**CHAPTER 1: AN INTRODUCTION TO GREEN AND SUSTAINABLE FINANCE**

**Learning objectives**

On completion of this chapter you should be able to:

* Define green and sustainable finance, and distinguish between these and related terms
* Describe a range of approaches to green and sustainable finance
* Describe the opportunities and challenges for green and sustainable finance
* Describe the UN Sustainable Development Goals (SDGs)
* Outline the development of green and sustainable finance sector globally.

Green and sustainable finance are moving into the mainstream of finance as policy, regulation and market forces combine to align financial institutions, activities and operations with the aims and objectives of the Paris Agreement and UN Sustainable Development Goals. The finance sector’s central position in the economy means it is uniquely positioned to lead the transition to a low-carbon, more sustainable world – a transition estimated to require approximately $6 trillion per year for the foreseeable future, the majority of this from private sources. This is not only a commercial opportunity for the finance sector, but also an opportunity for finance to demonstrate its positive social purpose. In this introductory chapter, we explore the dimensions of green and sustainable finance and compare them to related concepts.

* 1. **Defining green and sustainable finance**

In the aftermath of the Global Financial Crisis of 2008, strong consensus emerged from policymakers, regulators, civil society and from some financial services practitioners themselves that many (although not all) financial institutions had engaged in too many short-term, harmful financial activities without any underlying, positive social purpose. It was felt that financial institutions, and the finance sector as a whole, needed to fundamentally reconsider its strategies, operations and activities, and align these with more socially-purposeful, longer-term aims and objectives delivering greater economic and social value. Finance, in short, should seek to become more ‘**sustainable’**.

While definitions vary, 'sustainable', and related terms including 'sustainability' and 'sustainable development', generally refers to meeting the needs of current generations without compromising the ability of future generations to meet their needs. Needs may be wide and varied, but many approaches to sustainability focus on three key aspects, often described as a “three legged stool” or similar: the economy, environment and society. This is the approach we follow throughout this book. A useful framework for considering a sustainable economy, environment and society is provided by the United Nations' 'Sustainable Development Goals' (SDGs), which we describe towards the end of this chapter.

In the immediate post-crisis years, there was a strong focus on making financial institutions themselves more sustainable. In recent years, this has shifted and emphasis is now placed more on how finance can support sustainable economies and societies more generally – including the natural environment. **Sustainable finance**, therefore, encompasses both:

* Making the activities and operations of banks, asset managers, insurers and other financial institutions more sustainable, including but not limited to considering broader economic, environmental and social factors (e.g. reducing a firm’s carbon footprint, implementing responsible lending policies, adopting an inclusive approach to recruitment, treating suppliers fairly) in an organisation’s strategy and management; and
* Financing sustainable economic, environmental and social objectives, often those set out in the UN Sustainable Development Goals (introduced later in this Chapter).

Both go hand in hand, and it is hard to see how individuals and institutions could successfully identify and provide finance for sustainable economic, environmental and social objectives without adopting sustainable principles and practice within their own organisation.

For the purposes of this book, we define sustainable finance as: ***“the inclusion of economic, environmental and social factors in an organisation’s strategy, management, activities and operations; combined with the financing of sustainable economic, environmental and social objectives.”***

More recently, and particularly from 2015 with the signing of the Paris Agreement on Climate Change, policymakers, regulators and financial services practitioners have focused on environmental sustainability. This has included significantly increasing the financing of new technologies and activities designed to reduce greenhouse gas emissions (‘climate change mitigation’) and/or support climate-resilient development (‘climate change adaptation’), and identifying and disclosing climate-related financial risks. Finance, in short, should seek to become more ‘**green’**.

Quick question: What do you see as the main similarities and differences between ‘sustainable finance’ and ‘green finance’?

Write your answer here before reading on.

All green investments must be genuinely environmentally sustainable to be accurately described as such, otherwise this would be 'greenwashing' - a term defined and explored later in this book.  It is clearly not environmentally sustainable to continue to extract and burn fossil fuels at the rate we currently do so, for example, as this at the very least means there will be insufficient resources in future, and in some scenarios large parts of the planet would be rendered uninhabitable due to global temperature rises (we explore the science and impacts of greenhouse gas emissions and global warming in Chapter 2).  Nor could an economic activity be described as sustainable if it resulted in significant benefits today, but led to substantial disbenefits to future generations.  
  
'Sustainable' is often used synonymously, or in conjunction with 'green', as in the title of this book.  There are important differences, however.  In practice, the great majority of green investments - particularly those that support climate-resilient development and other climate change adaptation activities - may also be described as sustainable.  For the most part, they seek to preserve (or enhance) the environment for the benefit of current and future generations, and may deliver a range of economic, environmental and social benefits - or, at least, mitigate economic, environmental and social harm caused by climate change.

It is possible, however, for an investment (or activity) labelled as 'green' not to be considered by some, at least, as 'sustainable' in some regards.  Investment in renewable energy combined with the closure of thermal coal power generation plants, for example, could lead to a significant loss of employment for those working in the plant, in the coal mines supplying fuel, and in a wide range of supporting sectors.  If employment is concentrated in a relatively small region, this could have a substantial economic and social impact on current and future generations. This might not, therefore, be considered as fully sustainable as current and future generations, at least in the region in question, are likely to be significantly disadvantaged, albeit for what most would agree is a greater overall good.    
  
The impacts of such a transition may be mitigated by investing in training and development to enable workers to reskill and find new employment in the renewable energy sector, and supporting sectors.  Incentives might be deployed to encourage clean energy and other firms to establish in a region traditionally reliant on fossil fuel extraction and production.  Supporting workers and communities negatively impacted by the transition to a sustainable, low-carbon world and helping current and future generations benefit from this is described as the "**just transition**" - ensuring that the switch from a high to low carbon economy is fair for current and future generations, and that the transition is truly sustainable in the broadest sense

In practice it seems difficult, if not impossible, for any genuinely sustainable approach to finance not to incorporate environmental factors, particularly those relating to climate change mitigation and adaptation, and climate-related risks. It seems equally difficult for green finance to avoid consideration of the broader aspects of sustainability, including economic and social costs. To succeed, climate change mitigation and adaptation projects and activities require the active support of communities and societies impacted by climate change, and the projects and activities developed to tackle this.  We may think, therefore, of green and sustainable finance being highly interrelated, with green finance being a major and integral element of sustainable finance overall. This is the approach we adopt throughout this book, and we generally refer to ‘**green and sustainable finance’** except where the context specifically requires the use of a single term.

Green and sustainable finance is one of a number of terms used to label activities related to the interaction between the economy, environment, society and finance. Related terms include ‘Responsible Banking’ and ‘Responsible Investment’, ‘Environmental, Social and Governance’ (or ‘ESG’), ‘Sustainable Finance’, and ‘Climate Finance’. These terms are often treated synonymously, but there are differences in their scope, particularly in terms of whether they include social and governance issues:

1. **Environmental issues** relate to the quality and functioning of the natural environment and natural systems including biodiversity loss; greenhouse gas emissions, renewable energy, energy efficiency, natural resource depletion or pollution; waste management; ozone depletion; changes in land use; ocean acidification and changes to the nitrogen and phosphorus cycles.
2. **Social issues** relate to rights, well-being and interests of people and communities including human rights, labour standards, health and safety, relations with local communities, activities in conflict zones, health and access to medicine, consumer protection; and controversial weapons.
3. **Economic issues** relate to investee impacts on economic conditions at local, national, and global levels. Performance areas include direct financial performance and risk, and indirect impacts such as through employment, supply chains, and provision of infrastructure.
4. **Governance issues** relate to the management of investee entities. Issues include board structure, size, diversity, skills and independence; executive pay; shareholder rights; stakeholder interaction; disclosure of information; business ethics; bribery and corruption; internal controls and risk management; and, in general, issues dealing with the relationship between a company’s management, its board, its shareholders and its other stakeholders.

**Source: UNEP Inquiry into the Design of a Sustainable Financial System**

Approaches which embrace the full range of these issues are more likely to be termed ‘sustainable finance’, whereas those that focus mainly on environmental issues are more likely to be termed ‘green finance’. The United Nations Environment Programme (UNEP) themselves defines sustainable finance as incorporating environmental, social and governance (ESG) factors in market practice and policy frameworks for banking, capital markets, investment and insurance; and green finance as finance that delivers environmental benefits in the context of sustainable development. The UNEP’s definition of green finance also stresses the broader sustainable aspect of green finance, as we do throughout this book.

Advocates for a sustainable finance approach argue that it is not possible to separate the environment from society: society depends on the environment for its existence, and human society has a major impact on the environment. Many of today’s most pressing environmental issues impact disproportionately on those with the fewest resources, in both high-income and low-income countries, and the need to improve standards of living and reduce inequality cannot be separated from the need to protect our environment. In 2015, the United Nations defined and adopted the Sustainable Development Goals (SDGs) to encourage governments, business and civil society to tackle these wider issues of sustainability. These are explained in more detail in 1.5 below.

“A sustainable financial system is… one that creates, values and transacts financial assets in ways that shape real wealth to serve the long-term needs of an inclusive, environmentally sustainable economy.”

**UNEP Inquiry into the Design of a Sustainable Financial System**

Where the concern is only with preventing or responding to climate change, the term ‘climate finance’ may be used. Climate finance is also used specifically to refer to the UN climate change negotiations (the United Nations Framework Convention on Climate Change – UNFCCC) and the provision of aid from developed countries to developing countries to help with climate change mitigation and climate adaptation. The Paris Agreement, part of the UNFCCC process, aims to limit increases in global average temperature to below 2 °C above pre-industrial levels and to seek to limit such increases to 1.5 °C. One of three objectives set out in Article 2 of the Paris Agreement - Article 2.1(c) - commits signatories to making financial flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development. The recognition of the key role of finance in tackling climate change has been a major influence on the growth of green finance, and we will return to this throughout this book.

* 1. **Financing green, and greening finance**

Although the term ‘green finance’ is increasingly used by multinational bodies, governments, central banks and regulators, banks, investment funds, insurers and other financial institutions, finance professionals, academics and consumers, there is no single, agreed definition of what this constitutes. It can refer to some or all of: ‘green’ products and services offered by financial institutions (e.g. ‘green bonds’), identifying and managing environmental and climate risks, organisational strategies, organisations themselves, investment sectors, industry initiatives and policy and regulatory instruments. This list is by no means exhaustive; as the green and sustainable finance sector grows and becomes more mainstream, more and more activities are being promoted as ‘green’ and/or ‘sustainable’. Assessing the extent to which activities are truly green and sustainable and avoiding ‘greenwashing’ is a major theme of this book.

Some working definitions of green finance in the national and international context include:

**United Nations Environment Programme (UNEP):** “Green financing is to increase level of financial flows (from banking, micro-credit, insurance and investment) from the public, private and not-for-profit sectors to sustainable development priorities. A key part of this is to better manage environmental and social risks, take up opportunities that bring both a decent rate of return and environmental benefit and deliver greater accountability”

**G20 Green Finance Study Group:** “Financing of investments that provide environmental benefits in the broader context of environmentally sustainable development. These environmental benefits include, for example, reductions in air, water and land pollution, reductions in greenhouse gas (GHG) emissions, improved energy efficiency while utilizing existing natural resources, as well as mitigation of and adaptation to climate change and their co-benefits.”

**Organisation for Economic Co-operation and Development (OECD):** Green Finance is finance for “achieving economic growth while reducing pollution and greenhouse gas emissions, minimising waste and improving efficiency in the use of natural resources.”

**European Banking Federation: “**Green Finance includes, but is not limited to:

a. Environmental aspects (pollution, greenhouse gas emissions, biodiversity, water or air quality issues); and

b. Climate change-related aspects (energy efficiency, renewable energies, prevention and mitigation of climate change-connected severe events).”

**China State Council Guidelines for Establishing the Green Financial System:** “Financial services for economic activities that improve the environment remediation, address climate change, and enhance efficiency of resource utilization. These economic activities include the financing, operation and risk management for projects in areas such as environmental protection, energy savings, clean energy, green transportation, and green buildings.”

**Government of Germany:** “Green Finance is a strategic approach to incorporate the financial sector in the transformation process towards low-carbon and resource-efficient economies, and in the context of adaptation to climate change.”

**UK Green Finance Initiative:** “Funding any means of reducing carbon emissions or raising resource efficiency... It incorporates green crowdfunding for small-scale, community schemes right up to green bond issuance for major infrastructure projects or corporate energy-efficiency schemes.”

Quick question: What are the main similarities and differences between these definitions?

Write your answer here before reading on.

While these definitions all differ in their emphasis, they generally share some or all of the following elements:

* The role of finance in allocating capital for wider, more sustainable purposes, including mitigating the impacts of climate change
* A focus on the use of investment to either benefit the environment or reduce harm
* A concern to manage environmental and related risks, including climate risks facing the finance sector and society as a whole. Climate-related financial risks can be classed as physical, transition (including stranded asset) and liability risks, which we introduce in Chapter 3 and explore in more detail in Chapter 5.
* A recognition of the policies and infrastructure required to enable green and sustainable finance, which we explore in Chapter 3
* A broader context of sustainable development and/or economic growth, which we introduced above and explore throughout this book
* Examples of products, services, sectors and projects that may be supported by green and sustainable finance, which we detail in Chapters 6 to 11.

A helpful way to consider the scope of green finance is to think of it in terms of both “*financing green”* and “*greening finance”*. The former refers to increasing flows of finance to support green and sustainable development objectives; the latter to integrating sustainability within financial institutions’ strategies and activities and, in the context of green finance in particular, the identification and disclosure of climate-related financial risks across the finance sector. “Financing green” and “greening finance” are mutually reinforcing rather than opposing goals.

For the purpose of this book, we require a definition of green finance that combines aspects of the above and will be generally acceptable. For the Chartered Banker Institute, green finance encompasses the finance sector’s strategic approach to meeting the challenges of climate change and the transition to a low-carbon world, incorporating both “financing green” and “greening finance”.

Green finance is, therefore: ***“any financial initiative, process, product or service that is designed to protect the natural environment and support the transition to a sustainable, low carbon world; and/or manage climate-related and other environmental risks impacting finance and investment”.***

This is a broad definition which acknowledges the different dimensions of the concept of green finance, while retaining an overarching focus on enhancing and sustaining the natural environment, and managing current and future environmental risks – particularly, but not exclusively, climate change. It highlights and recognises the two-way nature of the relationship. Finance and investment can help or harm the environment, while the environment can also positively or negatively impact the performance of investments and financial services firms.

To support flows of finance to “green” investments and activities it is important for policymakers, regulators, financial services firms, clients and customers to agree on what is “green” – and what is not (sometimes referred to as “brown”). Countries including Brazil and China have developed taxonomies that seek to define what a ‘green’ product, service or outcome is. In 2017, the **European Union’s (EU) High-Level Expert Group on Sustainable Finance** commissioned a study to consider different definitions of and approaches to defining green and sustainable finance. In March 2018, the study’s recommendations were incorporated into the EU’s “Action Plan: Financing Sustainable Growth”, which established a Technical Expert Group (TEG) on sustainable finance to develop:

* an EU Sustainable Finance ‘Taxonomy’ (classification system) to determine whether an economic activity is environmentally sustainable;
* an EU Green Bond Standard;
* benchmarks for low carbon investment strategies; and
* guidance to improve corporate disclosure of climate-related information.

In June 2019, the EU Taxonomy was published, and in December 2019 it was approved by the European Commission, Council and Parliament. It includes:

* technical screening criteria for 67 activities across 8 sectors that can make a substantial contribution to climate change mitigation;
* a methodology and worked examples for evaluating substantial contributions to climate change adaptation; and
* guidance and case studies for users of the Taxonomy.

The development of the EU Taxonomy - a classification system which will define and provide examples of what is ‘green’ – will provide a framework for many other aspects of the EU’s Action Plan. The Taxonomy will be used, for example, to determine which investments will qualify as being ‘green’ in the context of the proposed EU Green Bond Standard; bonds that finance cleaner coal that are currently labelled as ‘green’ by some issuers would be unlikely to qualify once this is introduced. Given the EU’s reach and influence, the development, publication and implementation of the taxonomy is likely to have a significant global impact and, over time, lead to the harmonisation of definitions of green and sustainable finance, or at least of the activities and projects that may be supported by financial services and classed as “green” and/or “sustainable”.

**Mitigation and adaptation**

Green finance supports projects and activities that aim to reduce greenhouse gas emissions and the rate of climate change (‘**climate change mitigation’**) and to improve resilience to the effects of climate change (‘**climate change adaptation’**). Climate change mitigation activities seek to address the causes of climate change, for example by funding renewable energy systems to reduce carbon emissions, or cleaner transport systems. Climate change adaptation activities address the impacts of climate change, both those that are already visible (e.g. measures to reduce coastal community flooding caused by rising sea levels) and those that are anticipated as a result of global warming (e.g. developing new agricultural crops and techniques to reduce water use and vulnerability to higher temperatures).

To date, the majority of green finance funding has tended to support climate change mitigation projects and activities. The Climate Policy Initiative reported that, of the $455 billion of climate finance in 2016, only an estimated $22 billion was focused on adaptation projects and activities. The UNFCCC’s 2018 Biennial Assessment estimates that mitigation finance is some 4-5 times greater than adaptation finance. Whilst there is inevitably some crossover between mitigation and adaptation projects (e.g. new, greener infrastructure may be sited further away from coastlines), and there is a lack of consistent reporting on mitigation versus adaptation, it is clear that the latter is currently underfunded. More recently, however, major green finance institutions, particularly the Multilateral Development Banks (MDBs) are placing much greater emphasis on climate change adaptation, with the World Bank committing to an equal weighting of mitigation and adaptation project finance in its most recent 2021 to 2025 strategic plan. This is covered in more detail in Chapter 8.

Adaptation projects, by their nature (e.g. improving the resilience of coastal communities, or developing new, more efficient and less wasteful agricultural techniques) often support broader social and economic sustainability objectives alongside climate and other environmental related goals. We can often see, therefore, the strong interconnectedness between green and sustainable finance in such examples, and the difficulty of separating “green” and “sustainable” objectives and activities.

* 1. **The dimensions of green and sustainable finance**

The breadth of the terms ‘green finance’ and ‘sustainable finance’ means they can be used to refer (i) to specific green and sustainable financial products and services (e.g. ‘green bonds’, ‘green loans’), including those designed to both directly benefit the environment, manage environmental risks or have other social benefits, (ii) to organisational approaches and (iii) to industry sectors. In this book, we cover all of these, and briefly introduce them below.

* + 1. **Green and sustainable finance products and services**

Green and sustainable finance covers a wide range of financial products and services, which can be broadly divided into banking, investment, and insurance products. Examples of these include green bonds, green-tagged loans, green investment funds and climate risk insurance. We explore the different types of green and sustainable finance products in more detail in Chapters 6 to 11.

But what makes a financial product ‘green’ and/or ‘sustainable’? In many cases the ‘green’ or ‘sustainable’ aspect of the product relates to the underlying investible asset, such as investments in clean energy projects or reforestation. In other cases, the features of the product are designed to encourage or reward environmentally friendly or other socially beneficial activity, such as mortgages which are discounted in line with a property’s energy efficiency, or investment which links the sustainable management of resources with the receipt of investment or lower collateral requirements.

Other products labelled ‘green’ and/or ‘sustainable’ may not be universally accepted as such, for example:

* Financial products (e.g. credit cards) which offer a donation to a social cause (e.g. a cancer research charity) in reward for a certain level of spend
* Financial products which respond to an environmental and/or social issue (such as flood insurance) but do not seek to address the causes of this issue (such as climate change)
* Financial products that minimise the environmental impacts of the provider’s operations (such as using recycled paper) or offset the customer’s normal activities (such as the carbon emissions generated by air travel).

Such products raise the question of where the boundary lies in terms of green and sustainable finance. We explore this in more detail in subsequent chapters. For now, however, note that, from our definition of green finance in particular above, it is clear that the core of the product, service or organisation should be ‘green’ and that in this case its focus should be on protecting or improving natural systems, and/or managing climate-related and other environmental (physical, transition and liability) risks. These, and other key risks associated with green and sustainable finance, are covered in more detail in Chapter 5.

* + 1. **Green and sustainable finance as an organisational approach**

Quick question: Can you think of any examples of financial services firms that have adopted green and/or sustainable principles finance as an organisational approach?

Green and sustainable finance principles can be applied not just at a product or individual process level, but across an entire financial services organisation. For some such organisations, such as Ecology Building Society, Naturesave Insurance or Banca Etica, environmental and social sustainability have been central to their strategy, culture and decision-making for many years. This is also the case, especially in relation to social and economic sustainability, for many building societies, credit unions, co-operative banks and insurers and other (often mutually-owned) financial institutions.

A growing number of large mainstream financial institutions are also incorporating green and sustainable finance principles into some or all of their activities. This trend has been accelerating, particularly after the Paris Climate Agreement was signed in December 2015 (see Chapter 2). The launch of the UN Principles for Responsible Banking in 2019 also encourages financial institutions to incorporate green and sustainable finance principles into their strategies and activities and link their business plans to societal goals as expressed in the UN Sustainable Development Goals and the Paris Agreement. The Principles for Responsible Banking are similar in many respects to the well-established UN Principles for Responsible Investment (see Chapter 3) that have encouraged and supported many institutions in embedding green and sustainable finance principles into their investment and related activities.

This whole-organisation approach to green and sustainable finance is rooted in an understanding that the financial system both serves and relies on the economy, which itself serves society and is embedded in the environment. Such an ‘embedded’ approach means that business decisions take into account not only the financial implications of the decision, but also the implications for the wider economy, society and the environment. This mindset can influence every area of the business, from operations and staff recruitment and development to investment strategy, product design and pricing, risk management, marketing and financial management. We explore green finance as a strategic approach further in later chapters.

economy

society

environment

**CASE STUDY: Ecology Building Society**

Ecology Building Society is dedicated to building a greener society by providing mortgages for properties and projects that respect the environment. It was established in 1981 by a group of pioneering founder members who wanted to help finance environmental building renovations and support sustainable development. By the end of 2016, its assets had reached more than £170 million and net profit was just under £1 million. As a mutual, any surpluses are used for the benefit of the Society’s members, which number around 8,000.

The Society’s Memorandum states that its purpose is “making loans which are secured on residential property and are funded substantially by its members… To promote, in carrying on any business or other activity, ecological policies designed to protect or enhance the environment in accordance with the principles of sustainable development.”

Ecology’s mortgages incentivise lower-carbon lifestyles through a series of mortgage discounts linked to the energy efficiency of each property. Mortgage decisions are made on an individual basis, with careful consideration of the potential environmental benefits and impacts of each project.

Ecology’s HQ building is designed to have an airtight structure, high levels of insulation and low energy requirements. Wherever possible, materials used in the building are from renewable sources, recycled or low toxicity. All of Ecology’s electricity is sourced from renewables and it has offset the carbon emissions generated since the Society began in 1981.

* + 1. **Green and sustainable industry sectors**

Quick question: Which industry (i.e. non-finance) sectors would you currently associate with green and sustainable finance?

Write your answer here before reading on.

Many definitions of green and sustainable finance focus on its role in directing investment towards ‘green’ sectors – those that seek to reduce greenhouse gas emissions, promote climate resilient development, and protect or enhance environment more broadly. Some sectors are more universally accepted as ‘green’ than others, as shown in the diagram below.



**Source: UNEP Inquiry into the Design of a Sustainable Financial System**

Areas which are usually accepted as ‘green’, with little controversy, include renewable energy production, distribution and storage, energy efficiency in domestic and industrial buildings, green transport, recycling, pollution prevention, water conservation and forestation. Areas that are more contested or infrequently cited include Carbon Capture and Storage (CCS), nuclear energy and fossil fuel efficiency. Reaching consensus on what is ‘green’ (and, conversely, what is ‘brown’) through initiatives and international agreements such as the EU Taxonomy is, as we saw above and will discuss in more detail in later chapters, a key step towards growing green and sustainable finance.

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| **Green industry area** | **Meaning** |
| Renewable energy | Renewable energy comes from a source that is not depleted when it is used, or is naturally replenished within a human timescale. This includes solar, wind, geothermal, tidal, wave, hydroelectric and biomass power. |
| Energy distribution | Most energy is distributed through a grid (an interconnected network for transmitting power). Green energy distribution tends to focus on the integration of renewable energy into the main grid, distributed generation, microgrids (running separately from the main grid), and smart grids that detect and react to changes in energy usage. |
| Energy storage | Renewable energy storage is key to enabling an increase in the take-up and efficiency of renewables, and can include mechanical storage (e.g. pumped water), batteries and thermal energy storage. |
| Emissions reduction and capture | Emission reduction technologies aim to reduce the CO2 produced by energy generation, transport and industrial processes. Emissions capture tends to refer to Carbon Capture and Storage (CCS) – technology to capture CO2 emissions produced in electricity generation and industrial processes. |
| Energy efficiency | Energy efficiency means reducing the amount of energy that is required to provide a product or service, and is often applied to buildings (domestic, commercial and industrial), appliances and vehicles. |
| Green buildings | Green buildings are designed, built and used in a way that is energy efficient, minimises the use of resources and water, encourages biodiversity and provides a healthy indoor environment. |
| Green transport | Green transport minimises CO2 and other harmful emissions, uses renewable energy, is energy-efficient and supports sustainable communities. The term can refer to public transport systems and infrastructure and private vehicles. |
| Water conservation | Water conservation aims to sustainably manage freshwater resources and prevent water pollution in nearby lakes, rivers and local watersheds. |
| Pollution control | Pollution control aims to reduce or avoid the release of harmful substances into the environment, including the air, water and soil. Pollution can also be defined by the type of pollutant, including plastic pollution and thermal pollution. |
| Waste reduction and management | Waste reduction aims to minimise the amount of waste produced by individuals, households and organisations, including through resource efficiency and reuse. Waste management involves the collection, treatment, recycling, reprocessing and disposal of waste. |
| Biodiversity and habitat protection | Biodiversity protection aims to preserve the full range of ecosystems, species and gene pools in the environment – the full variety of life on earth. Habitat protection aims to conserve, protect and restore the natural environments which sustain these plants and animals. |
| Afforestation / reforestation | Afforestation means the establishment of forests where previously they did not exist, while reforestation means the re-establishment of forests where they previously existed, either through direct planting or natural growth. |

Finance can support these areas in a number of ways, for example by providing green bond financing or long-term loans for new renewable energy projects; by providing green mortgages which link repayments to home energy efficiency improvements; or by providing venture capital for innovative new storage technologies. Sometimes projects may have competing environmental and social impacts, and this can often lead to controversial financing decisions. New battery storage technologies, for example, may support the growth of solar or wind energy by providing the means to store and deliver power when weather conditions would not normally allow this, but may require the mining of rare minerals, causing significant environmental damage and social harm. Similarly, the closure of a thermal coal power generation plant may have significant environmental benefits, in terms of reducing greenhouse gas emissions, but may create substantial unemployment and related social problems in a town or region heavily dependent on employment from fossil fuel users, producers and extractors.

Finance can also play a role in encouraging and incentivising firms or industry sectors to decarbonise by divesting, or threatening to divest, from firms or sectors perceived as damaging the environment. One of the better-known examples is Climate Action 100+, a group of more than 370 investors managing approximately $35trn in assets that seeks to engage systemically important greenhouse gas emitters in order to encourage them to shift resources to clean and/or cleaner energy, thus supporting the goals of the Paris Climate Agreement. In 2018, Royal Dutch Shell agreed to set short- and long-term carbon emissions targets linked to executive remuneration – the first of the large oil companies to do so. Shell aims to reduce its Net Carbon Footprint by approximately 50% by 2050 and by approximately 20% by 2035 as an interim step. Earlier in the year, Shell had announced that divestment should be considered a “material risk” to its business. The divestment movement, and the decarbonisation of investment portfolios, is covered in more detail in Chapter 9.

* 1. **The challenges and opportunities for green and sustainable finance**

In Chapter 2 we will see how a range of man-made environmental issues affects our world, including climate change, habitat and biodiversity loss, air and water pollution, deforestation, soil erosion and water shortages. Overcoming these challenges, and supporting the transition to a sustainable, low-carbon world, requires very substantial capital. Estimates of the investment needed to achieve different (and sometimes overlapping) green and broader sustainability objectives vary, and are presented in the table below.

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| **Finance need\*** | **Global investment required** | **Source** |
| To implement “sustainable growth” | $0.5 – 1.5 trillion a year by 2020  $3 – 10 trillion a year by 2050 | World Business Council for Sustainable Development (2010) |
| To achieve the Sustainable Development Goals (SDGs) | Incremental financing needs of $1.4 trillion in low- and lower-middle-income countries by 2030 | United Nations Association –  UK (2016) |
| To achieve global sustainable development and climate objectives | $90 trillion in the next 15 years | G20 |
| To meet the below 2oC target of the Paris Agreement | $65 trillion by 2035 | International Energy Agency  (IEA) (2014) |
| To transform global energy generation and simultaneously meet emission targets | $79 trillion by 2050 or $1.6 trillion per year | UN World Economic and Social Survey (2011) and Global Energy Assessment, World Economic Forum (2013) |
| To fully fund nations’ green infrastructure  requirements between now and 2030 | $6 trillion per year | New Climate Economy (Sept 2016) |
| To deliver new renewable electric power  generation to 2025 | $6.9 trillion for business as usual scenario $12.1 trillion for 2ºC or below scenario requirements | Bloomberg New Energy  Finance (2016) |
| To complete developed to developing country flows for climate change adaptation and mitigation | $100 billion per year by 2020 | UNFCCC (2010) Cancún  decisions |

\* Note these are different scopes of action and not an additive list

**Source: UK Green Finance Initiative**

Whichever figures are chosen (and for the purposes of this book we use the $6 trillion per year figure used by the G20 and New Climate Economy), these are very substantial amounts. The scale of investment required means that public funds alone will not be sufficient. The financial services sector therefore has a key role to play in mobilising and directing private capital to support the transition to a sustainable, low-carbon world; it is estimated that up to 80% of the funds required will need to come from private sources.

At the moment, however, finance still often contributes to increasing greenhouse gas emissions, and other environmental and social problems, such as habitat destruction, rather than financing environmental solutions, for example:

* Speaking to the UK House of Commons Treasury Select Committee in October 2019, Governor of the Bank of England Mark Carney told Committee members that global markets were currently holding portfolios consistent with 3 to 3.7 degrees Celsius of warming;
* 33 global banks have provided financing of more than $1.9 trillion to fossil fuel companies since the signing of the Paris Agreement in 2015, according to the Banking on Climate Change 2019 Report; and
* Between 2010 to 2015, large producers and traders of tropical agricultural products accused of significant deforestation received nearly $50 billion in loans and more than $20 billion through share and bond issues.

Quick question: Why might financial decision-making not take environmental and other sustainable goals into account?

Write your answer here before reading on.

Our current financial system has three key characteristics that can contribute to environmental and other problems of sustainability, rather than offer solutions:

* A bias towards short-termism in decision-making
* A narrow focus on profit and shareholders
* A failure to address ‘externalities’.
  + 1. **Short-termism**

The time horizons in which financial institutions make decisions are often too short to consider the longer-term environmental or social effects of an investment or activity. This short-termism is intensified by the pressure to deliver positive, often quarterly results for shareholders. Short-termism can discourage financial institutions from investing in sectors that offer long-term value rather than short-term gain, and encourage them to discount the long-term risks of their activities, which often include environmental risks. Regulatory pressures to enhance liquidity can also dissuade financial institutions from offering products designed to build value over the long term.

The impacts of short-termism demonstrate the link between time horizons and different types of risk and reward. What might in the short term look productive, because of its immediate revenue potential, can in the long term be unproductive and unprofitable, because of its negative environmental and social impacts.

“What constitutes ‘productive’ cannot be independent of a project’s environmental and socio-economic impact because there are often trade-offs between short-term profits and long-term impact. What might appear to be a profitable project over a given time period could have negative impacts that might only become apparent in the longer term.”

**Schoenmaker, 2017**

Short-termism has particularly significant implications for responding to the climate challenge. While the worst impacts of climate change will most likely be felt by future generations, the measures needed to avoid catastrophic climate change and its impact on individuals, communities and the financial system are required urgently. This has been recognised by the Bank of England as an issue that may have significant effects on financial stability.

**Mark Carney on ‘The Tragedy of the Horizon’**

The challenges currently posed by climate change pale in significance compared with what might come… So why isn’t more being done to address it?...

Climate change is the Tragedy of the *Horizon*.

We don’t need an army of actuaries to tell us that the catastrophic impacts of climate change will be felt beyond the traditional horizons of most actors – imposing a cost on future generations that the current generation has no direct incentive to fix.

That means beyond:

- the **business cycle;**

- the **political cycle**; and

- the **horizon of technocratic authorities**, like central banks, who are bound by their mandates.

The horizon for monetary policy extends out to 2-3 years. For financial stability it is a bit longer, but typically only to the outer boundaries of the credit cycle – about a decade.

In other words, once climate change becomes a defining issue for financial stability, it may already be too late.

**Source: Bank of England**

* + 1. **Narrow focus**

Since the 1960s and the growth of the ‘Chicago School’ of economics, the main purpose and role of business has been viewed, by many, as being to maximise returns to its shareholders. This idea has had a powerful effect on the conduct of business and approaches to the regulation of firms and to the economy as a whole. It is also a key assumption in many economic models used to inform policy.

This view of the role of business does not have a strict basis in company law, however. Like many powerful ideas, the focus on maximising shareholder value is based on a certain subjective worldview. Others argue that the purpose of business should be much broader than simply maximising shareholder return. As the economist Julie Nelson states:

“Case law has established that directors and managers of corporations have a ‘fiduciary duty’ [duty of loyalty of care] to the corporation. This is often interpreted as requiring them to maximise returns to shareholders. Yet, if you look at the actual descriptions of the duties of directors, what you find is a requirement that they must act ‘in a manner… reasonably believed to be in the best interests of the corporation’… [I]t does not specify that the ‘corporation’ is the shareholders only, nor that serving the ‘interests of the corporation’ means maximising profit…

“It is my tribe, economists, who are the source of this fixation with *maximisation*… While legislators and judges have… generally been rather vague about the purpose(s) of business, mainstream economists have been vociferous in popularising the idea that firms have a single, simple, and (conveniently!) quantifiable goal.”

If financial institutions make decisions based on maximising shareholder returns as the sole motivation, there is a high risk that such decisions may lead to unintended consequences, including damage to the environment and other significant social costs. This may happen in three ways:

* Only financial risk and reward is considered, and so environmental damage and social costs are not considered relevant to the decision
* Those who are affected by the environmental or social consequences of an investment are not likely to be shareholders, and so are not counted as relevant to the decision
* A focus on profit maximisation combines with short-termism, and so the impact of environmental damage or social costs on future profits is not considered relevant to the decision.

The implications of a profit maximisation approach are not always apparent, because they are cumulative (e.g. pollution of water caused by the release of industrial chemicals) or not immediately visible (e.g. climate change caused by the burning of fossil fuels). Industrial accidents and environmental disasters, such as a major oil spillage, however, can bring the dangers of profit maximisation to the fore.

More recently, there have been calls for businesses (including financial institutions) to move to a ‘stakeholder value’ approach, most notably in 2019 by the publication of a new ‘Statement on the Purpose of a Corporation” by the US Business Roundtable incorporating obligations to customers, communities, employees and suppliers alongside shareholders. The stakeholder value approach sees the role of business as generating value for all of the stakeholders it serves, including its customers, employees, suppliers, shareholders and the wider community. Some even argue that future generations should be considered as a key stakeholder group, and this has particularly important implications for longer-term environmental issues such as climate change.

A stakeholder value approach has parallels with the ‘embedded’ model of the financial system we saw in 1.3.2 above, in that a financial institution is embedded in society and serves not only its shareholders, but also a wide range of different actors within and beyond the financial system.

economy

society

environment

regulators

government

owners

creditors

employees

suppliers

shareholders

management

local communities

customers

Quick question: Who are the key stakeholders for your organisation? Be as specific as possible.

Write your answer here before reading on.

* + 1. **Externalities**

“*Externalities* is the term economists use when they talk about the side effects—or in the positive case, the spillover effects—of a business’s operations. They’re the impacts that a business has on its broader milieu, either directly or indirectly, but is not obliged to pay for or otherwise take into account in its decision-making.”

**Meyer and Kirby, 2010**

Imagine a factory produces waste chemicals that slowly drain into a local stream. Downstream, the water gradually becomes unfit for consumption and uninhabitable for aquatic life. Yet the cost of cleaning up the river does not, in many cases, fall to the factory. This is because the factory treats the pollution as an ‘externality’ – something which is ‘external’ to its decision-making because the costs are hidden or borne by someone else (in this case, probably, the local community or environment agency).

Externalities are not necessarily negative, however: investing in green public transport systems, for example, can enhance the health of the local community by encouraging them to walk or cycle more.

Externalities mean that when financial institutions assess the risks and rewards of a decision using criteria rooted in maximising shareholder returns, other factors, including environmental and social costs, are often not considered. This leads to investment in sectors and projects that generate pollution, carbon emissions, habitat destruction, and other environmental damage. Externalities are linked to a short-term focus (since many environmental and social effects are not apparent in the short term) and profit maximisation (since damage that does not directly affect profits is discounted). Failure to consider externalities may also contribute to the risk of investing in assets that may subsequently become substantially impaired or ‘stranded’, as we shall see in later chapters.

Negative externalities may be addressed through enhanced measurement and quantification of climate-related and other environmental impacts, regulation to prevent the most harmful activities, taxes to fund environmental protection and restoration, and public pressure for companies to internalise the cost of their externalities. The identification, measurement and disclosure of climate-related financial risks is a major focus for global regulators. The work and impact of the global Task Force on Climate-related Financial Disclosures (TCFD) in this regard is discussed in Chapter 5.

* + 1. **Opportunities for financial services organisations of a sustainable approach**

A sustainable approach to finance can help financial institutions, and the financial system overall, to overcome the challenges of short-termism, narrow focus and externalities, potentially leading to a range of shorter and longer-term positive outcomes for the organisation, its customers, staff, supply chain and other partners – and for our planet as a whole. As we shall see throughout this book, there is a wide range of benefits for institutions adopting a green and sustainable finance approach, including:

*Reputation and relationships*

* Enhanced reputation and credibility – helping to demonstrate finance’s social purpose and reconnecting banks and society
* Stronger, values-based relationships with governments, communities, customers, investors, partners and suppliers

*Markets*

* Access to new markets – including new partnerships with governments and communities
* Opportunity to improve competitive position and attract new customers through differentiation
* Opportunity to develop and market innovative green and other sustainable products and services
* Retention of existing customers and markets
* Greater resilience to market disruption caused by climate change, and the costs of social transition

*Operations*

* Opportunity to decrease risk across portfolios, by avoiding concentration in areas of high environmental or other risks (such as fossil fuels)
* Greater resilience to the operational impact of climate change and other social changes
* Increased valuation through resilience planning
* More efficient operations, including energy efficiency, resource minimisation and reuse, reduced water usage, and adoption of new technologies

*Regulatory*

* Potentially lower capital weightings for ‘green’ and/or ‘sustainable’ assets and higher weightings for ‘brown’ assets
* Preparedness for regulatory and policy changes (e.g. increased disclosure, stress testing, including climate change scenarios)

*Customers*

* Managing changing customer preferences, leading to new product and service opportunities
* Longer-term, less transactional relationships with customers based on values rather than price
* Greater satisfaction – the ‘feel-good factor’

*Staff*

* Greater ability to attract and retain younger generations who see sustainable values as an important part of their personal and working lives
* Greater staff satisfaction and employee engagement from enhanced sense of purpose
* Enhanced working environments

*Partners and supply chains*

* Increased resilience of the supply chain (less affected by environmental and social issues, e.g. use of forced labour)
* Incentives for partners to enhance the sustainability of their own operations and supply chains
* Longer-term relationships with suppliers based on shared purpose and values
  1. **The UN Sustainable Development Goals**

As we discussed earlier in this chapter, a broader approach to sustainable finance and development encompasses, but goes beyond strictly ‘green’ finance to include issues of economic and social equality and justice. Some argue that economic, social and environmental issues are inextricably linked, and that genuine sustainable development (i.e. meeting the needs of the present without compromising the ability of future generations to meet their own needs) is impossible without considering these wider aspects. This is the approach to green and sustainable finance that we support and promote throughout this book.

The UN Sustainable Development Goals (SDGs) were defined and adopted by 193 countries in 2015 to encourage governments, business and civil society to tackle these wider issues of sustainability. The Goals set out what the UN perceives as the major economic, environmental and social challenges faced by our world. As can be seen below, these go beyond the challenges of climate change mitigation and adaptation, and support of the transition to a low-carbon world addressed by green finance, in that green finance principles and practice are wholly aligned to the holistic approach to sustainability promoted by the SDGs. As we shall see throughout this book, there are many overlaps, for example a Sustainability Bond may support a range of project outcomes aligned to the SDGs, including a range of climate change adaptation and mitigation measures.

The 17 Sustainable Development Goals are:

|  |  |
| --- | --- |
| **Goal 1** | End poverty in all its forms everywhere |
| **Goal 2** | End hunger, achieve food security and improved nutrition and promote sustainable agriculture |
| **Goal 3** | Ensure healthy lives and promote well-being for all at all ages |
| **Goal 4** | Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all |
| **Goal 5** | Achieve gender equality and empower all women and girls |
| **Goal 6** | Ensure availability and sustainable management of water and sanitation for all |
| **Goal 7** | Ensure access to affordable, reliable, sustainable and modern energy for all |
| **Goal 8** | Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all |
| **Goal 9** | Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation |
| **Goal 10** | Reduce inequality within and among countries |
| **Goal 11** | Make cities and human settlements inclusive, safe, resilient and sustainable |
| **Goal 12** | Ensure sustainable consumption and production patterns |
| **Goal 13** | Take urgent action to combat climate change and its impacts |
| **Goal 14** | Conserve and sustainably use the oceans, seas and marine resources for sustainable development |
| **Goal 15** | Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss |
| **Goal 16** | Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels |
| **Goal 17** | Strengthen the means of implementation and revitalize the global partnership for sustainable development |

The 17 SDGs, with a deadline of 2030, are not legally binding, but countries, business and others are expected to take ownership of the goals and establish national or other frameworks for achieving them; for example:

* In Scotland, the new National Performance Framework, published by the Scottish Government in 2018, incorporates the SDGs in a “vision for national wellbeing” in Scotland
* Carlsberg’s “Together Towards ZERO” programme seeks to significantly improve the organisation’s sustainability to enhance business performance and reduce impact on the environment and society. Carlsberg focuses its efforts on 7 SDGs where it believes it can have the greatest impact: 3, 6, 7, 8, 12, 13 and 17
* ANZ (Australia and New Zealand Banking Group Limited) has developed an SDG Bond Framework and will issue bonds where proceeds will contribute to SDGs 3, 4, 6, 7, 9, 11 and 12.

Quick question: Which of the SDGs are most relevant, in your view, for the finance sector in your country or region?

Write your answer here before reading on.

As with supporting the transition to a low-carbon world, substantial investment will be required to achieve the SDGs in full, most of which will need to come from the private rather than the public sector. As we saw above, one estimate put the annual cost of achieving the SDGs by 2030 in low and middle income countries as $1.4 trillion per year. A 2017 report by the Business Commission estimated the cost as between $2-3 trillion of additional investment per year. These figures seem low, however, compared with the costs of meeting the objectives of the Paris Agreement alone.

Whatever the figure, a key challenge cited by the UN is how to mobilise capital to achieve these goals, since most of the capital required will need to come from the private sector. Achieving and financing the SDGs will require a shift in business models, both in financial services institutions and business more broadly, including a deeper recognition of the investment chain connecting the finance sector with broad issues of sustainability.

Financial institutions can support the achievement of the SDGs in a number of ways:

1. Ensuring investment decisions incorporate, as a minimum, environmental, social and governance factors, or more preferably, linking desired investment outcomes with the SDGs.
2. Explicitly aligning definitions of fiduciary duty with sustainable development.
3. Engaging with companies they hold a stake in, either individually or as part of a coalition.
4. Providing debt finance for SDG solutions.
5. Promoting access to finance for individual entrepreneurs and small enterprises seeking to achieve the SDGs.
6. Developing innovative financial products and processes that allow people to invest in line with the SDGs, reduce the costs of doing so, and strengthen governance where needed.
7. Ensuring that their operations and wider business activities support, rather than detract from, the achievement of the SDGs.

**CASE STUDY: Triodos and the triple bottom line**

Triodos Bank is a global pioneer in sustainable banking, using the power of finance to support projects that benefit people and the planet. Its approach is based on the fundamental belief that economic activity can and should have a positive impact on society, the environment and culture. Triodos values people, planet and profit – the ‘triple bottom line’ – and takes all three into account in its strategy, structure, lending and culture.

Founded in 1980, Triodos is overseen by a supervisory board and its shares are administered by a separate Foundation, both of which aim to balance the needs of all of Triodos’ stakeholders. It has branches in the Netherlands, UK, Germany, Spain and Belgium, and in 2016 had assets under management of €13.4 billion.

Triodos only lends to organisations that create real social, environmental and cultural value – charities, social businesses, community projects and environmental initiatives. As part of the application review process, Triodos applies its own strict social and environmental lending criteria, and publishes a full list of all the organisations it lends to.

50% of its loans are in the environmental sector; by the end of 2016 it was financing 381projects, contributing to a generating capacity of 2,400 MW of energy – enough to avoid 1.7 million tonnes of CO2 emissions. It also financed 33,000 hectares of organic farmland and 28,000 hectares of nature and conservation land across Europe.

**Source: Triodos UK / Triodos Bank**

Quick question: What indicators of the growth of green and sustainable finance have you seen in your own organisation, country or region?

Write your answer here before reading on.

* 1. **Green and sustainable finance today**

Green and sustainable finance is a fast-growing sector that will continue to grow rapidly and looks set, in time, to become part of the mainstream of finance. A combination of policy, regulatory and market forces are all combining to drive and support the mainstreaming of green and sustainable finance, as we will see throughout this book.

As we saw above, there is a wide range of estimates for the costs of the transition to a low-carbon, sustainable world, requiring very substantial investment for many years, until at least 2050. Using the figures from the G20 and New Climate Economy quoted above, approximately $6 trillion per year will be required, with some two thirds of this needing to be deployed in developing countries. According to the Climate Policy Initiative, however, approximately $612 billion of investment in climate change mitigation and adaptation was deployed in 2017, falling back to $546 billion in 2018. While this is a doubling since 2012, and represents considerable progress, there is still a very substantial investment gap, and the majority of investment required (estimated at some 80% of the total) will need to come from the private sector in the coming years. It is unsurprising, therefore, that the green and sustainable finance market is growing quickly, and the pace of policy and regulatory development advances at a similar pace.

**Recent market developments**

* The World Economic Forum 2020 “Global Risks Report” ranked climate change – and specifically the risk of failing to take action on climate change - as the key risk faced by business, finance and society over the next 10 years, as assessed by a large panel of global business, public sector, academic and civil society leaders.
* The Green Bond market grew to approximately $230bn in 2019, a substantial (36%) increase on the previous year, according to data from the Climate Bonds Initiative, with issuers including sovereign states, multilateral development banks, municipalities and corporates.
* 204 new issuers of Green Bonds were welcomed to the market during 2019.
* Indonesia issued the first sovereign green sukuk in US dollars in March 2018, raising US$1.25 billion, following the launch of the first green sukuk by Malaysia the previous year.
* The European Investment Bank (EIB) provided more than Euro 19.6bn to green finance projects in 2017, nearly 30% of its total financing. In October 2019, the EIB announced that it would end financing of all oil, gas and coal projects by the end of 2021, and align all future investment decisions with the goals of the Paris Agreement.
* The Asian Development Bank announced that it will invest $80bn from 2019 to 2030 to combat climate change.
* Green mortgages are now available in countries including the US, UK, Sweden and Australia, with National Australia Bank issuing the world’s first Residential Mortgage-Backed Securitisation, including a certified green tranche of AUD 300 million, meeting criteria for low-carbon residential buildings.
* Climate Action 100+ investors manage approximately $35trn of assets.
* Sustainable, responsible or ethical investing now accounts for approximately 26% of assets under management globally (almost $23 trillion) according to the Global Sustainable Investment Alliance (GSIA).
* Assets under management in ESG funds worldwide rose in 2018 to $1.05 trillion, increasing from $655 billion in 2012. BlackRock, the world’s largest asset manager, launched a range of Exchange Traded Funds (ETFs) that invest based on ESG criteria in October 2018.
* 64 green finance centres (2018) are identified in the Global Green Finance Index survey, rising from 59 the previous year.
* 92% of the world’s largest banks are members of the UNEP Finance Initiative.

**Recent regulatory and policy developments**

* The UN launched the Principles for Responsible Banking in September 2019 supported by 130 banks from 49 countries, representing more than $47 trillion in assets, as the founding signatories.
* In March 2018 the EU published the “Action Plan: Financing Sustainable Growth”, followed by the publication of the EU Taxonomy in June 2019 and the European Green Deal later that year.
* As of June 2019, 785 organisations had expressed their support for the Task Force on Climate-related Financial Disclosures (TCFD) recommendations for consistent, climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers and other stakeholders.
* In December 2018, the US Alliance for Sustainable Finance (USASF) was launched by 15 large banks and asset managers, aiming to identify and streamline existing climate-finance initiatives, encourage greater transparency across climate-related financial risks and opportunities, and encourage more capital for sustainable investments.
* 400 global asset managers representing $32trn in assets launched the Investor Agenda in September 2018 to support investors as they scale up investments tackling climate change, and to showcase the actions some investors are already taking to improve their climate-related decision-making and risk reporting.
* The development of a national green finance system for China has been publicly endorsed by President Xi and the State Council, supported by 220 of China’s largest financial institutions, representing nearly 75% of China’s assets under management.
* The People’s Bank of China has incorporated green bonds and green loans into Macro-Prudential Assessments, and in June 2018 announced an expansion of the Medium-term Lending Facility to include green loans and green bonds.
* The Bank of England has announced that it will include the impact of climate change scenarios (including a rise in global temperatures of 4 degrees Celsius) in its UK bank and insurer stress tests in 2020.

Green and sustainable finance are growing rapidly, therefore, and there are very significant commercial opportunities for banks, investment funds, insurers and other financial services organisations to support the transition to a sustainable, low-carbon world. Despite rapid growth in recent years, however, there is still a very substantial investment gap. The scale of the challenge is beyond that of public finances alone, and, given the commitments made by the majority of national governments, a significant increase in support from the financial services sector is required to achieve the objectives set. The scale of the challenge and speed of response required has grown since the announcement of the 2015 Paris Agreement target of limiting global warming to less than 2 degrees, which would require reducing emissions to net zero by 2070, along with the October 2018 Intergovernmental Panel on Climate Change (IPCC) report recommending limiting global temperature rises to 1.5 degrees.

This is not only a commercial opportunity for the financial services sector, however. Importantly, it is also an opportunity for the sector to demonstrate its social purpose, by playing a key role in the transition to a low-carbon economy and a more sustainable world. By supporting activities, organisations and industries that can mitigate climate change, help individuals and communities adapt to the effects of climate change, and support other long-term social and economic goals, financial services organisations can help solve some of the world’s, and local communities’, greatest challenges.

International and national institutions, and financial services firms large and small, have key roles to play in addressing these challenges and supporting the transition to a sustainable, low-carbon world. Individual finance professionals also have a vital role. As we will explore in Chapter 12, change is ultimately led by individuals, and the changes needed to embed and mainstream green and sustainable finance principles and practice within financial services requires finance professionals with the relevant knowledge and skills to be able to develop and deploy products, services and tools that can mobilise capital to support the transition. Enhancing the role of the individual Green and Sustainable Finance ProfessionalTM, and developing a global network of Green and Sustainable Finance ProfessionalsTM, is key to mainstreaming green and sustainable finance.

There is a long way to go before green and sustainable finance achieves the mainstream scale and effectiveness necessary to address our biggest environmental and societal challenges, as set out in the Paris Agreement and UN Sustainable Development Goals. In particular, banks and investors still provide significant amounts of funding to environmentally destructive activities, including the burning of fossil fuels, that contribute to potentially catastrophic climate change and cause significant environmental and social harm. In the next chapter, we will explore the scale of these environmental and related challenges, the science underpinning climate change and the connections between these and the financial sector.

**Key Concepts**

In this chapter, we considered:

* The various definitions of green and sustainable finance, and the difference between ‘these and related terms
* Some of the typical characteristics of approaches to green and sustainable finance
* The challenges and opportunities for green and sustainable finance
* The UN Sustainable Development Goals (SDGs)
* Some indicators of the global development of the green and sustainable finance sector

Now go back through this chapter and make sure you fully understand each point.

**Review**

**Sustainable finance** encompasses both making the activities and operations of the financial services sector more sustainable, by considering broader economic, environmental and social factors in an organisation’s strategy and management; and the financing of sustainable economic, environmental and social objectives. For the purposes of this book, we define ‘sustainable finance’ as: “*the inclusion of economic, environmental and social factors in an organisation’s strategy, management, activities and operations; combined with the financing of sustainable economic, environmental and social objectives”.*

The signing of the Paris Agreement on Climate Change in 2015 has seen many policymakers, regulators and financial services practitioners focus on environmental sustainability. This has included significantly increasing the financing of new technologies and activities designed to reduce greenhouse gas emissions (‘climate change mitigation’) and/or support climate-resilient development (‘climate change adaptation’). It also encompasses identifying and disclosing climate-related financial risks. This has become known as **green finance**.

In practice it seems difficult, if not impossible, for any genuinely sustainable approach to finance not to incorporate environmental factors, particularly those relating to climate change mitigation and adaptation, and climate-related risks. Similarly, it is hard to separate the environment from the economy and society – each impacts on the other, both positively and negatively. Green and sustainable finance are highly interrelated, therefore, with green finance being a major and integral element of sustainable finance overall.  This is the approach we adopt throughout this book, in which we generally refer to ‘**green and sustainable finance’**.

For the purpose of this book, we define ‘green finance’ as *“any financial initiative, process, product or service that is designed to protect the natural environment and support the transition to a sustainable, low-carbon world; and/or manage climate-related and other environmental risks impacting finance and investment”.* This is a broad definition which focuses on enhancing and sustaining the natural environment, and managing current and future environmental risks.

Green and sustainable finance products and services include those that channel capital to those industry sectors that design products and services in order to reward environmentally friendly and other socially-purposeful activities, and that support the effective management of physical and transition risks. The most commonly cited green and sustainable industry sectors include renewable energy production, distribution and storage, energy efficiency in domestic and industrial buildings, clean transport, recycling, pollution prevention, water conservation, agriculture, aquaculture and forestry.

Green and sustainable finance can also be a whole-organisation approach, driving strategy, culture and business processes throughout a financial services firm. This is often tied to an stakeholder-focused corporate mission and an understanding of the financial sector as embedded in the economy, society and the environment. At present, however, the financial sector as a whole is not ‘green’ and ‘sustainable’. Institutions still provide significant amounts of funding to environmentally destructive activities, including the burning of fossil fuels. Our current financial system has three key characteristics that tend to contribute to environmental problems, and other social issues:

* A bias towards short-termism in decision-making
* A narrow focus on profit and shareholders
* A failure to address ‘externalities’.

Supporting the transition to a sustainable, low-carbon world requires very substantial capital. Estimates of the investment needed vary, but a figure of $6trillion per year has been suggested by the G20 and New Climate Economy. The scale of investment required means that public funds alone will not be sufficient. The financial services sector has a key role to play in mobilising and directing private capital to support the transition; it is estimated that up to 80% of the funds required will need to come from private sources.

The UN Sustainable Development Goals (SDGs) set out the major economic, environmental and social challenges faced by our world. These go beyond the challenges of climate change mitigation and adaptation, and offer a more holistic approach to sustainability going beyond the boundaries of green finance alone. They provide an extremely useful framework for considering sustainable finance, and an increasing number of financial and other institutions are aligning their strategies and activities with the SDGs.

Green and sustainable finance is a growing global phenomenon and represents a very significant opportunity for the financial services sector. This is not only a commercial opportunity, but also an opportunity for the sector to demonstrate its social purpose, by playing a key role in the transition to a sustainable, low-carbon world.

**Key Terms**

|  |  |
| --- | --- |
| **Term** | **Definition** |
| **Green finance** | Any financial initiative, process, product or service that is designed to protect the natural environment and support the transition to a sustainable, low-carbon world; and/or manage climate-related and other environmental risks impacting finance and investment. |
| **Sustainable finance** | The inclusion of economic, environmental and social factors in an organisation’s strategy, management, activities and operations; combined with the financing of sustainable economic, environmental and social objectives |
| **Just transition** | Ensuring that the transition from a high to low carbon economy is fair for current and future generations, particularly those communities and workers most impacted |
| **Climate change mitigation** | Projects and activities that aim to reduce greenhouse gas emissions and the rate of climate change. |
| **Climate change adaptation** | Projects and activities that aim to improve resilience to the effects of climate change. |
| **Renewable energy** | Energy that comes from a source that is not depleted when it is used, or is naturally replenished within a human timescale. |
| **Fossil fuels** | Fuel that is formed from the decayed remains of plants or animals, such as coal and oil. |
| **Biodiversity** | The full range of ecosystems, species and gene pools in the environment – the full variety of plant and animal life on earth. |
| **Embedded approach** | An approach that sees the financial system as embedded in the economy, society and the environment. |
| **De-carbonisation** | Reducing the amount of carbon (e.g. carbon dioxide or methane) emitted from an agricultural, industrial or other process. |
| **Divestment** | The opposite of an investment, e.g. selling rather than buying an asset such as shares in a firm. |
| **Net carbon footprint** | Total greenhouse gas emissions associated with the production, processing and consumption of products and services, offset by activities to mitigate emissions, such as Carbon Capture and Storage. |
| **Paris Agreement** | In December 2015, countries agreed to combat climate change and to accelerate and intensify the actions and investments needed to support the transition to a low-carbon world. The Agreement’s central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise in the 21st century below 2 degrees Celsius above pre-industrial levels and to pursue greater efforts to limit the temperature increase to 1.5 degrees Celsius. The Agreement entered into force in November 2016, after countries accounting in total for at least 55% of total global greenhouse gas emissions ratified the Agreement. |
| **Intergovernmental Panel on Climate Change (IPCC)** | The United Nations body that assesses the science related to climate change. The IPCC provides regular assessments of the scientific basis of climate change, its impacts and future risks, and options for adaptation and mitigation. |
| **Tragedy of the horizon** | The mismatch between business, political and regulatory cycles, and the timescale needed to prevent climate change impacting on financial stability. |
| **Stakeholder value approach** | An approach that sees the role of business as generating value for all the stakeholders it serves. |
| **UNFCCC** | United Nations Framework Convention on Climate Change. Agreed in 1992, and ratified by 197 parties to the Convention, the UNFCCC is the key international treaty providing a global framework for combating climate change. The Paris Agreement (see above) is an agreement reached within the UNFCCC process. |
| **Greenwashing** | Making false, misleading or unsubstantiated claims about the positive environmental impact of a product, service or activity. |
| **UN Sustainable Development Goals** | 17 objectives agreed by 193 countries in 2015 to address the major environmental, social and economic challenges of our time. |