

Accountability and accounting for fisheries - six decades of reporting by the Electricity Supply Board of Ireland, 1935-1993

Martin Quinn, Queen's Management School, Queen's University; Belfast; United Kingdom

Alonso Moreno, Department of Finance and Accounting; Universidad de Jaén; Jaén; Spain

Bibek Bhatta, Queen's Management School, Queen's University; Belfast; United Kingdom

Corresponding author: Martin Quinn; Martin.Quinn@qub.ac.uk

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Abstract

Purpose

This study aims to contribute to the relatively limited historic literature on social and environmental accounting/accountability. More specifically the study explores accounting and accountability for fisheries over time and determines potential legitimacy relations as conveyed through reporting.

Design/methodology/approach

A content analysis method is used to analyse a fisheries-related section of an annual report of a state-owned electricity firm for 56 years (1935/36-1993). The time frame analysed is a period when environmental or social reporting was, in general, informal and not mandated. However, accountability was established for the company under study, through the legally mandated provision of (unspecific/discretionary) information about fisheries activities. A lens evoking legitimacy relationships as a dyad is utilised.

Findings

The fisheries reporting within the case organisation is an early example of recognition of the important effects of business activities on the environment and biodiversity. The findings of the analyses suggest the content aligns with what may be anticipated in a contemporary setting. Drawing on trends noted from the content analysis, three potential legitimacy relationships are identified around the fisheries reporting. Only one is determined as a complete legitimacy relationship.

Research limitations/implications

The research is limited in that it is an analysis of one case in a single context. Also, the content analysis methods used were developed specifically for the study, which may limit their application. Finally, the data source used, and the historic nature of the study, to some extent limits the ability to determine some legitimacy relationships.

Originality/value

This study offers some insights on the historic nature of environmental reporting from a fisheries perspective in the Northern hemisphere. The longitudinal nature of the analysis also offers insights into how the content of the reporting changed over time. Additionally, the use of a relatively new approach to operationalising legitimacy may prove useful for future researchers in the accounting discipline, especially given recent concerns on how the concept of legitimacy has been utilised in such research.

Keywords: fisheries, accounting, accountability, river.

Paper type: Research paper

1. Introduction

As suggested by some accounting history focused studies (e.g., Quinn, 2014; Moreno *et al.*, 2019), there are advantages to examining phenomena over an extended historical time frame. One distinct advantage of such research is it reveals the evolution of the subject of study (e.g., textual characteristics of reports as in Moreno *et al.*, 2019) over time. In the management history literature, it has been noted that such research can also contribute to our understanding of concepts and theories of the present day (Rowlinson and Hassard, 2013; Hiebl *et al.*, 2015; Cleary *et al.*, 2019) and shifts over time (e.g. Morf *et al.*, 2013 reflect on shifts in social responsibility reporting). Similar comments have been made in the accounting literature (Carnegie and Napier, 1996, 2012; Parker, 2015). In particular, Carnegie and Napier (2012, p. 354) stated “without knowledge of accounting’s past, we have only a limited point of reference from which to critique contemporary practice and thought”. In the context of the subject of this study, Parker (2015, p. 144) noted “almost no historical research” of social and environmental accountability/accounting. Thus, we aim to contribute to this sparse field with an exploratory historic focus to analyse social and environmental accounting/accountability, or more specifically accounting/accountability for fisheries.

The context of this study is the reporting of an Irish state-owned energy company, the Electricity Supply Board of Ireland (hereafter ESB). Ireland’s first hydro-electric power station (referred to as the Shannon Scheme) was built on the River Shannon, coming into operation in 1929. The River Shannon is Ireland’s longest and most important river, and it was recognised (see later) that the construction of a hydro-electric power station would affect fisheries. In 1935, the Irish government passed legislation requiring that the power station operator – ESB – assumed management of and responsibility for fisheries on the entire River Shannon. Accountability was established (e.g., Roberts and Scapens, 1985; Fry, 1995) as the ESB was required by the 1935 law to report on an annual basis to the relevant Irish government minister on activities around fisheries.

The resulting report became a feature of the overall annual report of the ESB and included not only accounting data in monetary terms, but also accounting in terms of fish volumes, stocks and catch. It is not unusual for power generating firms using hydro-electric turbines to be accountable for effects of their activities on rivers/bodies of water, and on the wider communities who may use these water resources (e.g., Dey and Russell, 2014). To give a contemporary example, in summer 2021 during a period of drought, the Spanish government launched an inquiry into how a power company used water in producing energy. The power company drained two reservoirs to produce electricity to take advantage of high electricity prices. While the power company’s actions were not illegal, they could be considered irresponsible given the climatic conditions. In the context of Ireland and the ESB, the effects of hydro-electric power schemes – at least historically – have been primarily on fisheries, but also on the environment and ecosystems of rivers.

The objective of this study is twofold. First, we analyse the evolution of the content of the ESB’s fisheries report over time. Using a content analysis method, we analyse the fisheries-related section of the annual report of the ESB from 1935/36 to 1993 spanning 56 years in total [1]. This extended time frame allows us to analyse the fisheries reports during a period when such reporting was less formal, not required by general business and when terms such as “environmental accounting” or “social accounting” were not in common use. As noted by Moreno *et al.* (2019), content analysis studies of corporate reports over an extended timeframe are not plentiful but can

be very useful to identify trends in reporting practice (Beattie *et al.*, 2008). Few content analysis studies of reports around environmental accounting/accountability over such an extended time have been done previously (see e.g., Guthrie and Parker, 1989). This presented some issues in the design of the content analysis, which resulted in a multi-faceted approach developed specifically for this study to avoid risks of ahistoricism. Second, having identified content and trends, we seek to determine legitimacy relationships which may have existed around the reporting. A legitimacy lens considering recent developments in legitimacy as a concept is adopted. Using this lens, we analyse whether legitimacy relationships existed, what type of legitimacy was at play and whether legitimacy sources changed over time.

The remainder of the paper is structured as follows. The next section provides a brief review of the nature of social and environmental accounting, a review of studies on content analysis in this area, turning to literature specifically focusing on accounting and accountability for rivers, and finally an overview of the use of legitimacy in this area. Then, some contextual information on the ESB is given, together with the sources and methods adopted in this study. The following section presents the findings of the content analysis and discusses about legitimacy relationships. The final section offers some concluding comments.

2. Literature Review

This section serves three purposes. First, a brief reflection of literature on the nature of, and issues around, social and environmental accounting and accountability in the public sector is given to set the scene. Given that much of the existing research around these issues relate to the corporate sector (van Staden *et al.*, 2011) as opposed to the public sector, this review is not intended to be extensive. Second, an overview of existing content analysis studies in environmental accounting in general is given, as a content analysis method is applied here. Third, an overview of literature using the concept of legitimacy as a lens to study social and environmental accounting and accountability is given.

2.1. Social and environmental accounting

Environmental accounting (EA) can be considered a broad term and various terms – such as social and environmental accounting (SEA) or simply social accounting – have been used in the literature to denote EA (Gray and Laughlin, 2012; Deegan, 2017). Here, we use terms EA and SEA interchangeably and assume them as having a similar meaning. Deegan (2017, p. 66) suggested SEA “can be thought to relate to the preparation and capture of information to inform stakeholders [...] about an organisation’s impact on the societies and environments in which it operates (including, past, present, and future societies and environments)”. Within this definition, and other definitions of EA/SEA (e.g., Gray *et al.*, 2014), two key commonalities are the notions of accountability and stakeholders. Both concepts are the subject of much literature. Briefly here, accountability has been mentioned in the context of environmental accounting since Gray (1983) i.e. accounting beyond financial accountability to shareholders; stakeholders are “any group or individual who can affect or is affected by the achievement of the firm’s objectives” (Freeman, 1984, p. 46).

It is worth noting that a recent definition of accounting offered by Carnegie *et al.* (2021) seems to encompass EA/SEA. They define accounting as “a technical, social and moral practice

concerned with the sustainable utilisation of resources and proper accountability to stakeholders to enable the flourishing of organisations, people and nature” (Carnegie *et al.*, 2021, p. 69). EA/SEA research is quite broad and Deegan (2017, 2019) for example highlighted the many areas of study which constitute this body of research. Interestingly, from the perspective of this study, little research has been done on the historical nature or historical development of EA/SEA – an analysis of accounting history publications by Spraakman and Quinn (2018) for example did not identify any categories of research which could be termed reflective of a large body of work in this area. More recently, Sargiacomo *et al.* (2021) reviewed specialist history journals as well as generalist/contemporary journals in accounting and economics with a view to highlighting research on accounting for natural disasters. While not the subject matter of this paper, accounting and accountability for and around natural disasters can be considered part of EA/SEA. Their review identified eleven papers covering the accounting/economic consequences of earthquakes, plague and drought.

There are also some useful papers in contemporary publications e.g., Solomon and Thomson (2009), Atkins and Thomson (2014), and recent more papers by Atkins and McBride (2022) and Servalli and Gitto (2021). Solomon and Thomson (2009) and Atkins and McBride (2022) use interpretive content analysis to reveal historic SEA from rivers and smoke pollution respectively. Both papers reveal themes compatible with contemporary SEA reporting themes. As detailed later, a content analysis method is also used here, but with a more quantitative leaning. Servalli and Gitto (2021) explored fisheries management in the Italian Ancona region in the late 1700s, and the role of accounting in achieving the policy objectives around control of fish supplies. It thus concentrates more on the use of accounting to achieve environment objectives (e.g. avoiding over-fishing) rather than the preparation of SEA type reports. Finally, it is also interesting that while the notion of “green accounting” has been around since the 1970s (Mathews, 1997; Gray and Laughlin, 2012; Marrone *et al.*, 2020), similarly historical research on this topic is not plentiful.

In the past few decades, EA/SEA has not been as successful as may have been imagined in improving corporate accountability (Deegan, 2017). This may be due to competing institutional and societal pressures leading to companies engaging in mere hypocrisy and creating facades through sustainability reports that rarely lead to substantial disclosures (Cho *et al.*, 2015). This idea could be extended to a state company (like the ESB, see below) who face pressures of budgets on one hand and society at large on the other. EA research has a role in exposing the potentially subversive role of corporate reporting, whereby such reports may have no association with actual environmental performance and may simply be used as a tactic to distract attention from key social and environmental issues (Ingram and Frazier, 1980; Wiseman, 1982; Rockness, 1985; Deegan, 2017). In a similarly cynical tone, Gray (2013) pointed to the irony of voluntary environmental reporting in that firms spend significant resources in producing rather poor environmental reports. In this context, it can be argued that it is even more important to ‘read between the lines’ of any such reports published by relevant bodies and companies and it is plausible that firms are deliberately vague in the language used in such reports.

Motivations for EA/SEA reporting seem to be related to corporates’ reputation management or to attaining/maintaining legitimacy (Deegan *et al.*, 2002, Deegan, 2019) – more will be stated on legitimacy later. Thus, companies in sectors with more environmental risks – such as electricity generation – tend to disseminate more environmental information (Mata *et al.*, 2018). De Villiers and van Staden (2006) also argue that firms with operations that change the

environment tend to disseminate more environmental information. As will be revealed below, the ESB and the Shannon Scheme are reflective of a scenario which could affect the environment by virtue of its sector (electricity) and change to the environment (changes to the nature of the river). As such, the ESB/Shannon Scheme provides a particularly interesting historic case setting.

As the ESB case involves effects on a river, some brief reflections on literature on accounting/accountability and rivers is useful. Dey and Russell (2014) provided a very interesting case of tensions surrounding a Scottish hydroelectric scheme. The tensions they referred to are conflicts between the restoration and/or maintenance of a river's biodiversity versus the need to produce hydroelectric power. They referred to the river as an accounting entity i.e., something which should have its own accounts produced. While the hydroelectric scheme they refer to originates from the 1930s, Dey and Russell (2014) focussed on the accounting reports of the operators around the 2008-2010 period. The reporting they noted is quite scant, being little more than a paragraph, and it was voluntary. Other external entities did however provide varying levels of reporting on the river in question.

Russell *et al.* (2017, p. 1426), in an introduction to a special issue of *Accounting, Auditing & Accountability Journal* on ecological accounts, offered a critical view on EA/SEA research in general, noting that extant literature "overwhelmingly focuses on economic entities and their inputs and outputs". While they mention rivers many times in their discussion, and indeed provide arguments for the inclusion of rivers in such accounts, rivers are not the specific focus of any papers within the issue. Accordingly, we hope our efforts here, especially given the longitudinal nature of the study, add some perspective on rivers. In a related note, Barrett *et al.* (2020) discussed the granting of legal rights to the Whanganui River in New Zealand. More recently, the Magpie River in Canada has also been granted legal rights [2]. From an accounting view, such legal rights suggest the creation of a reporting entity although this appears to be not specifically mentioned in the underlying legislation in both examples. Accountability for the rivers in such examples is apparent however, which by association implies reporting on the rivers will occur.

Going further back in time, *Accounting, Auditing & Accountability Journal* had a special issue on the theme of Green Accounting in 1991 where Harte and Owen (1991) highlighted the shallow nature of EA in the annual reports of British companies – a problem more acute for water industry which the authors identify as 'particularly sensitive sector'. Though newly privatised water companies at that time were subjected to additional reporting burden concerning EA compared to other companies, the annual reports of water companies were remarkable for what was not disclosed in terms of water quality, river quality, and use of water assets. In the same special issue, Roberts (1991) examined EA practices in Europe to come to a similar conclusion that EA disclosures were generally low. As such, the EA reporting throughout Europe at the time seems to have been taken by companies as a perfunctory act and EA disclosure itself was characterised by a prevalence of low disclosure. As will be shown later, the ESB has been reporting on the nature of a river and its fisheries since the 1930s.

2.2. Content analysis in social and environmental accounting research

Previous literature reviews have tried to systematise research on social and environmental reporting/accounting (Mathews, 1997; Gray, 2002; Owen, 2008; Eugénio *et al.*, 2010; Parker, 2011; Deegan, 2017; Mata *et al.*, 2018). From a methodological point of view, although it can be mechanistic in nature (Beck *et al.*, 2010), content analysis is noted as the most common methodology used to examine sustainability and environmental reporting of companies (Eugénio *et al.*, 2010; Deegan, 2017; Mata *et al.*, 2018). Its common use is highlighted by Mata *et al.* (2018) in their review of papers published between 2006 and 2015 [3]. They also noted that most of the studies are empirical in nature. Many existing studies on EA (e.g., Lanis and Richardson, 2013) source information from annual reports, with others using corporate press releases, websites, media reports, brochures, declarations from CEOs, and sustainability reports (Joseph and Taplin, 2011; Rodrigue, 2014; Liesen *et al.*, 2015).

Some recent examples of content analysis studies of EA reporting are now summarised, although it should be noted these studies in general apply contemporary understandings of the notion [or conception] of EA. Hence, they may not be directly comparable to the content studied here. Manetti and Bellucci (2016) and Bellucci *et al.* (2019) focused on stakeholder engagement around environmental reporting. Manetti and Bellucci (2016) explored if interaction through online social media represents an effective stakeholder engagement mechanism to define the contents of environmental reporting; they found that a small number of organisations used social media to engage stakeholders as a means of defining the contents of environmental reporting, and that the level of interaction was generally low. Bellucci *et al.* (2019) studied how sustainability reporting and stakeholder engagement processes serve as vehicles of dialogic accounting in corporate reports; they found that companies often committed to two-way dialogue with their stakeholders, but fully developed frameworks for dialogic accounting were rare. Bellucci *et al.* argued that sustainability reporting can become a platform for dialogic accounting if stakeholder engagement is effective.

Bradley and Botchway (2018) identified sustainability indicators disclosed by coffee companies in their sustainability reports and webpages. They found that the indicators correspond to the sustainability challenges identified in the literature. They also highlighted the discretionary nature of sustainability reporting, finding considerable variance in indicators disclosed. Also using content analysis as a part of their qualitative research, Liao *et al.* (2018) found that environmental regulations and fiscal/tax measures were the main driving force behind environmental innovation of Chinese companies, although environmental policies were issued in the form of notices which lacked authority (Liao, 2018). They also found that environmental policies were issued mainly in the form of market-based instruments (e.g., tax incentive, financial support, etc.) as opposed to regulation instruments or information instruments (see Rogge and Reichardt, 2016). Carungu *et al.* (2021) studied the quality of non-financial reporting over time when moving from a voluntary to a mandatory basis and did not find any increase in quality. Indrasari *et al.* (2021) studied the strategies used in implementing corporate social and environmental reporting by Indonesian companies engaged in environmentally sensitive business activities. They found that companies use both reactive and proactive strategies in reporting their social and environmental activities.

Hackson and Milne (1996) examined the disclosure practices of New Zealand companies using a measure of EA disclosure. Their EA measure was constructed by using a content analysis of the reports, by considering various dimensions of disclosure themes like environment, energy, products/consumers, community, employee/human resources and general/other – as will be shown

later, a similar thematic approach is used in this study. Hackson and Milne (1996) presented disclosure themes under six categories - environment, energy, product, consumers, community involvement and employee health. Other have used the categories of Hackson and Milne (1996). For example, Osemene *et al.* (2021) conducted a comparative study of corporate governance mechanisms and EA reporting in African companies. Using environmental disclosures and a reporting score, they found that board characteristics have a significant influence on such reporting. A more recent study by Li *et al.* (2022) also conducted a content analysis of sustainability disclosures, with data from Australian firms in 2002-2016, but rather than analysing content derived themes focuses on four textual characteristics – optimism, certainty, clarity and readability. By measuring corporate sustainability performance by Thomson Reuters Asset4 ESG ratings, they found that firms with a better sustainability performance communicate in a more optimistic, certain and clear way and produce more readable manner material. While the approach taken here (see later) will analyse some textual characteristics, we do not test for relationships to performance given the research objective of this study, its historical nature and that we analyse one longitudinal case.

Finally, the work of Weber *et al.* (2017) is relevant to the present study as it uses a content analysis method – as here – to explore how rivers and streams are reported in the media. Weber *et al.* (2017, p. 15) “conducted a content analysis of existing publications to document the breadth and frequency with which various measurable attributes, such as flooding, water quality characteristics, and wildlife appeared in different news sources over a multiyear timeline”. Their source documents consisted of blog posts from *National Geographic* and articles from the *New York Times* and the *Wall Street Journal* covering a period from 2009-2012. Their methods applied make efforts to focus on the physical attributes of rivers and the motivations for interest in rivers. This, they suggested, allowed them to distinguish “the traditional extractive uses from the recreational and ecological motivations” (2017, p. 16). Their findings, limited to a US context, suggested that the most common attributes of the text coded centred on water quantity and quality, fish, wildlife and vegetation. The most common motivation for interest in rivers per the text coded was in the consumptive use of water. While the study is not focused on technical environmental reporting, the coding scheme is interesting in that it recognises the varying attributes of rivers. As will be shown later, this was a useful consideration in the development of our coding scheme.

2.3. Legitimacy

The study by Guthrie and Parker (1989), in displaying “leadership in publishing in the field of social and environmental accounting” (Carnegie and Napier, 2017, p. 1646) – undertaken as joint Founding Editors of *Accounting, Auditing & Accountability Journal* – was one of the early research papers to suggest that legitimacy theory might offer explanations as to why firms engaged in corporate social reporting (CSR). Based on evidence from annual reports published over 100 years by BHP Steel, they rebutted legitimacy theory, suggesting it offered only marginal explanations. Since their work, there have been developments in our understanding of legitimacy as a concept and its usefulness in understanding why firms engage in various forms of reporting. Using Guthrie and Parker (1989) as a starting point, some key developments in the literature around legitimacy are now outlined.

Guthrie and Parker (1989) described legitimacy theory as positing that corporate disclosures (such as CSR) are reactions to economic, social and political factors to legitimise

actions of the firm. Deegan *et al.* (2002) updated the work of Guthrie and Parker (1989) using more recent data of the same firm BHP and while using a different measure of the reported content, did not expand on the notion of legitimacy theory. Others who published in the same Special Issue as Deegan *et al.* (2002) – e.g., O'Donovan (2002) and O'Dwyer (2002) – offered alternative views on “legitimacy” as opposed to “legitimacy theory” which had emerged in broader organizational literature. Indeed, Deegan (2019, p. 2321) noted “many of the insights provided by legitimacy theory, as developed within the social and environmental accounting literature, originated from sources linked to what might typically be known as ‘institutional theory’”. However, Deegan (2019, p. 2321) also noted that the “legitimacy theory” as utilised did “provide a parsimonious explanation that was appealing to many researchers [...] with respect to how managers are strategically disclosing information about organisational social and environmental performance”.

We concur with Deegan's (2019) perspectives regarding “legitimacy theory”, and as he hints, it is an institutional theory concept than a theory in its own right. Accordingly, legitimacy is considered as a concept of institutional theory in this paper. Turning to the institutional literature, organizations seek legitimacy from several sources (Scott, 2014). While a precise definition is elusive (Deephhouse and Suchman, 2008; Schoon, 2022), legitimacy has been defined as “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate with some socially constructed system of norms, beliefs and definitions” (Suchman, 1995, p. 574). As a concept, it has been widely used but has developed “considerable surplus meaning and [has been] used, and misused, in many ways” (Suddaby *et al.*, 2017, p. 451) – see also the above comment by Deegan (2019).

To deal with such ambiguity, Suddaby *et al.* (2017) offered distinct concepts of legitimacy. First, legitimacy is a property of organizations. This conceptualization can be addressed by establishing of ‘fit’ between the attributes of an organization and the expectations of its audience. As a property, it is assumed that legitimacy is measurable, but what quantity should be present at any part of the organization is not considered *per se*. Second legitimacy can be viewed as a process. In this conceptualization, legitimacy requires on-going negotiations between various organizational actors and is not stable. In the context of the present study, Phillips *et al.* mention the importance of discursive ‘tools’ in the generating and maintaining legitimacy. They note “texts that leave traces – which include written and verbal reports, as well as other symbolic forms of communication – are likely to be generated in order to secure and maintain legitimacy; without such texts, organizations cannot signal to internal and external members of the organization that their activities are legitimate” (2004, p. 642). Thus, in line with the comments above, organizations may engage in environmental and similar reporting. Third is legitimacy as perception, which captures the “perceptual and subjective components of legitimacy” (Suddaby *et al.*, 2017, p. 463) through which individuals and groups make legitimacy judgments.

Deegan (2019) acknowledged differing types (as opposed to conceptualizations) of legitimacy as proposed by Suchman (1995), namely pragmatic, moral and cognitive. Pragmatic legitimacy is based on serving the calculated self-interest of an audience, such as complying with laws; moral legitimacy reflects a positive normative evaluation of organizations, such as the desirability of outputs; cognitive legitimacy reflects the taken-for-granted nature of an organization. These three legitimacy types are not stand-alone, but co-exist and may reinforce each other. However, they are distinctive, which may result in conflict. More recently in an extensive review

of literature across multiple disciplines, Schoon (2022) identified 25 types of legitimacy – including those identified by Suchman (1995) and some associated subtypes.

Schoon (2022, p. 6) noted how all definitions and types of legitimacy share three essential elements in common, namely “an object, an audience, and a set of social expectations” [4]. The object is a social object – e.g., action, an individual, an organization. The audience may be individual, group or corporate entity. The social expectations (see also Suddaby *et al.*, 2017) define the relationship between an object and the audience (to which the latter assents), whereby the audience can assess if the object is conforming to expectations. Schoon (2022, p. 7) proposed legitimacy should be examined as a dyad, a “unitary entity composed of two nodes (e.g., individuals, groups, organizations, practices, cultural objects) and one or more relationships between them” – thus capturing the object, audience and relation between them in one construct. Schoon (2022) suggested that to measure legitimacy, the components of the dyad (object, audience, expectations) must be identified, and then establish that the three necessary conditions are met i.e. there are expectations, assent and conformity. Schoon (2022) provided five steps to operationalize legitimacy as a dyad, which are drawn on here and explained in Section 3.3.3.

Considering the more recent work on legitimacy, therefore, it seems plausible to use it as a framing for this study, but in a more advanced way than some prior literature. This, along with a detailed and longitudinal analysis, we hope goes some way to alleviating some of the concerns raised by Deegan (2019) around the application of legitimacy “theory” to social and environmental reporting. The legitimacy approach used here also assists in mapping out the evolution of reporting as per the research objective set out earlier.

3. Context, sources and method

3.1. The ESB and the Shannon Scheme

Quinn and Warren (2017) provide a useful overview of the ESB, while Bielenberg (2002) studied the Shannon Scheme. We draw mainly on these two sources here, together with relevant legislation/parliamentary debates to provide context for this research.

As institutions of the fledgling Irish Free State were formed in the 1920s, one objective of the government was to provide electric power for the State. The ESB was founded in 1927 by the Electricity (Supply) Act of the same year. The ESB, through this Act, acquired all electricity generating undertakings within the state as part of its formation, thus giving it a strong legal legitimacy (Tyler, 2006). Section 2(2) of the Act designated the ESB as “a body corporate having perpetual succession and may sue and be sued under its said style and name” [5]. Quinn and Warren (2017) highlighted the ESB as a semi-state company. These companies are legally the same as any other public/private company in Ireland, but there are typically differences around board format and ownership. Sections 3 and 4 of the Act gave the Irish government authority to appoint a board of directors and a Chairperson, although the daily operations of the company were (and are) independent of government interference. The ESB did not have any issued share capital and in the first 40 or so years of its existence was financed mainly by advances from central government. While the ownership of the ESB rested with the Irish government as the sole shareholder, daily management and operations were not subject to political interference, and it is therefore appropriate to treat it as a for-profit firm.

The Shannon Scheme was the first major project embarked upon by the ESB, although the project dates from 1925 as captured in the Shannon Electricity Act 1925. The project was to construct Ireland's first (hydro-electric) power station on the River Shannon – a river of about 250km in length, flowing through the centre of Ireland. The Shannon Scheme, located at Ardnacrusha, is closer to the mouth of the river to capture greater water flow. The construction of the power station required the diversion of waters which reduced the flow in the natural course of the river and affected fisheries (e.g., salmon) therein. With the completion of the Shannon Scheme in 1930, the first full year annual accounts afterwards reveal the ESB had revenue of £938,933 (€60.5m in 2021 values) [6] for the year to March 1932. By 1950, revenues had grown to £4.8 million (€151.3m in 2021 values), £39.3 million in 1970 (€545.4 in 2021 values) and £300.4 million in 1980 (€1.16b in 2021 values). In 2021, revenues were approximately €5 billion.

To alleviate the effects of the construction on the river, the Shannon Electricity Act 1925 included a provision (s.16) which stated that the Minister for Fisheries should consider “the protection of and avoidance of injury to fisheries during or in consequence of the construction” of the power station. This 1925 Act covered the construction phase only. However, parliamentary records of the early 1930s suggest that permanent consequences for the Shannon fisheries were apparent. On June 20, 1934, a parliamentary question was posed by James Reidy, a representative for the Limerick area to the Minister for Industry and Commerce as follows:

[Deputy James Reidy] asked the Minister for Industry and Commerce if he will state when proposals for legislation dealing with fisheries and fishing rights on the Shannon will be introduced; if he is aware that the livelihood of the Abbey fishermen, Limerick, has been seriously jeopardised by the development of the Shannon Electricity Scheme; and if he will state whether any arbitrator has been appointed to inquire into claims for compensation [...] (Questions and Answers, *Dáil Éireann*, 20/06/1934, Vol. 53 No. 6) [7]

The Ministerial response was that the matter would be resolved within the present parliamentary session and the first reading of a Shannon Fisheries Bill was on July 5, 1934. The parliamentary debates around this Bill suggests its origins stem from damages to the fisheries. A debate on 18th July 1934 noted:

Under the Shannon Act of 1925, power was taken to compensate owners of fisheries where these fisheries had been damaged by the construction of the Shannon works and certain sums were due to various fishing owners on that account (Sean Lemass, Minister for Industry and Commerce, *Dáil Éireann*, 18/07/1937, Vol. 53 No. 13) [8]

The Bill would bolster and enact the compensatory powers mentioned above, although the debates [9] suggest that the damages to fisheries were less than reported by local political representatives. Minister Lemass noted “I am glad to be able to say that the pessimistic forecasts made at one time as to the probable effect of the operation of that scheme upon the fisheries do not appear to be borne out. In fact, this year I understand the run of fish has been remarkably good” in a debate on July 18, 1934. At the end of these debates the Irish parliament passed the Shannon Fisheries Act 1935. The Shannon Fisheries Act 1935 thus extended compensation to the period after construction due to the permanent changes in the nature and course of the river. The 1935 Act would also grant the ESB fisheries management powers of the River Shannon, as captured in the parliamentary debates:

[...] the control and management of the fisheries on the Shannon should be handed over to the Electricity Supply Board and that the Electricity Supply Board should be charged, in addition, but subject and without prejudice to the primary function of maintaining, working and developing the Shannon hydro-electric works in accordance with the Act of 1927, with the duty of managing, conducting and preserving the Shannon fisheries (Sean Lemass, Minister for Industry and Commerce, *Dáil Éireann*, 18/07/1934, Vol. 53 No. 13)

The 1935 Act has four parts. Part I includes standard items found in most Irish legislation, such as the Act title and some definitions. Part II concerns compensation for injuries to fisheries. Under Section 4 of the Act any persons(s) who had/owned fishing rights could claim for compensation “but only if such injury was caused by the operation of the Shannon hydro-electric works.” Part III sets out the duties of the ESB, which can be summarised as to “perform the duty of managing, conducting, and preserving the Shannon fisheries” (Section 8). While the river was not granted a legal identity as in contemporary cases (see earlier), the responsibilities of the ESB towards the river and its fisheries are clear. This part also granted the ESB rights to sell salmon (without licence) and appoint members to a board of conservators [10]. Part IV of the 1935 Act includes various miscellaneous provisions. Section 20 for example imposed a duty on the ESB to not allow the flow rate at Parteen to fall below ten cubic metres per second, which according to the parliamentary debates was “the minimum amount considered necessary for the preservation of the fisheries below the weir” (Seán Lemass, Minister for Industry and Commerce, *Dáil Éireann*, 18/07/1934, Vol. 53 No. 13); Sections 23-25 limited the amount and type of fishing permitted. Of special interest here are Sections 17 and 18, which are reproduced verbatim in Table I.

The 1927 Act referred to in Table I is the Electricity (Supply) Act, the law founding the ESB. Section 7 of the 1927 Act requires the ESB to maintain accounts “of all proper and usual accounts of all moneys [sic] received or expended by them, including a capital account, revenue account, profit and loss account, and a balance sheet”. It is worth noting that the ESB was seen as quite independent of political interference when it was founded in 1927. This sentiment was repeated in the debates on the 1935 Bill, as captured in the following excerpt:

I am delighted to see, if the Shannon fishery is to be taken over by somebody, it is not being taken over by the Minister. [...]. It is going to be taken over under powers granted by him to the Electricity Supply Board and he is going to have the same relation to that board in respect of fisheries as the Shannon Electricity Act gave the Minister for Industry and Commerce in relation to the board in respect of electricity. The same scheme is being carried through here with absolute attention to the old details. The scheme of the original Shannon Scheme in relation to electricity was that a board was being set up, given tremendous powers and privileges, told its duty was to develop the use of electricity throughout the country, and that, in consideration for the powers and privileges which it got, it had to reveal its secrets once a year through accounts. These accounts were to be investigated by auditors appointed by the Government, but paid for by the board. The Government, on receipt of the auditor's report, might call for a further report and that report, plus any explanatory details—there was discretion as to the explanatory details—had to be put before the *Dáil* once a year (Patrick Gilligan [11], *Cumann na nGaedheal*, *Dáil Éireann*, 18/07/1934, Vol. 53 No. 13)

[insert Table I about here]

As identified by the use of bold text in Table I and the debate excerpt above Patrick Gilligan, Section 17(1) required separate accounts of the fisheries. Section 18(1) required the ESB to include fisheries activities within its annual report to the Minister, and Section 18(2) required the inclusion of statistics related to fisheries [12]. No detail of the type/format of accounts or statistics required are given in the 1935 Act but, as noted in the excerpt above, discretion was given to the ESB; however it does establish clear accountability to the relevant government Minister. As a result of the Shannon Fisheries Act 1935, the ESB did indeed include separate fisheries activities sections within its annual report. To link these reporting requirements to contemporary literature, the reporting required, while legally mandated, was not specific. Based on the archival evidence, as supported by the comment by Patrick Gilligan (above) the ESB had discretion as what to include within the fisheries reporting. Thus, the motivation for the reporting likely lies between accountability motivations and legitimacy motivations (Nishitani *et al.*, 2021) – legitimacy is discussed in more detail later.

Further legislation extended or augmented the duties of the ESB under the 1935 Act. For example, the Electricity (Supply) (Amendment) Act of 1945 included a Part III titled “Acquisition and Management of Fisheries”. Section 16 granted the ESB specific powers to preserve any fisheries. As another example, the Electricity (Supply) (Amendment) Act, 1961, reconfirmed the need to furnish reports and statistics to the relevant government Minister. However, such legislation did not change the overall nature of the ESB’s duties as regards fisheries. A full discussion of all relevant legislation is beyond the scope of this study, but to the present day the ESB is legally bound to produce a report on Shannon fisheries activities.

A final point worthy of mention is to pose the question who consumed or used the fisheries reports? It is worth remembering that the analysis period predates the Internet. A definite answer to this is not possible, but we can determine who the reports were addressed to and to whom they were available. Under the Electricity (Supply) Act 1927, annual accounts and statistics were given to the relevant Minister and presented before *Dáil Éireann* – see also the excerpt from the speech of Patrick Gilligan above; following the Shannon Fisheries Act 1935, this included the fisheries report. Therefore, all members of *Dáil Éireann* (lower house of parliament) could have consumed the fisheries report – and, for example, reported to their constituents if from the Shannon region. Members of the upper house, *Seanad Éireann*, would also have had access. Section 7(4) of the Electricity (Supply) Act 1927 also notes that the Minister “shall publish and put on sale” any accounts submitted. Hence, any member of the public could access the fisheries report through the Government Publications Office in Dublin. Finally, from 1977 under the Worker Participation (State Enterprises) Act, 1977, worker directors were elected to the ESB Board of Directors. ESB workers could thus have had access through reporting back by the Worker Directors.

3.2. Sources

The source documents here are the ESB Annual Report and Accounts from 1935/36 [13] to 1993, which are available electronically from the ESB archives. The Annual Report and Accounts are addressed to the relative government Minister – whose title changed over time. The report has two major sections, 1) a narrative part and 2) annual accounts with associated notes. The narrative part is extensive [14], as it covers all aspects of operating a power generation company. It also typically contained one specific section on the Shannon fisheries.

This study analyses the fisheries section of the narrative part of the ESB annual report. Accordingly, while the source is similar to contemporary studies (i.e., part of an annual report and accounts), it is not an obvious source in that it was/is mandated by specific legislation (see above). Next, we provide more details about the sources of the present research. From 1935/36 to 1951/52, the annual report contained a separate heading “Report on the Shannon Fisheries”, typically one to three pages in length. This same wording was also typically contained as a sub-heading on the cover of the annual report. From 1952/53 to 1969/70 the section was titled “Report on the Fisheries” (from 1960/61 the title of the section also included “To the Minister for Lands/Agriculture and Fisheries”); from 1970/71 to 1975/76 “Fisheries and Environment”; from 1976/77 to 1984/85 “Fisheries and Conservation”; and, from 1988 to 1993 “Fisheries report”. Exceptionally, in 1986 and 1987 there is no narrative section devoted to the series. The content of this section typically summarises incomes and costs associated with fisheries. Details and statistics for the financial year are also typical e.g., the weight of salmon and eels caught at various weirs, detail of fish counted/fish stocks, pollution control and detail of business development. Some examples of the reports can be seen in Appendix 1. This accounts for a total of 56 annual reports with information related to the fisheries, which were used as a basis for a content analysis.

The 1935/36 report is the first report after the ESB became legally bound to report on the Shannon fisheries – the period ending 31 March 1936 is the first full period after the passing of the Shannon Fisheries Act 1935. It is worth noting that some annual reports prior to 1934/35 included some detail of related items. For example, the 1931/32 report included in its appendices a detailed report on water flows and a photograph of a fish pass on a weir. The 1934/35 annual report acknowledges the duties bestowed on the ESB by the Shannon Fisheries Act. From the 1935/36 report, reporting on fisheries was regular and suited to our analysis. The 1993 report is the final report selected as from 1994 onwards reporting on fisheries was subsumed into general components of the annual report (e.g., the Chief Executives Review) [15]. Ruane and Quinn (2018) also noted a change to more corporate social responsibility type content from the early 1990s within the annual report. It is also worth noting that from 1970 a separate “Fisheries Report” was produced by the ESB. Some samples of this report are available. Its detail is extensive and technical [16] but, as far as we can determine, devoid of financial data. However, not all of these separate reports from 1970 to 1993 are accessible. Taking this into account, and to have a consistent analysis mechanism, we utilise only the annual report content.

A separate trading and/or profit and loss account for the fisheries was contained within the “Accounts” section of the annual report in earlier years (not directly analysed in the present research). From the 1973 year end, instead of a separate profit and loss account, a line item was shown in the general profit and loss account, with notes providing more detail. It is also interesting to note that the title of the fisheries accounts changed from “Fisheries Account” to “Preservation and Operation of Fisheries” in 1964, and later in the 1970s to “Fisheries and Conservation”. Taking the report and accounts together, accountability for the fisheries is evident beyond income, cost and asset values, to the broader need to preserve and conserve the natural environment. Additionally, accountability is arguably present to Irish society, as the ESB was/is accountable to the Irish government, which in turn, is accountable to the electorate.

3.3. Method

Content analysis is useful for studying how topics evolve over time (Berelson, 1971; Moreno and Quinn, 2020). Many accounting studies have used thematic content analysis (Neimark and Tinker, 1986; Kothari *et al.*, 2009). Despite having been found particularly useful to analyse changes in accounting history (Neimark, 1983; Previts *et al.*, 1990; Badua and Watkins, 2011; Moreno and Cámara, 2014), it is not a predominant method in this field (Spraaakman and Quinn, 2018). Content analysis can be manual or computerized. Computerized analysis is broadly considered to be objective and can handle large samples but raises validity concerns. Manual analysis is more sensitive to the context of the information (Aerts, 2001, 2005; Clatworthy and Jones, 2003) but it is time-consuming and more subjective and therefore, raises reliability concerns. In computerized analysis, words are often recorded (Frazier *et al.*, 1984; Kothari *et al.*, 2009; Davis *et al.*, 2012), while in manual analysis, themes, paragraphs or even complete documents are commonly recorded (Noble *et al.*, 2002; Cormier *et al.*, 2005; Moreno and Cámara, 2014). Recognising the complementarity of both analyses, we conduct both to offer more robust evidence about the information evolution on fisheries.

3.3.1. Manual content analysis

Several steps are prescribed to conduct a manual content analysis (Weber, 1985). First, paragraphs were chosen as the recording unit for coding (Moreno and Quinn, 2020; van der Steen *et al.*, 2021). Second, a deductive approach was used to build a category system for coding. For this purpose, two authors independently read the fisheries section in a sample of annual reports and took note of the main topics described per paragraph. Later, they discussed their notes and built a tentative system of categories. The categories were intended to be comprehensive and mutually exclusive (Krippendorff, 1980; Moreno and Cámara, 2014) and capable of capturing the various attributes of rivers (e.g., Weber *et al.*, 2017) and reporting to various stakeholders as anticipated in SEA (e.g., Deegan, 2017). The scheme of categories was tested on another different sample of reports, also coded by the same authors. Results were compared, inconsistencies discussed, and a refined scheme of categories emerged. The final system of categories shown in Table II was used to code the entire series.

[insert Table II about here]

In addition, the following coding rules were followed. The counting unit was the relative frequency of a given category in the fisheries report. Every paragraph within a single fisheries report was given equal importance, with the weight related to the number of paragraphs (e.g., if in a given year the fisheries report comprised eight paragraphs, every paragraph counted as 12.5%). A paragraph could be coded with more than one category, up to a maximum of three categories. In the case of multiple categories in a paragraph, they were assumed to have the same weight (e.g., 1/2 or 1/3). Photographs, graphics and tables were coded as if they were paragraphs, but non-editorial items were excluded.

Next, the reliability of the system was assessed. For this purpose, a sample of five reports – different to those selected initially to build the categories – was randomly selected and independently coded by the two same authors. The coefficient of agreement between the two authors was 95%. A more conservative measure, Krippendorff's alpha, was also calculated at 89%. These levels of agreement were considered suitable, and all source documents were then coded by one author. A total of 56 reports were coded, capturing 740 paragraphs. The average of paragraphs

devoted to the fisheries section in a report was 13.2. A total of 452 paragraphs (61%) were coded with a single category, 255 paragraphs (34%) with two categories and 33 paragraphs (4%) with three categories. Finally, reliability was reassessed with a random sample of five reports which were coded by a second author. These reports were different to any report previously coded by this second author. The coefficient of agreement was 89%, with Krippendorff's alpha at 79%. This agreement suggests that the results are reproducible to a greater extent.

3.3.2. *Computerized content analysis*

The manual analysis was complemented by a computational linguistic analysis, headed by a third author. For this analysis, all textual data of the report on fisheries were first extracted. Illustrations, charts and tables were excluded. In addition, the text was cleaned and numerical characters, obligatory opening sentences [17], stop words (e.g., the, a, his) and any remaining two-letter words (e.g., mr, lb, go) were removed. The resulting corpus consisted of just over 2,500 unique words. The most (least) used word was 'salmon' ('alternative' and 'happy'), occurring 552 (1) times. Appendix 2 shows the frequencies of the top 100 words.

The most used 500 words were categorized by two authors, where possible, to the eight categories identified through manual coding – the category *Others* was excluded from the computerized analysis. Not all words were equally meaningful for this purpose. For example, words like 'previous' and 'carried' (both in the top 500) offer little contextual meaning whereas other words like 'revenue' (Commercial), 'conservation' (Environment for Fisheries), 'weirs' (Infrastructure), 'disease' (Wider Environment) can be categorized with a higher level of accuracy for the purpose of categorization in the given context. Consequently, 33% of the top 500 words were reasonably categorized as one of the eight categories, with the remaining 67% uncategorized and therefore excluded from further analysis. Then, the sum of occurrences of each of the words (and their variants) in each of the eight categories was counted every year. It was scaled down by the total number of words every year to construct a weighted measure of each of the categories for a given year. This approach of counting the keywords, also known as unigrams, and the related words (or lemma) is widely used in content analysis (e.g., Arts *et al.*, 2021).

The computational analysis was extended to analyse the degree of novel and familiar words in the spirit of Pan *et al.* (2020), to examine trends over time. Social actors are known to attempt to influence the audience by selective use of vocabularies (Entman, 1993; Benford and Snow, 2000) known as 'linguistic frames'. Linguistic frames may help social actors – including individuals and organizations – to convince target audiences of the appropriateness of the actions of the social actor (Hallett and Ventresca, 2006). As noted earlier, EA reports may be used as a tactic to distract attention from key social and environmental issues and the report may have no resemblance to the actual environmental performance (Ingram and Frazier, 1980; Wiseman, 1982; Rockness, 1985; Deegan, 2017). As such, this linguistic analysis is deemed useful in the context of the present study. Thus, we record the frequency of words/phrases used by Pan *et al.* (2020) to construct a measure of novelty and familiarity (scaled by the total number of words in the report per year). Novelty refers to "information about [items of a] radical nature or updated features" (*ibid*, p. 4) and is captured in words such as "unique", "new" and "advanced". Familiarity refers to "linguistic representations that highlight the commonalities [of an organisation's] technologies, products or services, and business models and those of existing ones" (*ibid*, p. 5) and is captured in words such as "typical" and "compatible".

Hedging strategies (Hyland, 1996; Resche, 2015) were also explored. This term refers to the technique of deliberately choosing specific words/phrases to safeguard against possible negative consequences. This aspect is important, taking into account the deliberate obscurity and vagueness that might be employed by social actors to distract attention from key social and environmental issues (Deegan, 2017). Hyland (1996) suggests that hedging cannot be fully understood in isolation from social and institutional contexts and suggests a more pragmatic approach for interpretation. In this spirit, we explore the possible hedging strategies used in the fisheries report by utilizing three strategies namely vagueness, uncertainty and truth (Resche, 2015). Words/phrases associated with each of these strategies were counted on the initial corpus (containing the stop words) to get a measure of such strategies being employed in the fisheries reports. Vague words used in the reports include “almost”, “approximately”, “most”; uncertain words include “possible” and “indicate”; truth words include “significantly”, “very” and “critical”. Measures of vagueness, uncertainty and truth were constructed similarly to the novelty/familiarity analyses.

3.3.3. *Applying a legitimacy lens*

As noted earlier, a definition of legitimacy has been elusive and there are many types of legitimacy noted in the literature. Herein, we draw more on the organizational and sociological literature than some prior studies to tease out legitimacy in and around the Shannon fisheries (as reported) by the ESB and how it evolved over time [18]. To do this, we use a series of steps proposed by Schoon (2022) – see Table III. The five steps can establish if legitimacy efforts are apparent, and if so, its type can be separately debated. This, in turn permits an analysis of how legitimacy sources may have varied over time (or not) and offers insights into the sustained reporting efforts of the ESB in a time when such reporting was not common or mandated in general. The findings of the content analysis over time allows us to identify periods when content of the fisheries reports changed. The contextual narrative presented above and the use of a legitimacy lens in turn may offer potential explanations as to why.

[insert Table III about here]

4. Findings of content analysis and legitimacy relationships

4.1. *Content analysis findings*

Drawing from the manual analysis first, Table IV(a) shows descriptive statistics for each category, with Figure I(a) showing the evolution of the different categories graphically over the study period. Commercial (C) (27%) and Fish volumes (FV) (22%) are the categories with the highest presence over time, but with a decreasing trend. Environmental for fisheries/river (E) is the next category, on average (17%), increasing over time. Formal (F) (14%) and Infrastructure (I) (10%) are the fourth and fifth categories – showing an increasing and decreasing trend respectively. Finally, Research and Development (RD) (3%), Other (O) (3%), Wider environmental (WE) (2%) and Community relationships (2%) (CR) show almost non-existent presence. The computerized analysis – see Table IV(b) and Figure I(b) – supports to a great extent the relative importance of the categories and most of the trends of each category over time, with the exception of RD and WE. This gives confidence in the robustness of the results. Supplementing Figure I, which shows the evolution of the categories stacked, Figure II shows the evolution of the categories, for ease of

reference, with two or three categories at a time (not-stacked), both (a) according to the manual analysis and (b) according to the computerized analysis.

[insert Table IV about here]

[insert Figure I about here]

[insert Figure II about here]

It is not surprising that C and FV are the most common categories, as the original legislation giving the ESB powers to manage and preserve the River Shannon reflected the duties it had to preserve fish stocks and manage fishing rights (including the commercial aspect of selling such rights) – see the legitimacy relationship discussion later. It is interesting that both show declining trends over time (although remaining important), with F and E increasing. As can be observed from Figures I and II, from around 1970 F exhibits an increasing trend, with E from about 1950. The computerized analysis highlights the importance of the FV and E. The word “salmon” is the most frequently used word over the entire period. Other frequently used words include “fisheries”, “fishing”, “fish”, “year” and “Shannon”. The computerized analysis displays a downward trend in the frequency of all words in general post 1970.

The content of the fisheries report (as summarised in Figures I and II and Table IV) captures the tensions suggested by Dey and Russell (2014), albeit a period of 60-70 years earlier than the power firm example they portrayed. The narrative content of the ESB report was also quite extensive relative to that reported by Dey and Russell (2014). One element of the tensions – to maintain the River Shannon’s biodiversity, or at least protect and preserve its fish stocks – is captured in the FV, E and WE categories, which the entire period average about 33% of the report, according to the manual analysis. The other side of the tension mentioned by Dey and Russell (2014) is the need to produce power for a developing economy in the context of Ireland from the 1930s to the 1960s. This tension is captured outside the fisheries report in the broader annual report [19]. While caution should be taken in making comparisons to more contemporary content analysis studies of EA/SEA reporting, Figures I and II suggest that the fisheries report captures broader environmental issues, even from the 1930s and in the specific context of a river and fisheries – at least two of Hackson and Milne’s (1996) disclosure themes are captured, namely environment and community involvement.

Additionally, novelty and familiarity (see Pan *et al.*, 2020) of the reports were also computerized – see Figure III. Linguistic framing is described as a communicative strategy used by actors (the ESB here) to focus stakeholders’ attention to certain items and/or to influence their interpretations and actions toward an issue of interest. As can be seen from Figure III a familiarity framing dominated the reporting until about 1970, when novelty and familiarity became more equalised. This suggests that the ESB reporting until the 1970s, utilised more wording which is reflective of common practices. The increase in novelty words in the 1980s is interesting. A closer examination of the reports of 1984 and 1985 reveals commentary on the decline of wild salmon and mention of the ESB’s efforts to increase its salmon farming activities with, for example, “new” and “expand”(ed) salmon farming activities.

[insert Figure III about here]

In terms of hedging strategies (Resche, 2015), the analysis shows a dominance of vague and uncertain words until the mid-1970s, with truth words being more apparent from the late 1970s (Figure III). The use of vague words in the first decade or so of the report is particularly notable. This could be due to a learning curve effect as the ESB became more familiar with and confident in the reporting itself. As noted earlier, no specific guidance of what to report appears to have been given. The increased trend in truth words in the mid to late 1970s is largely attributable to commentary on the declining salmon stocks, which the ESB attributed to increased pollution from agriculture. Overall, with the exception of the vague words in the earlier years, the general behaviour across vague, uncertain and truth words is similar. This tentatively suggests the ESB produced a relatively balanced report over time and were not deliberately obscure or vague in some period in relation to others as suggested in the more contemporary literature review by Deegan (2017).

It is worth noting that the Resche's (2015) work, which focussed on the discourse of central banks, showed typically 4-5% of the corpus as hedging words. In this study, the typical range aggregated is 0.5-2.5%, considering that we have used only three relevant hedging frames out of six used by Resche. In this sense, by extrapolation for comparison with Resche's work, the hedging terms in our study would be 1-5%, which is still lower compared to the use of hedging terms used by central bankers. This may be expected given the words of central bankers are likely more closely observed, but it is interesting to observe the ESB reports seem to be less engaged in hedging over time.

4.2. Legitimacy relationships

Drawing on the dyadic model of legitimacy propose by Schoon (2022), (potential) legitimacy relations are explored. As noted by van der Steen *et al.* (2021), for instance, discursive strategies are often used to build and maintain legitimacy. Here, the discursive instrument is the fisheries report. Based on the analysis presented thus far, Figure IV suggests three potential legitimacy relationships existed during the period analysed here. It should be noted that although Figure IV "stops" at 1993, that the potential legitimacy relationships shown could exist beyond this time.

[insert Figure IV about here]

The left most element of Figure IV portrays a legitimacy relationship starting from the 1935/36 fisheries report. It can be described as pragmatic legitimacy as the ESB had to abide by the Shannon Fisheries Act 1935 and produce a report to the Minister. Following the steps per Table III, the object is the ESB and the audience is the Minister, Government and the public [20]. The relationship is the management and preservation of fisheries in the River Shannon as outlined in Section 3 earlier. As the fisheries report was continually produced, this is evidence that the audience assented to the relationship i.e. the fisheries reports were approved by the Minister. Given that the fisheries report was continuously produced we presume this as perceived conformity (Schoon, 2022) with the relationship from both sides (ESB and Minister/Government/public). Hence, as depicted in Figure IV (left), a legitimacy relationship existed. In terms of the report content, this relationship is captured in the inclusion (and relatively higher proportion) of items under categories WE, FV and E – see Table IV and Figures I and II.

The centre element of Figure IV portrays a legitimacy relationship starting from 1960. This relationship is best described as potential, as empirical evidence of assent and conformity cannot

be established from the available data. This is not to say that evidence does not exist but given the unit of analysis here is the fisheries section of the annual report, relevant evidence is not present. The content analyses suggest change in content themes around 1960. For example, as captured in Figure II(a) and (b), the categories C, FV, E and even I (the latter only per the computerized analysis) tend to converge. Similarly, per Figure III novel and familiarity words converge and remain broadly so to the end of the analysis period.

A broader analysis of the entire annual report shows that 1960 was the first year when the ESB borrowed funds from the markets, issuing bonds. Thus, the annual report had a new audience – bond holders – who would utilise the annual report for financial risk assessment. The annual report included the fisheries report as outlined earlier. While a potential legitimacy relationship was likely between the ESB and bondholders [21], and the annual report could be regarded as a discursive strategy to appease bondholder's pragmatic legitimacy, we cannot determine this legitimacy relationship is captured within the fisheries report. This is due to a lack of evidence of consent or conformity – as depicted by the strikethrough font in Figure IV. However, the changes in the fisheries report highlighted by the content analysis may be a consequence of changes in the language and tone of the annual report in general to address bondholders.

The right most element of Figure IV portrays a legitimacy relationship starting from about 1970. This relationship is again best described as potential, as empirical evidence of assent and conformity cannot be established from the available data – as depicted by the strikethrough font in Figure IV. Assent would apply the accounting professional agreed with the contents of the fisheries report produced by the ESB, and conformity would imply the reports match expectations. However, this potential relationship is reflective of changes to accounting regulations and to the accounting profession around this time. On the former, financial reporting standards emerged from the early 1970s; on the latter, literature suggests an increased professionalisation of management in general (e.g., Zorn, 2004; Hiebl *et al.*, 2015). Therefore, as suggested by the right-hand element of Figure IV, there may have been efforts to seek pragmatic and/or cognitive legitimacy via the fisheries reports to attain professionalism. The content analysis reveals an increase in the F category around this time, hinting at increase professionalisation of management. As noted earlier (see Section 3.2), from 1970 a separate “Fisheries Report” was produced by the ESB. The reason for this is not apparent from within the annual report itself, nor was a reason apparent from available archival evidence. In the 1969/70 annual report, it is noted that “services of Messrs. McKinsey & Company” were engaged to determine a “revised structure of top management”.

In essence, the changes were that the Board was to be concerned with major planning and policy issues and Directors were appointed for the “areas of Generation/Transmission, Finance, Commercial, Personnel”. It is possible that this new structure, where the Chief Accountant (now Director of Finance) became a member of the board, increased the focus on compliance-type reporting and led to a reduced emphasis on the fisheries report within the annual report – e.g. on average 23 paragraphs in the 1960s, down to nine paragraphs in the 1970s. Osemene *et al.* (2021) noted the presence of specific governance mechanisms around environmental reporting increased the volume and quality of such reporting. Here, the opposite seems to occur, as the increased governance focus on accounting and organization in a general sense reduced the focus on fisheries – at least in the annual report, which is typically viewed as the most dominant report of companies (Amernic *et al.*, 2010).

5. Concluding comments

This study highlights the evolving nature of content of the fisheries report produced by law by the ESB since 1935/36 across a period of 56 years, which was the first objective of this paper. Also, using this content and a legitimacy lens, the study highlights three legitimacy relationships centring around the fisheries report of the ESB, meeting the paper's second objective. With help of a model described by Schoon (2022), one definite legitimacy relationship has been identified. Two other potential relationships are suggested (see Figure IV), and while these relationships seem logical, empirical evidence to confirm them is not apparent. From the analysis presented in Section 4, some points are worthy of further comment.

First, the case of the ESB and fisheries reporting is an early example of recognition of the important effects of business activities on biodiversity. The resulting reporting, mandated by Irish law, captured the importance of the River Shannon to Irish legislators – which may to some extent be attributable to the importance of the salmon in Irish culture and mythology, something a fledgling State wished to encapsulate in its principles [22]. The resulting accountability to the Irish parliament, the relevant Minister and the public is in line with contemporary expectations observed in the literature. The content of the reports, although not regulated, also aligns with what may be expected in a contemporary setting (Dey and Russell, 2014; Weber *et al.*, 2017) and addresses legitimacy concerns. Further research in other historic contexts would be useful to determine if the ESB was unique in this regard or not. Manning and McDowell (1985) noted the presence of Swiss and Swedish experts during the early stages of planning for the Shannon Scheme. It may be possible that power companies in these (or other countries) engaged in similar reporting.

Second, the manual and computerized analyses (see Figures I and II) assisted in the identification of two potential legitimacy relationships – with bondholders and the accounting profession. Both were deemed *not* legitimacy relationships. As noted, increased professionalisation of accounting roles within organisations and increased regulation around accounting from around the 1970s dulled the content of the report to some extent. The analysis here ends in 1993, when reporting on fisheries was subsumed into general components of the annual report (but as noted earlier a separate technical fisheries report is still produced). As such, a gradual decline of EA type reporting may be typical of firms such as the ESB as financial reporting came more to the fore – some evidence from for example the NGO sector suggests increased compliance type reporting may be detrimental to other reporting (e.g., Clerkin and Quinn, 2021). Only more historical research of corporate environmental disclosure by accounting history researchers can provide insights in this regard. As revealed earlier, such historic research of the content of environmental reporting is not plentiful and we distinctly call for more research, possibly guided by the methods presented here.

Third, and stemming from the above, we have discounted two potential legitimacy relationships due to the lack of evidence available to us. While such evidence may or may not be present, an important point emerging from the analysis here is that legitimacy should not be assumed. As highlighted earlier, Deegan (2019) presented some arguments suggesting that the use of “legitimacy theory” as a means of explaining environmental reporting needed some overhaul. Drawing on the methods presented by Schoon (2022), we have established only one legitimacy relationship, which still exists to the present day. The other two could not be termed legitimacy given lack of evidence on conformity and assent. If the methods used here were to be applied to

similar contemporary reporting, it may be that legitimacy relationships which may have been assumed over time are questionable, or indeed may not be examples of legitimacy. Only further similar studies – contemporary and historic – will tell.

Fourth, there is some evidence (Figure III, hedging strategies) that the ESB by and large reported in a fair manner. This is not surprising given its direct accountability to the relevant minister for its activities around fisheries i.e. the one established legitimacy relationship per Figure IV. Additionally, as Quinn and Warren (2017, p. 410) noted, “[a] 1927 Act granted it ‘body corporate’ status [with] no share capital”. They also noted:

It was not until after the Electricity (Supply) (Amendment) Act, 2001, that the ESB issued shares. Upon issuance, 95 per cent of the shares were held by the Minister for Finance, and 5 per cent were made available to an employee share ownership scheme (*ibid*, p. 411).

Thus, for the entire period of the analysis here, the ESB was (and still is) accountable by law to the Irish government as a majority shareholder. This contrasts with its nearest neighbour, the United Kingdom, which saw its power generation sector gradually become more financialised from the late 1960s, with full privatisation from the 1990s (see Warren *et al.*, 2018). This more direct accountability, with associated indirect accountability, may be a contributory factor towards the balanced use of language as conveyed in Figure III (hedging strategies), and indeed towards an arguably better form of reporting than that reported by Dey and Russell (2014) in a non-state-owned Scottish power firm.

In summary, the analysis presented here depicts the ESB and the Irish government of the day as being innovative for their time – at least from a reporting stance. Reporting on the fisheries still occurs in quite some detail in a separate report as noted, but features less in the annual report presently and is captured together with other EA issues. If one lesson is apparent for the present, it may be that, by creating the ESB in the 1920s, the Irish government remained as the key shareholder and stakeholder (Manning and McDowell, 1985) and this allowed (and allows) them to dictate the reporting of anything it wishes by the ESB to the relevant minister of the day i.e. establishing a legitimacy relationship. We can only surmise the effect such direct accountability might have on a sector which is responsible for about 25% [23] of global CO2 emissions.

There are some limitations of the work presented here. First, the analysis is of a single case and context and therefore is not generalisable to other contexts *per se*. This should however be balanced against the longitudinal nature of the study (Moreno *et al.*, 2019). Second, there is a risk of ahistoricism in that contemporary methods and concepts are applied to historical data. While efforts have been made to avoid such ahistoricism, a lack of comparative studies of a historic nature has not aided the work here – although it is hoped this study will help future historic research on EA reporting. For example in terms of the methods used, the work of Pan *et al.* (2020) is on text used by entrepreneurs, with Resche (2015) on central banks. It could be argued these methods are not ideal for use in an historic analysis of words in different contexts. However, the use of linguistic analysis tools across varying disciplines and media types has been around for quite some time but is relatively new and gaining prominence in accounting research more recently (Loughran and McDonald, 2016). Third, the research here is subject to the typical limitations of manual content analysis. However, we have ensured consistency and avoided subjectivity by reaching acceptable levels of reliability. In addition, we have supplemented the manual analysis with a

computerized analysis. Fourth, the analysis is confined to an element of the annual report only. Future studies may consider including other media types – based on availability of course. Finally, the dyadic model of legitimacy used here has proved quite helpful in exploring potential legitimacy relationships over time. Using the model in a historic study is however more difficult as evidence of various parts of the relationship (see Figure IV) may not be available.

Despite the above limitations, we hope the analysis and methods presented here will inspire or at least encourage more accounting history researchers to seek out more archival records similar to those of the ESB for examination. This may result in the advent of a comparative literature of the genre. It is possible that such records exist in countries who have historically had hydroelectric power and being accountable for effects on rivers. Indeed, another angle could be why reports like those of the ESB were not historically required? Such studies, we believe, are not only useful and worthwhile for historical accounting and accountability research, but will also augment contemporary understanding of environmental and social accounting.

Notes

- 1 As noted by Servalli and Gitto (2021, p. 219) the role of calculative practices such as accounting in fisheries management and governance “continues to be overlooked”.
- 2 See <https://theconversation.com/rights-for-nature-how-granting-a-river-personhood-could-help-protect-it-157117>
- 3 That is, 38.5% based on content analysis and further 8.7% based on content analysis and interview.
- 4 Briefly, these also encapsulate the conceptualisations of legitimacy as property (object), process (relationship) and perception (audience) suggested by Suddaby *et al.* (2017).
- 5 At the time, Ireland did not have its own body of company law, instead using UK company law.
- 6 The 2020 values are as of 31/12/2020 and calculated using a tool available from the Central Statistics Office of Ireland - <https://www.cso.ie/en/interactivezone/visualisationtools/cpiinflationcalculator/>
- 7 See <https://www.oireachtas.ie/en/debates/debate/dail/1934-06-20/>
- 8 See <https://www.oireachtas.ie/en/debates/debate/dail/1934-07-18/28/>
- 9 The full text of the debates can be found at this link <https://www.oireachtas.ie/en/bills/bill/1934/41/?tab=debates>
- 10 This term is used in UK/Irish fisheries legislation. In general, a conservator is a person appointed by a court to manage the estate of a protected person. In the context of fisheries, it refers to person(s) responsible for the protection of fisheries.
- 11 Patrick Gilligan was Minister for Industry and Commerce in 1927 and led the introduction of legislation which formed the ESB. At the time, key points of debate were its monopoly status and its independence from Government.
- 12 This requirement was restated and confirmed in later Acts such as the Electricity (Supply) (Amendment) Act, 1961.
- 13 From the beginning to 1986, the annual report was for the year ended March 31st. From 1986, the year ended December 31st.
- 14 For example, the 1935/36 annual report totalled 59 pages, 19 of which were devoted to the financial statements and notes. As a comparison, the Annual Report and Accounts of Arthur Guinness & Son Ltd of the same year totalled four pages. Guinness was at that time one of the largest firms in the State. Of course, the content of the latter's annual report became more extensive over time as company law and accounting standards emerged and evolved.
- 15 We presume this fact was related to the introduction of Corporate Governance codes in 1993. Although the ESB was/is not a listed entity, from 1994 the structure of its annual reports resembles those of contemporaneous listed UK/Irish firms.
- 16 An example from 2020 can be found at this link <https://esb.ie/docs/default-source/fisheries/esb-fisheries-non-financial-annual-report-2020>
- 17 For example, these obligatory sentences would read something like “In accordance with the provisions of Sections 17 and 18 of the Shannon Fisheries Act...”.
- 18 As mentioned, the ESB is regarded as a for-profit firm. Lodhia *et al.* (2012) for example note legislation and government-regulation as better explanations of environment reporting in a public sector environment than a

legitimacy explanation. They also suggest “a more sophisticated approach to legitimacy is required to understand the role of environmental reporting in the public sector context” (p. 631). This study offers such an approach, although we do not consider the ESB as public sector.

19 The annual report contains data on for example production (in MegaWatts) from the Shannon Scheme, and from the late 1940s-1970s on the number of rural homes connected to the grid.

20 As noted earlier, the report was available for purchase by the public.

21 Assent and consent can be assumed between the ESB and bondholders given that the issuance of bonds increased from 1960.

22 The “salmon of knowledge” (or *bradá n feasa* in Irish Gaelic) features widely in Irish mythology and has been depicted on coinage for example.

23 See for example <https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data>

Primary sources

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Figure I(a). Evolution of categories over time (1935–1993), manual analysis-paragraphs (stacked)

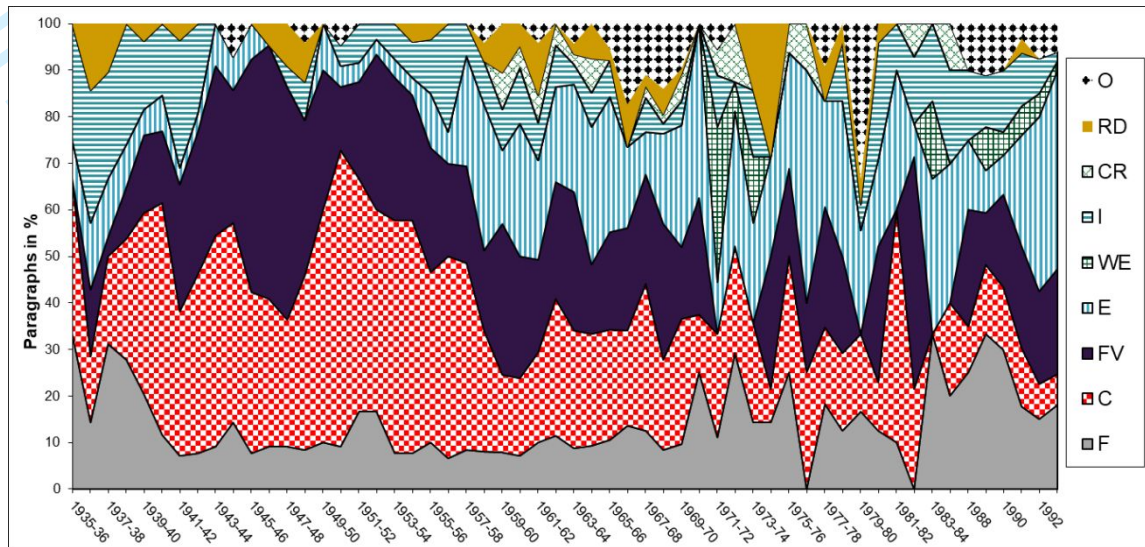
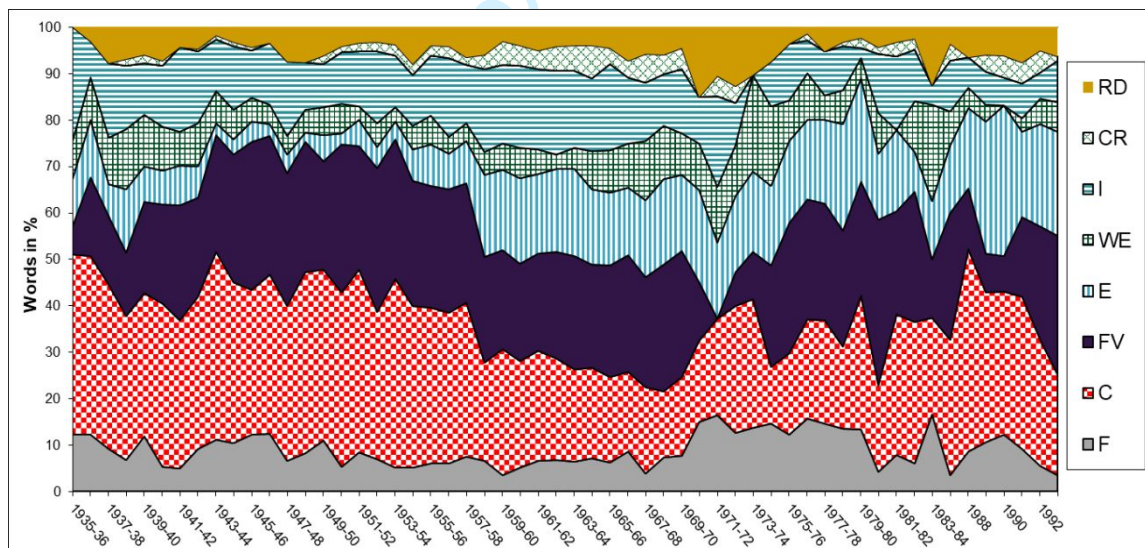


Figure I(b). Evolution of categories over time (1935–1993), computerized analysis-words (stacked)



Note: Category O is excluded in the computerized analysis

Figure II(a). Evolution of categories overtime (1935–1993), manual analysis-paragraphs (non-stacked)

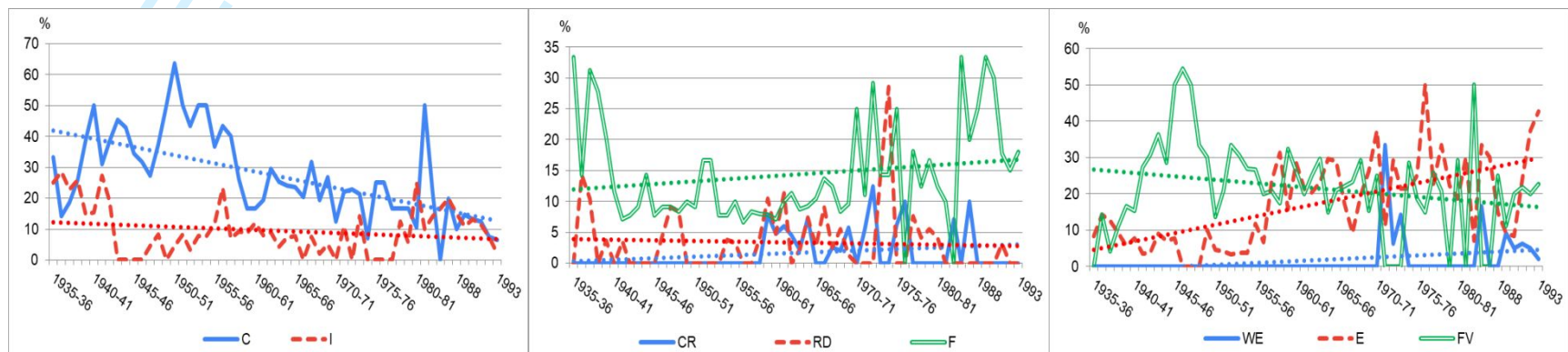


Figure II(b). Evolution of categories overtime (1935–1993), computerized analysis-words (non-stacked)

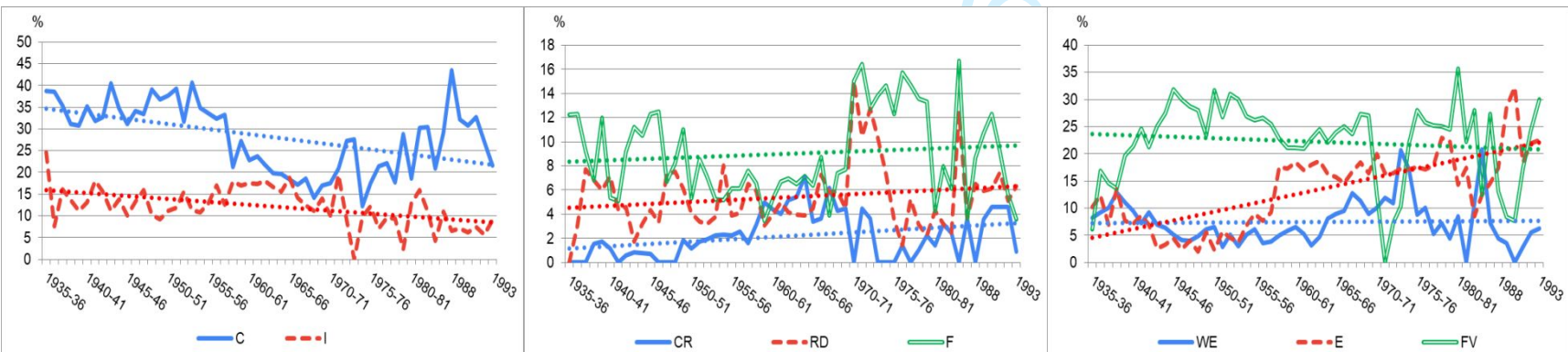


Figure III. Evolution of novelty/familiarity tone and hedging strategy words

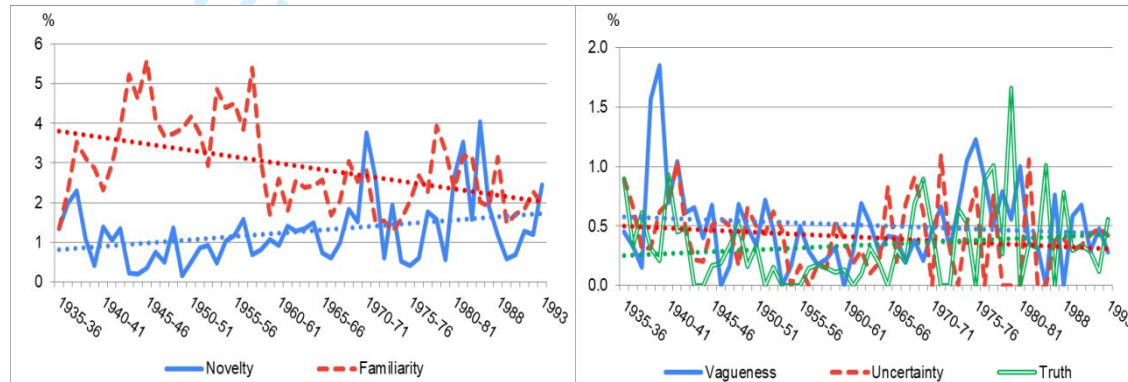


Figure IV. Potential legitimacy relationships

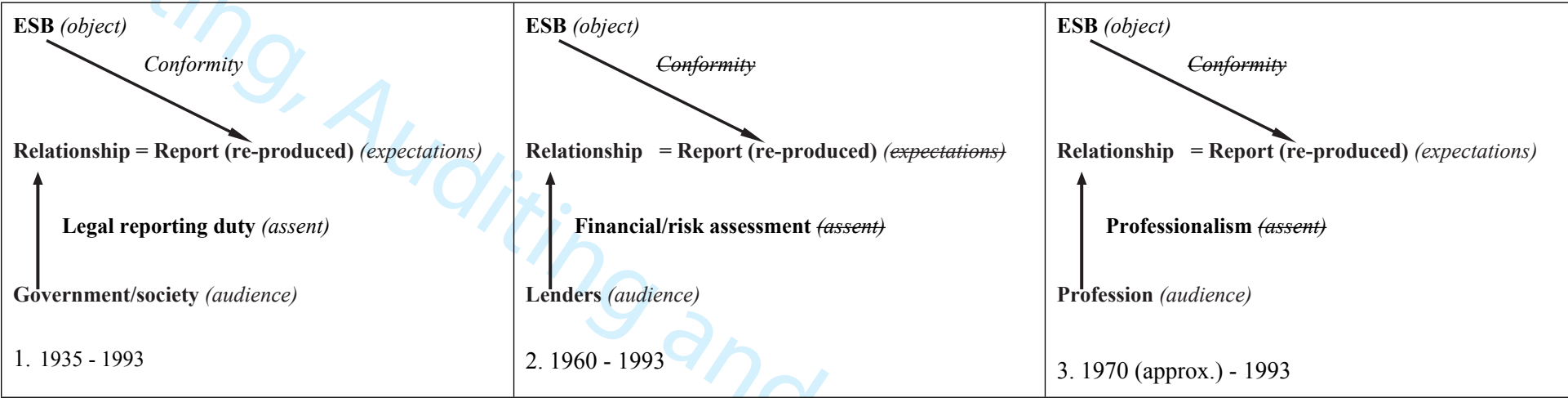


Table I. Excerpts from Shannon Fisheries Act 1935

Section	Text
17(1)	The obligation imposed on the Board by section 7 of the Act of 1927 to keep accounts of money received or expended by the Board shall extend to and apply in respect of moneys received or expended by the Board under this Act or received or expended by the Board in the performance of the duties in relation to the Shannon fisheries imposed on the Board by Part III of this Act, but subject to the modification that separate and distinct accounts shall be kept under the said section 7 in relation to the moneys to which that section is applied by this section.
17(2)	All the provisions of section 7 of the Act of 1927 shall apply to the accounts kept by the Board under that section in relation to moneys to which that section is applied by this section.
18(1)	The report required by section 32 of the Act of 1927 to be made by the Board in each year shall extend to and include the proceedings of the Board under this Act during the year to which such report relates, including the proceedings of the Board in the performance of the duties in relation to the Shannon fisheries imposed on the Board by Part III of this Act.
18(2)	The obligation to furnish statistics and returns imposed on the Board by section 32 of the Act of 1927 shall extend to and include statistics and returns in relation to the proceedings of the Board under this Act.

Note: Board refers to the ESB

Source - <http://www.irishstatutebook.ie/eli/1935/act/4/enacted/en/print.html>

Table II. Scheme of issues encoded within each category

F	Formal	Introductory administrative aspects (usually located at the beginning of the reports), information on applicable legislation regarding reporting and governance, acknowledgments
C	Commercial	Sales, costs, prices, markets, profit and loss, revenue, expenses, depreciation, measures mainly oriented to increase sales/profits, comments on figures contained in the accounting documents
FV	Fish volumes	Fish volumes taken, information on runs of fish, data from fish passes such as weirs/counters, fish catch, fish taken, weight of the catch (without financial data)
E	Environmental for fisheries / river	Measures mainly oriented to the preservation/conservation of fish (including rearing of fish for release) and the river, protection works – including monetary expenses. Reports of pollution, drought or effects of weather
WE	Wider environmental	Measures oriented to protect wider environment, including flora and fauna
I	Infrastructure	Acquisitions of premises, purchase, construction and maintenance of equipment (weirs, tanks, nets, counters, hatcheries etc.), development/maintenance of amenities
CR	Community relationships	Relationships with the local community/public in general, sponsorship of sport events and competitions, participation in exhibitions
RD	Research and development	Fish experiments, tests related to fish and the river, investigations
O	Others	Residual. Other aspects not included in the previous categories

Table III. Five steps to operationalize legitimacy (drawing on Schoon, 2022).

1	<i>Identify the <u>object</u> and <u>audience</u> of legitimacy</i> – the nodes of the dyad. Here, the object is generally the ESB organization (through its reporting) and the audience is the reporting community (Government, public and a professional community)
2	<i>Specify the <u>relationship of interest</u> between the two nodes.</i> Here the relationship is in general the management of fisheries in the River Shannon
3	<i>Identify the <u>expectations</u> that define the relationship.</i> Here, the expectations are mainly not clearly defined initially, but evolved over time
4	<i>Establish empirical <u>evidence of assent</u>.</i> Here, based on archival evidence of reports continuously produced
5	<i>Establish empirical <u>evidence of conformity</u> with expectations</i>

Table IV(a). Descriptives (in percentages) and trend over time for categories (manual analysis)

	Mean	Std. deviation	Max.	Min.	Trend
Formal (F)	14.3	8.2	33.3	0.0	↗
Commercial (C)	27.3	14.0	63.6	0.0	↘
Fish volumes (FV)	21.5	13.1	54.5	0.0	↘
Environmental for fisheries / river (E)	17.2	12.0	50.0	0.0	↗
Wider environmental (WE)	1.8	5.5	33.3	0.0	↗
Infrastructure (I)	9.6	8.1	28.6	0.0	↘
Community relationships (CR)	1.7	3.2	12.5	0.0	↗
Research and development (RD)	3.4	5.2	28.6	0.0	↘
Others (O)	3.2	5.9	33.3	0.0	↗

N=56

Table IV(b). Descriptives (in percentages) and trend over time for categories (computerized analysis)

	Mean	Std. deviation	Max.	Min.	Trend
Formal (F)	4.2	1.5	7.6	1.2	↗
Commercial (C)	13.6	5.0	27.1	5.3	↘
Fish volumes (FV)	11.0	4.4	20.1	0.0	↘
Environmental for fisheries / river (E)	6.1	3.1	13.1	1.0	↗
Wider environmental (WE)	3.4	1.7	9.4	0.0	→
Infrastructure (I)	5.9	2.4	10.8	0.0	↘
Community relationships (CR)	1.1	0.9	3.7	0.0	↗
Research and development (RD)	2.5	1.1	5.7	0.0	↗

N=56

Appendix

Appendix 1. Sample extracts from the ESB fisheries reports

REPORT ON THE SHANNON FISHERIES

27 Lower Fitzwilliam Street,
Dublin.

TO THE MINISTER FOR INDUSTRY AND COMMERCE

In accordance with the provisions of the Shannon Fisheries Act, 1935, the Board presents the Annual Report and Accounts for the year ended 31st March, 1951.

The proceeds from the sale of salmon, eels and oysters, the leasing of angling rights and miscellaneous income amounted to £19,423, as compared with £17,311 in the preceding year. Having charged interest and sinking fund amounting to £12,146 on the capital invested in the fisheries, and making allowance of £967 for depreciation, the Profit and Loss Account showed a deficiency of £7,634 compared with £9,404 last year. The debit for fishery rates was £3,442.

SALMON FISHERIES

It will be noted from the following table, which shows the recorded run of salmon at Thomond Weir, that the steady increase which began in the 1948-49 season has been maintained. During the war, and for some years afterwards, the run of the fish in the Shannon declined. A similar trend was experienced, during the same period, in most of the other rivers in Europe, and, although its cause has not been definitely established, the continuance of more favourable returns may justify the presumption that the decline has been arrested.

Year ended 31st March	Recorded run through Thomond Weir
1942	22,308
1943	18,681
1944	18,344
1945	11,321
1946	6,473
1947	10,355
1948	8,809
1949	10,261
1950	12,551
1951	14,403

By arrangement with the Department of Agriculture (Fisheries Branch), only 28% of the recorded run at Thomond Weir may be taken, but even with the increased numbers in recent years, the percentage allowed is not sufficient to enable the interest on the capital invested in the fisheries to be met in full.

Sample page from 1950/51

COMMERCIAL FISHING

72% of the salmon reaching Thomond Weir at Limerick continued to be released for propagation purposes and for angling. Owing to the heavy supply of grise the prices in 1962 were seriously depressed in the traditional salmon markets. The Board was, however, fortunate in obtaining new continental outlets for its salmon and revenue from the sale of salmon from the Shannon rose from £12,534 in the previous year to £24,225.

There was also a good run of grise in the river Erne. After 3,000 salmon had been counted at Cathaleen's Fall, netting was opened to the public. The revenue from the sale of the small number of fish which the Board took realised £1,697.

In the interests of stock conservation the Board did not operate its commercial fishery on the River Lee.

The development of the eel fisheries on the Shannon continued. 4,500,000 eels passed upstream at Ardnacrusha and 1,600,000 were transferred from other rivers to the Shannon for feeding. Sales of eels from the commercial eel weir at Killaloe realised £5,224.



Young salmon are graded at Parteen.

Sample page from 1962/63

Fisheries and Conservation

The total expenditure on Fisheries and Conservation amounted to £413,295. Income from the sale of salmon and eels was £134,070 and miscellaneous income amounted to £7,661.

It was another bad year for salmon with a further decline in landings. The Board's catch on the River Shannon and the salmon run on the River Erne were the lowest ever. The salmon run on the Liffey did not alter significantly. The Board has commented in many previous reports on the decline in salmon stocks and expressed its view that the main reason for the decline was the lack of any effective regulation of salmon fishing at sea. The Board wishes to record its appreciation of the action which the Minister for Fisheries is taking to remedy the situation.

The Board again did not fish the Clady or Erne in the interests of stock conservation. In its view the poor returns in recent years from the River Erne would warrant conservation measures such as a ban for a number of years on public netting in the estuary.

The beneficial effect of the hatcheries at Parteen and Carrigrohoid on the development of salmon stocks in the Rivers Shannon and Lee is significant - during the year 20% of the catch at Thomond Weir and a much larger part of the run in the River Lee were hatchery reared.

The total eel catch was 15% lower than the previous record year; income from sales was higher, mainly because of increased prices.

There was further progress in the salmon rearing project sponsored jointly by the Board and Gaeltarra Eireann and the first year's crop of 10,500 salmon was sold. Difficult problems remain to be solved, particularly those relating to losses of young salmon and early maturation. Experimental work in these areas is continuing.

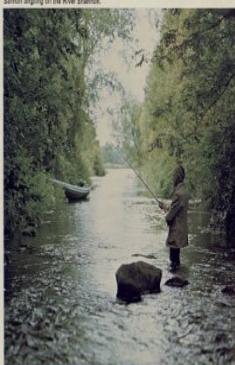
During the year the Board approved a five year development plan at an estimated additional cost of £500,000.

The Board continued its activities in the field of water pollution control; it is expected that these will be at a lower level in future with the coming into operation of the Local Government (Water Pollution) Act, 1977 and the increased responsibility being given to local authorities in this matter. The Board hopes that they will be given all the resources they require to discharge this important function.

The Board's annual Fisheries Report, published separately, deals with these activities in more detail.



Pin-dipping of young salmon at ESB hatchery and rearing station.



Salmon angling on the River Shannon.

Sample page from 1977/78

FISHERIES AND CONSERVATION

The decline of salmon in Irish rivers continued. In the Shannon, Lee and Erne rivers there was insufficient salmon eggs from wild fish to provide seed for ESB hatcheries. The hatcheries had to use some eggs from salmon reared in captivity in sea farms. The ESB has been warning for years that salmon as a wild species of fish would become extinct from the excessive and illegal offshore fishing along the west coast. This day of total extinction is fast approaching. On the positive side, the ESB continued with its smolt production policy with plans to expand its rearing station on the Lee to produce an additional 350,000 salmon smolts each year.

ESB salmon farming results are satisfactory and the installation of a second farm at Mulroy Bay commenced, to give a potential annual output of 200 tonnes worth about £1m at market prices. A farm using new types of cages with a capacity of 150 tonnes was constructed at Killybegs with the co-operation of BIM and local interests. The use of this new type of cage greatly increases the range of suitable sites for sea cage salmon rearing.

Sample page from 1984/85

Appendix 2. Top 100 word frequencies

Word	Freq.	Word	Freq.	Word	Freq.
salmon	552	weirs	64	last	44
fisheries	428	esb	64	stake	43
year	296	commercial	62	rights	43
shannon	277	revenue	61	spawning	42
fish	246	grilse	61	operation	42
board	236	fishery	60	estuary	42
river	222	march	59	clady	42
lbs	177	account	58	activities	41
weir	158	ova	58	new	41
fishing	136	castleconnell	57	also	40
compared	131	sale	57	oysters	40
eels	130	weight	57	limerick	39
run	129	parteen	57	area	39
development	120	catch	55	follows	38
erne	111	made	53	smolt	38
continued	106	water	53	income	37
boards	98	recorded	53	hydroelectric	37
angling	98	preceding	51	interest	36
eel	96	per	51	rod	36
thomond	94	sales	50	small	36
previous	90	conservation	50	ended	36
lee	88	trout	50	division	36
years	85	work	49	conditions	35
season	80	carried	49	price	35
pass	76	total	49	numbers	35
rearing	72	local	49	following	34
programme	71	disease	46	conservators	34
average	68	protection	45	possible	34
taken	67	killaloe	45	station	34
amounted	66	increase	45	department	33
rivers	66	smolts	45	liffey	33
hatchery	66	stock	44	control	32
stocks	66	fry	44		
number	64	ardnacrusa	44		