identify the most influential/interlinked targets while algorithms were also used to determine clusters of such highly interacting targets across the SDGs. Furthermore, the UN has recently published an interactive repository of SDG interactions, which details the proportion of a target or goal for which co-benefits exist and the proportion that are trade-offs. The repository also details the overall strength of a goal or a target’s interactions (Pham-Truffert *et al.*, 2019). This approach enables decision-making that more appropriately accounts for how targets may influence each other as part of an overall system, pointing to where policy intervention would be the most strategic to generate overall progress. In theory, this permits more robust and efficient priority-setting, especially for countries with limited resources. However, it is imperative that policymakers do not take this as evidence that certain indicators are more important than others and adhere

to the principle of universality of SDG implementation. Nonetheless, interlinkages are interesting components of the SDGs and have yet to be taken into account in the development of an SDG index.

## 2.2 Multi-stakeholder Partnerships

### 2.2.1 Academic literature background

Present-day governing styles no longer reflect traditional, hierarchical, rule-based systems where the state assumes total responsibility for society. Contemporary systems are based on the interdependencies between state, market and civil society. These interdependencies are particularly pertinent for sustainability and environmental issues where non-state actors have the capacity and responsibility to act (Glasbergen, 2010; Bierman *et al.*, 2012; Hajer *et al.*, 2015). In such systems, the government tends to collaborate with relevant non-state actors. Therefore, it is unsurprising that the concept of partnerships has received much attention as a means for implementing the SDGs.

Partnerships typically refer to any collaborative relationship between state and non-state actors. The existence of multiple definitions of partnerships has led to the critique of its relevance as a concept, with Brinkerhoff and Brinkerhoff (2011) asserting that the term is “conceptually empty”. By assessing definitions of MSPs in the academic literature, some common terms repeatedly emerge that help inform an understanding of MSPs. For example, partnerships should include multiple stakeholders from multiple sectors and a non-hierarchical or horizontal relationship forming a polycentric governance approach that works on a collaborative basis. Partnerships should address public policy problems, achieve public good, or mitigate environmental challenges that are often too large for any one societal domain to solve. The UN (Resolution A/58/227) defines partnerships as:

voluntary and collaborative relationships between various parties, both state and non-state, in which all participants agree to work together to achieve a common purpose or undertake a specific task and to share risks and responsibilities, resources and benefits. (UNGA, 2004, p. 4)

Similarly, in public policy literature, scholars define partnerships as:

a voluntary cooperative arrangement between organisations from the public, private and/ or civil society sectors that have common, non-hierarchical decision-making procedures, share risks and responsibilities, and whose purpose is to address a public policy issue. (Steets, 2010, pp. 6–7)

Common to the UN’s and the public policy literature’s definitions of MSPs is the need for collaborative relationships between different sectors in society that want to address a public policy or public good-related issue of mutual interest. This concept shaped the current research team’s understanding of MSPs. Figure 2.1 provides a visual representation of how MSPs are conceived for the current project. Indeed, it shows what could be considered a common understanding of MSPs involving each of the three key domains of society: the state, the market and civil society. When the relationship includes only two sectors, such as the state and civil society or the state and the market, these relationships are known as dyads. Common dyads are public–private partnerships, where the supply of public goods and services is contracted out to the private sector (Reeves, 2013). Dyads can also exist between civil society and the private sector, especially those dyads associated with corporate social responsibility. Additionally, dyads between the government and civil society are evident. A notable example of such an arrangement is when governments allocate funds to

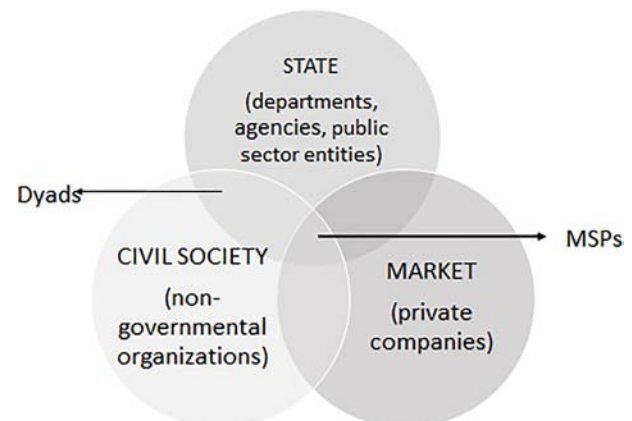


Figure 2.1. MSPs representing the key domains of society.

non-governmental organisations and civil society for public policy-related activities. However, trisectoral partnerships, as opposed to dyads, are crucial for addressing issues concerning environmental degradation, health care and, especially, areas covered by the SDGs.

After reviewing the academic literature, multiple benefits of MSPs were noted under three headings. Table 2.1 provides a review summary on how scholars studying partnerships have identified the different levels of benefits of MSPs. Although the list is extensive, it should not be considered as exhaustive. Benefits can be experienced at a partner level, in other words individual stakeholders derive benefits from being part of an MSP, but also at the partnership level, with the partnership as a whole benefiting from collaborative learning and the mutual sharing of expertise. Furthermore, the benefits from an MSP can be felt at the societal level.

MSPs often differ from each other based on the specificity of the task that they are created to handle. Partnerships with high task specificity have very well-defined tasks, and resources and responsibilities are allocated accordingly (Waddell and Brown, 1997). In the case of other MSPs, task specificity can be low, for example when stakeholders coordinate loosely to bring about a social change (Waddell and Brown, 1997). Examining MSPs with high task specificity is particularly useful for understanding how MSPs

have evolved, how they operate, how resources and responsibilities are shared, how trust is maintained and how review and follow-up processes are undertaken.

### 2.2.2 The SDG context

The UN has consistently championed the benefits of partnerships. In the past, the UN has participated in various partnerships with country-level non-state actors to address a range of global challenges. UN agencies have traditionally worked with civil society organisations in developing countries to implement country- and region-specific projects that were beyond the reach of the UN in isolation. In 1992, the United Nations Conference on Environment and Development (UNCED) made the first call for active engagement of social groups to develop and implement policies for Agenda 21 (UN, 1992). In subsequent global conferences, the MSP approach gained further traction through its being championed by the UN. However, the Rio+20 United Nations Conference on Sustainable Development in 2012 was the most significant event; all stakeholders, including government, civil society and the private sector were invited to perform critical roles in achieving development that is socially, economically and environmentally sustainable (Dodds, 2015). Based on these past experiences, the concept of partnerships has become an important tool for SDG implementation, with SDG 17 being almost exclusively dedicated to the concept of partnerships.

**Table 2.1. Benefits of MSPs**

Partner benefits	Partnership benefits	Societal benefits
Resource-pooling (Crane and Seitanidi, 2013)	Improved efficiency, cost reduction and innovation (Provan and Kenis, 2008; Steijn <i>et al.</i> , 2011; Huxham and Vangen, 2013)	Hyper-collective actions (Severino and Ray, 2010)
Co-learning/joint learning is possible (Muñoz-Erickson <i>et al.</i> , 2010; Selsky and Parker 2010; Austin and Seitanidi, 2012)	Relationships of trust, reputation and legitimacy can be built (Muñoz-Erickson <i>et al.</i> , 2010; Austin and Seitanidi, 2012), while diversity and inclusivity can be enhanced (Bäckstrand and Kylsäter, 2014)	Help in tackling and solving complex social problems (Biermann <i>et al.</i> , 2012; Kolk, 2013; Kuenkel and Aitken, 2015)
The accessing of knowledge, networks, resources and opportunities becomes easier (Echebarria <i>et al.</i> , 2004; Austin and Seitanidi, 2012; Pattberg and Widerberg, 2015)	Conflicts between partners can be reduced due to the shared benefits of achieving the collective goals (Schruijer, 1999; Austin, 2000; Van der Molen and Stel, 2010; Huxham and Vangen, 2013)	Fill the void of government inaction (Kolk <i>et al.</i> , 2008)
Co-sharing benefits and risks (Gray and Stites, 2013) and building relationships of trust (Selsky and Parker, 2005)	Inclusive and bottom-up (Chan and Pauw, 2014; Pattberg and Widerberg, 2015)	Collective responsibility for sustainable development (Ruggie, 2004; Biermann and Pattberg, 2008; Khagram and Ali, 2008; Andonova, 2010)



To ensure that all stakeholders are considered, and to “leave no one behind”, the MSPs for the SDGs must be as inclusive as possible. Therefore, in our project, an MSP for the SDGs should ideally be a voluntary, collaborative, non-hierarchical, multi-organisational and cross-sectoral relationship between the state (local, regional and national) and non-state actors, including all the UN-defined “Major Groups” of stakeholders: business and industry, children and youth, farmers, indigenous peoples, non-governmental organisations, scientific and technological community, women, and workers and trade unions.

### ***2.2.3 The national policy context***

Although there are multiple benefits associated with MSPs, especially in implementing, following up and reviewing SDG-related projects and policies, there are few MSPs that have multisectoral representation and are working specifically in the environmental sector in Ireland. However, it is critical to understand the backdrop for MSPs in Ireland within the context of the SDGs. Achieving the SDGs in Ireland is a work in progress, and this study captured the initial emergence of the partnership process in the Irish case.

Ireland officially adopted the UN SDGs in January 2016. In July 2018, Ireland presented its

first Voluntary National Review (VNR) of progress implementing the SDGs at the UN High-level Political Forum (HLPF) in New York. The Department of Communications, Climate Action and the Environment (DCCA) led the Irish VNR following procedures outlined by the UN. In an attempt to achieve the SDGs, the Government of Ireland has put in place a process that enables stakeholder engagement from the outset. The government led several quarterly National Stakeholder Forums to discuss SDG progress in Ireland between June 2018 and December 2019. However, there is little clear evidence that the National Stakeholder Forum is truly influencing policy formation around SDG implementation or that MSPs are being fully utilised to implement the SDGs. Moreover, since December 2019, no further Forums have been organised by the relevant government department, which indicates a distinct change in focus in relation to SDG engagement and implementation at government level. Within this context, this study conducted content analysis of the Irish Sustainable Development Goals National Implementation Plan 2018–2020 (henceforth SDG NIP 2018–2020) and the Irish VNR 2018 to analyse the extent to which MSPs have been promoted or encouraged as part of SDG 17 (Government of Ireland, 2018a,b). The results of this research are presented in Chapter 3.

# 3 Methodology

## 3.1 Developing an Environmental SDG Index for Ireland

### 3.1.1 Background and methodological approach

As described in section 2.1, the standard approach to measuring development is to combine normalised indicators from different dimensions into a single composite index. Our index follows the standard method used by the SDSN for their Sustainable Development Reports (Sachs *et al.*, 2019). This approach of equal weighting aligns with the UN's vision of sustainable development; the 2030 Agenda is considered to be "indivisible" and should be implemented as a whole (UNGA, 2015). In contrast, the unequal weighting of indicators would bestow more importance on certain SDGs than on others. A composite index is ideal when dealing with a complicated issue such as the SDGs. Similar to the calculation of gross domestic product (GDP), a composite index allows the aggregation of many complex targets into a single value. This value can then be used as a comparator between different countries, as a benchmark on which future progress can be measured, or as a value for optimisation by policymakers. Similarly, a composite index allows policymakers and the general public to easily understand a country's performance on a complex issue (Kararach *et al.*, 2017). This is particularly relevant to the SDGs given that awareness-raising among the wider public is crucial for implementation (Carteron *et al.*, 2019).

The process of assigning equal weight to each variable in a composite index smooths out areas of poor performance in final rankings. In this sense, there is significant difficulty with ranking countries in a composite manner, not least because it implies that nations ranked highly are generally succeeding in their pursuit of sustainable development when, in fact, they may have several areas of poor performance. Indeed, the SDSN Index and Dashboard demonstrates this;

it notes that no nation is on track to achieve the SDGs by 2030. Indeed, even the nation ranked number 1 (Denmark) has significant shortcomings in its pursuit of some elements of the SDG agenda, and this is highlighted in the next section.

Given this context, the approach taken in developing Ireland's index is to set criteria that must be met for data to be utilised for the construction of an environmental SDG index. Those criteria are as follows:

1. The data utilised must be available for a wide range of other global nations to enable a benchmarking of Ireland's performance against other nations.
2. Any identified data must be in precise alignment with the SDG data indicator or must be an adequate proxy (this is discussed later in the section).

In relation to the criteria above, while the UN allows nations to derive locally based indicators, such indicators often provide very limited information about a country's performance relative to that of its peers in an international context. In Ireland, such local-level indicators have been heavily utilised (see GeoHive, Ireland's SDG data hub, <https://irelandsgd.geohive.ie/>) and provide useful context and stories about Ireland's interactions with the SDGs at the national, regional and local levels. However, only data that are internationally comparable will provide the information needed to accurately assess Ireland's progress and performance in relation to SDG implementation among peer nations. To that end, and using the criteria outlined previously, the current research produces Ireland's first environmental SDG index, which assesses Ireland's progress on the environmental SDGs relative to peers in the 27 Member States of the EU (EU-27).<sup>1</sup> The production of a composite index is ambitious in that it compares Ireland's overall performance with the best and worst performers on each individual SDG indicator constituting the

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<sup>1</sup> The index constructed for Ireland was made pre-Brexit and includes the UK but does not include Romania in the analysis, as Romania is an extreme outlier for the majority of indicators.

overall index and thereby maximises the possibility of achieving the SDGs if performance targets are set on individual indicators. As well as producing a composite environmental SDG index for Ireland, the current research also produces separate environmental SDG indices broken down by outcome-based indicators, MoI indicators and linkage-based indicators. This is a significant innovation on existing SDG indices including the SDSN SDG Index and Dashboard.

A further key innovation of the current work is that separate indices are produced for each SDG indicator for which data are available. In practical terms, this means it is possible to assess performance/progress in relation to each indicator individually and at a disaggregated level as opposed to assessing performance over a wide range of indicators. The latter approach smooths out extreme cases of performance/progress variability across indicators. The current index avoids this problem and by doing so has the potential to target indicators with tailored and bespoke policies that could improve performance more efficiently.

The SDGs have 17 goals, 169 targets and 231 indicators. The 169 targets are, by design of the UN Open Working Group, a mixture of outcomes, linkages and MoIs. Not all of the indicators are related to the environment, and many span the economic, social and governance pillars of the SDGs. The current project is focused solely on the environmental SDGs and, therefore, it was necessary to identify SDG indicators that were either directly or indirectly related to the environment. This is discussed in the following section.

### 3.1.2 “Environmental” SDG indicators and data

The UN IAEG on SDG Indicators (IAEG-SDGs) has devised a tier classification system for SDG indicators that categorises the conceptual and methodological basis along with the data availability of individual SDG indicators (see Box 1.1). The classification of SDGs within specific tiers is dynamic and changes as methodologies are devised for the collection of data for SDG indicators. As of December 2019, the updated tier classification contains 115 Tier I indicators (50.5%), 92 Tier II indicators (40.5%) and 20 Tier III indicators (9%). Additionally, there are four indicators

that have multiple tiers (different components of the indicator are classified into different tiers). The task of identifying SDG indicators that are either directly or indirectly related to the environment has been assisted greatly by recent work of the United Nations Environment Programme (UNEP). In the UNEP (2019) document entitled *Measuring Progress towards Achieving the Environmental Dimension of the SDGs*, 93 (83 unique)<sup>2</sup> “environmentally related” indicators are used to measure current progress on the environment. The document *Measuring Progress* is a derivative of the UN’s sixth Global Environment Outlook. The use of these indicators in measuring progress is justified by the presentation of a list of these 93 environmentally related indicators by the UN Environment Secretariat to a subcommittee of the UN Environment Assembly Committee of Permanent Representatives in September 2018. The Committee of Permanent Representatives is a subsidiary intersessional body of the United Nations Environment Assembly, composed of accredited Permanent Representatives to UNEP. The United Nations Environment Assembly sets the global environmental agenda and is mandated to take strategic decisions on environmental sustainability issues, particularly in terms of addressing emerging environmental challenges, to provide political guidance in the work of UN Environment and to promote a strong science-policy interface.

According to the UNEP (2019) report, *Measuring Progress towards Achieving the Environmental Dimension of the SDGs*, the “environmental dimension” of the SDGs refers to over half of the 169 targets that directly or indirectly seek to reduce environmental damage or that emphasise the critical role of natural resources and ecosystem services in ensuring human well-being and prosperity. According to the UNEP (2019) report, if an SDG indicator informs us on the current state of the environment (e.g. extent of habitat destruction, levels of pollution, number of invasive species) or details some factor that has a direct effect on the environment or the services that it provides (e.g. sustainable agriculture, key biodiversity sites in protected areas), then this indicator can be considered as environmentally related. In *Measuring Progress* ecosystems services include the production

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2 A number of indicators occur several times throughout the IAEG-SDG list of indicators. “Unique” means that a repeated indicator is classified as a single indicator in our list of 83 environmental indicators.

of food and clean water, disease management, climate regulation and protection against natural disasters. Importantly, the document also states that factors to increase environmental sustainability are effective only if they are backed by law and policy (UNEP, 2019). As a result, indicators that relate to policy coherence and the signing of relevant treaties are considered to be environmentally related. In addition to *Measuring Progress*, the Environment Statistics Section of the UN Statistics Division produced a report detailing the relationship between the environmentally related indicators and the Basic Set of Environment Statistics contained in the UN's Framework for the Development of Environment Statistics, which was helpful in our delineation of environmentally related SDG indicators (UNSD, 2019).

Among the 231 SDG indicators, our analysis identified 83 unique indicators that are specific to the environment based on the document *Measuring Progress towards Achieving the Environmental Dimension of the SDGs* (UNEP, 2019). These data, including the format, spatial scale, source, latest year of availability and UN tier classification, are outlined in Appendix 1. In addition, a colour-coded system to describe the quality and the availability of the data relating to each indicator for Ireland was devised (see Appendix 1). Indicators in green are indicators for which the data correspond directly with the SDG indicator in question and are currently used for reporting. Indicators in blue are indicators for which "adequate" proxy data are available, i.e. data that do not relate precisely to the SDG indicator in question but are nevertheless adequate for reporting. To determine if proxy data could be defined as "adequate", several factors were taken into consideration, such as:

- data availability;
- correlation between the data and the official SDG indicator;
- reliability of the data source;
- comparability of the data across nations;
- whether or not a time series was available for the data;
- data accessibility;
- data format.

Indicators in orange are those for which poor proxy data are available. These data do not

directly correspond to the SDG indicator but can, nevertheless, be useful in the absence of more robust data. Data categorised as "orange" are not widely accessible or comparable across nations. Indicators that are not highlighted are those that currently do not have potential proxy data. These are usually Tier III indicators that do not yet have a Tier III work plan under the UN system.

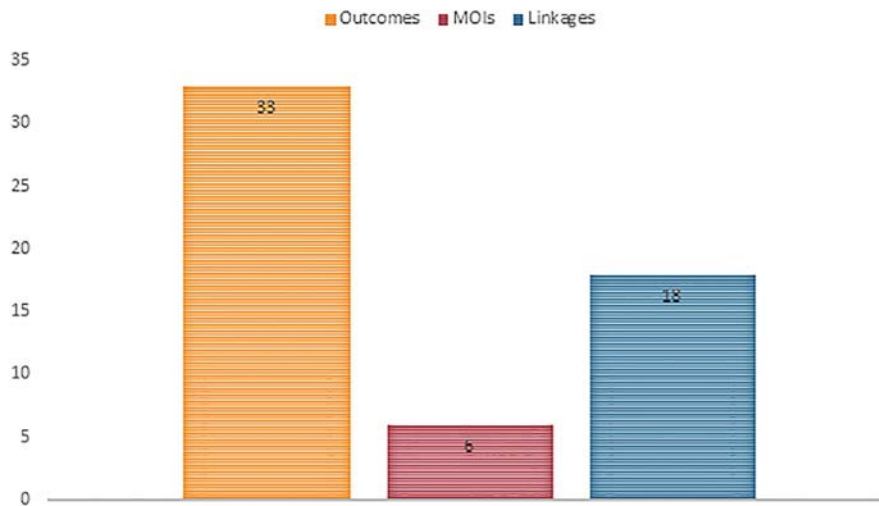
The identification of 83 unique environmental indicators consisted of 102 data points in total for our index because a number of SDG indicators have sub-indicators or are repeated several times in the indicator list, which we have included as separate observations. The breakdown of the 102 data points is as follows: 55 outcomes-based indicators (53.9%), 21 Mol indicators (20.6%) and 26 linkage-based indicators (25.5%). Mols are defined by the UN Working Group as an interdependent mix of indicators that deal with:

financial resources, technology development and transfer, capacity-building, inclusive and equitable globalisation and trade, regional integration, as well as the creation of a national enabling environment required to implement the new sustainable development agenda. (UN, 2014, p.1)

Targets of SDGs 1–16 denoted by a letter and the entirety of SDG 17 are considered Mols (UNESCAP, 2019). This research project defines linkage indicators as non-Mol indicators that either are repeated throughout the index or correspond to targets that in their text explicitly reference more than one SDG pillar (social, economic, environmental). Finally, outcome indicators can be thought of as "circumstances to be attained" (Bartram *et al.*, 2018). For example, target 2 of SDG 15 can be considered an outcome indicator since it aims to:

[By 2020], promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and substantially increase afforestation and reforestation globally. (UN, 2015)

The outcome cohort represents all indicators that are not denoted by a number and are not considered a linkage indicator.



**Figure 3.1. Breakdown of the 57 available data points by outcome, MOIs and linkages.**

This analysis disaggregates SDG data on this basis because different categorisations indicate the nature of a country’s SDG performance in different areas. For example, the environmental MOI index highlights performance on capacity-building for the environmental dimension of the SDGs, linkage indicators outline how well a nation is performing on SDG targets that link multiple goals, while the outcome indicator’s index highlights progress, or the lack thereof, towards desirable, or away from undesirable, environmental outcomes.

Data were available for 42 of the 83 unique environmental indicators for Ireland, which equated to 57 observations since any repeats of indicators or sub-indicators were treated as an individual data point. A breakdown of these observations by outcomes, MOIs and linkages by year of data is given in Figure 3.1. It can be seen that 57.8%, 10.6% and 31.6% of the data points correspond to outcomes, MOIs and linkages, respectively. It is notable that the availability of MOI data for Ireland is particularly weak, indicating a difficulty in appropriately assessing Ireland’s capacity-building progress in relation to the SDGs.

The 57 data points acquired and utilised for the composition of the current indices relate to the latest available year for each indicator data point, which ranges from 2010 to 2019 depending on the indicator (see Table 3.1). Although this is a significant range, it is important to note that 94.7% of the data utilised are from the 2015–2019 time period. However, the overall analysis highlights the need to strengthen Ireland’s data collection in a targeted manner for

SDG environmental indicators given that there are 31 indicators for which we have no internationally comparable data and 5.3% of the data points that are available correspond only to the pre-2015 period.

Once the data observations had been identified, the next step in the analysis was to standardise the data into an index number, that is a score between 0 and 1. The data needed to reflect whether the indicator related to a good (desirable) or bad (undesirable) outcome. For example, indicator 2.5.2 measures the proportion of local breeds classified as being at risk, which is considered an undesirable outcome. In contrast, indicator 15.2.1 measures the progress towards sustainable forest management, which is a desirable outcome. In addition, the very high degree of variability in the measurement values associated with individual data points required that the data be normalised. For example, some data points are measured per capita while others relate to the percentage of a population or an area; some data

**Table 3.1. Breakdown of 57 data points by year, frequency and per cent for the Composite Environmental Index**

Year	Number of indicators (%)
2010	3 (5.3)
2015	7 (12.3)
2016	8 (14.0)
2017	22 (38.6)
2018	9 (15.8)
2019	8 (14.0)

points are measured in bounded outcomes and others are unbounded.

Accordingly, data points were standardised so that they were comparable on a single relative scale. Simultaneously, the current index was devised in such a way that, for each indicator, Ireland was placed on a scale where the upper value data point in the range was associated with the strongest performer in the EU, while the lower value in the range was associated with the weakest performer. Where Ireland sits in this range is interesting because it reveals how close Ireland is to being the best performer: it provides a gauge of relative performance.

To standardise the data and place Ireland on a relative range, we used the formula in equation 3.1:

$$I_i = \frac{(IRL_i - Min_i)}{(Max_i - Min_i)} \quad (3.1)$$

where  $IRL_i$  = Ireland's value for a given indicator,  $Min_i$  = the value of the worst performing country for a given indicator and  $Max_i$  = the value of the best performing country for a given indicator.

The formula corresponds to a ratio of how far Ireland is to the worst EU performer as a percentage of the difference between the best and worst EU performers on each indicator. The formula provides a resultant value for each indicator between 0 and 1, where 1 is the best in class and 0 is the worst in class. It is possible to impose various types of functional forms on the indexation of each indicator. For example, it is possible to square the numerator, the value distance from the Irish data to the lowest (minimum) EU performance. This formulation would enable the numerator, and hence the index score, to rise at an increasing rate as performance improves beyond the lowest (minimum) EU performer. However, the preference for this study is to not impose any behavioural assertions on the data that might not be justified by science, economic cost or political constraints. Accordingly, the current study measures distance from these minimum and maximum frontiers in a linear manner between 0 and 1 across all indicators.

From equation 3.1 an index number was generated for each environmental indicator from the data sourced for all EU countries. Table 3.2 reports the percentage of indicators that measure good outcomes. Overall, 65% of our indicators are constructed from data that

**Table 3.2. Relationship between environmental indicators and positively stated targets**

Environmental indicators	Percentage of positively stated targets	
	Mean	SD
Overall	0.65	0.48
Outcomes	0.72	0.45
Mols	0.83	0.41
Linkages	0.44	0.51

**SD, standard deviation.**

measure desirable outcomes. The modalities vary in this respect. Most Mols (83%) relate to positive outcomes. However, 56% of linkages indicators correspond to negative outcomes.

The index number for each indicator that tracks a bad outcome is subtracted from 1, as follows:

$$I_i = 1 - \frac{(IRL_i - Min_i)}{(Max_i - Min_i)} \quad (3.2)$$

A composite SDG Environmental Index can be constructed using either an arithmetic, geometric or harmonic mean. The arithmetic mean is the most commonly used and easily understood measure of central tendency in a data set. As shown in equation 3.3, the arithmetic mean of our set of environmental indicators is defined as the sum of the values of each observation divided by the total number of observations. Through this method, high scores in certain indicators can compensate for low scores in other indicators.

$$A = \frac{1}{n} \sum_{i=1}^n I_i = \frac{I_1 + I_2 + \dots + I_n}{n} \quad (3.3)$$

where  $A$  = arithmetic mean score,  $I_i$  = the value of a given observation and  $n$  = the number of total observations.

The geometric mean indicates the central tendency of a set of indicators by using the product of their values (as opposed to the arithmetic mean, which uses their sum). The geometric mean is defined as the  $n$ th root of the product of  $n$  numbers as follows:

$$G = (\prod_{i=1}^n I_i)^{\frac{1}{n}} = \sqrt[n]{I_1 I_2 \dots I_n} \quad (3.4)$$

The geometric mean is always less than the arithmetic mean. If one indicator is close to zero, the product

of all indicators will be reduced. A strict process of averaging would give the indicator close to zero an equal weight, which could then be compensated for by high scores in other indicators. A high geometric mean would demonstrate a good performance in all indicators with little variance.

The harmonic mean, sometimes called the subcontrary mean, is calculated by dividing the number of values in the data series by the sum of reciprocals of each value in the data series, as shown in equation 3.5. This mean, by design, gives more weighting to the indicators with lower index scores. Variance would be “punished” by giving low scores a greater influence on the final figure:

$$H = \left( \frac{\sum_{i=1}^n I_i^{-1}}{n} \right)^{-1} = \frac{n}{\frac{1}{I_1} + \frac{1}{I_2} + \dots + \frac{1}{I_n}} \quad (3.5)$$

### 3.2 Understanding Multi-stakeholder Partnerships in Ireland

For this part of the project, data were primarily collected through qualitative research methods such as participant observations, document research and interviews with key stakeholders. This section describes in detail the method used to gather the data presented. The use of qualitative research methods was justified for this part of the research project for several reasons. Given that no other work on Irish MSPs in the context of the SDGs exists, this is an exploratory research project. Consequently, it was imperative to gather as much knowledge from the points of view of the different actors engaged in the SDGs in Ireland. Similarly, there was a risk of losing crucial information by quantifying textual data or surveys based on our current understanding of MSPs for the SDGs.

Since the formation of the SDGs, one of the principal investigators (PIs) of this project, Professor Patrick Paul Walsh, as a member of the UN’s Scientific and Technology Working Group (STWG), has been involved in meetings and workshops on how to best develop the SDGs. The STWG represents one of the major stakeholder groups of the SDGs, whose main aim is to integrate science into the implementation of the SDGs. The PI’s experience of observing

the evolution of the SDGs has provided the other researchers engaged in this project with a deep understanding of the SDGs. The research themes, questions, approach and selection of interviewees were informed by this experience. As a participant in the negotiations, the PI was participating in the situation and also recording the ongoing process. Engaging in participant observations over a prolonged period of time is useful for developing an in-depth and holistic understanding that may not be possible without being part of the process (Jorgensen, 2015; Shah, 2017). However, one risk associated with being a “deep insider” (Brannick and Coghlan, 2007) is that the objectivity of the data might be obscured. To combat this risk, and to thus ensure authenticity, the data were cross-checked multiple times (Lincoln and Guba, 1986).

The participant observation method was also used when the researchers of this project attended the quarterly National Stakeholder Forums organised by the Government of Ireland’s DCCA. These Forums provided fruitful opportunities to investigate the ways in which government representatives engaged with various stakeholders, as well as the government’s plans for achieving the SDGs. By design, the Forums are platforms for stakeholders to express ideas and concerns. Through their being part of different focus groups, the researchers were able to gather critical data regarding the relevant SDG stakeholders, their perspectives and those stakeholders who seem to be excluded from the process. These Forums were also helpful in identifying interviewees for further in-depth discussions on questions and issues identified by the researchers of this project.

In addition, the researchers attended the UN HLPF in 2018 and 2019 at UN Headquarters in New York, USA. At the HLPF, members of the various UN Major Groups around the world meet for 10 days to discuss the progress on SDGs and to identify best practices and critical challenges for further progress. The HLPFs, therefore, represent valuable learning grounds for experts in the field of SDGs. Each day at the HLPF, various interest groups organise side-events where case studies are presented and attendees deliberate on the SDGs. A large number of reports are provided by different think tanks, government agencies, UN agencies and international organisations

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3 Now the Department of Environment, Climate and Communications (DECC).

that are part of the UN Major Groups. These engagements permit the revisiting and revising of the researchers' ideas and questions. In other words, such participant observations aid the understanding of the SDG implementation processes and challenges internationally. These ideas were explored in the Irish case using semi-structured interviews with relevant stakeholders. Therefore, as SDGs are relatively new and scholarly literature on the SDGs is at a nascent stage, participant observation allowed the researchers to understand challenges of stakeholders from their perspectives and experiences.

Document analysis was another qualitative research method used in this study. The research team examined Ireland's VNR documents (Government of Ireland, 2018b), which were presented at the UN HLPF in 2019, to understand how the use of MSPs for SDG implementation has evolved in different countries. NVivo software was used to code and analyse the VNRs to identify key trends emerging in stakeholder engagement and MSP status in different countries. The established qualitative research methods of semi-structured interviews and transcript-mediated theme generation were used for the data collection of this part of the project. The questions posed by researchers required in-depth and nuanced responses and, as a result, these data were most effectively collected via qualitative, rather than quantitative, approaches. Interviews were carried out with 14 members of relevant stakeholders' groups in representative sectors in Ireland to obtain rich and detailed insights about the nature of stakeholder interactions with the SDGs. To enable an appropriate scope of experiences, interviewees were drawn from a wide range of sector representations including civil society organisations, environmental groups, trade unions and the business sector. Table 3.3 gives a breakdown of the sectoral representation of the interviewees. Interviewees were chosen based on their having participated in SDG-related forums in the past or their being identified as a sustainability expert in their organisation.

Non-probability purposive "snowball" sampling methods were adopted to generate respondents from each of the sectors outlined above. One risk that presented with the generation of the sample is that respondents might suggest other potential interviewees who share similar characteristics and/or outlooks. Given the intersectoral nature of this research, this confirmation bias particularly needed to be avoided. To reduce the probability of such biased development in the sample, respondents had to meet established screening criteria (Bryman, 2004). This was particularly important when respondents suggested other people "who might be worth talking to" (Fox-Rogers and Murphy, 2014). As a result, a core qualifying criterion was established: irrespective of referrals provided from interviewees, to enter our sample, respondents had to be senior members of an organisation and currently be in a leadership role, especially in the area of sustainability. Given that the research was explicitly focused on MSP formation in the environmental area, the selection of sectoral organisations was restricted to those focused on the environment. A quota of four respondents was sought from each sector, equating to 20 respondents in total. However, although 20 interviewees were targeted, we were able to obtain only 14 interviews for the study. Mason's (2010) survey of 2533 studies that employed qualitative methods found that small sample sizes are common in studies using qualitative techniques. Therefore, we consider the current sample adequate for meeting the study objectives.

Undertaking qualitative interviews can present methodological limitations. In this regard, we were cognisant of the gaps between what is said in the interview setting and what occurs in reality (Fox-Rogers and Murphy, 2014). Dunn (2007) warns of dangers of the "pufferfish" phenomenon, where respondents (particularly those in positions of authority) attempt to portray themselves or others in a particular light, and this was regarded as a potential issue for our research. To mitigate this risk, several

**Table 3.3. Sectoral breakdown of interviewees participating in the qualitative study**

Environmental organisations	Civil society	Trade unions	Business sector	Youth
Water ( <i>n</i> =1)	Poverty, inequality, social justice ( <i>n</i> =2)	National-level officers engaged with SDG ( <i>n</i> =3)	Senior members of chambers and similar organisations engaged with SDGS ( <i>n</i> =2)	Senior official engaged in SDGs ( <i>n</i> =1)
Forestry ( <i>n</i> =1)				
Sustainable communities ( <i>n</i> =2)				
Biodiversity ( <i>n</i> =1)				
Environment ( <i>n</i> =1)				



steps were taken to ensure that transparent and frank accounts were offered by the respondents. First, the interviews were anonymous to encourage the respondents to be as open and transparent about their experiences as possible. Second, considerable attention was taken to ensure that the respondents felt comfortable with the interviewer. Professionally formulated emails were issued to prospective respondents, which detailed how the interview information would be gathered and used. Respondents were informed that interviews would be recorded digitally, transcribed and that their organisation's anonymity would be protected. They were also assured that the data generated would be used solely for the purposes of independent academic research. The generalisability of the study presents an additional limitation. However, triangulation methods were used to minimise these concerns. Consequently, the

in-depth understanding gained through this research took precedence over generalisability (Maxwell, 1992).

The themes of the questions asked during interviews were chosen based on the existing scholarly literature on MSPs, discussions with experts on the SDG process in Ireland and an in-depth pilot interview. All interviews were transcribed verbatim, and a systematic in-depth review of the interview transcripts was then carried out on a line-by-line basis to develop codes to sort the data using NVivo. NVivo is a query tool that analyses data and aids in detecting trends. To understand the most common themes emerging from the data the number of respondents who raised particular themes/codes were documented and quantified. This process allowed a clearer picture of the pervasiveness of dominant issues relating to SDG awareness for MSPs, the history of MSP formation and the potential role of government to be generated.

## 4 Research Findings

### 4.1 Irish Environmental SDG Indices

This study used the approaches outlined in Chapter 3 to develop four environmental SDG indices for Ireland relative to other EU Member States. The four indices include a composite environmental SDG index, as well as separate environmental SDG indices disaggregated by whether or not the associated SDG indicators are outcomes based, Mol based or linkage based.

Table 4.1 presents the results of the calculation of Ireland's EU Composite Environmental SDG Index, outlining the three averaging approaches used in the calculation process (arithmetic mean, geometric mean and harmonic mean), which produce different index results. The key difference between the three means in terms of index results is that the geometric mean, and to an even greater extent the harmonic mean, results in lower average values. This is especially the case when there are values in a set that tend towards the lower end of the set's range. Essentially, this means that the harmonic and geometric means penalise lower scores on indicators within the various indices. Note that the results of each index are given on a scale ranging from 0 to 1, where 1 represents Ireland being the best performer in the EU-27 on that specific indicator and 0 represents the opposite.

The arithmetic mean result for Ireland for the EU Composite Environmental SDG Index is 0.638. This can be interpreted as Ireland being 63.8% of the way towards the aggregate best performers in the EU. The result from the geometric means suggests that Ireland is only 44.7% of the way towards the aggregate

best performers in the EU, while the corresponding value using the harmonic means is 4.7%.<sup>4</sup> Overall, the results of the index suggest that Ireland has a considerable way to go to achieve the environmental SDGs as outlined in the 2030 Agenda.

The overall value of the aggregate EU Composite Environmental SDG Index depends on the nature of the functional form used for aggregation. The results indicate an average performance of 63.8% relative to the best performances in the EU. However, variance exists across the indicators by modality. In particular, Ireland performs poorly on Mols, average on outcomes and well on linkages. Overall, the values from the geometric and harmonic means indices show that there is coexistence of some very poor and some very good performances across the range of environmentally related SDG indicators in Ireland. This variance warrants the creation of a dashboard for all indicators to define those that are problematic.

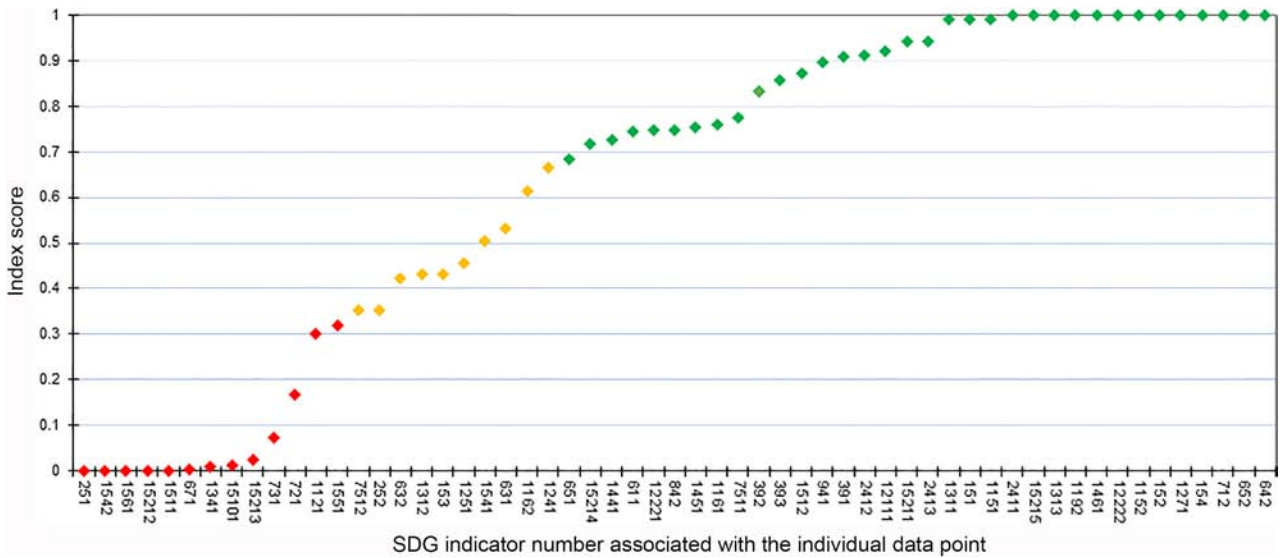
Figure 4.1 outlines the results of the EU Composite Environmental SDG Index broken down by each of the 57 data points constituting the composite index. The x-axis shows the SDG indicator number associated with the individual data point (e.g. 251 is SDG 2, indicator 5.1, and so on). The y-axis ranges from 0 to 1, as described previously. Each indicator in the figure coloured red, orange or green indicates poor, neutral or good performance, respectively. The approach to the development of this system is similar to that of the SDSN Sustainable Development Report's dashboard; indicators with normalised scores <0.33 are given

**Table 4.1. EU Composite Environmental SDG Index results using alternative central tendency measures**

Index mean	Number of index data points	Index score (0–1)	95% confidence interval
Arithmetic	57	0.638	0.541 to 0.735
Geometric	53	0.447	0.299 to 0.668
Harmonic	53	0.047	NA

NA, not applicable.

<sup>4</sup> For the rest of this chapter, the focus of the discussion is on the arithmetic mean scores given that they are comparable to results from similar international indices such as SDSN's SDG Sustainable Development Report Index and Dashboard (Sachs *et al.*, 2019).



**Figure 4.1. Irish Environmental Index – EU-27 dashboard.**

a “red” rating (poor performance), while those with scores between 0.33 and 0.66 are “orange” (neutral performance), and those with scores >0.66 are “green” (good performance). In addition, Table 4.2 depicts the number and percentage of indicators in each of the previously mentioned traffic light categories. The traffic light system is useful because it provides a simple visual representation of Ireland’s progress on each individual indicator. The novelty of the index produced in this report is that it assesses a nation’s performance on each indicator separately, as well as in composite, and thereby provides policymakers with the ability to target areas of poor or neutral performance more specifically.

The results from Figure 4.1 are interesting because the graph clearly outlines the significant degree of variability that exists in Ireland’s progress/performance in the environmental SDGs. Table 4.2 shows that performance is considered good for 61.4% of indicators, but 22.8% of indicators lie in the poor

performance category, with a further 15.8% considered neutral. For example, Figure 4.1 shows that Ireland is performing poorly on indicator 2.5.1 but well on 6.4.2. The value of such data is twofold: (1) once a disaggregated performance data set is produced, policymakers can identify where the nation is strong and where it is weak; (2) in areas where improvement is needed, it allows the best peer performers to be easily identified. Policies of these top performers can then be assessed for the possibility of their transferability to the Irish context. In other words, it is possible that policies have been implemented by the best-performing nations in each indicator that can be adapted, improved on and transferred to the Irish case to aid the acceleration of Ireland’s SDG implementation.

To further outline the potential of this approach, Appendix 2 details Ireland’s EU Composite Environmental SDG Index Dashboard in more detail. The dashboard mirrors the data outlined graphically in Figure 4.1 but also includes a description of each SDG target and indicator, and gives the best-performing nation for each indicator. To use two examples, Boxes 4.1 and 4.2 outline cases in the dashboard where Ireland is the best and the worst performer in the EU-27. These cases demonstrate the value of the dashboard in identifying potential reasons for good or poor performance on each individual indicator, relative to EU-27 peers. In essence, undertaking an in-depth assessment of performance on each indicator may allow Irish policymakers to adopt policies used

**Table 4.2. EU Composite Environmental SDG Index: number and percentage of index indicators within each traffic light**

Indicator rating	Number (%)
Red	13 (22.8)
Orange	9 (15.8)
Green	35 (61.4)

**Box 4.1. Spotlight on SDG indicator 12.2.2: domestic material consumption**

Best performer in EU: Ireland

Worst performer in EU: Bulgaria

Ireland's 12.2.2 index score: 1.0

There are two ways by which the UN measures this indicator: domestic material consumption per capita and per unit of GDP. In terms of the latter measurement, Ireland is currently the best performer in the EU-27. Historically, Ireland has been close to the EU minimum for this indicator; however, 2017 was the first year that Ireland was the best performer in this area. Ireland's performance in this indicator is surprising since Ireland does not yet have a dedicated national resource efficiency strategy or action plan like other EU Member States such as Austria and Germany (EEA, 2016). Instead, Ireland's resource efficiency is broadly dealt with in the National Waste Prevention Programme (NWPP), which has been in operation since 2004. The latest phase of the NWPP, "Towards a Resource Efficient Ireland", runs over the period 2014–2020 (EPA, 2014). Clearly, from Ireland's performance in this area, the NWPP is proving effective, as shown in a review of NWPP activities between 2004 and 2012 (EPA, 2014). Examining the relevance, efficiency and value of the programme, an EPA review found that NWPP programmes identified over €40 million in savings from 2008 to 2012 for participant businesses and other organisations. This was all carried out while simultaneously reducing the environmental footprint of participant enterprises and activities (EPA, 2014). It should be noted that, since GDP is the divisor of this indicator, Ireland's large GDP may be compensating for a poor performance in domestic material consumption. Indeed, this hypothesis is supported by the fact that Ireland is the best performer on "domestic material consumption per unit of GDP" but is only 75% of the way towards the EU best performer on the "domestic material consumption per capita" sub-indicator. Therefore, if Ireland wants to retain its strong position in this domain, a specific national resource efficiency strategy may be vital.

in top-performing countries to the Irish context, which could hasten the implementation of the environmental SDGs.

Using the approaches described above, it is also possible to produce a comparable disaggregated index for indicators classified as "outcomes", "Mols" and "linkages". Table 4.3 shows the results of this process for indicators classified as "outcomes". According to the results from the arithmetic mean approach, Ireland is 56.2% towards the aggregate best performer in the EU for outcomes. This is lower than the value for the composite index, which suggests that Ireland is weaker with respect to its performance on SDG outcome indicators. Figure 4.2 outlines an indicator-based disaggregation of these results. This is corroborated by the data in Table 4.4, which show that Ireland has good performance on 51.5% of outcome indicators, as opposed to 61.4% for the composite index. Similarly, Ireland has a higher percentage of outcome indicators in the poor performance category. However, Figure 4.2 demonstrates that there is significant variability in Ireland's performance in SDG

outcomes. For example, Ireland is considered the worst performer for indicator 15.4.2, "Mountain green cover index", but performs well for indicator 12.7.1, "Number of countries implementing sustainable public procurement policies and action plans".

Appendix 3 outlines the EU SDG Outcomes Index. It provides a useful opportunity for policymakers to identify how Ireland is performing on each of the outcome-based SDG indicators. Box 4.3 provides a case study outline of how the dashboard might be used to identify future policy responses by Irish policymakers and illustrates that Ireland has considerable ground to cover to mirror the performance of the EU-27's best performer in SDG 6.3.2, namely Estonia.

The data can be further disaggregated on the basis of Mols (Table 4.5). The results show that Ireland is 34.5% of the way towards the overall best performer in the EU for Mols. Mol data relate to a nation's capacity-building for the various Mols identified in Agenda 2030 (e.g. SDG Finance, Technologies, Data,

**Box 4.2. Spotlight on SDG indicator 15.6.1: number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits**

Best performer in EU: Denmark

Worst performer in EU: Ireland

Ireland's 15.6.1 index score: 0.0

Ireland is the worst performer in the EU with respect to this specific indicator, and the dashboard allows us to identify potential reasons for the poor performance. This indicator has four components, of which Ireland currently achieves only one. The main reason for Ireland's poor performance in this indicator is that, although Ireland signed the Nagoya Protocol in February 2012, it is one of the few countries that have yet to ratify the agreement (UNTCD, 2021). The Nagoya Protocol is a UN agreement that provides a transparent legal framework for the fair and equitable sharing of benefits arising from the utilisation of genetic resources (UNCBD, 2011). It accounts for half of the components of this indicator. It should be noted that Ireland has taken steps to try and improve in this area. In the middle of 2019, it announced new legislation that will allow Ireland to proceed with the ratification of the agreement (ISB, 2019). The other two components of this indicator are related to the International Treaty on Plant Genetic Resources for Food and Agriculture (PGRFA). Ireland, through its being a party (signed and ratified) of the International Treaty on PGRFA, achieves one of the sub-indicators, but it fails on the other component; "countries that have legislative, administrative and policy framework or measures reported through the Online Reporting System on Compliance of the PGRFA". This sub-indicator relates to the measures a country has taken to implement its obligations under the International Treaty, including the access and benefit-sharing measures, which Ireland has not yet carried out (FAOTD, 2021). By way of contrast, Denmark has achieved all four of the indicator components. Denmark ratified the Nagoya Protocol in 2014 (UNTCD, 2021) and has integrated the protocol into national policy through the Danish Act on sharing benefits arising from the utilisation of genetic resources (DMEF, 2012). Similarly, Denmark is a party to the International Treaty and, in 2018, published a country report of compliance with the online reporting system (DMEF, 2018). Denmark is the best performer in Europe and, judging by the country's policy implementation, considers global biodiversity to be a more serious issue than Ireland.

**Table 4.3. EU Outcomes Environmental SDG Index results using alternative central tendency measures**

Index mean	Number of index data points	Index score (0–1)	95% confidence interval
Arithmetic	33	0.562	0.432 to 0.692
Geometric	29	0.439	0.262 to 0.737
Harmonic	29	0.042	NA

**NA, not applicable.**

Partnerships, Science–Policy Interface, Education, Professional Training, Follow-up and Review). The results suggest that Ireland is weak with respect to its performance in Mols. It is notable that Ireland is considered a poor performer on 50% of Mol indicators, (Table 4.6), compared with 22.8% of the indicators in the composite index (see Table 4.2). Figure 4.3 illustrates that, for the data points available, Ireland does not perform well relative to its peers on the Mol

data. In total, Ireland falls below the 0.1 threshold in three out of the six available Mol indicators. For example, Ireland is considered a weak performer in indicator 13.4.1, "the mobilized amount of USD per year starting in 2020 accountable towards the €100 billion commitment" (i.e. our Paris Agreement commitments), with Germany the best performer and Croatia the worst. It is interesting that Ireland performs poorly in this indicator, when it performs strongly in

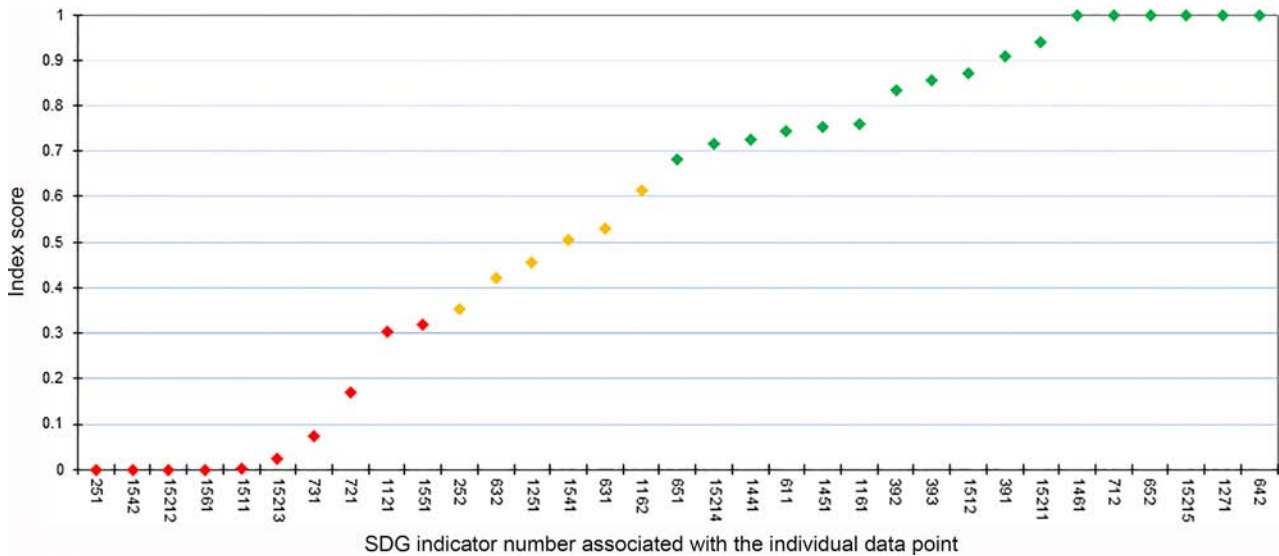


Figure 4.2. Ireland Outcomes Environmental Index – EU-27.

Table 4.4. EU SDG Outcomes Environmental Index: number and percentage of index indicators within each traffic light

Indicator rating	Number (%)
Red	10 (30.3)
Orange	6 (18.2)
Green	17 (51.5)

indicator 12.c.1, which is the amount of fossil fuel subsidies per unit of GDP and as a proportion of national expenditure on fossil fuels.

Appendix 4 outlines the EU SDG Mol Dashboard, which depicts Ireland’s performance across the Mol indicators through a traffic light system. Additionally, Box 4.4 contains a case study outline of the Mol indicator 15.b.1, an indicator on which Ireland is a poor performer and France is the EU leader.

By way of contrast with outcomes and Mols, Ireland’s performance on SDG linkage indicators is considered to be good. The results in Table 4.7 indicate that, using an arithmetic mean approach, Ireland is 87.4% towards being the aggregate best performer in the EU, which is impressive. The central issue for future policy development is to understand what Ireland is doing in this area that singles the country out as a robust performer. As can be seen in Table 4.8, Ireland’s performance is considered good for 88.9% of linkage indicators, and there are no indicators for

which Ireland’s performance can be categorised as “poor”. Figure 4.4 graphically depicts Ireland’s strong performance in the domain of linkage indicators.

Appendix 5 depicts the EU SDG Linkages Dashboard. As with the other dashboards, it provides more detailed information on indicator descriptions and the best EU performers on each indicator. Box 4.5 contains a case study outline of indicator 13.1.2. With respect to indicator 13.1.2, Ireland clearly has considerable ground to cover before it fully complies with the Sendai Framework, but the case of Estonia provides guidance on what is required of a best EU performer in this area.

## 4.2 The National SDG Stakeholder Forum and Multi-stakeholder Partnerships

The *Sustainable Development Goals National Implementation Plan 2018–2020* was published in early 2018 (Government of Ireland, 2018a). The vision of the SDG NIP is that SDG implementation should progress at the same rate in Ireland as it does internationally. The SDG NIP aims to reach this goal by providing a framework for how Ireland will implement the SDGs from 2018 to 2020 (Government of Ireland, 2018a). This framework has four strategic objectives: (1) to increase awareness of the SDGs; (2) to provide stakeholders with opportunities to participate in the SDG implementation plan; (3) to support communities

**Box 4.3. Spotlight on SDG indicator 6.3.2: proportion of bodies of water with good ambient water quality (outcome indicator)**

Best performer in EU: Estonia

Worst performer in EU: Poland

Ireland's index score: 0.422

For the above indicator, Ireland is 42.2% of the way towards performing as well as Estonia, which is the EU-27 leader. Given that both nations are members of the EU, their national water policies should, in theory, be very similar. Therefore, where both countries most probably differ is in the degree of implementation of the relevant EU legislation and policy. Water quality has been an ongoing issue for Ireland in terms of its lack of compliance with EU policy and directives. For example, in January 2019 the European Commission initiated infringement proceedings in two cases where Ireland was failing to comply with water and water quality standards, namely on reporting obligations on the environmental status of marine waters under the Marine Strategy Framework Directive (Directive 2008/56) and in Ireland's transposition of the Water Framework Directive (Directive 2000/60/EC) (European Commission, 2019). Ireland has also infringed on EU policy by its late adoption of the second round of River Basin Management Plans under the Water Framework Directive. Furthermore, there are several factors other than non-compliance with EU legislation, such as wastewater treatment and the intensity of agriculture, that probably contribute to Ireland's poor performance in this indicator. In relation to agriculture, Ireland has approximately four times as much land under agriculture as Estonia (DAFM, 2018; REMRA, 2019), indicating a greater degree of agricultural intensity in Ireland. Similarly, relative to Estonia, Ireland is guilty of unsustainable nitrogen use (Sachs *et al.*, 2019). With regard to wastewater, only 44% of anthropogenic wastewater receives treatment in Ireland, compared with 72% in Estonia, according to the 2019 SDSN Index (Sachs *et al.*, 2019). As a consequence, there is a greater probability that wastewater and fertiliser seepage will occur and negatively affect the quality of Ireland's water bodies. Finally, Ireland's poor performance may be unsurprising given the lack of investment in water. Irish Water committed to invest an average of €326 million each year on wastewater infrastructure between 2016 and 2021, but in 2015 and 2016 only €172 million and €215 million was invested, respectively (EPA, 2019).

**Table 4.5. EU Mol Environmental SDG Index results using alternative central tendency measures**

Index mean	Number of index data points	Index score (0–1)	95% confidence interval
Arithmetic	6	0.345	–0.088 to 0.915
Geometric	6	0.071	0.005 to 0.668
Harmonic	6	0.014	NA

**NA, not applicable.**

and organisations in achieving the SDGs; and (4) to align national policies to reduce overlap or blind spots for SDG implementation. According to the plan, the DCCAE is the governmental body responsible for implementing SDG-related plans and strategies.

As recognised in the strategic priorities of the SDG NIP, stakeholder engagement is a critical component in the execution of the SDGs. Despite this, there is no specific mention of MSPs in the SDG NIP. The plan

acknowledges that, as the stakeholder groups are an essential component in the SDGs internationally, they play a critical role in Ireland; they monitor how the government is implementing the SDGs while working in their own domains to make the SDGs successful (Government of Ireland, 2018a). The SDG NIP also suggests that stakeholders should be given opportunities for meaningful participation at the national level, from being consulted when SDG

**Table 4.6. EU SDG Mol Environmental Index: number and percentage of index indicators within each traffic light**

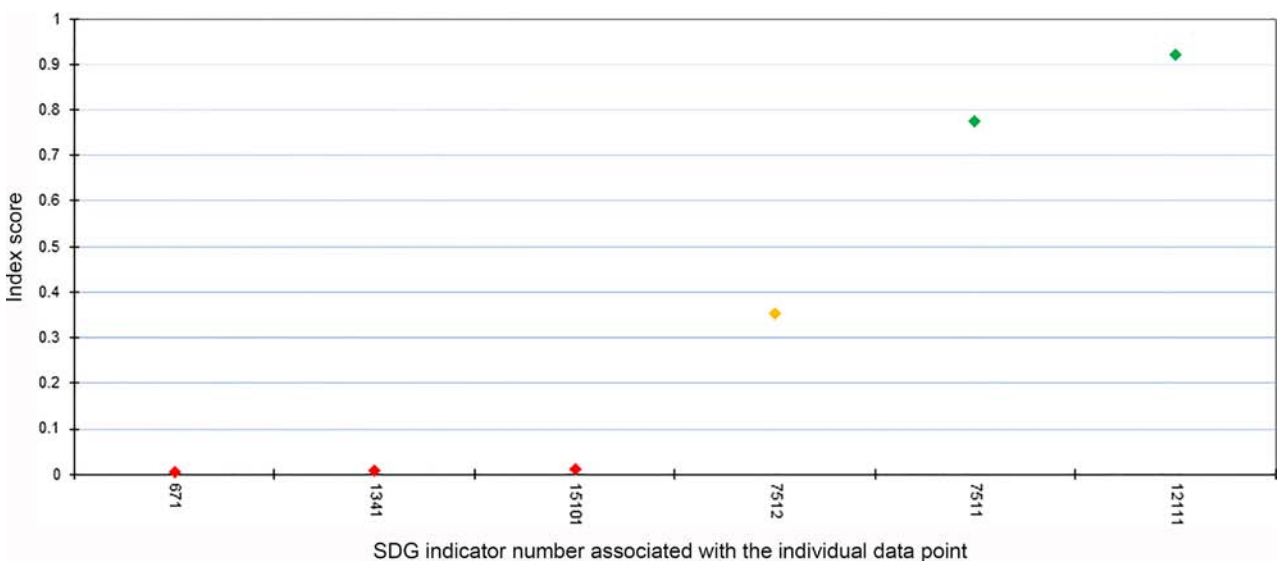
Indicator rating	Number (%)
3 (50.0)	3 (50.0)
1 (16.7)	1 (16.7)
2 (33.3)	2 (33.3)

plans are being prepared to having a role in SDG reporting arrangements (Government of Ireland, 2018a). The SDG NIP identifies key stakeholders as non-governmental organisations (NGOs), the private sector, community organisations, youth, trade unions, academia, the education sector, agriculture and local government (Government of Ireland, 2018a). Although there is mention of stakeholder engagement in the SDG NIP 2018–2020, the only entry point identified for stakeholders in SDG-related activities in the country is through the SDG National Stakeholder Forum, which is run by government. As mentioned previously, neither in the VNR nor in the SDG NIP did we find the establishment of precise and constructive measures to promote and encourage partnerships.

Given the objectives and the commitments under the SDG NIP, and in recognition of the collective ownership of the SDGs, an open National Stakeholder Forum (henceforth the Forum) was established in June 2018. DCCAE intends the Forum to meet

quarterly. The purpose of the Forum is to explore opportunities for stakeholder contribution to the national reporting framework and to SDG implementation and communication. In the reference document for the Forum, it was recognised that the Forum will evolve to encourage more action-oriented projects from stakeholders and the involvement of MSPs. The Forum provides a free and comprehensive engagement platform that is open to all citizens, as well as to representatives of different stakeholder groups in Ireland. In other words, the Forum is an opportunity for the whole of society to express their views to the government. Every Forum meeting convened and chaired by the DCCAE is advertised on the DCCAE website and interested stakeholder representatives register for participation. A draft agenda is published before each meeting, allowing participants to prepare for useful deliberations. A summary report of every Forum is posted on the DCCAE website, enabling any interested party to track the Forum discussions.

The Inter-departmental Working Group (IDWG), consisting of representatives of different government departments, is required to consider the suggestions and deliberations produced by the Forum. The IDWG reports Forum discussions to the Senior Officials Group, which liaises with cabinet ministers responsible for each government department. The intention of this liaison is to inform future policies with Forum outputs. Figure 4.5 provides a graphical representation of how



**Figure 4.3. Ireland Environmental Mol Index – EU-27.**



**Box 4.4. Spotlight on SDG indicator 15.b.1 (Mol indicator): official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems**

Best performer in EU: France

Worst performer in EU: Slovenia

Ireland's index score: 0.012

For SDG 15.b.1, Ireland is 1.2% of the way towards performing as well as France, which is the EU-27 leader. Historically (since 2002) Ireland has performed poorly on this indicator. Since Ireland's peak performance in 2009 there has been a decline in the amount of official development assistance for biodiversity, with the most recent data (2017) close to three times lower than the 2009 number. Ireland has stated publicly, in its National Biodiversity Action Plan, that its vision for biodiversity is "... that Ireland contributes to efforts to halt the loss of biodiversity and the degradation of ecosystems in the EU and globally" (DCHG, 2017). The same statement was also made in previous biodiversity plans (DAHG, 2011). However, it is clear from this indicator that Ireland is not doing enough at the global level to try and prevent biodiversity and ecosystem loss. France, on the other hand, currently the best performer in Europe, seems to be taking global biodiversity more seriously than Ireland. Action to halt biodiversity loss has been integrated into French overseas development and international solidarity policy. In addition, since 2014, a number of special financial instruments have been developed specifically for biodiversity assistance (Government of France, 2014). Similarly, in 2015, the French Global Environment Facility, a bilateral public fund that was set up by the French government in 1994 following the first Earth Summit, adopted its Strategic Programming Framework 2015–2018 (FFEM, 2015). One of the five environmental focus areas of this framework is innovative biodiversity financing.

**Table 4.7. EU Linkages Environmental SDG Index results using alternative central tendency measures**

Index mean	Number of index data points	Index score (0–1)	95% confidence interval
Arithmetic	18	0.874	0.779 to 0.970
Geometric	18	0.848	0.740 to 0.972
Harmonic	18	0.814	0.695 to 0.981

**Table 4.8. EU Linkages Environmental Index: number and percentage of index indicators within each traffic light**

Indicator rating	Number (%)
Red	0 (0)
Orange	2 (11.1)
Green	16 (88.9)

the Forum aims to bridge the gap between government and society.

**4.2.1 Sectoral participation in the Forum**

The SDG NIP 2018–2020 notes that the purpose of the Forum is to provide a place where stakeholders

from different sectors can engage with the government on SDG-related activities. Table 4.9 gives a breakdown of the composition of participants in each of the three meetings of the Forum. Participation from civil society has declined considerably since the initial Forum but still remains high compared with participation from the other stakeholder groups. Furthermore, participation of academia and government has increased over the same period while private sector engagement has remained consistent.

During focus groups organised at the Forum, meeting attendees expressed concerns that several stakeholder groups, including local government, women's groups, trade unions, farmers, and migrant and ethnic communities, were underrepresented. There was concern that the Forum would become

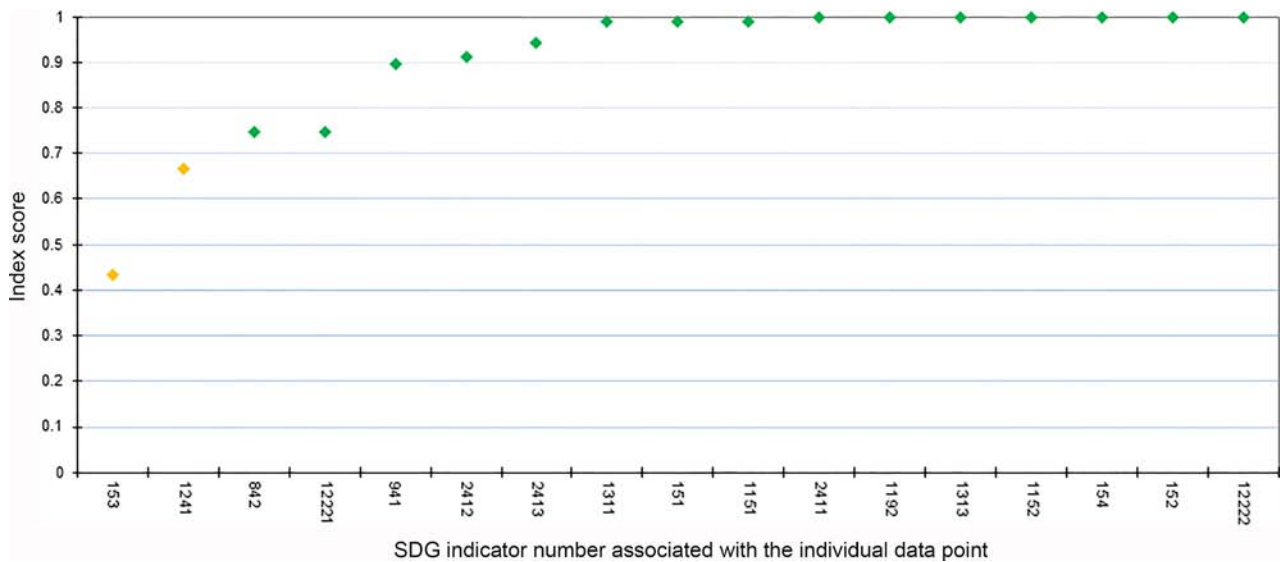


Figure 4.4. Ireland Environmental Linkages Index – EU-27.

**Box 4.5. Spotlight on SDG indicator 13.1.2 (linkage indicator): number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030**

Best performer in EU: Estonia

Worst performer in EU: Sweden

Ireland's index score: 0.432

For indicator 13.1.2, Ireland is 43.2% of the way towards performing as well as the EU-27 leader, Estonia. Estonia has a National Platform for Disaster Risk Reduction, one of the fundamental factors of the Sendai Framework. The Platform is a nationally owned and nationally led forum for advocacy, coordination, analysis and advice on disaster risk reduction. The Ministry of the Interior of Estonia established its National Focal Point of this platform within the Department of Rescue and Crisis Management Policy. Estonia has also established a task force for civil protection, which comprises a number of different government bodies with the aim of increasing public preparedness to cope with disaster situations. As a result, Estonia has issued a thorough overview consisting of 56 pages of guidelines and recommendations for citizens (available from the Estonian government website), which can be used for ensuring the preparedness of the populace in case of crises. Estonia has also developed an internal security system at the government level, known as STAK. By way of comparison, Ireland does not have a national platform for disaster risk reduction nor does it have a national database for collecting disaster losses (UNDRR, 2019). The Department of Defence has published a strategic emergency management document that details the national structures and frameworks for disaster risk reduction (DoD, 2018). Ireland also publishes an annual national risk assessment, the most recent being for 2017 (DoD, 2019). However, these actions fall short of what is required for full compliance with the Sendai Framework.

tokenistic unless it engaged the whole of society. Therefore, participants recommended an increased engagement between the government and those underrepresented groups in relation to SDG issues.

**4.3 Interview Data: Partnership and Stakeholder Interactions**

This research was driven by two primary motives. The first was to determine the extent, and nature, of SDG awareness within Irish stakeholder groups.

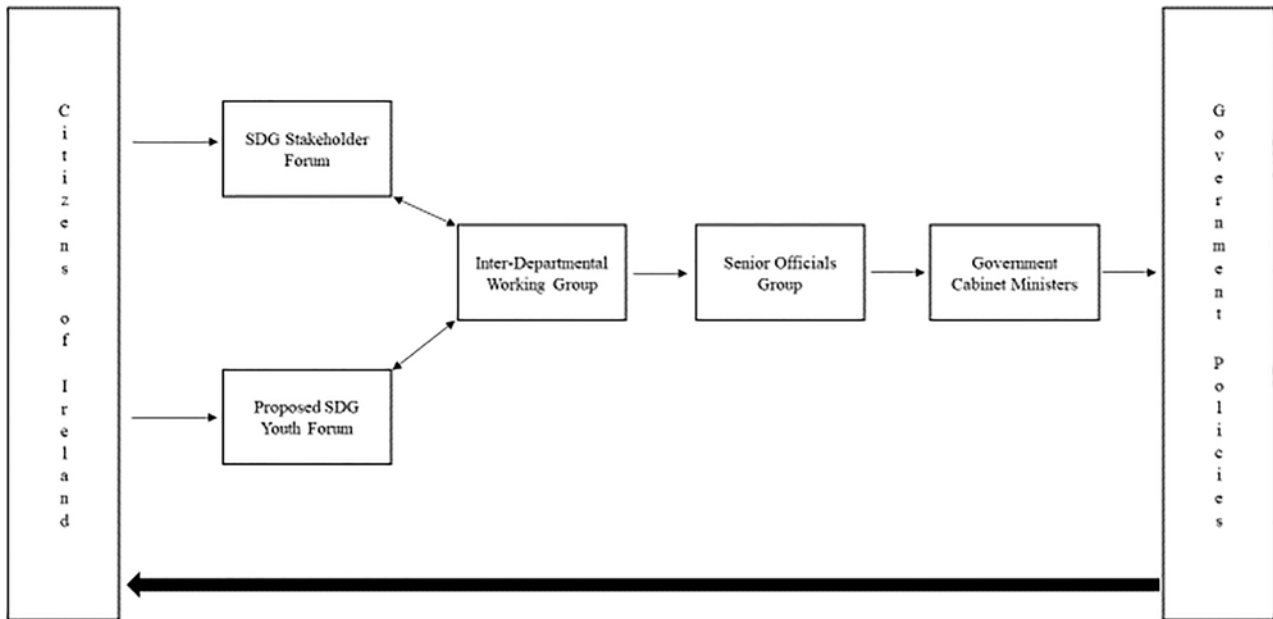


Figure 4.5. Government’s envisaged role of the National Stakeholder Forum for SDG-related governance in Ireland.

Table 4.9. Stakeholder representation at the National Stakeholder Forums (%)

Sector	Stakeholder Forum		
	June 2018	October 2018	January 2019
Civil society	80	46	45
Government	7	16	22
Academia	3	18	16
Private sector	10	7	12
Other (including trade unions)	2	13	5

Source: Compiled from information from the gov.ie website and personal communications.

The second was to understand the perception of stakeholder groups, especially non-state actors, of the concept of partnerships for the SDGs. Exploring these two aspects is of particular importance for the MSPs in the SDGs. It is imperative that MSPs voluntarily engage in the sharing of responsibilities and resources with sector and non-sector partners to implement SDG-related projects. The diversity and inclusivity of MSPs is underpinned by their voluntary nature, allowing different stakeholders to engage in the MSPs, which is crucial for the SDGs given their nature and scope. This section outlines the results of semi-structured interviews conducted with relevant stakeholder groups in representative sectors in Ireland. The results are structured according to the themes

conceived for the interviews, namely stakeholder awareness of the SDGs, the range and complexity of the goals, and the lack of historical context for MSPs in Ireland.

#### 4.3.1 Stakeholder awareness of the SDGs

Data from the interviews indicate that the stakeholders were generally aware of the SDGs. The depth of awareness, however, differed considerably across the 14 interviewees. This variation was largely dependent on the goal in question, as well as the level of SDG work undertaken by their interviewee’s organisation. For example, stakeholders who were involved in the VNR process or who participated routinely in the DCCAIE-organised SDG National Stakeholder Forums were more aware of the SDGs than stakeholders who had not. On the other hand, 3 out of the 14 interviewees were unaware of the National Stakeholder Forum prior to speaking with the research team. Stakeholder groups interviewed from sectors such as water, forestry and biodiversity had only limited knowledge of the SDGs and how the SDGs align with their work. In contrast, stakeholder groups interviewed from the social sector, business-related organisations and trade union representatives were more aware of the SDGs.

Interviewees shared different experiences of how their organisations became engaged with the SDGs

in Ireland. Some organisations were made aware of the SDGs through invitations to contribute to the VNR process. This contribution to the VNR included the publishing of a shadow report on the progress of the SDGs and the challenges in achieving them. As a result, these organisations became very involved in the SDGs and their representatives have attended the UN HLPF as part of the Civil Society Major Group. Other interviewees, especially those in the social sector, were aware of the SDGs owing to their previous work with UN agencies. Similarly, some interest-specific stakeholders, such as those representing labour unions and businesses, were made aware of the SDGs owing to their membership of international organisations. Some of these international organisations have observer status with the UN or are members of larger international organisations that have engaged with the UN systems. Two out of the 14 interviewees belonged to specific environmental sectors, water and forestry, and had little knowledge of the SDGs, being aware of them only from news reports and/or from discussions in professional circles or on social media. Others working on core environmental areas such as biodiversity conservation pointed out that awareness of the SDGs is poor in Ireland, especially of those SDGs related to biodiversity conservation on land and under water.

Data from the interviews indicated a lack of awareness of the SDGs *within* the network of organisations. In our interview sample, 12 out of the 14 interviewees belonged to national-level umbrella organisations that consisted of members from hundreds of smaller grass-root organisations working on specific social and environmental issues. Therefore, the interviewees were well placed to provide valuable insights into the work of regional and local member organisations. The results from interviews suggest that interviewees have different views of the level of perception of the SDGs in local and regional organisations. Some interviewees claimed that there is 100% awareness of the SDGs in member organisations, while others noted significantly lower levels of awareness. This variation in the perception of the SDGs seemed to depend on whether or not the national-level organisations held events to increase SDG awareness within their networks. Interviewees noted that the awareness of SDGs in member organisations is driven primarily by strong and dedicated leaders of the organisations. Interestingly, some interviewees asserted that many smaller

organisations looked on the SDGs very critically; specifically, smaller grass-roots organisations felt that the global scope of the SDGs was disconnected from their work at the local level. Interviewees also stressed a lack of SDG awareness among the general population. The lack of government effort in SDGs awareness-raising was criticised, but the interviewees did concede that awareness is improving.

#### ***4.3.2 The range and complexity of the goals***

Interviewees identified multiple factors that affect popular awareness of the SDGs in Ireland. The most prominent (identified by 12 out of 14 interviewees) was the assertion that the SDGs are “difficult to follow”. According to the interviewees, because of the large number of goals, organisations tend to focus on specific goals that match their work and to promote these goals over others. Some interviewees suggested that this process of cherry picking is systematic: organisations divide the goals into primary and secondary categories based on their direct and indirect connections with the work of the organisation. The explanation for such an approach relates to an organisation’s desire to champion specific issues given the difficulty of championing issues across the SDGs. Similarly, interviewees noted that such a filtering exercise is necessary to streamline the efforts and resources of the organisation so as to maximise impact. Grass-roots-level organisations felt that the SDGs are too complex for most people to understand because of the wide range of interconnections and interrelationships within and across goals.

Although, generally, interviewees were most aware of goals that closely aligned with their work and championed those within their network, some interviewees recognised that the benefits of the 17 SDGs as a whole is greater than the sum of their constituent parts. The interviewees also thought that the focus of non-state actors on individual goals can affect the complex interconnected nature of the goals, targets and indicators.

#### ***4.3.3 Lack of meaningful participation***

Most of the interviewees (12 out of 14) were concerned with current practices of engagement with the government on SDG implementation. Some interviewees felt it represented a mere “box-ticking

exercise” rather than a meaningful two-way engagement. They thought that very few entry points have been created by the government for stakeholders to participate in the NIP for the SDGs. This view was shared across the range of stakeholders interviewed, including by interviewees from the private sector. Respondents from the private sector noted that the SDGs are currently prevalent only as a form of corporate social responsibility (CSR) rather than partnerships directed via government-led initiatives. Specifically, CSR projects are now evaluated under different awards conferred by business membership-based organisations and the SDGs are an important consideration. However, one interviewee asserted that there continues to be little evidence that production and consumption systems have become more sustainable over time and, even when this is the case, it is typically the result of multinational companies, rather than domestic businesses, engaging in improved practices.

Almost all interviewees (13 out of 14) believed that the government should take a leadership role in bringing all sectors of society together, delegating to these sectors the responsibility for delivering on the SDGs. Respondents noted that each sector is working on the SDGs in its own silos, and that effort is required to bring stakeholders together under a common plan that would see concerted actions in the different areas covered by the SDGs.

#### **4.3.4 *Lack of knowledge and context for MSPs***

As previously outlined, our scoping analysis found that MSPs are uncommon in Ireland. Although there is a strong history of government-led dyad partnerships through, for example, Local Agenda 21 initiatives, MSPs remain elusive. This analysis was confirmed by the inability of interviewees to provide any specific examples of their having cooperated with multiple actors from civil society organisations, environmental groups, academia, business entities and other stakeholder groups to solve critical environmental public policy issues. Generally speaking, the results revealed that the concept of MSPs was unfamiliar to interviewees across the range of stakeholders interviewed. Although respondents felt that the SDGs should be achieved via the cooperation of different stakeholders and sectors, there was little awareness

of MSP formation or operation. Respondents did, however, affirm the existence of collaboration in the form of dyad-type partnerships. Interviewees noted that civil society organisations often collaborate with the business sector on fundraising activities and, in some cases, to provide a channel for employees of corporate organisations to use volunteering hours for CSR initiatives. In similar ways, the business sector cited collaborations with government via public–private partnerships. Despite this, our research demonstrates that the institutional knowledge required for the formation and management of MSPs that might exist in other jurisdictions does not extend to the Irish context. As a consequence of this lack of institutional knowledge, SDG-related partnership formation in Ireland has tended to follow a business-as-usual approach (i.e. dyad partnerships). Furthermore, MSPs are also not currently being practised by non-state actors.

#### **4.3.5 *Lack of past experience and trust***

Several interviewees expressed concerns about adopting an MSP approach for the implementation of the SDGs in Ireland. Although an MSP approach was popular as a concept, interviewees from civil society clearly stated that they could cooperate only with private sector entities whose values aligned with theirs. Specifically, civil society interviewees would find it problematic to partner with private sector entities that operated solely on a profit-seeking, rather than a holistic and sustainable, basis. Some respondents were of the opinion that this misalignment in values would be difficult to overcome given that environmental civil society organisations have taken years to gain the trust of their constituents as protectors of the environment.

Similarly, interviewees from the private sector found civil society and environmental groups problematic to engage with on the day-to-day business expected of a functioning partnership. According to one interviewee, the private sector is apprehensive about entering into MSP arrangements as a result of past experiences and the risk associated with investing large amounts of time into projects that may prove unsuccessful. Indeed, while there is general agreement among non-state stakeholders that MSPs may be a good way to collaboratively engage in solving SDG-related issues,

there is very little knowledge or experience on how to successfully arrange such a collaborative process.

Some stakeholders recognised that the SDGs presented a solution to one of the primary concerns of the Forum: how a process that enables functioning MSPs might be established. The SDGs are able to create an atmosphere in which many groups of stakeholders are brought together for the first time to achieve common goals. Government-organised events such as the National Stakeholder Forums are hugely beneficial, bringing SDG-interested stakeholders together and initiating dialogue around SDG implementation. Overall, the Forum stakeholders were optimistic that, if implemented effectively, MSPs can be useful for supporting mutual learning, sharing responsibilities and solving critical challenges related to the SDGs. However, they also noted that the success of MSPs is dependent on parameters such as transparency, communication, accountability and ambition for diverse partnership.

#### ***4.3.6 Lack of transparency and information flow***

The final theme that emerged from the semi-structured interviews was that the Irish government lacks transparency in how the SDG commitments are being dealt with. Most stakeholders (9 out of 14) indicated, in some manner, that they are not aware of any progress made on the SDGs since 2016 and, according to these stakeholders, it is “business as usual” in terms of SDG progression. Participants did, however, mention that the SDG Forum is a recent initiative where the government meets regularly with stakeholders to gather their advice on SDG-related topics. What the participants do not know is what happens to that

information. Stakeholders communicated that there is a lack of two-way interaction between government and stakeholders. As a consequence, stakeholders are mostly working within their own silos of SDG-related topics or, at best, with other stakeholders within the same domain; civil society groups are working with environmental groups or businesses are working with their membership organisations.

Trade union representatives pointed out that the changes needed to meet the targets of SDG 13 (Climate Action) would require significant changes in how energy is produced and consumed in Ireland. Old infrastructures are rapidly being replaced with newer technologies, which has positive impacts on some groups of society while negatively affecting others. In this respect, working on SDG 13 (Climate Action) and SDG 7 (Affordable and Clean Energy) is creating challenges for achieving SDG 8 (Decent Jobs and Economic Growth) and SDG 11 (Sustainable Cities and Communities). For example, the stable and well-paid jobs created by carbon-based energy production and which support families and communities in the Irish Midlands are facing an uncertain future as Ireland attempts to transition to a carbon-neutral economy. Trade union representatives stressed that the government lacks adequate plans to rehabilitate workers and communities after peat production is wound down. Although numerous alternatives have been proposed for the use of land and the use of people, it is unclear how transitions would occur in reality. Alluding to the term “Just Transition” coined by the international trade union movement, trade union representatives were mainly of the opinion that the plans to transition to a low-carbon economy have yet to be established concretely in Ireland.

## 5 Discussion

### 5.1 Environmental SDG Indices

Achieving sustainable development is an urgent and pertinent global challenge. It lies at the heart of one of the most pressing issues affecting the future of human civilisation on Earth – anthropogenic climate change. Sustainable development is also crucial to our management of the oceans, life on land and for societal health and well-being. Despite a robust research tradition in sustainability, the relative lack of progress on the SDGs has laid bare the urgency for research in understanding national and global progress in sustainability. Sustainable development is a complex challenge, one reliant on multilevel and multilateral cooperation through partnerships, as well as scientific knowledge on the current state of progress on the SDGs. The development of a series of environmental indices in this project offers new insights into the way in which a nation can measure their progress on the SDGs relative to peer nations. By outlining a methodology and a case study of Ireland's progress on the environmental SDGs, this project provides the tools needed by policymakers to identify strengths and weaknesses in relation to SDG implementation.

The work undertaken in this project has led to a number of important index innovations for the SDGs. First, our index has taken a different approach to the SDSN index in that we have identified SDG pillars on the basis of SDG targets rather than on SDGs. For example, the environmental dimension of our index incorporates environmental indicators from 16 out of the 17 SDGs (SDG 10 is the exception), highlighting the fact that the environment is linked, and relevant, to achieving almost all of the SDGs. By way of contrast, the SDSN index is goal focused in that the environmental dimension of that index is concerned with only SDGs 13–15. Taking a goal-based approach to index development misses the existence of linkages across goals and thus encourages goal-based thinking, which deviates from the principle of indivisibility of the SDGs. In constructing our index, the environmental, social, economic and governance pillars are created from SDG targets rather than goals. In doing so, we adhere to the principle that the SDGs

are indivisible and need to be pursued in tandem but, more importantly, we are able to highlight the scope of linkages across the various SDG pillars.

Second, the index created in this project differs from previous indices in its approach to index construction because it is inherently focused on indicators. Our innovation in this regard is to assess a nation's performance as a ratio of the best and worst performers in the EU-27 on each individual SDG indicator. This is a valuable innovation, since it allows each nation to assess its progress relative to peers on individual indicators rather than against the best performer on a composite index. The latter approach, which is used by the SDSN SDG Index, smoothes out the top-ranked nation's poorer performance on a range of indicators in favour of its averaged performance. The disadvantage of this approach, using such an index, is that it is not possible to direct policy towards specific indicators in which a country might be performing poorly.

Third, the index developed in this project is currently the only SDG-related index that produces separate disaggregated indices broken down by outcome indicators, MoI indicators and linkage indicators. This disaggregation is useful because it allows the easy identification of a nation's performance in the different categories of SDG indicators. This identification can allow policymakers to determine core areas of strength and weakness with respect to SDG performance and implementation.

Fourth, our index has the potential to provide a significant innovation for SDG policymaking. It presents a nation's disaggregated performance relative to the best and worst performers in the EU-27 on each indicator. Consequently, it is possible for policymakers to develop bespoke policies that target areas in which progress is weak. The possibility of identifying the best performer in each indicator in the EU-27 is particularly useful. Once identified, the policy approach in the top-performing nation can be assessed with the aim of determining the potential effects, in terms of SDG implementation, of adopting similar policies in another country (such as Ireland).

In short, our indices provide the opportunity to swiftly transfer policies from one nation to another to aid performance in SDG implementation. Similarly, it is possible to learn from areas in which Ireland's performance is strong and identify factors/policies/decisions that enabled such a robust performance on a specific indicator. In this regard, it is imperative that areas of strong performance are assessed to ensure that such a standard of performance is maintained in the future.

Finally, our research on environmental indices suggests that there are still significant improvements that can be made with respect to data gathering and monitoring of the environmental dimension of the SDGs. Internationally, as of December 2019, there were 20 indicators that were classified as Tier III indicators and 14 out of the 20 relate to the environmental dimension of the SDGs. Therefore, it is quite clear that, on an international level, improvements are required in data gathering and monitoring for the environmental dimension of the SDGs. In the Irish context, of the 83 unique indicators identified as being environment related, Ireland has data only for 42. Some of the 42 unique indicators are repeated throughout the SDGs and others contain sub-indicators so, in total, the index contains 57 data points. Of these 42 indicators, 40 can be categorised as green (i.e. the data directly correspond to the UN indicator) and two as blue (i.e. the data are adequate but are not routinely collected), as described in Appendix 1. The implication here is that Irish data collecting and monitoring for environmental SDG indicators need to improve if we are to better understand our performance. At the moment, we can only assess 42 (51%) of the 83 indicators in the Irish context; for the remainder, we have no information about Ireland's performance relative to international peers in the EU-27. These findings align with those from other projects that assess current global environmental performance such as Yale's Environmental Performance Index (EPI). Similar to this project, the EPI has found consistent severe data gaps for indicators that measure environmental issues (Wendling *et al.*, 2020). Such data gaps limit the analytic scope, and consequently the potency, of indices such as the one developed in this research project. The solution is, in theory, relatively simple: better data collection and monitoring are needed.

## 5.2 Multi-stakeholder Partnerships

The nature and the scope of the SDGs are perhaps without precedence. The UN system provides every Member State with support from an international perspective and provides a platform for every country to share their ideas, successes and challenges. Countries also have the opportunity to learn from each other and deliberate on future policy trajectories. However, it is the responsibility of each nation to achieve the SDGs within its territory. SDG achievement requires more widespread institutional and societal effort than the government in isolation can achieve with its limited resources and capabilities. Therefore, it is essential that a whole-of-society approach is adopted, with the government acting together with civil society (including all non-business Major Groups) and the private sector. Given this, it is unsurprising that SDG 17 (Partnerships for the Goals) is focused on implementation and that partnership is identified as a key element of this implementation. Although there is significant rhetoric on partnerships and MSPs, there continues to be a lack of progress in this area.

Ireland, unlike developing countries, has little experience in implementing UN-specified goals like those of the MDGs. Although there is a strong history of government-led dyad partnerships through, for example, Local Agenda 21 initiatives, MSPs remain underutilised. This research found that SDG awareness in Ireland is low, especially among stakeholders who work on national environmental issues. Stakeholders claimed that, generally, SDG awareness in the country is low, although this claim cannot be verified from other sources. However, studies in other countries have demonstrated that SDG awareness varies among university staff and students (Omisore *et al.*, 2017; Jati *et al.*, 2019) and among health workers (Bello *et al.*, 2019), depending on the efforts taken by the relevant institutions to raise awareness of or improve access to the available information. We argue that such lack of awareness can create impediments to the fostering of collaborations between non-state actors, especially collaborations that can lead to MSP-based projects. Lack of awareness can also be problematic for progress on the SDGs, as actors may remain unaware of how their action or inaction can affect implementation of the SDGs. As a result, critical opportunities may get



lost as SDG-unaware non-state stakeholders commit to business-as-usual practices that challenge the achievement of the SDGs. With 2030 being only 9 years away, timely decisions are crucial if we are to set in motion a process that will influence many other actions, plans and projects.

One of the interesting findings of this research was the generally high awareness of SDG 13 and the need to take urgent action to tackle climate change. There may be various reasons for this high awareness, such as the publicity stemming from Ireland's having the reputation of being a climate-laggard in the EU or the recent deliberations of the Irish government on carbon taxes. This awareness may also be due to the stakeholder groups we interviewed, which were mainly involved in the environmental domain and thus are in a prime position to be aware of climate-related issues. This finding was particularly interesting because, in many ways, there is a sense that the goal climate action, rather than the complex synergies and trade-offs that are inherent to the SDGs. In other words, climate actions, if unplanned and executed in silos, may create new challenges for achieving other SDGs.

This research also found that the evidence of successful MSPs in Ireland is scant. As mentioned previously, stakeholders who take their role in SDG achievement seriously have started working on their own, or at times creating, partnerships, within their domain. These partnerships, however, may not sufficiently capture the benefits of MSPs. Numerous scholars insist that collaborative engagements between the state, civil society and the private sector can help societies to function within the limits of a safe operating space or within "planetary boundaries" (Rockström *et al.*, 2009). In these bottom-up approaches, where state actors display limited progress, researchers have suggested methods that can make the partnerships more effective. For example, Pattberg and Widerberg (2016) identified nine conditions arranged under three overarching themes:

1. actors (leadership, partners);
2. processes (goal-setting, funding, management, monitoring);
3. context (meta-governance, problem structure and sociopolitical contexts).

The primary focus of the current project was on the first theme: how actors (mainly non state) perceive the SDGs and the MSPs. From our study, we found that there are challenges and limitations in both leadership and among partners that are inhibiting initial MSP formation.

Pattberg and Widerberg (2016) determined that leadership is essential in the formation and functioning of partnerships. Others have pointed out that, to form a partnership, an "entrepreneur or a broker" (Glasbergen, 2010; Pattberg and Widerberg, 2016), a "convener" (Pattberg and Widerberg, 2016) or an "orchestrator" (Abbott and Snidal, 2010) is needed. Fowler and Biekart (2017) also suggest that complex multi-stakeholder arrangements, such as those required for the implementation of the SDGs, need a host or an "interlocutor". The role of the host is to bring the different partners together to initiate a partnership process and to aid its progression. The host also acts as a mediator, helping various actors find common goals, highlighting the benefits of cooperation and attempting to reconcile divergent opinions. The host, therefore, is an enabler who can influence the stakeholders without being authoritarian (Klingebiel and Paulo, 2015). In our study of the landscape of stakeholders involved in areas that would align with many SDGs, we found a lack of such brokers or interlocutors. Many interviewees said that they thought it was the responsibility of the government to play this orchestrating role. Although we found instances of the government having taken a leadership role (i.e. organising the quarterly National Stakeholder Forums), considerable work still remains if the government is to be considered an active, rather than a relatively passive, stakeholder.

Pattberg and Widerberg (2016) explain that MSPs are arranged with the purpose of partners cooperating to ameliorate deficits in resources, expertise and experiences. In other words, partnerships are symbiotic relationships whose partners complement each other. This arrangement can enable MSPs to become "agents of hypercollective actions" (Severino and Ray, 2010) necessary to solve complex issues such as poverty, inequality, climate change and biodiversity loss (Fowler and Biekart, 2017). However, such partnerships cannot evolve without the active engagement of major stakeholders who possess the resources, capabilities, expertise and influence

needed to drive societal changes. Similarly, such major stakeholders can enhance the MSP process through their adding credibility to the initiative and thus attract other actors. Without the inclusion of the right mix of partners, partnerships can be suboptimal in performance; this can affect the long-term success of the partnership, especially when partners accept suboptimal benefits for themselves in exchange for optimal benefits at a partnership level. When partners face suboptimal outcomes at partner level as well as at partnership level, long-term interest in such partnerships is difficult to maintain.

Given the foregoing context, the results from this research project are interesting. Participants recognised the benefits of MSPs in theory; however, in reality, most had no experience of working in such partnerships. Similarly, non-state stakeholders did not express high levels of the intersectoral trust required for the organic growth of collaboration between intersectoral actors. Overall, some stakeholders showed a degree of willingness to compromise, but others seemed to lean towards the complete avoidance of partnership arrangements.

## 6 Conclusion

The motivation for the Environmental-SDGs project was to outline an appropriate governance framework for the environmental SDGs in Ireland. In doing so, our project has taken a dual track. The first track is essentially concerned with understanding the nature of Ireland's progress on achieving environmental SDG targets. In this regard, we ask a simple question, albeit one with a complex answer: how is Ireland performing on the environmental SDGs? The research in this project has focused on providing concrete and measurable answers to that crucial question. The second track is concerned with understanding partnerships and cooperation for the SDGs at a national level. This includes assessing the current institutional arrangements for stakeholder engagement through the National Stakeholder Forum and discerning the perception of SDG MSP actors of current partnership arrangements for SDGs in Ireland. In relation to the two tracks outlined, this chapter refers to the general conclusions emerging from our research.

### 6.1 Ireland's Environmental SDG Index

The development of an environmental SDG index for Ireland is a significant innovation that has the potential to assist policymakers with a more nuanced implementation of the SDGs. Several conclusions precipitate from the results of the indices. One is that Ireland is 64% of the way towards the aggregate best performers in the EU in relation to its performance on the environmental SDGs. In our traffic light system, this is classified as a neutral performance. Essentially, this result suggests that Ireland has considerable work to do if it is to become a leader in the SDGs and environmental sustainability more generally.

The disaggregation of the index into outcomes, Mols and linkages reveals that Ireland's performance is weakest on Mols and strongest on linkages. This suggests that Ireland's capacity-building for the SDGs, which will ultimately dictate future capability to develop more sustainably, is poor. Ireland's Mol index score of 0.34 indicates that it is only 34% of the way towards

the performance of the best in class in the EU-27. This implies that considerable attention and investment is required in this area to improve performance. In contrast, the linkage index score of 0.87 reveals a robust performance in this class of indicators. In this regard, the most beneficial action, in terms of policy implementation, is to determine what Ireland is doing to reach the status of a good performer specifically with respect to linkage targets and to transfer these approaches to areas of weak performance such as the Mol-based SDG targets. One question that frequently arises is what the return on investment might be for investing in Mols. Using our index, this question can be answered through additional modelling work. Specifically, we could model how investment in and the resultant change in performance in Mol-based indicators affects performance in other areas of the SDGs. Such analysis could be achieved by using principal component analysis, factor analysis or other similar statistical approaches to model how components of Mols, outcomes and linkages affect overall SDG performance. For example, it may be the case that investing heavily in Mols considerably improves a country's performance on SDG outcome-based indicators without further direct investment in outcome indicators specifically.

Another conclusion from our work relates to the general construction of indices for the SDGs. Comparable indices such as the SDSN SDG Index, while using similar methods to our index, adopt a goal-based approach to index construction and aggregation. The key innovations of our index are the development of separate indices for individual indicators and the focus on using SDG targets to identify SDG clusters or pillars. For example, our environmental SDGs span 16 out of the 17 goals. This scope and consequent impact of the environmental dimension of the SDGs would simply be lost with a goal-based analysis that focused on SDGs 13–15 (traditionally considered the "environmental" SDGs). Our approach prevents the emergence of goal-based silos and, given the extent of interlinkages in our analysis, bestows additional weight on the principle of indivisibility of the SDGs.

A further conclusion relates to the policy implications of our indices. The disaggregation of our indices and dashboards in which performance, along with the best and the worst in class, is identified for each indicator provides a potentially profitable innovation for policymakers. It is important that we do not identify one nation as the best performer on the SDGs in their entirety; the reality is that the best performers on the SDGs differ considerably depending on the indicator under consideration. Therefore, policy transfer should proceed on an indicator-to-indicator basis as opposed to a one-size-fits-all approach. It is also imperative that, in implementing policy changes for the SDGs, Ireland does not always attempt to “reinvent the wheel”. Our analysis permits the identification of the best performers on individual indicators, and from this the policies implemented by the best performers could be analysed and adapted to the Irish context. This process could accelerate improvements for many SDG indicators, as it avoids the necessity of devising policies from scratch, which can be highly resource intensive.

In developing such an environmental SDG index for Ireland, a further key conclusion that can be drawn is that Ireland needs to improve its performance with respect to the data collection on the environmental aspects of the SDGs. Although we identified 83 unique environmental indicators for our index, only 42 were available for Ireland, and for two of these indicators the most recent data relate to a decade ago. This means that there is a significant gap in our knowledge of Ireland’s performance with respect to almost half of the environmental SDGs. Although there are local proxy indicators for some of the missing data points (such as those outlined on GeoHive – <https://irelandsdg.geohive.ie/>), most of these proxies have no international comparator and therefore cannot be used to assess Ireland’s progress relative to EU peers. The implication here is that Ireland needs to improve its data collection processes for environmental SDG indicators at the institutional level. In some cases, this will require resources to be put in place to fund the data collection, as well as its compilation and management. However, such improvement in data collection is imperative if we are to fully understand Ireland’s performance on the environmental SDGs. It is important to note that, relative to its EU-27 peers, Ireland’s performance in relation to data availability for the environmentally related indicators is impressive.

According to our analysis, Ireland can currently be ranked joint second with Germany in terms of the number of environmental indicators for which data that are sufficient for reporting are available. The UK is the leader in this regard, with 45 of the 83 unique indicators being available.

## 6.2 Multi-stakeholder Partnerships

The MSP research conducted for the project can be considered initial exploratory, and the results are succinctly outlined in Banerjee *et al.* (2020). While the objective was to identify a number of environmental SDG-based MSPs that are functioning in Ireland with local-, regional-, or national-level stakeholder representations and determine how those collaborations were established, how they function and what can be learned from the process, no such cases were identified. However, what was identified was an opportunity to understand the initial conditions that enable or obstruct MSP formation. In this regard, the research draws attention to stakeholder perceptions of the SDG and national stakeholder process in Ireland, the perception that participation in the National Stakeholder Forum neither is meaningful nor represents a true partnership but seems to be only consultative in nature, the complexity of the SDGs, the lack of MSP experience in Ireland, the perceived lack of transparency and poor information flow in relation to Ireland’s SDG implementation. Overall, our research identified how stakeholders perceive MSPs in Ireland and what they see as the key challenges to SDG implementation. The identification of these conditions is necessary to assist with the future planning of SDG implementation.

Pisano *et al.* (2015) found that governance for sustainable development requires long-term planning, the integration of social, economic and environmental policies across different levels of governance, the participation of stakeholder groups in the policy decision-making processes and the ability to reflect on existing and ongoing policies through continuous monitoring, evaluation and re-adaptation. To enhance stakeholder engagement in national-level SDG policy processes, Walsh (2016) has suggested establishing hybrid parliamentary committees that are inter-party, inter-government and inter-Major Group, as well as including other stakeholders. He argues that such a committee structure is necessary to prevent the

capture of parliamentarians by special interest groups. Ultimately, this architecture will aid the delivery of medium- and long-term planning that is essential for sustainability planning. Moreover, it will assist with the achieving of an integrated and inclusive approach to SDG policymaking. By working together with

parliamentarians and bureaucrats, stakeholders can help to craft inclusive and sustainable policy solutions. Perhaps this suggested structure could propel MSPs forward for future SDG delivery and implementation in the Irish context.

# References

- Abbott, K.W. and Snidal, D., 2010. International regulation without international government: improving IO performance through orchestration. *The Review of International Organizations* 5: 315–344.
- Adams, W.M., 2006. *The Future of Sustainability: Re-thinking Environment and Development in the Twenty-first Century*. IUCN, Zurich, Switzerland.
- Alkire, S., Foster, J., Seth, S., Santos, M.E., Roche, J.M. and Ballon, P., 2015. *Multidimensional Poverty Measurement Analysis*. Oxford University Press, Oxford, UK.
- Andonova, L.B., 2010. Public–private partnerships for the earth: politics and patterns of hybrid authority in the multilateral system. *Global Environmental Politics* 10(2): 25–53.
- Austin, J.E., 2000. Strategic collaboration between nonprofits and businesses. *Nonprofit and Voluntary Sector Quarterly* 29(1): 69–97.
- Austin, J.E. and Seitanidi, M.M., 2012. Collaborative value creation: a review of partnering between nonprofits and businesses: Part I. Value creation spectrum and collaboration stages. *Nonprofit and Voluntary Sector Quarterly* 41(5): 726–758.
- Bäckstrand, K. and Kysäer, M., 2014. Old wine in new bottles? The legitimation and delegitimation of UN public–private partnerships for sustainable development from the Johannesburg Summit to the Rio+ 20 Summit. *Globalizations* 11(3): 331–347.
- Banerjee, A., Murphy, E. and Walsh, P.P., 2020. Perceptions of multistakeholder partnerships for the sustainable development goals: a case study of Irish non-state actors. *Sustainability* 12(21): 8872.
- Bartram, J., Brocklehurst, C., Bradley, D., Muller, M. and Evans, B., 2018. Policy review of the means of implementation targets and indicators for the sustainable development goal for water and sanitation. *npj Clean Water* 1: 3.
- Bell, S. and Morse, S., 2018. *Routledge Handbook of Sustainability Indicators*. Routledge, London.
- Bello, A.O., Omachi, P.A., Adeboye, M.A. and Adegboye, A.O., 2019. Awareness and knowledge of sustainable development goals among health workers in Bida, north-central Nigeria. *Journal of Medicine in the Tropics* 21(1): 26.
- Biermann, F. and Pattberg, P., 2008. Global environmental governance: taking stock, moving forward. *Annual Review of Environment and Resources* 33: 277–294.
- Biermann, F., Abbott, K., Andresen, S., Bäckstrand, K., Bernstein, S., Betsill, M.M., Bulkeley, H., Cashore, B., Clapp, J., Folke, C. and Gupta, A., 2012. Transforming governance and institutions for global sustainability: key insights from the Earth System Governance Project. *Current Opinion in Environmental Sustainability* 4(1): 51–60.
- Brannick, T. and Coghlan, D., 2007. In defense of being “native”: the case for insider academic research. *Organizational Research Methods* 10(1): 59–74.
- Brinkerhoff, D.W. and Brinkerhoff, J.M., 2011. Public–private partnerships: perspectives on purposes, publicness, and good governance. *Public Administration and Development* 31(1): 2–14.
- Bryman, A., 2004. Qualitative research on leadership: a critical but appreciative review. *The Leadership Quarterly* 15(6): 729–769.
- Burck, J., Hagen, U., Höhne, N., Nascimento, L. and Bals, C., 2019. *The Climate Change Performance Index 2020*. Germanwatch, Bonn, Germany.
- Carteron, J., Decamps, A. and Suter, B., 2019. *2019 Update Report from Sulitest, Tangible implementation of the HESI & Contributor to the Review of the 2030 Agenda*. Sulitest, New York, NY.
- Chan, S. and Pauw, W.P., 2014. *A Global Framework for Climate Action – Orchestrating Non-state and Subnational Initiatives for More Effective Global Climate Governance*. Discussion Paper 34. German Development Institute, Bonn, Germany.
- Conrad, A. and Cassar, L., 2014. Decoupling economic growth and environmental degradation: reviewing progress to date in the small island state of Malta. *Sustainability* 6(10): 6729–6750.
- Crane, A. and Seitanidi, M.M., 2013. Social partnerships and responsible business: what, why and how? In *Social Partnerships and Responsible Business*. Routledge, Abingdon, UK, pp. 29–40.
- DAFM (Department of Agriculture, Food and the Marine), 2018. Fact sheet on Irish agriculture. Available online: <http://cedia.eu/wp-content/uploads/2019/11/FactSheetOnIrishAgriAugust190918.pdf> (accessed 23 September 2021).

- DCHG (Department of Arts, Heritage and the Gaeltacht), 2011. *Actions for Biodiversity — 2011–2016 Ireland’s National Biodiversity Plan*. Available online: <https://www.npws.ie/sites/default/files/general/national-biodiversity-plan-english.pdf> (accessed 28 January 2021).
- DCHG (Department of Culture, Heritage and the Gaeltacht), 2017. *National Biodiversity Action Plan 2017–2021*. Available online: <https://www.npws.ie/sites/default/files/publications/pdf/National%20Biodiversity%20Action%20Plan%20English.pdf> (accessed 28 January 2021).
- Deaton, A., 2011. Measuring development: different data, different conclusions? In Proceedings of the 8th AFD-EUDN Conference, Paris, 1 December 2010.
- Department of Economic and Social Affairs and the United Nations Development Programme, 2014. TST Issues Brief: Means of implementation; Global partnership for achieving sustainable development. Available online: [https://sustainabledevelopment.un.org/content/documents/2079Issues%20Brief%20Means%20of%20Implementation%20Final\\_TST\\_141013.pdf](https://sustainabledevelopment.un.org/content/documents/2079Issues%20Brief%20Means%20of%20Implementation%20Final_TST_141013.pdf) (accessed 23 September 2021).
- Department of the Taoiseach, 2012. *Our Sustainable Future – A Framework for Sustainable Development for Ireland*. Available online: [https://www.financialjustice.ie/assets/files/pdf/our\\_sustainable\\_future.pdf](https://www.financialjustice.ie/assets/files/pdf/our_sustainable_future.pdf) (accessed 23 September 2021).
- DMEF (Danish Ministry of Environment and Food), 2012. Act no. 1375. Act on sharing benefits arising from the utilisation of genetic resources. Available online: <https://absch.cbd.int/api/v2013/documents/8C9F1ADB-89DF-B6E2-DF7D-F3F0802AE59B/attachments/Act%20on%20sharing%20benefits%20arising%20from%20the%20utilisation%20of%20genetic%20resources.pdf> (accessed 28 January 2021).
- DMEF (Danish Ministry of Environment and Food), 2018. *Country Report on the Implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)*. Available online: <http://www.fao.org/3/I8688EN/i8688en.pdf> (accessed 28 January 2021).
- DoD (Department of Defence), 2018. *Strategic Emergency Management National Structures and Framework*. Available online: <https://www.gov.ie/en/publication/374396-strategic-emergency-management-national-structures-and-framework/> (accessed 23 September 2021).
- DoD (Department of Defence), 2019. *National Risk Assessment for Ireland 2017*. Available online: <https://assets.gov.ie/30726/04c9b4280572447a90f4a56622aba71a.pdf> (accessed 28 January 2021).
- Dodds, F., 2015. *Multi-stakeholder Partnerships: Making Them Work for the Post-2015 Development Agenda*. Available online: <https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=1619&menu=1515>. (accessed 29 January 2021).
- Dunn, E., 2007. Of pufferfish and ethnography: plumbing new depths in economic geography. In Tickell, A., Sheppard, E., Peck, J. and Barnes, T. (eds), *Politics and Practice in Economic Geography*. Sage Publications Ltd, London, pp. 82–93.
- Echebarria, C., Barrutia, J.M. and Aguado, I., 2004. Local Agenda 21: progress in Spain. *European Urban and Regional Studies* 11(3): 273–281.
- EEA (European Environment Agency), 2016. *More from Less — Material Resource Efficiency in Europe – 2015 Overview of Policies, Instruments and Targets in 32 Countries*. EEA Report No 10/2016. Available online <https://www.eea.europa.eu/publications/more-from-less/#additional-filesGERMANY%20%20final%20country%20profile%20for%20web%202021%20May%202016.pdf> (accessed 28 January 2021).
- EPA (Environmental Protection Agency), 2014. *Towards a Resource Efficient Ireland – A National Strategy to 2020 Incorporating Ireland’s National Waste Prevention Programme*. Available online: <https://www.epa.ie/publications/circular-economy/resources/TowardsAResourceEfficientIreland.pdf> (accessed 28 January 2021).
- EPA (Environmental Protection Agency), 2018. *Ireland’s Greenhouse Gas Emissions Projections 2017–2035*. Available online: <https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/irelands-greenhouse-gas-emissions-projections-2017-2035.php> (accessed 28 January 2021).
- EPA (Environmental Protection Agency), 2019. *Urban Waste Water Treatment in 2017*. Available online: <https://www.epa.ie/publications/monitoring--assessment/waste-water/Final-report-for-website.pdf> (accessed 28 January 2021).
- European Commission, 2019. January infringements package: key decisions. Available online: [https://ec.europa.eu/commission/presscorner/detail/en/MEMO\\_19\\_462](https://ec.europa.eu/commission/presscorner/detail/en/MEMO_19_462) (accessed 28 January 2021).
- Eurostat, 2016. *Sustainable Development in the European Union. A Statistical Glance from the Viewpoint of the UN Sustainable Development Goals*. Available online: <https://ec.europa.eu/eurostat/documents/3217494/7745644/KS-02-16-996-EN-N.pdf/ae6b7f9-d06c-4c83-b16f-c72b0779ad03?t=1480064220000> (accessed 23 September 2021).

- Farnia, L., Cavalli, L., Lizzi, G. and Vergalli, S., 2019. Methodological insights to measure the agenda 2030 at urban level in Italy. *Sustainability* 11(17): 4598.
- FFEM (Fonds Français pour l'Environnement Mondial), 2015. *Strategic Programming Framework 2015–2018*. Available online: <https://www.ffem.fr/en/ressources/strategic-programming-framework-2015–2018> (accessed 28 January 2021).
- Food and Agriculture Organization of the United Nations Treaties Database (FAOTD), 2021. *International Treaty on Plant Genetic Resources for Food and Agriculture*. Available online: <http://www.fao.org/treaties/results/details/en/c/TRE-000005/> (accessed 28 January 2021).
- Fowler, A. and Biekart, K., 2017. Multi-stakeholder initiatives for sustainable development goals: the importance of interlocutors. *Public Administration and Development* 37(2): 81–93.
- Fox-Rogers, L. and Murphy, E., 2014. Informal strategies of power in the local planning system. *Planning Theory* 13(3): 244–268.
- Galli, A., Đurović, G., Hanscom, L. and Knežević, J., 2018. Think globally, act locally: implementing the sustainable development goals in Montenegro. *Environmental Science & Policy* 84: 159–169.
- Glasbergen, P., 2010. Global action networks: agents for collective action. *Global Environmental Change* 20(1): 130–141.
- Government of France, 2014. Act no. 2014-773 of Orientation and Programming Relating to Development Policy and International Solidarity (LOP-DSI). Available online: <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029210384&dateTexte=20180930> (accessed 28 January 2021).
- Government of Ireland, 2018a. *The Sustainable Development Goals National Implementation Plan 2018–2020*. Available online: <https://www.gov.ie/en/publication/7cde9f-the-sustainable-development-goals-national-implementation-plan-2018-/> (accessed 23 September 2021).
- Government of Ireland, 2018b. *Ireland: Voluntary National Review (VNR) 2018. Report on the Implementation of the 2030 Agenda to the UN High-Level Political Forum on Sustainable Development*. Available online: <https://www.gov.ie/en/publication/97fc1-ireland-voluntary-national-review-2018/> (accessed 23 September 2021).
- Government of Ireland, undated. Ireland's SDG data hub – GeoHive. Available online: <https://irelandsdg.geohive.ie/> (accessed 28 January 2021).
- Gray, B. and Stites, J.P., 2013. *Sustainability through Partnerships. Capitalizing on Collaboration*. Network for Business Sustainability, London, Ontario.
- Hajer, M., Nilsson, M., Raworth, K., Bakker, P., Berkhout, F., De Boer, Y., Rockström, J., Ludwig, K. and Kok, M., 2015. Beyond cockpit-ism: four insights to enhance the transformative potential of the sustainable development goals. *Sustainability* 7(2): 1651–1660.
- Haywood, L.K., Funke, N., Audouin, M., Musvoto, C. and Nahman, A., 2019. The sustainable development goals in South Africa: investigating the need for multi-stakeholder partnerships. *Development Southern Africa* 36(5): 555–569.
- Herlitz, A. and Horan, D., 2017. A model and indicator of aggregate need satisfaction for capped objectives and weighting schemes for situations of scarcity. *Social Indicators Research* 133(2): 413–430.
- Huxham, C. and Vangen, S., 2013. *Managing to Collaborate: The Theory and Practice of Collaborative Advantage*. Routledge, London.
- ISB (Irish Statute Book), 2019. S.I. No. 253/2019 – European Union (Nagoya Protocol on Access to Genetic Resources and Benefit-Sharing) Regulations 2019. Available online: <http://www.irishstatutebook.ie/eli/2019/si/253/made/en/pdf> (accessed 28 January 2021).
- Islam, M.M. and Shamsuddoha, M., 2018. Coastal and marine conservation strategy for Bangladesh in the context of achieving blue growth and sustainable development goals (SDGs). *Environmental Science & Policy* 87: 45–54.
- Jati, H.F., Darsono, S.N.A.C., Hermawan, D.T., Yudhi, W.A.S. and Rahman, F.F., 2019. Awareness and knowledge assessment of sustainable development goals among university students. *Jurnal Ekonomi & Studi Pembangunan* 20(2): 163–175.
- Jorgensen, D.L., 2015. Participant observation. In Scott, R.A. and Kosslyn, S.M. (eds), *Emerging Trends in the Social and Behavioral Sciences: An Interdisciplinary, Searchable, and Linkable Resource*. Wiley Online Library, pp. 1–15. <https://doi.org/10.1002/9781118900772.etrds0247>
- Kararach, G., Nhamo, G., Mubila, M., Nhamo, S., Nhemachena, C. and Babu, S., 2017. Reflections on the Green Growth Index for developing countries: a focus of selected African countries. *Development Policy Review* 36: O432–O454.
- Khagram, S. and Ali, S.H., 2008. Transnational transformations: from government centric interstate regimes to multi-actor, multi-level global governance. In Park, J., Conca, K. and Matthias, F. (eds), *The Crisis of Global Environmental Governance: Towards a New Political Economy of Sustainability*. Routledge, New York, NY, pp. 209–249.



- Klaver, J., 2016. Measuring Ireland's progress in the United Nations' "data revolution": a study into national environmental data availability for the 2030 Agenda for Sustainable Development. MSc Dissertation. UCD School of Politics and International Relations, Dublin.
- Klingebiel, S. and Paulo, S., 2015. *Orchestration: An Instrument for Implementing the Sustainable Development Goals*. Briefing Paper, 14. German Development Institute, Bonn, Germany.
- Kolk, A., 2013. Partnerships as panacea for addressing global problems? On rationale, context, actors, impact and limitations. In Seitanidi, M. and Crane, A. (eds), *Social Partnerships and Responsible Business: A Research Handbook*. Routledge, London, pp. 43–71.
- Kolk, A., Van Tulder, R. and Kostwinder, E., 2008. Business and partnerships for development. *European Management Journal* 26(4): 262–273.
- Kuenkel, P. and Aitken, A., 2015. Key factors for the successful implementation of stakeholder partnerships: the case of the African Cashew Initiative. In Bitzer, V., Hamann, R., Hall, M. and Griffin-EL, E.W. (eds), *The Business of Social and Environmental Innovation – New Frontiers in Africa*. Springer, Cham, Switzerland, pp. 183–197.
- Kwatra, S., Kumar, A. and Sharma, P., 2020. A critical review of studies related to construction and computation of Sustainable Development Indices. *Ecological Indicators* 112: 106061.
- Le Blanc, D., 2015. Towards integration at last? The sustainable development goals as a network of targets. *Sustainable Development* 23(3): 176–187.
- Lincoln, Y.S. and Guba, E.G., 1986. But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New Directions for Program Evaluation* 1986(30): 73–84.
- Lynch, A., LoPresti, A. and Fox, C., 2019. *The 2019 US Cities Sustainable Development Report*. Sustainable Development Solutions Network (SDSN), New York, NY.
- Mason, M., 2010. Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research* 11(3).
- Maxwell, J., 1992. Understanding and validity in qualitative research. *Harvard Educational Review* 62(3): 279–301.
- Muñoz-Erickson, T.A., Cutts, B.B., Larson, E.K., Darby, K.J., Neff, M., Wutich, A. and Bolin, B., 2010. Spanning boundaries in an Arizona watershed partnership: information networks as tools for entrenchment or ties for collaboration? *Ecology and Society* 15(3): 22.
- Nilsson, M., Griggs, D. and Visbeck, M., 2016. Policy: map the interactions between sustainable development goals. *Nature* 534: 320–322.
- Nilsson, M., Chisholm, E., Griggs, D., Howden-Chapman, P., McCollum, D., Messerli, P., Neumann, B., Stevance, A.-S., Visbeck, M. and Stafford-Smith, M., 2018. Mapping interactions between the sustainable development goals: lessons learned and ways forward. *Sustainability Science* 13: 1489–1503.
- OECD (Organisation for Economic Co-operation and Development), 2016. *Handbook on Constructing Composite Indicators: Methodology and User Guide*. Available online: <https://www.oecd.org/els/soc/handbookonconstructingcompositeindicatorsmethodologyanduserguide.htm> (accessed 29 January 2021).
- Omisore, A.G., Babarinde, G.M., Bakare, D.P. and Asekun-Olarinmoye, E.O., 2017. Awareness and knowledge of the sustainable development goals in a University Community in Southwestern Nigeria. *Ethiopian Journal of Health Sciences* 27(6): 669–676.
- Pattberg, P. and Widerberg, O., 2015. Theorising global environmental governance: key findings and future questions. *Millennium* 43(2): 684–705.
- Pattberg, P. and Widerberg, O., 2016. Transnational multistakeholder partnerships for sustainable development: conditions for success. *Ambio* 45(1): 42–51.
- Pham-Truffert, M., Rueff, H. and Messerli, P., 2019. Knowledge for sustainable development: interactive repository of SDG interactions. CDEdatablog. Available online: <https://datablog.cde.unibe.ch/index.php/2019/08/29/sdg-interactions/> (accessed 28 January 2021).
- Pisano, U., Lange, L.K., Hametner, M. and Berger, G., 2015. *The Sustainable Development Goals (SDGs) and Their Impact on the European SD Governance Framework: Preparing for the Post-2015 Agenda*. European Sustainable Development Network. Available online: [https://www.sd-network.eu/quarterly%20reports/report%20files/pdf/2015-January-The\\_Sustainable\\_Development\\_Goals\\_\(SDGs\)\\_and\\_their\\_impact\\_on\\_the\\_European\\_SD\\_governance\\_framework.pdf](https://www.sd-network.eu/quarterly%20reports/report%20files/pdf/2015-January-The_Sustainable_Development_Goals_(SDGs)_and_their_impact_on_the_European_SD_governance_framework.pdf) (accessed 28 January 2021).
- Provan, K.G. and Kenis, P., 2008. Modes of network governance: structure, management, and effectiveness. *Journal of Public Administration Research and Theory* 18(2): 229–252.
- Reeves, E., 2013. Public–Private Partnerships in Ireland: A Review of the Experience 1999–2012. SSRN. <http://dx.doi.org/10.2139/ssrn.2215795>.

- REMRA (Republic of Estonia Ministry for Rural Affairs), 2019. *Estonian Land Lives and Nourishes*. Available online: <https://www.agri.ee/sites/default/files/content/valjaanded/valjaanne-2019-messitrukis-eng.pdf> (accessed 28 January 2021).
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin III, F.S., Lambin, E., Lenton, T.M., Scheffer, M., Folke, C., Schellhuber, H.J. and Nykvist, B., 2009. Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society* 14(2): 32.
- Ruggie, J.G., 2004. Reconstituting the global public domain – Issues, actors, and practices. *European Journal of International Relations* 10(4): 499–531.
- Sachs, J.D., 2015. Achieving the sustainable development goals. *Journal of International Business Ethics* 8(2): 53.
- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G. and Fuller, G., 2019. *Sustainable Development Report 2019*. Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN), New York, NY.
- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G. and Woelm, F., 2021. *Sustainable Development Report 2021*. Cambridge University Press, Cambridge, UK. <https://doi.org/10.1017/9781009106559>.
- Schrujver, S.G., 1999. *Interorganizational partnerships and cooperative strategy*. Dutch University Press, Tilburg, Netherlands.
- Selsky, J.W. and Parker, B., 2005. Cross-sector partnerships to address social issues: challenges to theory and practice. *Journal of Management* 31(6): 849–873.
- Selsky, J.W. and Parker, B., 2010. Platforms for cross-sector social partnerships: prospective sensemaking devices for social benefit. *Journal of Business Ethics* 94(1): 21–37.
- Severino, J.M. and Ray, O., 2010. *The End of ODA (II): The Birth of Hypercollective Action*. Working Paper No. 218. Center for Global Development, Washington, DC. Available online: <http://www.cgdev.org/content/publications/detail/1424253> (accessed 16 February 2020).
- Shah, A., 2017. Ethnography? Participant observation, a potentially revolutionary praxis. *HAU: Journal of Ethnographic Theory* 7(1): 45–59.
- Steets, J., 2010. Concrete partnership accountability standards. In *Accountability in Public Policy Partnerships*. Palgrave Macmillan, London, pp. 6–7.
- Steijn, B., Klijn, E.H. and Edelenbos, J., 2011. Public private partnerships: added value by organizational form or management? *Public Administration* 89(4): 1235–1252.
- UN (United Nations), 1992. Conference on Environment & Development: Agenda 21. Available online: <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf> (accessed 28 January 2021).
- UN (United Nations), 2014. TST issues brief: means of implementation; Global partnership for achieving sustainable development. Available online: [https://sustainabledevelopment.un.org/content/documents/2079Issues%20Brief%20Means%20of%20Implementation%20Final\\_TST\\_141013.pdf](https://sustainabledevelopment.un.org/content/documents/2079Issues%20Brief%20Means%20of%20Implementation%20Final_TST_141013.pdf) (accessed 28 January 2021).
- UN (United Nations), undated. Sustainable Development Goals. Available online: <https://www.un.org/sustainabledevelopment/globalpartnerships/> (accessed 18 October 2021).
- UNCBD (United Nations Convention on Biological Diversity), 2011. *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from Their Utilization to the Convention on Biological Diversity*. Available online: <https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf> (accessed 28 January 2021).
- UNDRR (United Nations Disaster Risk Reduction), 2019. Sendai Framework Data Readiness Review – Report – Ireland. Available online: [https://www.preventionweb.net/files/54296\\_irelandirl.pdf](https://www.preventionweb.net/files/54296_irelandirl.pdf) (accessed 28 January 2021).
- UNDRR (United Nations Disaster Risk Reduction), undated. Prevention web. Available online: <https://www.preventionweb.net/> (accessed 23 September 2021).
- UNEP (United Nations Environment Programme), 2019. *Measuring Progress towards Achieving the Environmental Dimension of the SDGs*. Available online: <https://wedocs.unep.org/bitstream/handle/20.500.11822/27627/MeaProg2019.pdf?sequence=1&isAllowed=y> (accessed 18 March 2019).
- UNESCAP (United Nations Economic and Social Commission for Asia and the Pacific). 2019. *Regional Road Map for Implementing the 2030 Agenda For Sustainable Development in Asia and the Pacific*. Progress Report. Available online: [https://www.unescap.org/sites/default/files/Regional\\_Road\\_Map\\_SDG\\_in\\_A-P\\_Progress\\_Report\\_2019.pdf](https://www.unescap.org/sites/default/files/Regional_Road_Map_SDG_in_A-P_Progress_Report_2019.pdf) (accessed 24 August 2021).

- UNGA (United Nations General Assembly), 2004. Resolution 58/227: Rules of procedure of the Governing Council of the United Nations Human Settlements Programme (UN-Habitat). Available online: <https://undocs.org/en/A/RES/58/227> (accessed 24 August 2021).
- UNGA (United Nations General Assembly), 2015. Transforming Our World: the 2030 Agenda for sustainable development – Agenda 2030. Available online: <https://sdgs.un.org/2030agenda> (accessed 28 January 2021).
- UNSD (United Nations Statistics Division), 2019. *Sustainable Development Goal (SDG) Indicators Correspondence with the Basic Set of Environment Statistics of the FDES 2013*. Available online: [https://unstats.un.org/unsd/envstats/fdes/sdgsind\\_basicsetmatrix.pdf](https://unstats.un.org/unsd/envstats/fdes/sdgsind_basicsetmatrix.pdf) (accessed 28 January 2021).
- UNSD (United Nations Statistics Division), 2021. Tier classification for global SDG indicators. Available online: <https://unstats.un.org/sdgs/iaeg-sdgs/tier-classification/> (accessed 28 January 2021).
- UNSD (United Nations Statistics Division), undated. Sustainable Development Goal indicators. Available online: <https://unstats.un.org/sdgs/> (accessed 28 January 2021).
- UNTC (United Nations Treaty Collection Database), 2021. Chapter XXVII Environment. 8. b Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity. Available online: [https://treaties.un.org/Pages/Treaties.aspx?id=27&subid=A&clang=\\_en](https://treaties.un.org/Pages/Treaties.aspx?id=27&subid=A&clang=_en) (accessed 23 September 2021).
- Van der Molen, I. and Stel, N., 2010. The changing role of the state and state–society relations. In *Multi-Stakeholder Processes, Service Delivery and State Institutions*, p. 10. Available online: <https://edepot.wur.nl/144317> (accessed 23 September 2021).
- Vangen, S. and Huxham, C., 2013. Building and using the theory of collaborative advantage. In Keast, R., Mandell, M. and Agranoff, R. (eds), *Network Theory in the Public Sector: Building New Theoretical Frameworks*. Routledge, New York, NY, pp. 65–81.
- Waddell, S. and Brown, L.D., 1997. Fostering intersectoral partnering: a guide to promoting cooperation among government, business, and civil society actors. *IDR Reports* 13(3): 1–26.
- Walsh, P., 2016. Implementing the UN 2030 Sustainable Development Agenda in Ireland: a case for hybrid sustainable development parliamentary committees. *Irish Studies in International Affairs* 27: 9–19.
- Wendling, Z., Emerson, J., Esty, D. Levy, M. and de Sherbinin, A., 2018. *2018 Environmental Performance Index (EPI)*. Yale Centre for Environmental Law & Policy, New Haven, CT.
- Wendling, Z., Emerson, J., Esty, D. Levy, M. and de Sherbinin, A., 2020. *2020 Environmental Performance Index*. Yale Centre for Environmental Law & Policy, New Haven, CT.

# Abbreviations

<b>CSR</b>	Corporate social responsibility
<b>DCCAE</b>	Department of Communications, Climate Action and Environment
<b>EPI</b>	Environmental Performance Index
<b>EU-27</b>	27 Member States of the EU
<b>GDP</b>	Gross domestic product
<b>HLPF</b>	High-level Political Forum
<b>IAEG</b>	Inter-agency and Expert Group
<b>MDG</b>	Millennium Development Goals
<b>Mol</b>	Means of implementation
<b>MSP</b>	Multi-stakeholder partnership
<b>NIP</b>	National Implementation Plan
<b>NWPP</b>	National Waste Prevention Programme
<b>PGRFA</b>	Plant Genetic Resources for Food and Agriculture
<b>PI</b>	Principal investigator
<b>SDG</b>	Sustainable Development Goal
<b>SDSN</b>	Sustainable Development Solutions Network
<b>STWG</b>	Scientific and Technology Working Group
<b>UN</b>	United Nations
<b>UNEP</b>	United Nations Environment Programme
<b>VNR</b>	Voluntary National Review
<b>WP</b>	Work package

# Appendix 1 Outline of Data Descriptives for the 83 Indicators Comprising the Irish Environmental SDG Index

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
1.4.2 "Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure"	Excel	Local (small areas)	GeoHive	2016	Yes	II	I
1.5.1/11.5.1/13.1.1 "Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population"	Excel	National	UN statistics (UNISDR) *GeoHive	2017 *2016	Yes	II	I
1.5.2/11.5.2 "Direct economic loss attributed to disasters in relation to global gross domestic product (GDP)"	Excel	National	UN statistics (UNISDR) *GeoHive	2016 *2016–2017	Yes	II	I
1.5.3/11.b.1/13.1.2 "Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030"	Excel	National	UN statistics (UNISDR)	2015–2017	Yes	I	I
1.5.4/11.b.2/13.1.3 "Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies"	Excel	National	UN statistics (Sendai Framework Monitoring System as provided by designated national focal points)	2015–2017	Yes	II	I
2.4.1 "Proportion of agricultural area under productive and sustainable agriculture"	Excel	National	SDSN Index	2016–2019	Yes	II	II
2.5.1 "Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities"	Excel	National	UN statistics (FAO)	2018–2019	Yes	I	I
2.5.2 "Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction"	Excel	National	UN statistics (FAO)	2000–2019	Yes	I	I

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
3.9.1 “Mortality rate attributed to household and ambient air pollution”	Excel	National	UN statistics (WHO)	2016	Yes	I	I
3.9.2 “Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)”	Excel	National	UN statistics (WHO)	2016	Yes	I	I
3.9.3 “Mortality rate attributed to unintentional poisoning”	Excel	National	UN statistics (WHO)	2000–2016	Yes	I	I
4.7.1 “Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment”	Excel	National	Department of Education and Skills	2015 (next data release 2020, concerned with data from 2018)	No	III	III
5.a.1 “(a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure”	Excel	National	CSO	2016	Yes	II	II
6.1.1 “Proportion of population using safely managed drinking water services”	Excel	National	UN statistics (WHO/ UNICEF)	2000–2017	Yes	II	I
		*Local (small areas, county, NUTS, electoral division)	*GeoHive	*2016			
6.3.1 “Proportion of wastewater safely treated”	Excel	National	UN statistics (WHO)	2018	Yes	II	I
6.3.2 “Proportion of bodies of water with good ambient water quality”	Excel	National	UN statistics (Environment Live)	2017 (next reporting cycle 2020)	Yes	II	I
		*Local (small areas, county, NUTS, electoral division)	*GeoHive	*2015			
6.4.1 “Change in water-use efficiency over time”	Excel	National	FAO (AQUASTAT)	1993–2012	No	II	II

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
6.4.2 “Level of water stress: freshwater withdrawal as a proportion of available freshwater resources”	Excel	National	UN statistics (UNEP)	2010	Yes	I	I
6.5.1 “Degree of integrated water resources management implementation (0–100)”	Excel	National	UN statistics (UNEP)	2018	Yes	I	I
6.5.2 “Proportion of transboundary basin area with an operational arrangement for water cooperation”	Excel	National	UN statistics (UNESCO)	2017	Yes	I	I
6.6.1 “Change in the extent of water-related ecosystems over time”	Excel	Local, national	UN statistics (UNEP), EPA, Geological Survey Ireland	Different dates for each data source	No	I	II
6.a.1 “Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan”	Excel	National	OECD	2005–2017	Yes	I	II
6.b.1 “Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management”	Currently no data available for Ireland				No	I	II
7.1.2 “Proportion of population with primary reliance on clean fuels and technology”	Excel	National	UN statistics (WHO)	2000–2017	Yes	I	I
7.2.1 “Renewable energy share in the total final energy consumption”	Excel	National	UN statistics (IEA)	2000–2016	Yes	I	I
		*Local (NUTS)	*GeoHive (SEAI, CSO)	*2015–2016			
7.3.1 “Energy intensity measured in terms of primary energy and GDP”	Excel	National	UN statistics (IEA)	2000–2016	Yes	I	I
7.a.1 “International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems”	Excel	National	OECD/IRENA	2012–2016	Yes	II	II

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
7.b.1 “Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services”	Excel	National	OECD *CSO	1999–2017	Yes	III	II
8.9.2 “Proportion of jobs in sustainable tourism industries out of total tourism jobs”	Currently no data internationally				No	III	III
9.1.1 “Proportion of the rural population who live within 2 km of an all-season road”	Excel	National	World Bank	2002	No	II	II
9.4.1 “CO <sub>2</sub> emission per unit of value added”	Excel	Local (NUTS) *National	UN statistics *GeoHive	2000–2016 *2016	Yes	I	I
11.2.1 “Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities”	Excel	National	SDSN *Eurostat	2019 *2000–2016	Yes	II	II
11.3.1 “Ratio of land consumption rate to population growth rate”	Excel	National	Eurostat CSO	2012–2015	No	II	II
11.3.2 “Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically”	Currently no data available for Ireland					II	II
11.4.1 “Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/ investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)”	Excel	National	Department of Culture, Heritage and Gaeltacht	2018	No	II	II
11.6.1 “Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities”	Excel	County (Dublin) *Local (admin. county)	UN statistics *GeoHive (EPA, OSi)	2015 *2013	Yes	II	I



Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
11.6.2 “Annual mean levels of fine particulate matter (e.g. PM <sub>2.5</sub> and PM <sub>10</sub> ) in cities (population weighted)”	Excel	National	UN statistics (WHO)	2016	Yes	I	I
11.7.1 “Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities”	Currently no data available for Ireland					II	II
11.c.1 “Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilising local materials”	Currently no data internationally				No	III	III
12.1.1 “Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies”	Currently no data for Ireland				No	II	II
12.2.1/8.4.1 “Material footprint, material footprint per capita, and material footprint per GDP”	Currently no data internationally				No	III	III
12.2.2/8.4.2 “Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP”	Excel	National	UN statistics (Environment Live Global Material Flows Database)	2000–2017	Yes	I	I
12.3.1 “(a) Food loss index and (b) food waste index”	Excel	Local (county, NUTS)	GeoHive (CIT, CSO, OSi)	2012	Yes	III	I
12.4.1 “Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement”	Excel	National	UN statistics (Environment Live)	2015	Yes	I	I
12.4.2 “Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment”	Excel	National	Eurostat, CSO, EPA	2014	No	II	II
12.5.1 “National recycling rate, tons of material recycled”	Excel	National	Eurostat *EPA	2010–2016 *2010–2016	Yes	III	II

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
12.6.1 "Number of companies publishing sustainability reports"	Excel	National	Global Reporting Initiative	1999–2018	No	II	II
12.7.1 "Number of countries implementing sustainable public procurement policies and action plans"	Excel	National	UNEP	2018	Yes	III	I
12.8.1 "Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment"	Excel/PDF	National	Department of Education and Skills	2015 (next data release 2020, concerned with data from 2018)	No	III	III
12.a.1 "Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies"	Excel	National	OECD	2004–2016	No	III	III
12.b.1 "Number of sustainable tourism strategies or policies and implemented action plans with agreed monitoring and evaluation tools"	PDF	National	Fáilte Ireland	2017	No	III	III
12.c.1 "Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels"	Excel	National	UN statistics (UNEP)	2013, 2015	Yes	II	I
13.2.1 "Number of countries that have communicated the establishment or operationalisation of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)"	Excel	National	United Nations Framework Convention on Climate Change	2015	No	III	III

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
13.3.1 "Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula"	Currently no data internationally				No	III	III
13.3.2 "Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions"	Currently no data internationally				No	III	III
13.a.1 "Mobilised amount of United States dollars per year between 2020 and 2025 accountable towards the \$100 billion commitment"	Excel	National	Eurostat	2014–2017	Yes	III	II
13.b.1 "Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities"	Currently no data internationally				No	III	III
14.1.1 "Index of coastal eutrophication and floating plastic debris density"	Excel	Local (OSPAR Marine Areas)	GeoHive (OSPAR, EPA, Marine Institute)	2014	Yes	III	I
14.2.1 "Proportion of national exclusive economic zones managed using ecosystem-based approaches"	Currently no data internationally				No	III	III
14.3.1 "Average marine acidity (pH) measured at agreed suite of representative sampling stations"	Excel	Regional	Eurostat	1989–2014	No	II	II
14.4.1 "Proportion of fish stocks within biologically sustainable levels"	Excel	National	SDSN	2016–2019	Yes	I	II
14.5.1. "Coverage of protected areas in relation to marine areas"	Excel	National	UN statistics (The World Database on Protected Areas, IUCN, UNEP)	2000–2018	Yes	I	I

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
14.6.1 “Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing”	Excel	National	UN statistics (FAO)	2018	Yes	II	I
14.7.1 “Sustainable fisheries as a proportion of GDP in small island developing States, least developed countries and all countries”	Excel	National	CSO	2007–2015	No	II	II
14.a.1 “Proportion of total research budget allocated to research in the field of marine technology”	Excel	National	Department of Business, Enterprise and Innovation	2017	No	II	II
14.c.1 “Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources”	Excel	National	UN Division for Ocean Affairs and Law of the Sea	Different dates for each data point	No	III	II
15.1.1 “Forest area as a proportion of total land area”	Excel	National	UN statistics (FAO)	2000–2015	Yes	I	I
		*Local (county, NUTS, small areas, electoral division)	*GeoHive (NPWS, OSi)	*2017			
15.1.2 “Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type”	Excel	National	UN statistics (BirdLife International, IUCN and UNEP-WCMC)	2000–2018	Yes	I	I
		*Local (small areas, electoral division)	*GeoHive (NPWS, OSi)	*2018			
15.2.1 “Progress towards sustainable forest management”	Excel	National	UN statistics (FAO)	2000–2018	Yes	I	II
15.3.1 “Proportion of land that is degraded over total land area”	Excel	National	Eurostat	2000–2012	No	II	II

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
15.4.1 "Coverage by protected areas of important sites for mountain biodiversity"	Excel	National	UN statistics (BirdLife International, IUCN and UNEP-WCMC)	2000–2018	Yes	I	I
		*Local (county, NUTS, small areas, electoral division)	*GeoHive (NPWS, OSi)	*2018			
15.4.2 "Mountain Green Cover Index"	Excel	National	UN statistics (FAO)	2017	Yes	I	I
15.5.1 "Red List Index"	Excel	National	UN statistics (BirdLife International and IUCN)	2000–2019	Yes	I	I
15.6.1 "Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits"	Excel	National	UN statistics (Convention on Biological Diversity)	2012–2018	Yes	I	I
15.7.1/15.c.1 "Proportion of traded wildlife that was poached or illicitly trafficked"	Excel	National	CITES Trade Database	1975–2018	No	II	II
15.8.1 "Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species"	Excel	National	*Different sources for each data point	*Different dates for data points	No	II	II
15.9.1 "Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020"	Excel	National	Convention on Biological Diversity	2011–2016	No	II	II
15.a.1 "Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems"	Excel	National	UN statistics (OECD)	2002–2017	Yes	I/III	I/III
15.b.1 "Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems"	Excel	National	UN statistics (OECD)	2002–2017	Yes	I/III	I/III

Indicator number and description	Data format	Spatial scale	Source	Data year(s)	Data can be used for reporting	Tier <sup>a</sup> (IAEG)	Tier (national)
16.8.1 "Proportion of members and voting rights of developing countries in international organisations"	Excel	National	UN statistics [Financing for Sustainable Development Office, DESA (FSDO)]	2016–2017	Yes	I	I
17.6.1 "Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation"	Currently no data internationally				No	III	III
17.7.1 "Total amount of approved funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies"	Currently no data internationally				No	II	II
17.9.1 "Dollar value of financial and technical assistance (including through North-South, South-South and triangular cooperation) committed to developing countries"	Currently no data for Ireland				No	I	II
17.14.1 "Number of countries with mechanisms in place to enhance policy coherence of sustainable development"	PDF	National	DECC (Formerly DCCAE)	2018	No	III	III

The inspiration for this structured data probing exercise and the subsequent table that emerged (Appendix 1) was the dissertation by J. Klaver (2016).

Green shading represents indicators for which the data correspond directly with the SDG indicator in question and are currently used for reporting. Blue shading represents indicators for which "adequate" proxy data are available. Orange shading represents indicators for which poor proxy data are available that do not directly correspond to the SDG indicator but are nevertheless useful in the absence of better available data. No shading represents indicators that currently do not have potential proxy data.

<sup>a</sup>Tier I: indicator is conceptually clear, has an internationally established methodology and standards are available, and data are regularly produced by countries (for at least 50% of countries) and of the population in every region where the indicator is relevant. Tier II: indicator is conceptually clear, has an internationally established methodology and standards are available, but the data are not regularly produced by countries. Tier III: no internationally established methodology or standards are yet available for the indicator, but methodology/standards are being (or will be) developed or tested.

Asterisks (\*) in columns 2, 3, 4 and 5 refer to the information relevant to the secondary source of indicator data. For example, the primary data source and the data used in the index for indicator 7.2.1 are from UN statistics and refer to data that are available at the national level. However, these data can be used in combination with data from GeoHive, which geographically disaggregates data into NUTs (Nomenclature of Territorial Units for Statistics), local level, etc. The spatial scale, years of data, of relevance to GeoHive are labelled with "\*\*".

NUTS were drawn up by Eurostat to define territorial units for the production of regional statistics across the EU. NUTS 3 region comprises the eight Regional Authorities (Border, West, Mid-West, South-East, South-West, Dublin, Mid-East, Midlands) established under the Local Government Act, 1991 (Regional Authorities) (Establishment) Order, 1993 which came into operation on January 1, 1994.

Local (admin. county) indicates that the data for this indicator are available at the local level and have specifically been disaggregated at the level of administrative county (county).

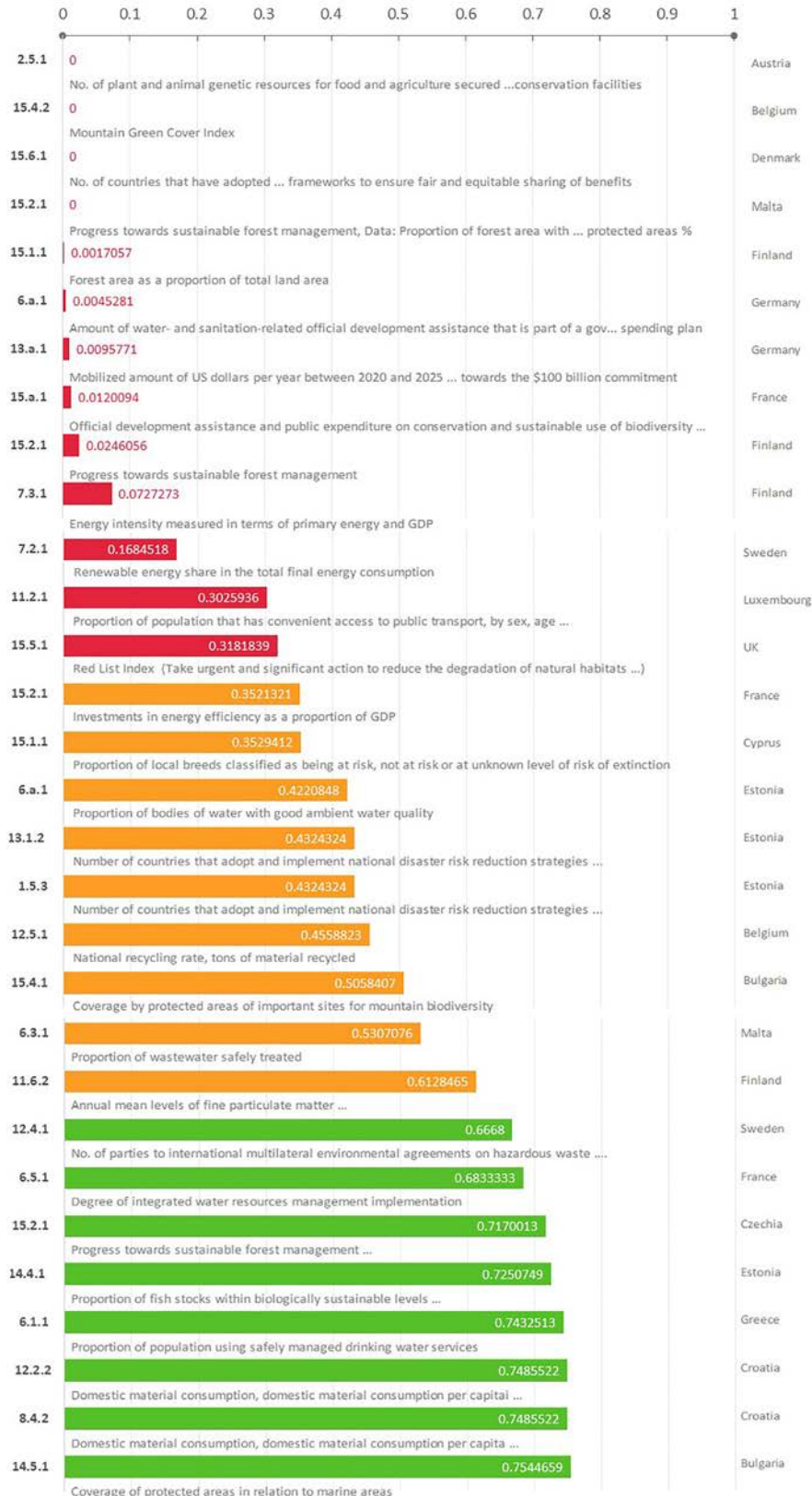
CBD, Convention on Biological Diversity; CIT, Cork Institute of Technology; CSO, Central Statistics Office; DCCAE, Department of Communications, Climate Action and Environment; DECC, Department of Environment, Climate and Communications; DESA, Department of Economic and Social Affairs; FAO, Food and Agriculture Organization of the United Nations; FSDO, Financing for Sustainable Development Office; IEA, International Energy Agency; IRENA, International

Renewable Energy Agency; IUCN, International Union for Conservation of Nature; NPWS, National Parks and Wildlife Service; OSi, Ordnance Survey Ireland; OSPAR, Convention for the Protection of the Marine Environment of the North-East Atlantic; PM<sub>2.5</sub>, particulate matter that is less than 2.5µm in diameter; PM<sub>10</sub>, particulate matter that is less than 10µm in diameter; SEAI, Sustainable Energy Authority Ireland; UNEP-WCMC, UNEP World Conservation Monitoring Centre; UNESCO, United Nations Educational, Scientific and Cultural Organization; UNISDR, United Nations International Strategy for Disaster Reduction; WHO, World Health Organization.

# Appendix 2 EU Composite Index



Indicator Score Colour Codes







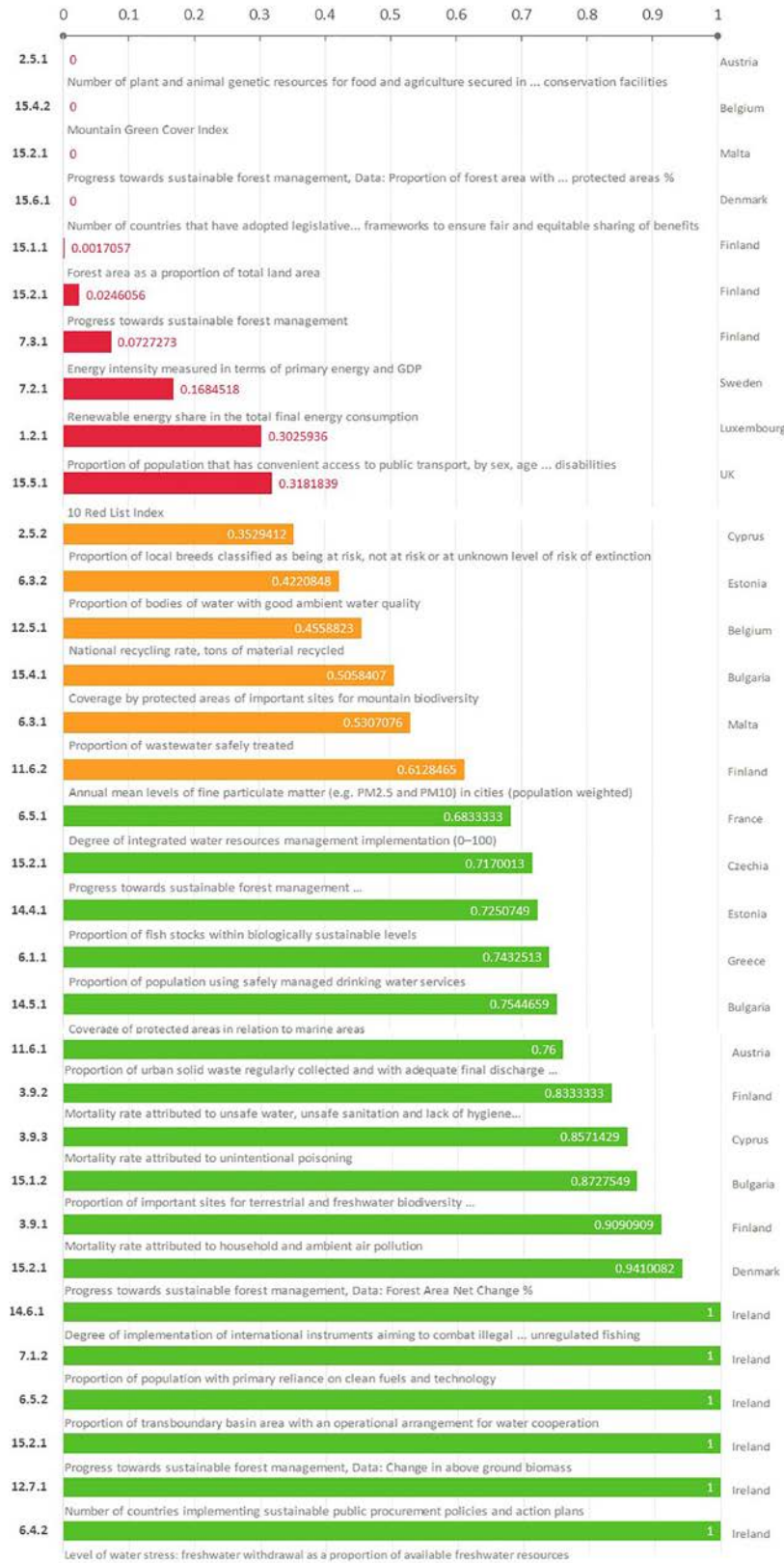
Indicator Score Colour Codes



# Appendix 3 EU Outcomes Index



Indicator Score Colour Codes



# Appendix 4 EU Means of Implementation Index



Indicator Score Colour Codes



# Appendix 5 EU Linkages Index



Indicator Score Colour Codes



## AN GHNÍOMHAIREACTH UM CHAOMHNÚ COMHSHAOIL

Tá an Gníomhaireacht um Chaomhnú Comhshaoil (GCC) freagrach as an gcomhshaoil a chaomhnú agus a fheabhsú mar shócmhainn luachmhar do mhuintir na hÉireann. Táimid tiomanta do dhaoine agus don chomhshaoil a chosaint ó éifeachtaí díobhálacha na radaíochta agus an truaillithe.

## Is féidir obair na Gníomhaireachta a roinnt ina trí phríomhréimse:

**Rialú:** Déanaimid córais éifeachtacha rialaithe agus comhlionta comhshaoil a chur i bhfeidhm chun torthaí maithe comhshaoil a sholáthar agus chun díriú orthu siúd nach gcloíonn leis na córais sin.

**Eolas:** Soláthraimid sonraí, faisnéis agus measúnú comhshaoil atá ar ardchaighdeán, spriocdhírthe agus tráthúil chun bonn eolais a chur faoin gcinnteoireacht ar gach leibhéal.

**Tacaíocht:** Bimid ag saothrú i gcomhar le grúpaí eile chun tacú le comhshaoil atá glan, táirgiúil agus cosanta go maith, agus le hiompar a chuirfidh le comhshaoil inbhuanaithe.

## Ár bhFreagrachtaí

### Ceadúnú

Déanaimid na gníomhaíochtaí seo a leanas a rialú ionas nach ndéanann siad dochar do shláinte an phobail ná don chomhshaoil:

- saoráidí dramhaíola (*m.sh. láithreáin líonta talún, loisceoirí, stáisiúin aistriúcháin dramhaíola*);
- gníomhaíochtaí tionsclaíocha ar scála mór (*m.sh. déantúsaíocht cógaisíochta, déantúsaíocht stroighne, stáisiúin chumhachta*);
- an diantalmhaíocht (*m.sh. muca, éanlaith*);
- úsáid shrianta agus scaoileadh rialaithe Orgánach Géinmhodhnaithe (*OGM*);
- foinsí radaíochta ianúcháin (*m.sh. trealamh x-gha agus radaiteiripe, foinsí tionsclaíocha*);
- áiseanna móra stórála peitрил;
- scardadh dramhuisece;
- gníomhaíochtaí dumpála ar farraige.

### Forfheidhmiú Náisiúnta i leith Cúrsaí Comhshaoil

- Clár náisiúnta iniúchtaí agus cigireachtaí a dhéanamh gach bliain ar shaoráidí a bhfuil ceadúnas ón nGníomhaireacht acu.
- Maoirseacht a dhéanamh ar fhreagrachtaí cosanta comhshaoil na n-údarás áitiúil.
- Caighdeán an uisce óil, arna sholáthar ag soláthraithe uisce phoiblí, a mhaoirsiú.
- Obair le húdaráis áitiúla agus le gníomhaireachtaí eile chun dul i ngleic le coireanna comhshaoil trí chomhordú a dhéanamh ar líonra forfheidhmiúcháin náisiúnta, trí dhírú ar chiontóirí, agus trí mhaoirsiú a dhéanamh ar leasúchán.
- Cur i bhfeidhm rialachán ar nós na Rialachán um Dhramhthrealamh Leictreach agus Leictreonach (DTLL), um Shrian ar Shubstaintí Guaiseacha agus na Rialachán um rialú ar shubstaintí a ídionn an ciseal ózóin.
- An dlí a chur orthu siúd a bhriseann dlí an chomhshaoil agus a dhéanann dochar don chomhshaoil.

### Bainistíocht Uisce

- Monatóireacht agus tuairisciú a dhéanamh ar cháilíocht aibhneacha, lochanna, uisce idirchriosacha agus cósta na hÉireann, agus screamhuisec; leibhéal uisce agus sruthanna aibhneacha a thomhas.
- Comhordú náisiúnta agus maoirsiú a dhéanamh ar an gCreat-Treoir Uisce.
- Monatóireacht agus tuairisciú a dhéanamh ar Cháilíocht an Uisce Snámha.

## Monatóireacht, Anailís agus Tuairisciú ar an gComhshaoil

- Monatóireacht a dhéanamh ar cháilíocht an aeir agus Treoir an AE maidir le hAer Glan don Eoraip (CAFÉ) a chur chun feidhme.
- Tuairisciú neamhspleách le cabhrú le cinnteoireacht an rialtais náisiúnta agus na n-údarás áitiúil (*m.sh. tuairisciú tréimhsiúil ar staid Chomhshaoil na hÉireann agus Tuarascálacha ar Tháscairí*).

## Rialú Astaíochtaí na nGás Ceaptha Teasa in Éirinn

- Fardail agus réamh-mheastacháin na hÉireann maidir le gáis ceaptha teasa a ullmhú.
- An Treoir maidir le Trádáil Astaíochtaí a chur chun feidhme i gcomhar breis agus 100 de na táirgeoirí dé-ocsaíde carbóin is mó in Éirinn.

## Taighde agus Forbairt Comhshaoil

- Taighde comhshaoil a chistiú chun brúnna a shainathint, bonn eolais a chur faoi bheartais, agus réitigh a sholáthar i réimsí na haeráide, an uisce agus na hinbhuanaitheachta.

## Measúnacht Straitéiseach Timpeallachta

- Measúnacht a dhéanamh ar thionchar pleananna agus clár beartaithe ar an gcomhshaoil in Éirinn (*m.sh. mórfheananna forbartha*).

## Cosaint Raideolaíoch

- Monatóireacht a dhéanamh ar leibhéal radaíochta, measúnacht a dhéanamh ar nochtadh mhuintir na hÉireann don radaíocht ianúcháin.
- Cabhrú le pleananna náisiúnta a fhorbairt le haghaidh éigeandálaí ag eascairt as tairmí núicléacha.
- Monatóireacht a dhéanamh ar fhorbairtí thar lear a bhaineann le saoráidí núicléacha agus leis an tsábháilteacht raideolaíochta.
- Sainseirbhísí cosanta ar an radaíocht a sholáthar, nó maoirsiú a dhéanamh ar sholáthar na seirbhísí sin.

## Treoir, Faisnéis Inrochtana agus Oideachas

- Comhairle agus treoir a chur ar fáil d'earnáil na tionsclaíochta agus don phobal maidir le hábhair a bhaineann le caomhnú an chomhshaoil agus leis an gcosaint raideolaíoch.
- Faisnéis thráthúil ar an gcomhshaoil ar a bhfuil fáil éasca a chur ar fáil chun rannpháirtíocht an phobail a spreagadh sa chinnteoireacht i ndáil leis an gcomhshaoil (*m.sh. Timpeall an Tí, léarscáileanna radóin*).
- Comhairle a chur ar fáil don Rialtas maidir le hábhair a bhaineann leis an tsábháilteacht raideolaíoch agus le cúrsaí práinnfhreagartha.
- Plean Náisiúnta Bainistíochta Dramhaíola Guaisí a fhorbairt chun dramhaíl ghuaiseach a chosaint agus a bhainistiú.

## Múscailt Feasachta agus Athrú Iompraíochta

- Feasacht chomhshaoil níos fearr a ghiniúint agus dul i bhfeidhm ar athrú iompraíochta dearfach trí thacú le gnóthais, le pobail agus le teaghlaigh a bheith níos éifeachtúla ar acmhainní.
- Tástáil le haghaidh radóin a chur chun cinn i dtithe agus in ionaid oibre, agus gníomhartha leasúcháin a spreagadh nuair is gá.

## Bainistíocht agus struchtúr na Gníomhaireachta um Chaomhnú Comhshaoil

Tá an ghníomhaíocht á bainistiú ag Bord Iáinimseartha, ar a bhfuil Ard-Stiúrthóir agus cúigear Stiúrthóirí. Déantar an obair ar fud cúig cinn d'Oifigí:

- An Oifig um Inmharthanacht Comhshaoil
- An Oifig Forfheidhmithe i leith cúrsaí Comhshaoil
- An Oifig um Fianaise is Measúnú
- Oifig um Chosaint Radaíochta agus Monatóireachta Comhshaoil
- An Oifig Cumarsáide agus Seirbhísí Corparáideacha

Tá Coiste Comhairleach ag an nGníomhaireacht le cabhrú léi. Tá dáréag comhaltáí air agus tagann siad le chéile go rialta le plé a dhéanamh ar ábhair inní agus le comhairle a chur ar an mBord.

# Framework for Achieving the Environmental Sustainable Development Goals



Authors: Enda Murphy, Patrick Paul Walsh and Aparajita Banerjee

## Identifying Pressures

Ireland is at a critical point in delivering on its United Nations (UN) Sustainable Development Goal (SDG) commitments. However, significant gaps exist in the literature on our understanding of Ireland's current environmental status in relation to the SDGs. There is a lack of knowledge on the scale of the sustainability problem in Ireland and it is therefore difficult to ensure meaningful improvements in a fully integrated approach to sustainable development. In this regard, there is significant pressure to improve our understanding and assessment of Ireland's sustainability performance relative to peers in the EU and internationally. This can be achieved with better data and metrics to assess performance on individual SDG targets. In addition, improving our understanding of how partnerships (and specifically multi-stakeholder partnerships) can facilitate whole-of-society transformations for sustainable development is crucial to future sustainability efforts. These gaps are addressed by the research within this report.

## Informing Policy

This report contributes to a range of international and national policy areas, creating a positive feedback loop between policies for environmental SDG promotion, governance for the SDGs and integrated environmental policymaking. Internationally, the research supports Ireland's future Voluntary National Review (VNR) at the UN, given its development of an environmental SDG index for Ireland based on the official UN SDG indicator framework. The research is also aligned with the new directorate established within the Irish Central Statistics Office (CSO) in early 2017; the CSO has responsibility for the co-ordination of data collection across government departments for the SDGs. Separately, the research provides a basis for understanding the future role of partnerships for SDGs in SDG transitions and transformations. Moreover, it has important implications for Ireland's future National Stakeholder Forum and wider stakeholder engagement for delivering on the SDGs.

## Developing Solutions

This research provides an important evidence base for assessing national progress on the environmental SDGs relative to EU peer nations. This is the first time that Ireland's progress on the SDGs has been assessed on an SDG target and indicator basis relative to peer nations. This is important because it provides a framework to understand Ireland's strengths and weaknesses on delivering on each individual SDG indicator and target, allowing for the possibility of bespoke policy interventions to address shortcomings. It also allows us to learn from peer nations that have comparably high performance levels. In this regard, the research has developed the first target-based SDG index of its kind internationally; it is disaggregated on the basis of SDGs means of implementation, outcomes and linkages. In relation to partnerships, the research identifies the lack of existing multi-stakeholder partnerships in Ireland and the need for policy to pursue state-led multi-stakeholder partnerships for future sustainable development.