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# Shifting the EU Taxonomy from Theory to Practice: A Review of the Literature highlighting Potential Academic Contributions to its Adoption, Implementation, and Impact

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# Shifting the EU Taxonomy from Theory to Practice: A Review of the Literature highlighting Potential Academic Contributions to its Adoption, Implementation, and Impact

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**Abstract**

The EU Taxonomy seeks to identify those sustainable economic activities, thereby supporting climate change mitigation and adaptation. Recent legislation underpinning the EU Taxonomy, such as the Non-Financial Reporting Directive (NFRD) and the Sustainable Finance Disclosure Regulation (SFDR), highlight the urgency for academic contributions that might shed light on its operationalisation.

At this embryonic stage in the Taxonomy's lifecycle, there is potential for the academic community to contribute to understanding its implications. Hence, we undertake a thematic analysis of predominantly, but not exclusively, professional literature to prioritise potential empirical research or conceptualisations that might offer insights for finance and accounting professionals, regulators, policymakers, investors and businesses. Our literature search is limited to literature that makes explicit reference to the Taxonomy between 2018 and 2021.

We find that little is understood on how investors or businesses intend to disclose against the taxonomy or on the challenges associated with disclosure. With sustainable finance emerging in Ireland, we propose an exploratory study of this sector's readiness to operationalise the taxonomy and offer a conceptual framework based on co-evolution theory (Foxon, 2011) bounded by three initial conditions: [1] skills and capability and [2] access to ESG data and [3] regulatory alignment.

## Introduction

With growing political and scientific alignment on achieving net zero carbon emissions by 2050, to maintain atmospheric temperatures to within 1.5$^{o}$C of pre-industrial levels, a deep re-engineering of the financial system is key to redistributing capital towards more sustainable economic activities. In this respect, reporting of these activities represents an essential vehicle for investors, companies, regulators, policy-makers and environmental and social scientists to gain actionable knowledge for transitioning quickly and orderly to a low carbon economy.

In recognition of the reporting challenge, the EU Taxonomy seeks to identify those very activities, thereby supporting climate change mitigation and adaptation and pursuit of sustainability, more broadly construed by the Sustainable Development Goals (Slevin et al., 2020). The Taxonomy shifts the focus of reporting from aggregate company level emissions to a more granular approach that differentiates sustainable activities from the numerous activities that companies undertake. Yet, the Taxonomy is merely a taxonomy. Rules of reporting and disclosure can be thwarted, resulting in collusion for greenwashing by investors and companies (Michelon et al., 2020). In this embryonic stage of the Taxonomy's lifecycle, we believe that the academic community can contribute to understanding the multi-layered and multidimensional aspects to the Taxonomy's operationalisation, hence informing professional practice across the world of business.

In this light, we undertake a thematic analysis of the emergent literature to identify key research questions relating to the Taxonomy's operationalisation. We begin with a traditional literature review. It includes short etymologies of sustainability and business and their convergence, an exploration of theoretical underpinnings to sustainable finance and transition as well as the role of finance in supporting sustainable development. In this review, we also provide a historical backdrop to policy and regulatory development in the EU, culminating in the Taxonomy's emergence. We then undertake a more systematic thematic analysis of the literature to identify the key themes that require research and scholarship.

**Sustainability – A Short Etymology**

Greek philosopher, Plato, argued that farming, logging and other uses of natural resources would impact the natural environment (Du Pisani, 2006). Indeed, the apple tree metaphor, from Adam and Eve to Isaac Newton, implies a historical understanding of humanity's interaction with, and growing capacity to alter the natural environment (Harari, 2016). Yet, it is not until the industrial revolution that the delicate balance of nature is disrupted by human activity on a global scale. Malthus' (1798) controversial article on population drew attention to human population growth and slower increases in food supply. Decades later, Swiss economist, Jean Sismondi, advocated a new perspective on political economics with human welfare to the fore. On climate specifically, awareness of atmospheric temperature correlation with fossil fuel burning emerged in the 19th century. Arrhenius, (1896) implied that fossil fuel combustion had some impact, although the causal mechanism was not entirely understood (Anderson et. al, 2016).

International think tank, the Club of Rome, subsequently concurred with Arrhenius, highlighting a connection between the burning of fossil fuels and the earth's atmospheric temperature (Meadows, 2007). In addition, the Club attributed overpopulation and hunger as threats to humanity. Contradicting this assertion, Meadows et al. (1972) predicted that hunger could be eradicated within twenty years, given technological advancements and the Earth's capacity to generate more food. In hindsight, this prediction was not prophetic, as it was estimated that 821 million of the planet's inhabitants were undernourished in 2018 (United Nations, 2020).

Despite the connotation that human behaviour was a factor in climate change and other planetary-scale environmental issues, the movement to address them remained dormant until the 1987 Brundtland report, published in the midst of several environmental disasters. Brundtland described sustainable development as meeting "*the needs of the present without compromising the ability of future generations to meet their own needs".* Many scholars argue that humanity's harmonious relationship with the environment has succumbed to short-term economics since the industrial revolution. Brundtland sought to question this dogma by creating awareness of social and environmental obligations, expected of agents of economic activity.

By 1991, there was some traction on climate change. Consensus on problem recognition became enshrined in the 1997 Kyoto Protocol, which recognised the Anthropocene as an era in which human activity has impacted the planet's natural ecosystems and sought to encourage member states to stabilise greenhouse gas (GHG) emissions. Yet, Kyoto stalled by the 2008 global financial crisis as governments succumbed to fiscal austerity. A successor to Kyoto came in the form of the Paris Climate Change Accord at COP21 in 2015. It comprised 190+ signatories and represented the first binding climate change initiative. Its rationale was underpinned by consensus on a need to address the effects of global warming and limit the increase in atmospheric temperature to 1.5$^{o}$C, a safe operating temperature that keeps like-supporting ecosystems resilient.

The UN's millennium development goals (MDGs) focused efforts on ending poverty and reducing gender inequality. Today's sustainability challenges, broader in scope, are enshrined in the UN's sustainable development goals (SDGs). All countries are called to offer solutions through their governments, businesses and societies. Implied in the SDGs is the global nature of human impact on its environment (Rockström et al., 2009), social inclusion and equity (e.g. Raworth, 2017) and good governance of business and civil society (SSDN, 2021). The SDGs are also future oriented in that they promote a conscious approach to our survival, highlighting a need for a classification system for areas of societal transformation. Rockström and Sukhdev (2016) categorise the SDGs according to economy, society and environment. The goals, themselves, are interrelated, offering synergies and trade-offs (Nilsson et al., 2018). The SDGs offer a framework for governments, corporates and societal organisations to prepare for an unfolding transformation. Sachs et al., (2019) six transformations provide guidance on how the SDGs can be operationalised through investments, policy implementation and regulation. These transformations reflect Gladwin et al.'s (1995) principles of sustainability – equity, prudence, comprehensiveness, connectivity and security, implicit in which is that we cannot comprehend sustainability in organisations without first considering the socioecological systems in which they are embedded.

Businesses have key roles in these transformations. Scholars, such as Weber (2007), highlight corporate culpability in biodiversity loss, climate change and social inclusion. Despite growing calls for change, the dominant business ethos remains one of economic growth (Schoenmaker

and Schramade, 2018). Imperative for change, the business world must derive from its environmental footprint and social responsibility. Yet, the narrative that business is an opposing force to sustainability is unfair. Even neoclassical theories suggest that businesses are mere entrepreneurial bi-products of market imperfections (Jensen and Meckling, 1976). There are well articulated risks to businesses from climate-change, for example, with Citi-Bank estimating the business-as-usual cost to be $72trillion (Winston, 2015). In the main, corporate America, a favourite scapegoat for social and environmental ills, supported the Paris Accord and in 2019 200+ CEOs declared that the purpose of business was no longer solely to maximise shareholder profit, corroborated more recently in an Accenture survey of 1,000 global CEOs (Winston, 2019).

Elkington's (2018) Triple Bottom Line (TBL) concept, which focuses on people, planet and profit, represented an important inflection in endeavours to achieve harmony between planet, society and commerce. A key theme of TBL theory is striking a balance between profit, corporate social responsibility and the environment, which has been actioned in the global reporting initiative (GRI). Although the financial system has been catalytic to corporate growth, its historic subversion of environmental (E), social (S) and governance (G) issues has now become a point of leverage to the extent that voices for a de-growth approach to economic development have grown louder. A short history of enabling forms of finance are addressed in the next section.

**Business & Finance – A Short Etymology**

Reamer and Downing (2016) outline four investment principles that can be traced back to the roots of commercial activity: [1] real ownership, [2] fundamental value, [3] financial leverage and [4] resource allocation. Real ownership suggests that direct investment and investment in financial instruments should lead to the same outcome (Hagstrom, 2005). Arguably, the failure of this principle, in the creation of synthetic financial products, led to the financial sector divorcing itself from social duty and the 2008 financial crisis. Fundamental value (Williams, 1938), refers to the sum of the present value of future dividends and any principle payments. The third principle, financial leverage, refers to the idea of borrowing capital to invest it elsewhere. It is considered to be a volatile approach to investing that can magnify profits or losses. The fourth

principle, resource allocation refers to the distribution of assets, in the correct manner to achieve a return.

In ancient times, agricultural land was the primary source of income and store of wealth. As far back as Aristotle's time, in Ancient Greece, slaves managed other serf's for the overall benefit of the landowner. Unlike today, land and other natural resources were considered to be abundant. The concept of lending and borrowing can be traced back to credit notes on clay tablets from 3000 BC. Reamer and Dowling (2016) highlights how the growth in investment necessitated a need for commercial banks, whose sophistication extended to collecting collateral for housing loans. Major changes to the financial sector occurred during The Renaissance, an era of expansion of lending and investment. Following the establishment of the Medici bank, the first stock exchange with an initial public offering came in 1603 (Petram and Richards, 2014). The stock exchange concept led to a significant broadening of access to finance, the monitoring of which became the genesis of what we recognise as economics today (Nussbaum, 1941).

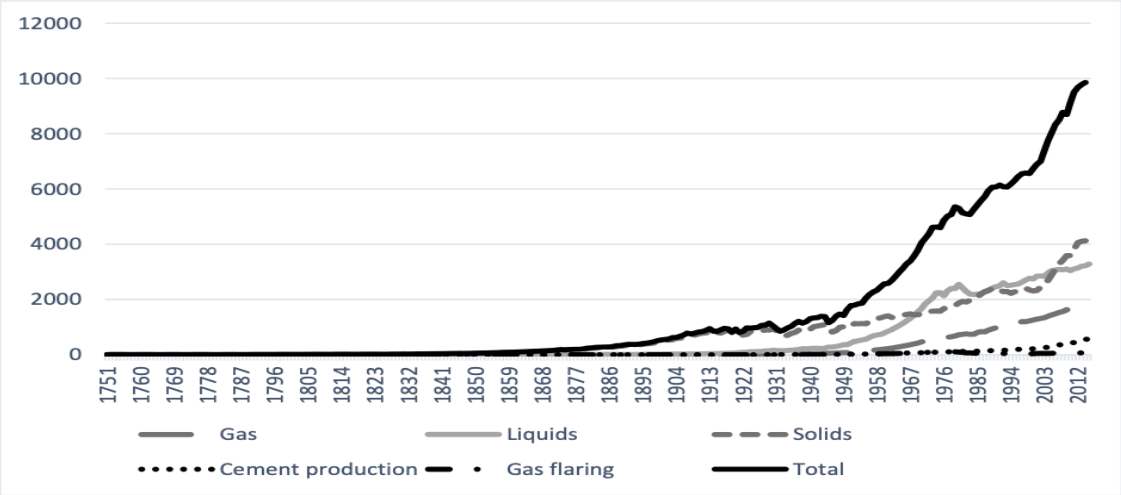
Smith (1776) is among the first seminal publications on economics from the era of the Industrial Revolution. Smith's economic ideologies focus on how self-interest can benefit society through division of labour within communities (Stigler, 1971). Liberalism was brought to the fore during this era by John Stuart Mill (1859) who advocated that countries should focus on trade and development, rather than war and destruction. This led to a shift from a mercantilism attitude to a more capitalist approach to business. Mercantilism describes an economic approach that maximizes exports whilst minimizing imports. It promotes colonialism as a means of resource exploitation (McKeon, 1989). On the other hand, capitalism can be described as:-

> *"an economic system in which private actors own and control property in accord with their interests, and demand and supply freely set prices in markets in a way that can serve the best interests of society" (Jahan and Mahmud, 2015)*

Perceived benefits of capitalism included ownership of private property, increased competition and freedom of choice (Jahan and Mahmud, 2015). Whilst the industrial revolution begun to accelerate in the 1800's, economic schools of thought became stagnant in a production-

consumption orientated society. It is the economic activities of the Industrial Revolution that contributed to the first noticeable increases in atmospheric $CO_2$ emissions (Fig. 1).

**Figure 1:** Carbon dioxide emissions from 1751-2012




**Source:** *Adapted from (Bergquist, 2017)*

The 19th Century reflected the beginning of great acceleration of socio-economic activity (Steffen et al., 2011) and earth system indicators, becoming the iconic symbol of the Anthropocene. Many of today's social challenges have their origins in the producer-consumer mindset from the Industrial Revolution. Deterioration in quality of life and reduced like expectancy due to air pollution, child labour, greater income inequality, rapid urbanisation, degradation of working conditions and post-Malthusian population growth are well articulated woes. Whilst many economic historians have dismissed the externalities of industrialisation (e.g. Williamson, 1981), advocating that the transformation brought by it was primarily in the service of progress, a growing critique advocated for better business management as a counter to self-interest.

Whilst management texts evoked social responsibility and moral rectitude, the prevailing attitude remained one in which nature, whilst occasionally requiring protection in badly polluted localities, was resilient and bountiful enough to be managed, tamed and exploited. Sustainability considerations in managing firms emerged as early as the 1930's (Carroll, 1999). Since then, sustainability-related management of firms has evolved considerably and a number of theories

have emerged that explore the complex interrelationship between business and sustainability (Chang et al., 2017). Table 1 depicts the historical evolution of these theories.

**Table 1:** Historical Evolution of Sustainability Related Theories in Business and Finance

| **Theory** | **Author** | **Year** |
|---|---|---|
| Social Responsibilities of the Businessman | Howard Bowen | 1953 |
| A New Rationale for Corporate Social Policy | Committee for Economic Development | 1970 |
| A 3rd Model of Corporate Performance | Archiebold Carrol | 1979 |
| Stakeholder Approaches | Edward Freeman | 1984 |
| Our Common Future | Gro Harlem Brundtland | 1987 |
| Triple Bottom Line | John Elkington | 1990 |

Since Brundtland, corporate sustainability (CS) has increasingly resonated with business leaders and financial investors, albeit with varying definitions. CS is operationalised through Elkington's (1990) TBL, which differs greatly from traditional financial reporting frameworks. Whilst some (e.g. Jamali, 2006) suggest that TBL can set a business on a more sustainable path, others (e.g. Gray, 2010) remain unconvinced about its ability to resolve the dichotomous tension between sustainable development and pursuit of profit. The emergence of the Green Economy with its emphasis on human health and social equity whilst reducing environmental risks, offers a pathway for CS, altering the way investment decisions are made (OECD, 2011). Although theories such as TBL underpin current thinking on business sustainability, the challenge is in shifting our understanding from what sustainability is, to how it can be achieved.

**The Transition Challenge – Theoretical Underpinnings**

The two short etymologies in the previous sections suggest that current economic models of the world were developed in an era of resource abundance when fossil fuels were plentiful and carbon emissions were negligible (Daly and Farley, 2004). A belief that current economic policies are outdated is reiterated by Raworth (2017) who notes that today's economics students are educated on theories that are rooted in the late 1800's. Raworth explains the need to shift from a growth orientated to a circular approach to economics. Her "doughnut" metaphor for a

sustainable economy safeguards its social and ecological aspects. The environmental aspects derive from Rockström et al.'s (2009) study of the Earth's nine planetary boundaries which humanity, as a precautionary principle, should not cross to avoid catastrophic environmental degradation. Raworth expands the environmental concepts by identifying 12 priorities that businesses should respect to ensure well, productive and empowered societies. In advocating for a transition from linear to circular economics, her "doughnut" analogy highlights a safe operating space that avoids overshooting the planetary boundaries, whilst providing a social foundation.

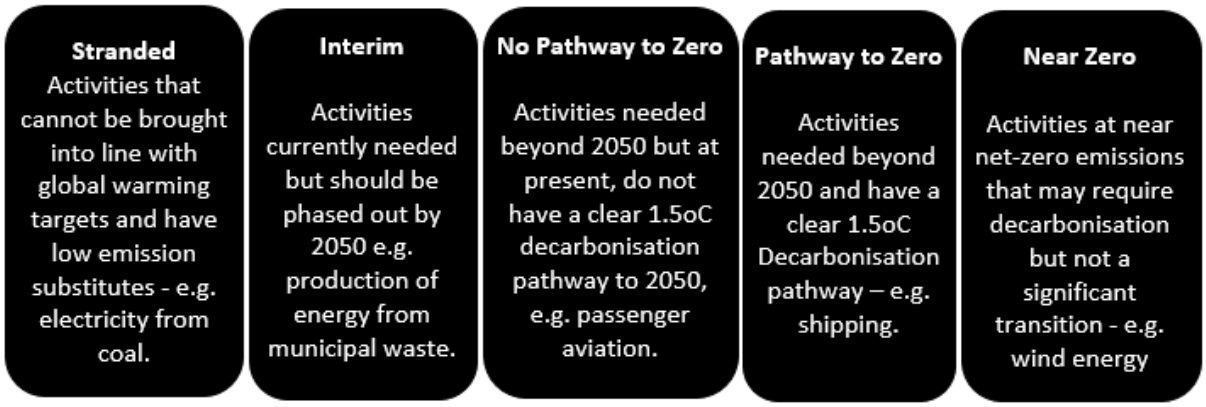
Despite recognising the need to transition to a more circular economy, there is still reluctance on the part of businesses to act on climate change and other environmental risks. Markman (2018), suggests numerous reasons. First, he believes, is the ever present trade-off between short-term and long-term benefits, thwarted by humans overvaluing short-termism. This is reflected in the pervasive practice of temporal discounting in which we place a higher emphasis on receiving benefits today than in the future. When applied to financing, this idea is prominent in investment choice, when high carbon emitting investments are prioritised over greener ventures, for their short term returns (Bećirović, 2015). Investors tend to focus on short-term measures when assessing the investment performance, using calculations like return on investment and earnings per share (Siggelkow and Wibbens, 2020). The main issue with these measures is that they fail to take into account the potential of high-impact, unforeseen events that lie ahead further down the line.

Another reason for lack of motivation for climate action is a sense of distance between individuals and the consequences of environmental collapse (Markman, 2018). This psychological "distance" is explained by construal-level theory, which hypotheses that people better conceptualise things to which they are physically closer (Trope and Liberman, 2010). This is corroborated by Naqvi et al.'s (2017) study of investments, which highlight the failure to predict long-term threats. Unpredictable events that have negative impacts on investments are referred to as black swans, and the alternative, more predictable events, as white swans (Naqvi et al., 2017). Medland (2017) supports the claims of Naqvi et al. (2017) by relating construal-level theory to the 2007 subprime mortgage crisis, stating that failure by lenders to prepare meant that subprime became a black

swan. In the words of Naqvi et al (2017), "All swans are black in the dark" meaning failure to prepare leads to unpredictable outcomes. Despite consensus on climate change, cognitive biases in corporate decision-making may mitigate against action (Mazutis and Eckardt, 2017).

Yet, despite the Paris Agreement requiring a reduction of GHG emissions, an acceleration in decarbonisation could distress traditional business models. A disordered transition towards a low-carbon economy could lead to a carbon bubble, in which investments in fossil-fuels become stranded (Ritchie and Dowlatabadi, 2015). Tackling decarbonisation represents merely one vector for transition in pursuit of sustainability. The Climate Bonds Initiative (2020) places climate change at the heart of the SDGs and proposes a financial framework that recognises diversity of transition along a continuum of five categories of activities (Fig. 2).

**Figure 2**: Five Categories of Economic Activities along the Transition to Zero Emissions




**Source:** *Climate Bonds Initiative (2020)*

There is also risk that investors may be over-zealous in transitioning (Silver, 2017), an irrational exuberance synonymous with bubbles and crashes. Hence, the challenge is to make finance consistent with requirements for orderly transition. The investment gap required across the SDGs is estimated to be circa. $5-7tn p.a. (UN, 2015). Delivering sustainable development requires clear transitions (Hanger-Kopp et al., 2015).

Emerging theories of business recognise the sustainability transition concept (Loorbach and Wijsman, 2013). Co-evolution theory adapts Darwinian principles to business (Hodgson, 2010)

and empirical studies explore the co-evolution of firms with their environments, identifying strategies for sustainable transition (Stead and Stead, 2013; Foxon, 2011; Geels, 2014). Yet, despite negative connotations associated with sustainable investments, Schoenmaker and Schramade (2018) believes a key solution lies in Dyllick and Muff's (2016) concept of long-term value creation, which is maximising economic, social and environmental value over a long period. Schoenmaker and Schramade (2018) inform us that companies focused on material sustainability issues, show a superior longer-term financial performance than those who resist. The emergence of Green Finance and Responsible Investments, is a recognition that sustainability transition requires enormous investment, political will and new regulation (Kuhn, 2020). Moreover, we now see the emergence of transition finance (Caldecott, 2020) as the "*provision … of financial products and services to … realise alignment with environmental and social sustainability*".

**The Role of Finance in Facilitating Sustainable Development**

Finance played a key role in circumventing the impact of the great depression of the 1930's (Fishback, 2010). Similar measures were also implemented to cope with the 2008 financial crisis, (Fitzgerald, 2014). In Ireland, the Government introduced stimulus measures, notably in the form of the pandemic unemployment payment, in the wake of COVID-19 (Miley, 2021).

In 2015, the United Nations Conference on Trade and Development (UNCTAD) identified a need to steer capital towards sustainable development. Watson and Kellett (2016) posit a rose-tinted view of finance, claiming that *"finance will clearly play important roles in supporting progress towards the SDGs*". Viewed from an EU perspective, a provision for sustainable finance in the new Green Deal supports decarbonisation of the economy. Financial sector sentiment towards sustainable development is increasingly aligned to national government narratives. In Ireland, for example, circa. 94% of investment managers have responsible investment policies (ILIM, 2020). Levine (2005) highlights conflicting opinions on the role of finance, citing theorists that believe that finance merely responds to the market. In contrast, Miller (1988) believes that finance plays a major role in economic development. In acknowledging these viewpoints, we lean towards the Slevin et al.'s (2020) view that finance can be a major contributor to sustainability.

The functions of finance can categorised in five ways (Levine, 2005): [1] to produce forecast data for possible capital allocations, [2] to oversee investments and provide corporate governance, [3] to offer a means to trade, diversify and manage risk, [4] to organise and reserve savings and [5] to offer an exchange of goods and services. These traditional functions focus on increasing shareholder wealth with little consideration for other stakeholders.

Schoenmaker and Schramade (2018) theorised sustainable finance based on financial value, social value and environmental value, articulating three approaches (Table 2). First, it considers the idea of maximising profit, whilst avoiding harmful stocks. Implied in this approach is that companies may transition towards more sustainable assets but remain oriented towards shareholder value. The second is to internalise negative environmental and social externalities to avoid risk, e.g. by implementing a carbon tax. This process could, for example, involve conducting a life-cycle analysis of a product and is consistent with triple bottom line and integrated profit and loss accounting (Schoenmaker and Schramade, 2018). The third approach focuses on finance that contributes directly to sustainable activities, whilst considering financial viability. In contrast to the first approach, social and environment impacts are prioritised over financial outcome.

**Table 2:** Three Approaches to Sustainable Finance

| Approach | Characteristic |
|---|---|
| Approach 1 | **F > S and E** where<br>(F = Financial Value, S = Social Impact, E = Environmental Impact) |
| Approach 2 | **I = S + F + E where**<br>(F = Financial Value, S = Social Impact, E = Environmental Impact and I = Integrated Value) |
| Approach 3 | **S + E > F where**<br>(F = Financial Value, S = Social Impact, E = Environmental Impact) |

Source: Adapted from Schoenmaker and Schramade (2018)

Schoenmaker (2017) highlights three obstacles to the success of sustainable finance. The first is that insufficient private effort due the "fallacy of composition" may prevent companies from sufficiently reducing their $CO_2$ emissions to meet climate targets. Dyllick and Muff, (2016) refer to this anomaly as a gap between what is being done and what is needed to be done. To mitigate this risk, policies and regulations must incentivise private sector firms to participate in sustainable activities (Schoenmaker, 2017). Second, Stern (2008) stresses the importance of rounded policies that include social responsibilities and values. Siggelkow and Wibbens, (2020) highlight short-term focus as a key challenge associated with transition. Carney (2015) refers to this as the *"tragedy of the horizon".* Schoenmaker (2017) alludes to short-termism in the form of quarterly reporting, calling on the International Accounting Standards Board (IASB) and the International Organisation of Securities Commissions (IOSCO) to establish standards for long-term metrics. A third limitation to sustainable finance is described by Schoenmaker (2017) as an aversion to change, highlighting the lobbying of incumbent companies against change.

Notwithstanding, sustainability is increasingly part of the financial lexicon (Hoffman, 2018). The UN supported Principles for Responsible Investment (PRI) initiative has seen exponential growth of 43% p.a., from 8 signatories in 2013 to 3000+ signatories in 2020, representing US$86 trillion under asset management. Responsible investors are increasingly asking corporations to disclose data on their ESG policies (Lydenberg, 2013). In essence the more sustainable finance becomes, the better the achievement of the SDGs (Ziolo et al., 2021).

**Enabling Policy for Sustainable Finance and the EU Taxonomy**

Whilst sustainable finance is becoming a key feature of the policy landscape to break the tragedy of the horizon, its potential has been limited by governance and a focus on investment institutions as mere brokers of, or passive investors in measures to address climate change. This sentiment is reflected in the Bank of England's (2019) response to climate change, which called for scaling up of sustainable finance and the establishment of policy frameworks in pursuit of the SDGs. The term *"loud revolution",* depicting the need for sustainability transition, was first coined at the UN Redesigning Finance for Sustainable Development conference. Since then, the notion that finance could assist in creating a circular economy has gained traction (UNEP, 2014). To

address investment declines of the 2008 financial crisis, the EU established the European Fund for Strategic Investment (EFSI), targeting sectors vital to wider recovery efforts. More crucially, beyond the necessity to act as an economic stimulus, EFSI recognised a need to address environmental issues, designating 40% of its funding to climate initiatives (EIB, 2020).

UNEP (2017) articulates four principles for positive impact: [1] a holistic view of sustainability, [2] frameworks to establish correct methodologies, [3] a transparency requirement to make known various classes and types of green initiatives, and [4] assessment of the impact. By 2018, the EU introduced an action plan to promote finance as an enabler of sustainable growth as part of broader efforts to connect finance with specific needs of the European economy for the benefit of the planet and society (Fig. 3). The plan comprised three elements: [1] reorienting capital flows towards sustainable activities, [2] mainstreaming sustainability in risk management and [3] fostering transparency and long-termism.

**Figure 3:** Summary of EU Action Plan on Financing Sustainable Growth

| | |
|---|---|
| **Category 1:** **R**eorienting Capital Flows | EU Taxonomy, EU Green Bonds, Sustainable Europe Investment Plan, Financial Advice, Developing Sustainability Benchmarks |
| **Category 2:** Mainstreaming Sustainability in Risk Mgt. | Include Sustainability in Ratings, Defining Duties of Asset Managers, Prudential Rules for Insurance Companies & Banks |
| **Category 3: Fostering Long-Termism and Transparency** | Strengthening Sustainability Disclosure and Accounting Standards, Fostering Sustainable Corporate Governance |

The EU Action Plan on Financing Sustainable Growth directs private investors towards activities that support transition to a climate-neutral, climate-resilient, resource-efficient and just economy. Its three-pronged approach underpins the evaluation of future EU sustainability initiatives. In line with EU policy initiatives, the Irish authorities have also sought to realign its spending with sustainable practices and the appraisal of future capital investments will require full consideration for their carbon impact (DCCA, 2021).

Synergies exist between the EU Taxonomy and the strengthening of sustainability disclosure. Strengthening sustainability disclosure refers to the development of the Sustainable Finance Disclosure Regulation (SFDR) and a review of the Non-Financial Reporting Directive (NFRD) which will be replaced by the Corporate Sustainability Reporting Directive (CSRD). Underpinned by the sustainability sciences (Lucarelli et al., 2020), the EU's Taxonomy regulation is the first standardized and comprehensive classification system to decipher what qualifies as a sustainable activity for investment purposes. SFDR requires investors to disclose how sustainability-related impacts are considered in their investment decisions whereas the revised NFRD has more stringent requirements for companies seeking finance on how they report non-financial information and how they disclose ESG data (Table 3).

**Table 3:** A Triple Approach to the EU Action Plan on Financing Sustainable Growth

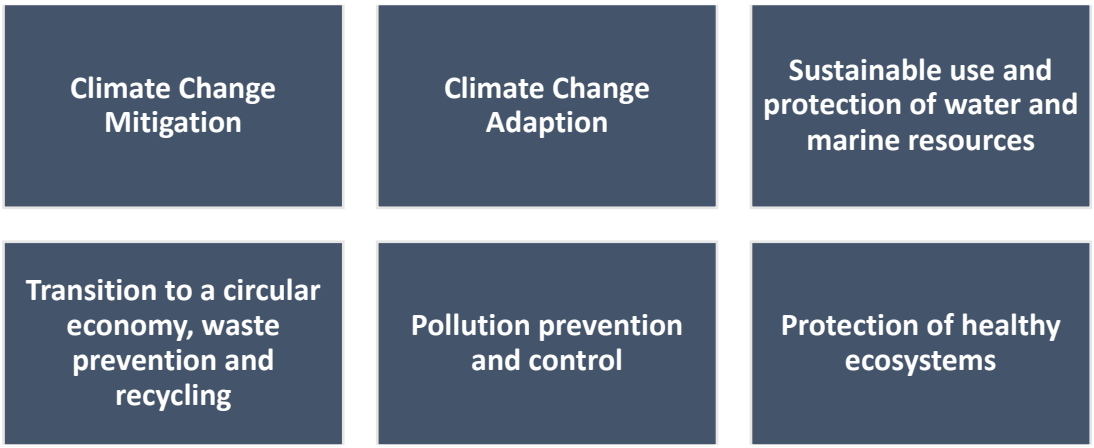
| | **SFDR** | **EU Taxonomy** | **NFRD** |
|---|---|---|---|
| **EU Action** | Action 9: Strengthen Sustainability Disclosure | Action 1: EU Classification System for Sustainable Activities | Action 9: Strengthen Sustainability Disclosure |
| **Goal** | Strengthen transparency for investors | Shift in capital flows to more sustainable activities. | Improve ESG data disclosure by investee companies |
| **Scope** | Financial Market Participants | Companies falling under NFDR | Businesses > 500 employees |
| **Criteria** | Classify al products based on ESG level | Criteria for whether an economic activity is sustainable | Non-financial reports to align with Taxonomy and SFDR |
| **Timeline** | March 2021 | December 2021 | December 2020 |

Despite this progress, regulatory gaps remain. Whilst the TCFD (2019) report highlights interest in climate-related financial disclosures from regulators, it implies that not enough companies are disclosing ESG data. There is also emerging consensus on the need for a transition framework to prevent greenwashing in which definitions for *"sustainable*" underpin the rules of investing. A

key instrument to address these issues is the EU's Taxonomy for Sustainable investments, which seeks to apply governance over the investment sector as it transitions from a culture of traditional return-led investments to more sustainably motivated proposals. The Taxonomy is an attempt to mitigate climate risk, through a financial lens, acting as a mechanism to transition investors to a low-carbon economy (TEG, 2020). Kuhn (2020) describes it as an initiative that classifies investments using a common approach across member states. The Taxonomy also attempts to improve reporting standards on SDG's (Esposito et al., 2020).

The TEG (2020) argues that finance can act as an enabler for sustainable development but, more crucially, it identifies that over the next decade global emissions must drop to half of current levels. Furthermore, it raises the argument the framework supporting the movement towards a more sustainably developed society comprises several elements, climate change being but one. Figure 4 depicts the EU Taxonomy's structure and is represented under the following six headings.

**Figure 4:** The Six Strand Structure Underpinning the EU Taxonomy




**Source:** *Adopted From (TEG, 2020)*

The Taxonomy requires all financial institutions within the EU, notably those providing financial products or services, to adhere to the guidelines in relation to their offerings of green labeled investments. More specifically, the objective of the current version of the taxonomy is to govern the influx of capital towards more sustainable led objectives.

**Utilising the Taxonomy**

The Taxonomy comprises multiple strands. The first imposes obligations on companies that investments they make contribute to one of the six criteria outlined in Figure 3. The second requires investments to present no significant harm on the remaining five objectives. Activities must also comply with the minimum social safeguards in respect of human rights applicable to business own operations. Additionally, the activity must consider requirements of the International Labour Organisation, including fundamental rights related to child labour, racial discrimination and gender equality (ILO, 2021). Finally, business activity must comply with technical screening criteria developed through various delegated acts (Renaud et al., 2020).

Renaud *et al.*, (2020) highlights how some activities may fail to contribute to climate targets but, in other ways, contribute to sustainable development. Activities that allow other ventures to contribute in this way are considered to be enabling. To ensure that the criteria is not overstretched, enabling activities must avoid a lock-in of assets that compromise long-term environmental goals (Och, 2020). The enabling activities must also have a substantial positive impact on the basis of life-cycle considerations (Renaud *et al.*, 2020). Improving technologies could lead to an enabling activity becoming non-viable. Some activities are inherently dangerous to the climate or to achieving sustainable development, particularly in industries that neither contribute to the Taxonomy agendas nor enable another activity to do so. The EU Taxonomy will apply procedures for these named industries to ensure that there is no technological or economical low carbon substitute. The procedure will support transition to a climate-neutral economy by ensuring the activity is a leader in industry standards. Jones *et al.*, (2020) list an example of these as a move from coal burning energy usage, to gas-fired power.

**The Taxonomy's Objectives**

The Intergovernmental Panel on Climate Change (IPCC) describes climate change mitigation as a human intervention through carbon reduction to minimise the harmful impacts of greenhouse gases. This definition is essential in understanding the Taxonomy's first objective. The transition to a circular economy requires a shift from high to low emitting activities. The EU Taxonomy aims to promote the growth of these activities through enabling and transitioning activities (Ingre and

Passburg, 2020). The EU utilises the NACE system, an industrial classification system for economic activities, as an initial guide to decide which undertakings to include in the taxonomy. The second objective of the Taxonomy is climate change adaptation, which is described by TEG (2020) as a two-step process to evaluate an activities contribution to climate resilience by:-

[1] assessing the negative effects of climate change on economic activity;

[2] Illustrating how the business activity will impact on, and negate these negative effects.

The adaptation process was due to come into effect in late 2020 but some eastern European countries are aggrieved with elements of the Taxonomy (Frederic, 2021), in particular the non-recognition of natural gas as a transition fuel. Hence, the timeframe for implementation has been extended to January 2022. Further criteria for activities that contribute to the other environmental objectives such as reducing pollution will enter into force in 2023.

**Obligations of the Taxonomy**

The Taxonomy will apply to financial companies within the EU that provide a range of financial services, including pensions, insurance and investment banking. The European Commission hopes that the introduction of the Taxonomy will contribute to transitioning financial companies towards more responsible operations. Table 4 provides a summary of the obligations highlighted in the final technical report and the Taxonomy.

**Table 4:** Financial Service Companies and Sectors Impacted by the EU Taxonomy

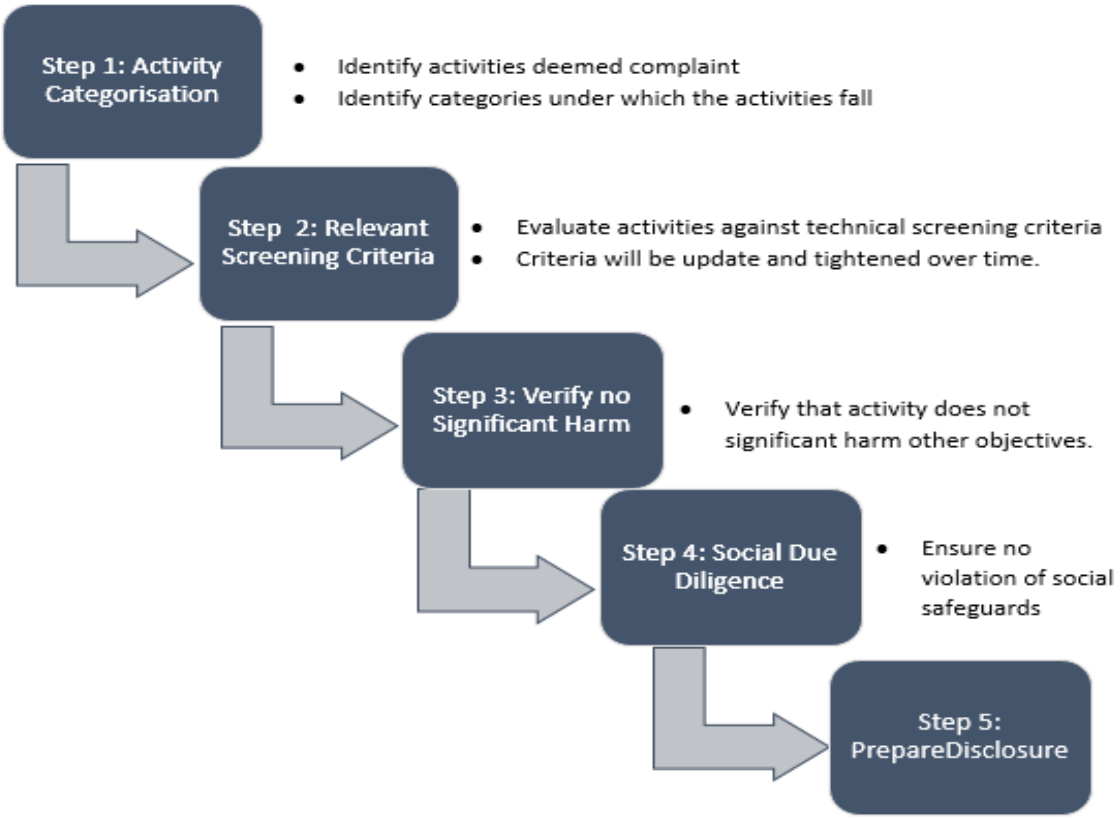
| Sector | Disclosure obligations |
|---|---|
| Pensions | • Pension Products<br>• Pension Schemes<br>• Pan-European Personal Pension Products |
| Insurance | • All Insurance products operating within the EU |
| Alternative Investment Funds (AIFs) | • Real Estate Funds<br>• SME Loan Funds<br>• Venture Capital<br>• Private Equity Funds |

| | |
|---|---|
| | • Infrastructure Funds |
| Undertakings for Collective Investment in Transferable Securities (UCIT Funds) | • Equity Funds<br>• Exchange-traded Funds (ETFs)<br>• Bond Funds |
| Corporate and InvesmtentBanking | • Securitisation Funds<br>• Venture Capital and Private Equity Funds<br>• Indices Funds and Portfolio Management |

**Source:** *Adapted From European Comission, 2020*

Companies will be required to comply with the Taxonomy through the NFRD and it is assumed the later CSRD ,that specifies supporting content, presentation and methodologies for compliance demonstration. Figure 5 illustrates a five step approach to compliance developed by the TEG (Renaud *et al.*, 2020).

**Figure 5:** 5-Step Approach to Taxonomy Compliance



To prepare disclosures, the company must identify the proportion of their investments compliant with NFDR, identifying [1] the percentage of investments relating to companies carrying out environmentally sustainable economic activities aligned to the Taxonomy and [2] the monetary share of environmentally sustainaible investments as a percentage of overall company investments. This will be published by companies through non-financial elements of their end of year reports.

**Methodological Approach to Identifying Thematics in the Literature**

In this study, we seek to establish how the current literature might inform academic contributions to the Taxonomy's operationalisation. Apart from a few emerging contributions (e.g. Giannarakis et al., 2018; Ingre and Passburg, 2020; Lucarelli et al., 2020; Och, 2020), academic research on the Taxonomy is still in its infancy. An academic community of practice on Taxonomy related research may ease the transitional phase by shortening the learning curve for those engaged in the process. To appropriately scaffold this approach to unearthing meaningful findings and conclusions (Bryman, 2013), we lean towards a qualitative approach by extracting emergent themes in the professional and academic literature. Maxwell, (2009) defines a qualitative led study, as one that engages in non-numerical data collection by means of document analysis, observations, lived experiences, and by capturing the opinions and expressions of those at the center of the study. In comparison a quantitative approach, favours the use of science or numerical data as a means of establishing its findings.

**Data Collection**

Due to the focus and scope of this study, data deemed relevant to the research objective was sourced exclusively from literature that makes explicit reference to the EU Taxonomy between 2018 and 2021 and are categorised in Table 5.

**Table 5:** Sources of Professional and Academic Literature Included in this Study

| Provider | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|
| Google Scholar | ✓ | ✓ | ✓ | ✓ |
| Financial Company Websites | X | ✓ | ✓ | ✓ |
| Professional Services Brochures | X | ✓ | ✓ | ✓ |
| News Articles | ✓ | ✓ | ✓ | ✓ |
| EU Policy Documents | ✓ | ✓ | ✓ | ✓ |
| National Policy Documents | ✓ | ✓ | ✓ | ✓ |
| Webinars and Workshops | X | X | ✓ | ✓ |
| Discussion Boards | X | X | X | X |
| Working Papers | X | X | ✓ | ✓ |

**Initial Data Extraction and Content Analysis**

During the literature review, attention was given to identify the presence of recurring words or phrases related to the operationalisation of the Taxonomy that, once identified, were subsequently documented within Excel for the purpose of further analysis. In essence, we undertook a content analysis (Berelson, 1952) of secondary data for the purposes of analysing how the narrative behind operationalising the taxonomy is emerging. In this initial analysis, we identified over 156 open codes, in which chunks of text were allocated a descriptive code or label. Whilst many of the codes affirm what we know about the Taxonomy's operationalisation, they served as a basis for a more systematic thematic analysis. Maguire and Delahunt (2017) describe this process as one that requires the researcher to extract meaning or to identify patterns that are embedded within the content.

In an attempt to understand the key issues concerning operationalisation, we then undertook a thematic analysis using the inductive coding of the emergent literature identified, prior to the implementation of the policy. In doing so we acknowledge the possibility of alternative methods of analysis. However, thematic analysis was considered the most appropriate approach as it is a broadly used tool across a range of analytic traditions in qualitative research, such as grounded theory, phenomenology, discourse analysis and narrative analysis. The advantage of thematic analysis is in its usability for novice researchers. Thematic analysis is theory-neutral and is

typically applied across a broad-range of ontological and epistemological domains, most notably in interpretive-constructivist learning research.

**Data Analysis**

The purpose of the thematic analysis was to organise, cluster and categorise the open-codes into a smaller number of conceptual themes (Boyatzis, 1998), in essence progressing the raw data to emerging themes. To undertake this task it was necessary to utilise the framework of Braun and Clarke (2006) used in the field of psychology, which comprises six steps, designed to steer this process. The opening phase of Braun and Clarke's (2006) framework places an onus upon the researcher to gain a sense of familiarity with the data, this is achieved by means of transcribing or repeatedly reading over the passages of data that were extracted during the literature review. In relation to this study, a like-for-like process also ensued. The Initial source of data was taken from a body of literature collated from a selection of peer-reviewed articles pertaining to sustainable finance. In addition, a larger body of material that was sourced from webinars, conferences, promotional videos, company brochures, professional briefings and government publications related to the topic of the Taxonomy itself. The purpose of engaging in this task was to identify relevant words or meaning that held an association with the objectives of the research. Once identified, they were subsequently extracted into Excel for further analysis. Of relevance to this study, a total of 156 chunks of texts were extrapolated for this purpose.

The guideline in relation to the second phase of the framework, requires that the researcher should loosely arrange or segment the data into working codes. This is enabled by systematically charting the extracted data into the most appropriate category. In keeping with this requirement, a categorisation process was also undertaken as part of this study, to distribute the extracted data into meaningful coded segments (Maguire and Delahunt, 2017). Subsequently these sub-groups were apportioned working titles for the purpose of commencing the initial thematic analysis process. This entailed structuring the data based on sources of data, e.g. professional briefings, academic publications and government papers etc.

In the third phase, the researcher is required to note any similarities or differences that have emerged throughout the different sources of information and to then engage in a comparison

process. This is described by Nowell et al. (2017) as a hunting exercise to locate the presence of themes within the literature. To maintain alignment with Braun and Clarke's framework, a similar exercise was also undertaken to refine the initial coded data into common groups that could potentially form the basis of an emerging theme. This was compiled on a comparative basis, by repeatedly scanning the data for any evidence of shared meaning or crossover.

In stage four of the process the framework implies that where themes have been identified, that they are evaluated to determine that they are in alignment with the objectives of the study. As a means of establishing this, it was necessary to engage in a probing exercise to substantiate any viable themes that had emerged, notably those associated with the operationalisation of the Taxonomy. To apply rigour to the process, a further review of the established themes, was also undertaken by means of group discussion and evaluation, this was enacted to ensure the validity and appropriateness of the emerging themes.

The framework also determines that, in phase five of the process, clear definitions and titles be applied to themes, in addition to any specific refinements including the removal of any unrelated content. The purpose of this is to bring this stage of the analysis to a close, resulting in the formation of a series of workable and relevant themes. In keeping with the structure of the framework, this study also engaged in an similar practice to ensure that an appropriate classification and naming process was introduced. This was achieved by engaging in a final review of the captured data and the subsequent removal of any dormant or unrelated content. In the concluding stage, the researcher is required to compile a report, a representation of what the combined themes purport to represent. This process is guided by an appropriate methodology and a series of clearly defined research questions. Of relevance to this study, the requirement to compile a report in respect of the research findings, is contained within and potential research questions to which the academic community attributed to each theme.

As with all approaches to research, there are limitations to utilising thematic analysis outlined by Braun and Clarke, (2006), which, in our case, is exacerbated by the lack of literature on the Taxonomy, the exploratory nature of the research, and the inherent restrictions of qualitative research. To mitigate the lack of literature risk, we conducted an extensive search of all literature

and information relating to sustainability, sustainable development, sustainable finance and literature explicitly referencing the Taxonomy, thus underpinning the scope and comprehensiveness of the paper. Braun and Clarke (2006) highlight an additional methodological limitation in which the flexibility of thematic analysis can lead to inconsistency and lack of understanding on behalf of the researcher. However, whilst there is inherent researcher bias in our interpretations, we mitigate this risk by taking an educated approach to the themes we identify.

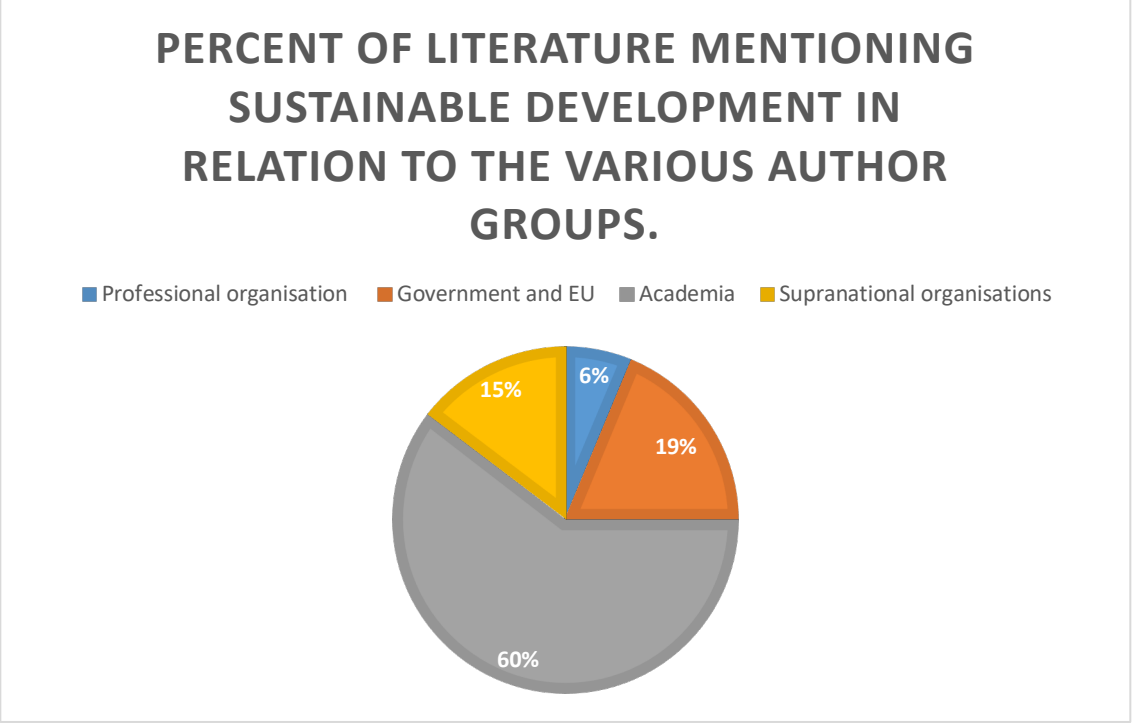
**Data Display**

A key challenge in displaying findings from qualitative work in a manner that facilitates conclusion making is in the volume of data and detail. Extended texts, such as large volumes of literature, are not well suited to making well-founded conclusions. To avoid becoming lost in the detail, we reduce, abstract and organize the data into a more compact form. Concept maps are particularly useful for visualizing data in summary format, for displaying tentative relationships between emergent themes, as a means of concisely summarizing the key message from the data. We deploy the Gioia et al.'s (2013) to display the aggregation of initial codes to emerging themes, ensuring qualitative rigor whilst retaining a degree of creativity in our analysis.

**Findings**

Of the 80 articles we reviewed on sustainable development, the following breakdowns of publications were established, peer-reviewed academic articles comprised over 60% ( Fig. 6).

**Figure 6:** Proportion of the Literature Referencing Sustainable Development.




As a control, the term “Sustainable Development” was utilised as a basis of comparison for two research topics. The term sustainable development was coined in the 1987 Brundtland report, and since then, based on the data obtained for this study, it has been mentioned predominantly in academic literature (United Nations, 1987). In contrast, if we consider “The EU Taxonomy” across the literature obtained for this study, it is noticed that academic literature is lagging behind the control in this instance. Figure 7 provides a visual representation.

**Figure 7:** Proportion of literature Making Explicit reference to The EU Taxonomy.

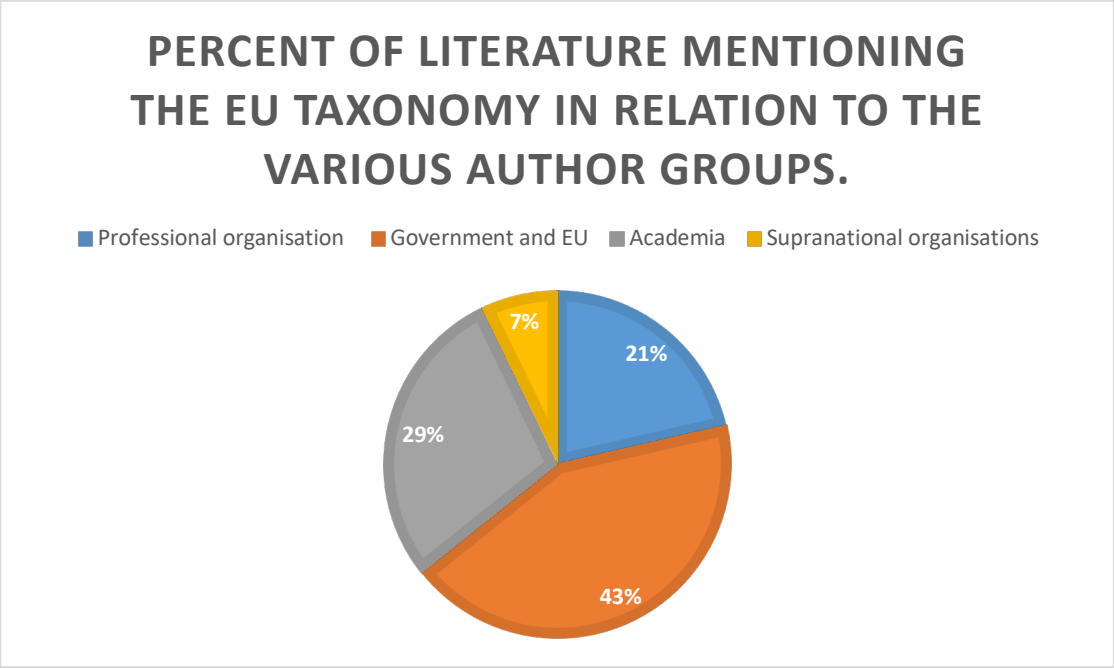



Figure 6 and 7 illustrate a comparative difference within the academic literature in relation to the terms “Sustainable Development” and “The EU Taxonomy”of 31%. It can also be derived that professional publications are currently stronger in terms of concentration and use of the term taxonomy in comparison to the phrase sustainable development. We are aware that these statistics are merely indicative and an explanation for the difference might be accounted for by the emergent nature of Taxonomy research. However, we also believe that the high output of professional literature stems from the fact that companies and financial investors are preparing for implementation of the Taxonomy. Another possible explanation for the high output of professional literature relates to the more immediate monetary risks of non-compliance with the Taxonomy, forcing companies and investors to react quickly without the comfort of due-diligence, more in-depth analysis or advice from the academic community. Through our thematic analysis, we note various avenues that require further academic attention to support the introduction of the taxonomy and its ongoing use as a guiding framework for ESG disclosure and decision-making.

Figure 8 summarise the aggregation of open codes into key themes related to the operationalisation of the taxonomy. We highlight four thematic areas that can essentially be considered initial boundary conditions or antecedents to the implementation of the Taxonomy. Furthermore, we identify an additional three thematic areas that require consideration for ongoing engagement with the Taxonomy. Whilst, we do not claim these to be conclusive, we believe that they provide an initial basis for considering how the academic community might contribute to the operationalisation of the Taxonomy.

**Figure 8:** Thematic Formation of Open Codes Identified in the Literature

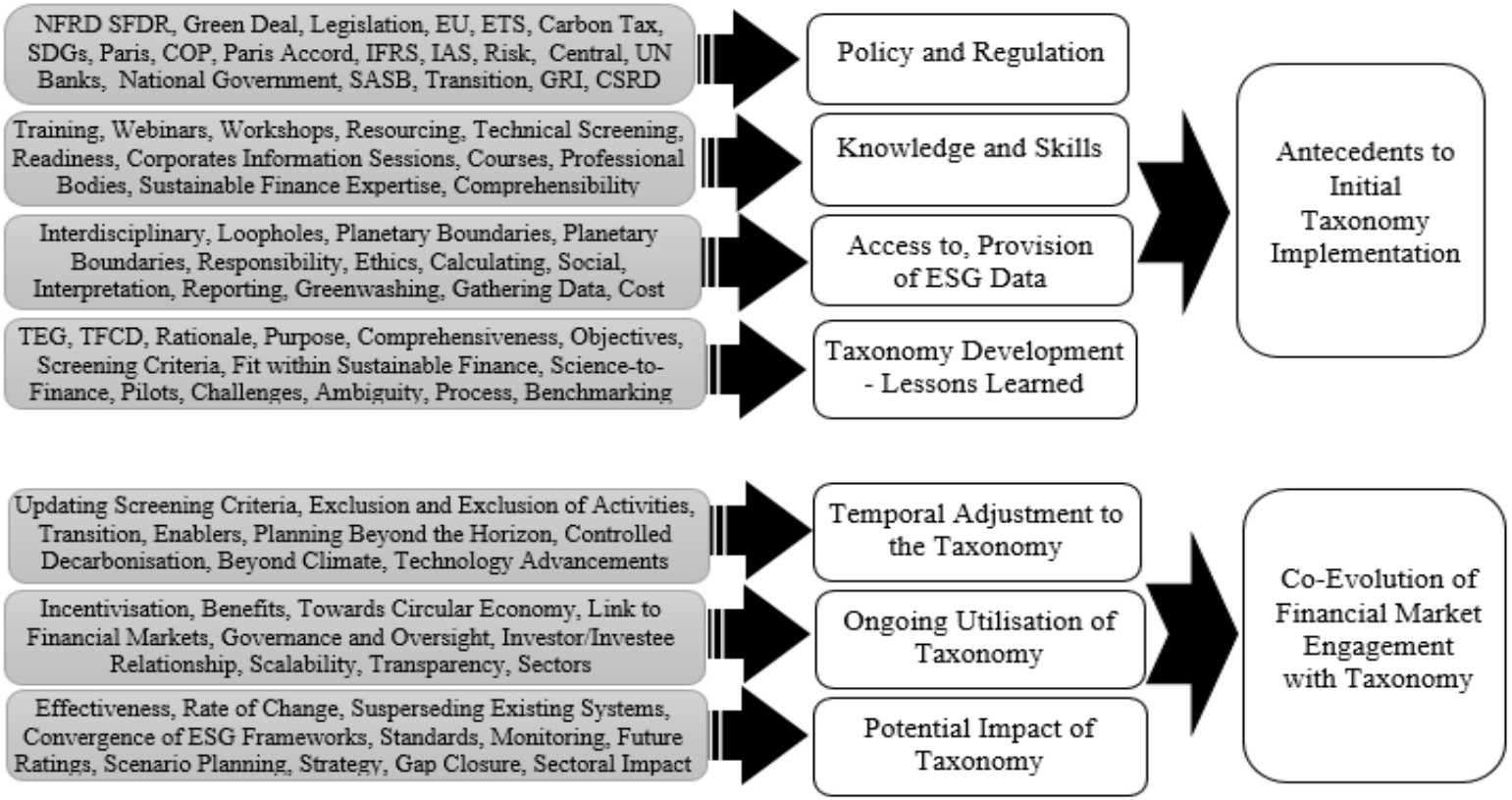


**Table 6:** Summary of Potential Research question Related to each Thematic Area.

| Primary Theme | Secondary THeme | Potential Research Questions |
|---|---|---|
| Antecedents to Initial Taxonomy Implementation | Policy and Regulation | • What potential political risks are there with over or under regulation?<br>• How can the EU interact with other juridictions to affect regulatory alignment? |
| | Knowledge and Skills | • What skills are required by professionals in corporate and financial sectors?<br>• How might these skills be emedded into undergradaute and graduate education? |
| | Access to and Provision of ESG Data | • What data is needed for diclosure by companies and investors?<br>• What ICT technologies and frameworks are neeed to capture the data? |
| | Taxonomy Development – Lessons | • How does the Taxonomy compare with other ESG reporting frameworks?<br>• How will the Taxonomy evolve with science and technology? |
| Co-Evolution of Financial Market Engagment with the Taxonomy | Temporal Adjustment to the Taxonomy | How will the screening criteria be maintained and updated?<br>Howe will corporate and investor strategies co-evolve with the criteria? |
| | Ongoing Utilisation of the Taxonoy | • How can investors and companies be incentivised to adopt the Taxonomy?<br>• What challenges need to be overcome by companies and financial investors?<br>• What are the costs and benefits of reporting in accordance to the EU Taxonomy? |
| | Potentia Impact of the Taxonoy | • What will be the impact of the Taxonomy on financial markets?<br>• What will be the impact of the Taxonomy on corporate reporting?<br>• Are there any potential unintended consequences of the taconomy?<br>• To what extent will the Taxonomy disincentivise greenwashing? |

In reflecting the infancy of the taxonomy, our study identifies two areas of interest for further studies. The first thematic area revolves around the idea of the initial implementation and adoption of the EU Taxonomy. We noted that the academic, governmental and professional literature lack clear reference to what will incentivise compliance with the Taxonomy. In particular, we note that the literature, at present, is more descriptive of the taxonomies procedure, rather than what benefits and drawbacks may be associated with compliance. Finally, in relation to the implementation and adoption of the EU Taxonomy, the literature suggests that the difficulty in obtaining data needed to comply, may hinder the efficacy of the Taxonomy regulation. The OECD (2021), for example, has cast a shadow over the ability of the utilities sector, one of the key sectors targeted for decarbonisation, to supply sufficient and appropriate data, as to determine an adequate level of disclosure. Indeed, Laidlaw (2021) suggests that investors face a major challenge when it comes to the verification and gathering of data from various sources.

The second thematic area for study addresses the dynamics of the Taxonomy's ongoing use and its impact. We therefore believe the impact of the taxonomy on the financial and corporate sectors may be one avenue for further exploration. This avenue of research, for example, could examine the potential impact that disclosure on greenwashing. Additionally, unintended consequences need to be considered. Awareness behind the concept of a "green bubble" notably one that could impact upon the wider european economy, was reiterated in November 2020, by Yves Mersch, a member of the Executive Board and Vice-Chair of the Supervisory Board of the European Central Bank (ECB). Mersch believes there remains a high possibility that greenwashing will become a contention within the market, and that this may prove to be the instigator of a green bubble, the very antithesis of a sustainable and orderly transition to a zero carbo economy.

Understanding the dynamics, i.e. rate of change, towards low carbon economic activities - as sustainability sciences, financial regulation, investors and companies co-evolve - is an essential avenue of research to which the academic community can contribute. To avert unintended outcomes, amendments to the design of the Taxonomy may be deemed necessary over time (ECB, 2020), reflecting policy evolution, market compliance and technological advancements.

**Proposal for Further Research**

Ireland is one of the smaller member-states of the EU, with a population and GDP of circa. 5 million people and €388bn respectively. Notwithstanding its relativelty small size, it has an emerging sustainable finance sector and current Government strategy is in line with the trend of leading financial centres around the world seeking to boost Sustainable Finance (Skillnet, 2019). Ireland has an established track-record for highly rated international financial services with many leading investment companies already offering innovative Sustainable Finance products. Ireland has a growing green bond sector and its first sovereign green bond for €3bn was heavily oversubscribed. Ireland plays a key role internationally for thought leadership in sustainable finance and is the European base for the UN Financial Centres for Sustainability (FC4S) initiative. Many of the members of the Irish Association of Investment Managers (IAIM) are UN PRI signatories. Ireland is also among one the world's largest Undertakings for Collective Investment in Transferable Securities ("UCITS") and Alternative Investment Fund ("AIF") domiciles in the EU (Maples, 2020). Taxonomy related regulation will apply to financial market participants (FMPs) in Ireland, including AIFMs, UCITS management companies and investment firms providing portfolio management. Several consultancy companies have already begun to evaluate the readiness of Irish investment managers for the forthcoming regulatory agenda, with areas of focus identified including strategy, reporting, engagement, governance structure, product strategy and training (SIF Ireland, 2020). Hence, the Irish context represents a suitable microcosm to explore the initial implementation, ongoing use and impact of the Taxonomy .

In light of the avenues for research identified in this literature review, we a propose an exploratory study of the taxonomy's operationalisation amongst Irish fund managers and corporates. The study will seek to examine the impact of the EU taxonomy for Sustainable investments on investment funds and corporates in Ireland's wider financial community. In doing so, we plan to establish congruence with and divergence from Taxonomy requirements of the current approaches to ESG reporting and how that may enhance or detract from the strategic decisions of various Irish investment managers. Our study will aim to compare and contrast the current green investment strategies of Irish investment companies with the new EU taxonomy

and seek expert opinion of participants within the Irish financial sector to gain insight into adaptation to the Taxonomy's requirements, posing three research questions (RQs).

> **RQ 1:** What knowledge and skills are perceived as necessary for fund managers and corporate finance managers to implement the Taxonomy?
>
> **RQ 2:** What data is perceived by fund managers and corporate finance as necessary for disclosure against the Taxonomy?
>
> **RQ 3**: What is the difference between perception and reality in terms of how existing funds and business activities are currently aligned to the taxonomy?

Our proposed study will seek to understand the effects of the Taxonomy in Ireland by investigating not only on how agents of its implementation are gearing up the new regulation but how the investment strategies of actively managed sustainable funds in Irish markets are affected. We intend to highlight the advantages and disadvantages inherent in the adoption of the Taxonomy. Moreover, whilst we do not intend to undertake a longitudinal analysis, we recognise the Taxonomy is meant to be inherently dynamic in which its key stakeholder co-evolve with broader environmental parameters. In this context, we intend to pose these questions not solely for the Taxonomy's initial adoption but for its ongoing implementation and impact.

In this context, we propose that ecological economic thinking based on Foxon's (2011) co-evolutionary framework for analysing a transition to a sustainable low-carbon economy, along with the thematic areas identified as initial boundary conditions, will provide a conceptual basis for the study. This framework takes account of challenges relating to the adoption and regulation of progressively lower-carbon technologies; interaction of social and technological elements within potential transition pathways and implications for socio-economic prosperity. In applying it to the Taxonomy in the Irish context, we will analyse the evolutionary transition of Taxonomy's stakeholder network in three steps: [1] characterising the existing sustainable finance sector, [2] identifying the dynamic processes at play and [3] identifying interactions that give rise to a virtuous transition.

**Concluding Remarks**

In this paper, we have conducted a review of literature, demonstrating a need for academic research to ensure a smooth introduction of the EU Taxonomy for Sustainable Investments. We begun with a short etymology of sustainability and finance and articulated challenges associated with shifting to a more sustainable economy. We explored the role policy can play in the transition to a circular economy, reducing the impact of the aforementioned challenges. The review culminated in an outline of the Taxonomy, itself, as an attempt to steer capital to sustainable economic activities by providing a classification system for sustainable investments. We outlined various obligations for financial sector participants that fall under its remit.

We then progressed to outline the methodology used to obtain the findings of this paper. Braun and Clarke's (2006) thematic analysis was deemed most appropriate given the qualitative nature of the literature. The analysis highlighted four thematic areas in relation to the Taxonomy's initial implementation: [1] policy and regulation, [2] knowledge and skills, [3] provision of, and access to ESG data and [4] lessons learned for development of the Taxonomy. As initial boundary conditions, we view these thematic areas as antecedents to adoption and implementation. The thematic analysis also highlighted three thematic areas in relation to the co-evolution of financial market engagement with the Taxonomy: [1] temporal adjustment, [2] ongoing utlisation and [3] potential impact. Whilst we note optimism for implementation, we also note some skepticism and hesitancy within the literature, albeit a recognition of the Taxonomy's infancy.

To conclude the paper, we highlighted the Irish context as an important microcosm for exploring these themes. We propose an exploratory study of Irish investment funds' perceived readiness for operationalising the Taxonomy, along three dimensions [1] skills and capability and [2] access to ESG data and [3] regulatory alignment. Ireland is a "Global Centre for Financial Services" according to the Industry Development Authority (2021), which would complement the idea of Ireland as a microcosm for the EU sustainable finance landscape. Conceptually the study, will be underpinned by co-evolution theory (Foxon, 2011) along with the thematic constructs we have identified, which recognize the dynamism inherent in the both the Taxonomy' objectives in transitioning to a low carbon economy and the responses of stakeholder engagement.

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