

Inclusive Growth and Climate Change Mitigation Programs and Policies in the ASEAN: Fiscal Implications

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Abstract

Addressing urgent global climate change and inequality issues has been a major challenge for the ten AMS (ASEAN Member States) given the diversity and local agendas with divergent political, economic, and social objectives. While regional policy frameworks prioritise harmonisation and inter-regional integration outcomes over national inequality and climate change policy goals, governments typically address the latter through discretionary policy add-ons that lead to policy fragmentation and competing fiscal goals that interfere with intermediate development plans.

To achieve the aspired inequality outcomes (Regional Framework and Action Plan, ASEAN Declaration, 2013) and the ratified global climate targets (Paris Treaty 2015) simultaneously, such policy outcomes and commitments to collaborative policy action will need to be aligned within an integrated policy framework at the regional or global level, and externalities of economic activity internalised into a sustainable and inclusive fiscal model. Focusing on policy design, integration and evaluation aspects, this paper tests the hypothesis that, given the urgency of these issues, the ASEAN governments devised corrective and preventive measures to systematically mitigate these externalities through intervention at the policy level and multilateral coordination at the regional and global levels to achieve pro-green and pro-equity policy outcomes with a net social surplus.

Adopting a qualitative methodology, this study conducts a structured literature search and subsequent document analysis, using advanced text mining techniques to extract, contextualise and map policy-relevant themes by geopolitical scope, policy intent and outcomes. Literature evidence confirmed that the ASEAN Member States have recognised and acknowledged the urgency of climate change and inequality challenges, and that these governments intervene at the local policy level and also engage in multilateral discussions, which lack, however, formal commitment and transparency. This study could not produce literature evidence of a systematic approach by these governments internalising mitigation mechanisms into the fiscal policy frameworks to achieve the aspired inclusive and sustainable outcomes - by design, rather than discretionary policy add-ons - and thus, the hypothesis was rejected.

Keywords: Sustainable fiscal policy, inclusive growth, climate change mitigation, policy integration, multilateral intervention, document analysis.

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1 Introduction

The impairment of the global and national public good of intergenerational prosperity (Collier, 2010; Stiglitz, 2015; Rees, 1995) caused by the economic inequality and climate change phenomena as externalities of economic activity, is threatening the very premise of economic, social and ecological sustainability. Within the greater paradigm of global and intergenerational sustainability, this study examines policy-relevant literature in search for documentary evidence of balanced, inclusive and sustainable fiscal policies and programs in the ASEAN, and the intervention level of these governments, i.e. local policy integration versus multilateral policy coordination.

The research objective is to test the hypothesis based on literature evidence. Specifically, that the ASEAN Member States (AMS) governments are enacting sustainable fiscal policy with internalised mechanisms to systematically mitigate the inherent climate change and inequality externalities. So, to achieve the aspired pro-green and pro-equity policy qualities through policy intervention and multilateral coordination.

Existing policy research literature in the ASEAN focuses mainly on specific socio-economic or political problems and related policy gaps (Singh, et. Al., 2019; Hill, 1998). Other strands are concerned with methodological considerations of policy analysis, or structural aspects of policy effectiveness, i.e., the design, implementation, and impact relative to the declared goals (Weber and Chaiechi, 2022; Havi, 2014). However, literature evidence of the extent of internalised policy mechanisms to mitigate urgent climate change and inequality externalities of existing and planned fiscal policy among the ASEAN governments, and their intervention strategy, is inconclusive and in need of structural clarity.

Specifically, two broad gaps were identified in recent literature:

- a) Extent to which existing AMS fiscal policy internalises mechanisms to systematically mitigate urgent climate change and inequality externalities by design, rather than by discretionary policy add-ons.
- b) Extent to which policy intervention is observed at the multilateral coordination and national integration levels and the transparency of policy goals and impact amongst the ASEAN Member States, with respect to the proclaimed pro-green and pro-equity fiscal policy outcomes.

Following the introduction of the research context, a guided literature review and discussion of the identified gaps lead into the methodology section, which includes the conceptual framing model, the data model and sources, and the document analysis method employed for structured policy analysis. It follows a brief discussion of the structural and ontological requirements for corpus collation and subsequent evaluation, including the advanced knowledge management techniques and tools employed for this task. The analysis and discussion section examines the results from the structured document analysis by corpus strati. Finally, the conclusion integrates and interprets the findings from the stratified analysis with respect to the research objective, while testing the hypothesis. The appendices hold the references and additional details to the tables and depictions of the analysis section.

2 Guided Literature Search

According to Bowen (2005) document analysis, as a social research method, is a useful part of triangulation, the mix of methodologies within the study of the identical phenomenon, where researchers may use data from interviews, observations and documentary analysis methods. Owen (2014) too, observes that pre-existing data are often used with other kinds of data for triangulation, a method designed to extend the trustworthiness of a study. Triangulation can mitigate potential methodology bias assisting in developing a deeper understanding of the investigated subject (Morgan, 2022). Similarly, Silverman (2011) views document analysis but one option of viable methodologies to achieve triangulation in a mixed methodology approach, in an attempt to further reduce systematic source, methodological and interpretation bias while

maximising objectivity, coverage and robustness of the research. Bowen (2009) adds, by using different data collection methods researchers can confirm findings across different data sets, thereby minimising the chances for inherent bias.

According to Patton (2015), any document containing text could be a potential source in qualitative analysis. Merriam & Tisdell (2015) posits that the term was also employed widely in texts incorporating visual artifacts, such as film, video and photographs. Like documents consisting of texts, those consisting of visual or audio encoded information may also be useful in qualitative analysis (Flick, 2018). Tight (2019) suggests that since document analysis was a viable research method in its own right, one would expect to find a wide variety of literature on this topic. However, Flick (2018) finds that the literature on documentary research was rather scant. Merriam et al. (2015) adds that analysing documents has frequently been an underused approach in qualitative research. The scarcity of literature on this subject was likely to contribute to the lack of awareness and may even prevent researchers from developing the specific skills needed for this style of research. Morgan (2022) claims that conducting qualitative document analysis based on available texts was a valuable research approach, particularly in situations where otherwise the project might not be completed on time and budget. Consistent with Morgan (2022), qualitative documentary analysis includes both, document and content analysis, and other thematic analysis methods as reflexive thematic analysis (Braun et al., 2019). Furthermore, secondary documentary analysis is a popular method in text-based research, offering the shared advantages of being cost-effective, and unintrusive, while being broadly available even to the remote research community. Clarke et al. (2013) also observed the popularity of text-based research methods mostly due to the broad availability, repeatability and comparative affordability of the source data. Electronic databases at universities allow researchers to access a large range of databases and textbooks, and the Internet offers access to immense knowledge, often free of charge. In triangulation mode, secondary sources may be used in combination with primary data acquisition methods as part of a mixed methodology approach. Although triangulation enhances the validity of qualitative research, some circumstances can make it difficult to use interviews and observations. As a recent example, Morgan mentions the Corona / COVID-19 pandemic, a situation that made it more difficult to conduct field research due to the involved health risks and imposed travel and contact restrictions.

Furthermore, qualitative studies can be conducted at the descriptive or interpretative level. Braun et al. (2019) propose that with the former technique researchers look for explicit meaning in the data extracts as illustrative examples, while with the latter, researchers provide an analysis of the extracts. Morgan (2022) adds that conducting a document analysis can reduce some obstacles qualitative researchers frequently encounter with primary research methods, including overcoming extensive resource requirements for being present during the interviewing process, obtaining venue permissions and insurance, reaching survey targets for minimum response rates, or the risk of introducing observation bias, as well as the indirect costs of respondent recruiting, travel and preparation. On the other hand, Silverman (2015) finds that researchers, when working with secondary documentary methods, needed to pay special attention to avoid inherent sampling error and methodological and interpretation bias due to corpus representativeness, differing and latent document intents and contexts, and individual authors' stance and target audiences (Table 1). Furthermore, researchers might be unskilful in using technology or may not be able to afford it (e.g. license fees and support requirements, etc.) (Redlich-Amirav and Higginbottom, 2014). Morgan (2022) suggests that conducting a document analysis can also reduce some of the ethical concerns associated with other more intrusive qualitative methods like interviewing, survey and observation, etc. Specifically, Redlich-Amirav et al. (2014) caution that while audio and videoconferencing and other forms of synchronous communication technology may be employed to overcome some of the disadvantages of primary data acquisition, such technology may introduce additional bias from uneven reach of targets in the field (e.g. the poor with limited access to such infrastructure), and/or from researcher's who inappropriately apply the technology within the methodology.

Table 1: Main benefits and limitations of document analysis

STRENGTHS	LIMITATIONS
<ul style="list-style-type: none"> • If trusted source, fewer ethical and authenticity concerns • Research method is less obtrusive • Scope and depth of sources and documents • Cost-efficiency in data sourcing and research conduct 	<ul style="list-style-type: none"> • Secondary data / limited information • Harder to objectively check for bias • Insufficient data to deliver the research objective

Adopted from Blackstone (2019), Bowen (2009), and Merriam & Tisdell (2016).

3 Methodology

The important decisions about qualitative research design with respect to the objective include the definition of the conceptual model, epistemology, methodology and methods of analysis, and the reporting framework. Dorothy Scott (2002) notes that there is an increasing recognition that research-based practice in the human sciences needs to incorporate meaning as well as measurement - and that, arguably, social work was essentially a hermeneutic endeavour with the construction of meaning at its core (England, 1986; Scott, 1989). According to Owen (2014) the conceptual model frames the research while informing the methodological design and influencing the data-collection process, procedures and techniques. Yet, Owen reminds us that policy analysis needed to take place in context, considering four important policy dimensions: normative, structural, constitutive, and technical. Ritchie et al. (2002) also emphasised the importance of structured policy analysis to drive the research design subordinate to the research objectives. However, Scott (2002) cautions that in categorising the findings researchers must be mindful of the mutually exclusive and collectively exhaustive principle of structuring the research task in order not to compromise the integrity of the research goals. Owen (2014) adds that the choice of research design demanded careful consideration of the multiple options at hand, their trade-offs and interdependencies opposite the research objective. Particularly, this included the conceptual framework, and the epistemological stance as pointed out by Michael Crotty's (1998)'s fundamental research design questions:

- What theoretical perspective will support the research proposal?
- What epistemology will inform the research proposal?
- What methodology will be employed?
- What methods will be used?

3.1 Framing Conceptual Model

In search of literature evidence from policy-relevant sources this paper follows a qualitative approach to test the hypothesis and deliver the research objective. The aim is to expose emerging pro-green and pro-equity policy themes among the ASEAN Member States (AMS) to achieve balanced, inclusive and sustainable (fiscal) policy outcomes. Specifically, the researchers examine two broad dimensions of the policy space,

- 1) policy goals and impact, with respect to inequality and climate change externalities, and
- 2) the geopolitical scope of government intervention to set structure and boundaries for policy content and expected outcome, with regards to the broad research question of internalising mitigation mechanisms for inequality and climate change externalities of planned and existing fiscal policy and programs by the AMS.

Each dimension is further categorised into rubrics to classify the emerging themes from extracted textual features from the analysed documents in the stratified corpus (Figure 1). Themes are derived from extracted and contextualised features using the document analysis method and assigned to the matching category for interpretation of the respective governments’ policy stance:

- Collect evidence from official government sources that acknowledge the pressing inequality and climate change issues, which are of global concern, and the urgent requirement for appropriate policy action
- Collect evidence from official government sources committing to specific and urgent (fiscal) policy action to effectively address the global inequality and climate change issues at the national and multilateral level
- Collect evidence from official government sources of enacted (fiscal) policy with effective mitigation measures to achieve pro-green and pro-equity policy outcomes (either through discretionary policy additions or internalised mechanisms by design)
- Collect evidence from official government sources of the effectiveness of the enacted (fiscal) policy with respect to mitigating inequality and climate change externalities and achieving sustainable pro-green and pro-equity outcomes. (key economic metrics for level and trend: political-economic ideology, Gini-coefficient, emissions per capita, fiscal stance and national debt)

The theme classifications match the conceptual dimension of Policy intent, construct and sustainability impact aligning the rubrics with the research question, i.e. to what extent and effect the ASEAN Member States (AMS) have implemented a sustainable fiscal policy for pro-green and pro-equity outcomes.

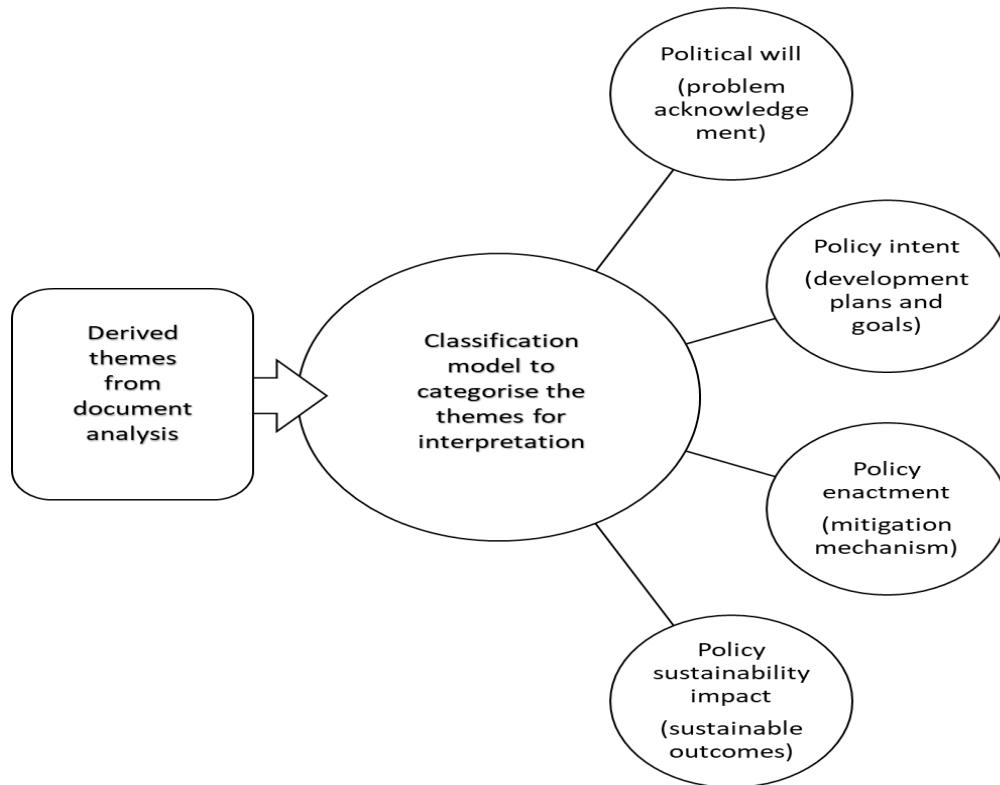


Figure 1: Conceptual model - dimension: Policy intent, construct and sustainability impact
 Source: authors

The first dimension follows governments' rhetoric and documents in search of evidence of a "stated political will" in official government communication channels, to "publicly stated policy intents" and through to "achieved mitigation impacts" with regards to the research objective. Note that mitigation impact is distinct from policy effectiveness, which is concerned with the overall policy outcome versus goals, rather than the extent to which inequality and climate change externalities could be neutralised at the policy level through built-in mitigation mechanisms and measures (Figure 2).

Again, the themes are derived from extracted and contextualised features using the document analysis method and assigned to the matching category for interpretation of the respective governments' policy stance:

- Collect evidence from official sources of multilateral government agreements at G7, G20, etc., level and ratification status of the participating ASEAN Member States (AMS) with a commitment to enact coordinated policy action to mitigate global inequality and climate change issues.
- Collect evidence from official political action committee (PAC) agreements between the ASEAN / AEC and the ASEAN Member States (AMS) level and ratification status of the participating ASEAN Member States (AMS). Especially, with respect to commitment to enact coordinated policy action to mitigate regional inequality and climate change issues.
- Collect evidence from official sources about the extent and effect to which the individual AMS governments implement balanced, inclusive and sustainable fiscal policies - with internalised mechanisms to mitigate inequality and climate change externalities that resulted from fiscal policy action.

The theme classifications match with the conceptual dimension of Policy intent, construct and sustainability impact aligning the rubrics with the research question, i.e., the extent and effect the AMS have implemented a sustainable fiscal policy for pro-green and pro-equity outcomes.

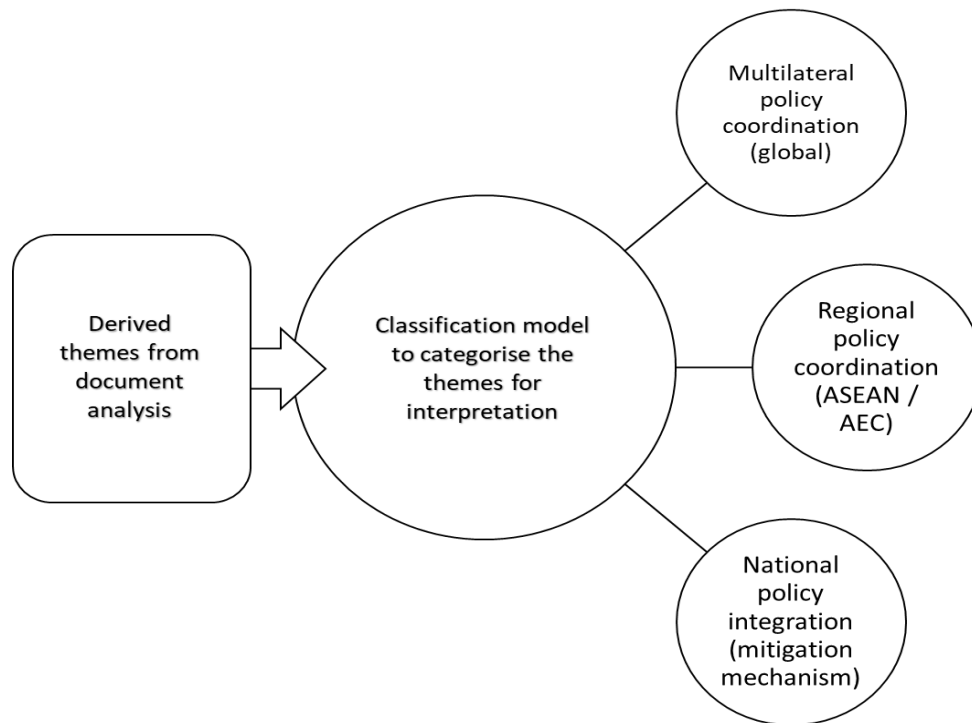


Figure 2: Conceptual model - dimension: Geopolitical scope of policy intervention

Source: authors

The second dimension follows governments' rhetoric and documents in search of evidence to explain the political influencers and motivators for a mitigated (fiscal) policy with pro-green and pro-equity impact at the global, regional ASEAN / AEC, and national levels.

Table 2 integrates both dimensions and the rubrics into the conceptual model to inform the research design, including the data model and methods with respect to the research objective.

Table 2: Conceptual model – Bivariate multinomial classification

Geopolitical scope of policy intervention	Policy intent, construct and sustainability impact		
	Political will rhetoric	Formal policy intent	Sustainable policy impact
Multilateral policy coordination (global)	a)	a)	a)
Regional policy coordination (ASEAN)	a)	a)	a)
National policy integration	b), c)	b), c), d), e)	e)

The *Policy intent, construct and sustainability* dimension classifies extracted content from the corpus into the three rubrics of “political will rhetoric”, “official policy intent”, and “sustainable policy impact” with respect to climate change and inequality externalities from fiscal policy and program activity. The second dimension of *Geopolitical scope of policy intervention* represents specific policy measures at the global level - through multilateral policy coordination, regional (ASEAN) or national level (AMS) - to mitigate externalities of fiscal policy through corrective, preventive or affirmative policy action (Weber & Chaiechi, 2022). Thus, achieve balanced, inclusive and sustainable fiscal policy outcomes.

The selection of the rubrics in the conceptual model is of particular importance to maintain objectivity, i.e., representativeness of the corpus database (sample), to minimise interpretation bias. The rubrics (classes) match the structure of the research model (Table 2), while aligning with the research questions, and these are informed by a priori knowledge from scientific and grey literature. Furthermore, rubrics are organised in topological succession to provide the scaffolding for the contextual and conceptual analysis and a logical narrative-based reporting framework (Table 3 below).

Arksey and O'Malley (2005) suggest minimising selection and interpretation bias, i.e. the corpus documents should be drawn from multiple sources collectively meeting the redundant, diverse and credible inclusion criteria (Pham, et al., 2014). Clustered sampling techniques are a common approach to structure qualitative data collection Onwuegbuzie (2007) and control the representativeness of the text corpus with regard to the research objective. According to Bauer (2000) structured corpora designs can significantly reduce the collection, selection and interpretation bias.

3.2 Data Model (Corpus Collation)

As shown in Table 3, the stratified data model imposes a structured clustering approach on the qualitative document search and selection tasks to maximise the representativeness of the text corpus within the examined policy dimensions of the conceptual model. Specifically, a positive search process, by AMS, identifies relevant documents across the thematic strati of the text corpus for subsequent analysis and criteria-based screening and selection for inclusion or exclusion, as guided by the structured search question. Table 3 associates the relevant document types with the corresponding evidence classes to structure the corpus composition in alignment with the conceptual model.

Table 3: Stratified data model for structured corpus composition (five classes / rubrics)

Document type	Evidence class
Ratified Multilateral Agreements, Declarations & Official Announcements (treaty, fora)	a) Global and regional sources of potential evidence of multilateral political will, policy intent and evaluation
National Medium & Long-term Development Plans (political will, policy intent)	b) National sources of potential evidence of political will and policy intent
Policy Framework & Policy Action Plans (by political mandate)	c) National sources of potential evidence of policy integration
Funded Policy Action and Programs (Fiscal Budget)	d) Sources of potential evidence of enacted (funded existing) policy and programs
Independent Policy Analysis & Advisory (Institutions and Consulting Firms)	e) Sources of potential evidence of independent polity evaluation and analysis

The conceptual model in Table 2 maps the stratified data model with the identified source document types and associated evidence classes (Table 3) for each rubric. The model informs the data collection and selection processes and subsequent analysis of each document in the corpus until corpus saturation is approached and the analysis exhausted.

4 Document Analysis Method

4.1 Document Analysis Suits Policy Research

Policy analysis research aims to inform the policy design, implementation, and evaluation process of policy domains (e.g. sustainable fiscal policy), individual policies and programs with respect to maximising intergenerational social value (i.e. achieving pareto-optimal outcomes) (Howarth et al., 1990). At each stage of the policy lifecycle, i.e. policy justification (socio-economic problem or deficit), policy intent and design (objective, goals and strategies), and the policy effects (direct and indirect impacts and externalities) - policy analysis can inform the policy making process to achieve pareto-efficient outcomes (Jordan, 2008). These tend to maximise the social surplus through balanced, inclusive and sustainable (fiscal) policies and programs with internalised mechanisms to mitigate climate change and inequality externalities (Weber and Chaiechi, 2022). According to Yanow (2007) interpretive policy analysis included studies of public policies which build on ontological and epistemological presuppositions that were derived from interpretive philosophies. Therefore, its core characteristic was to focus on the meaning. Crotty (1998, p. 67) posits that the interpretive stance well suits the policy researcher in search of culturally derived and historically situated interpretations of the social world. Studying the policy process Thomas Birkland (2005, p. 15) observed that when identifying a problem, this was as much a normative judgment as an objective reflection of fact. Thus, if the problem was normatively identified one cannot claim that any subsequent analysis was strictly objective. According Majchrzak and Markus (2013) policy research thus is to find and synthesise existing evidence and generate new evidence if needed, to make acceptable recommendations that can solve policy problems without negative side effects. Document research includes reviewing relevant literature dealing with both theory and evidence and locating existing sources of raw data. According to Weimer and Vining (2017) well-done systematic reviews of research on specific topics provide analysts and policy makers with summaries of the best available evidence and practices. In selecting a qualitative method to analyse (existing) policy-relevant contents, Owen (2014) finds that document analysis was particularly well suited for policy research as it allowed to collect appropriate data to address a given conceptual framework and research question.

In his seminal paper Bowen (2009) suggests that documents can provide an effective and important source of information for broad background coverage or discovery of major themes inherent in the research field or corpus. According to Morgan (2022) the Document Analysis method therefore provides an important instrument to help contextualise one's research within its subject or field. Scott (1990) suggests that the key criteria for objective document analysis include credibility, authenticity, representativeness, and meaning. Silverman (2015) adds, especially authenticity which refers to a document's genuineness, including considerations of fraud and errors - and credibility, which goes into motivations for producing a document. Similarly, Bowen proposes a four-step process for a systematic and structured qualitative document analysis, emphasising that special attention should be given to considering the author motivation, form and structure of the document. He too, emphasises authenticity and adds bibliographic and metadata to explicitly identify and consider possible source bias as an integral aspect of qualitative research. Analogue, O'Leary (2014) proposes an extended planning process with eight steps that should take place not just in document analysis, but in all textual analysis. Braun et al. (2019) states the importance of researchers maintaining objectivity while being aware of potential interpretation and source biases. O'Leary (2014) specifically warns of "unwitting" evidence, or latent content, which refer to the style, tone, agenda, facts or opinions that exist in the documents. Scott (1990) cautions that researchers should take a stance of "methodical distrust", while paying special attention to "spatial and temporal proximity" of authors who must be appraised, including different languages, dialects (Braun et al., 2006), or styles of writing to different conventions of dating to entirely different cultural norms and values (Silverman, 2015) that may introduce bias when interpreting a text.

4.2 Guiding Procedures for Analysis

Following the popular document analysis method by Bowen (2009) each document in the corpus is to be dissected in search of literature artifacts that can be classified for subsequent feature extraction, coding and curation into contextualised themes (Braun et al., 2019) that fit the conceptual framework (Table 2). According to Bowen (2009), this involves a systematic, but not overly restrictive, iterative guided process with four stages emerging from interrelated thematic categories of the data, including: (1) identifying problems and priorities, (2) motivating and mobilising, (3) working together, and (4) creating an enabling environment (Bowen, 2005). This process is to expose and codify relevant text passages in the corpus by combining, segregating, trimming and completing text constructs in an iterative and inductive process until meaningful features emerge (Seale and Silverman, 1997). The exposed features are further analysed by the researcher and synthesised into relevant subthemes and themes with respect to the research objective (Scott 2002). Themes or patterns within data can be identified in one of two primary ways: in an inductive or bottom-up approach (e.g., Frith and Gleeson, 2004), or in a theoretical or deductive or top-down approach (e.g., Boyatzis, 1998; Hayes, 1997). According to Braun et al. (2006) inductive analysis is a process of coding the data without trying to fit it into a pre-existing coding frame or the researcher's analytic preconceptions - and in this sense, it is data-driven. According to Braun et al. (2019) this process is similar to thematic analysis where curated features are condensed into contextualised themes that fit within the dimensionality and rubrics of the conceptual framework. Braun et al. (2006) proposes an iteratively approximative process with six steps (Table 4) in inductive, exploratory mode, or alternatively - depending on the research design, a top-down deductive approach.

Table 4: Stages of thematic analysis (adopted from Braun and Clarke, 2006)

Phases of thematic analysis	Description of the process
1-Familiarizing yourself with your data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2-Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3-Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4-Reviewing themes	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5-Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6-Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Braun et al. notes further that themes capture important features about the data in relation to the research question that represent some level of patterned response or meaning within the data set. However, she warns that feature prevalence was not necessarily a criterion in theme weighing and that researcher judgement was required to determine what a theme was. Another important aspect for the consistency and quality of coding is the decision of whether the analysis of extracted text artifacts happens at the semantic or the latent level (Braun and Clarke, 2006), with the former imposing a descriptive, and the latter an evaluative approach to coding the extracted features by the researcher (Gregory & Owen, 2014). Furthermore, Owen proposes an inductive approach at the latent level to code thematically related text artifacts, combining these into topical features that logically and intuitively fit together. These contextualised features are further analysed in search of emerging patterns and then synthesised into themes that fit with the categories in the conceptual model of the research.

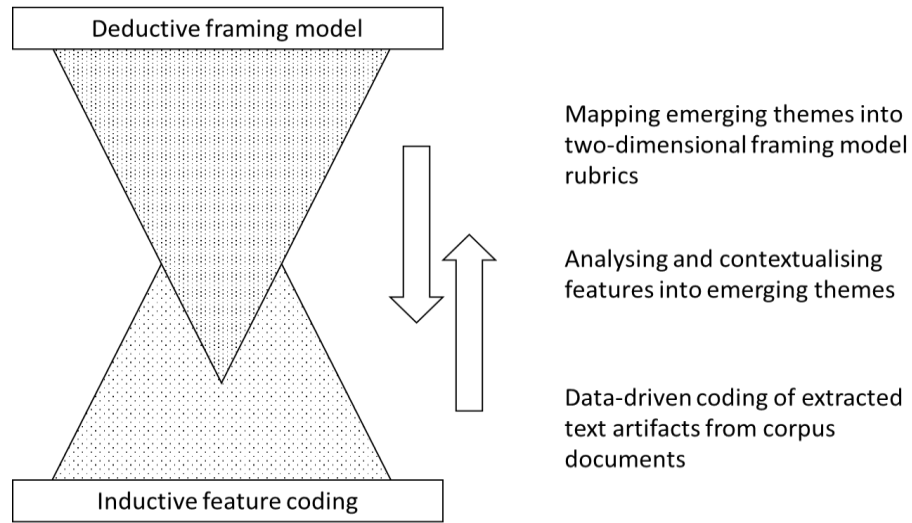


Figure 3: Framing emerging themes from data-driven features coding
 Source: authors

Figure 3 depicts the integrated document analysis process involving deductive classification approach of the derived themes by the two-dimensional framing model rubrics, in combination with inductive (data-driven) feature coding. The features are derived from extracted text artifacts from the analysed documents in each strata of the corpus, and contextualised based on the research question.

5 Corpus Collation and Evaluation

The document analysis process starts with finding the appropriate source documents for the study. According to Flick (2018), researchers, in selecting the documents for corpus compilation, should consider four factors to qualify individual documents for inclusion, as shown in Table 5.

Table 5: Four factors to qualify corpus documents (adopted from Kridel, 2015)

FACTOR	MEANING
1. Authenticity	Is the document genuine?
2. Credibility	Is the document error-free?
3. Representativeness	Does the document follow a typical format?
4. Meaning	Does the document follow a typical format?

Kridel suggests to append each document's metadata with the four attributes (Table 5). He further proposes that the corpus size was not fixed or predetermined and that researchers may add documents to the corpus as needed to support the study objective. For further readings about document validation also refer to Scott (1990), Silverman (2015), Braun and Clarke (2006), Bowen (2009) and O'Leary (2014).

The document collection task is guided by the search question, i.e. how to identify policy relevant documents about the AMS with respect to the research objective, and a priori protocol (Table 6), which lays out the screening procedure for a positive search of policy-relevant documents from a defined universe of selected reputable data sources in the white-listed search domains. The protocol defines the bibliographic and meta-data screening criteria for inclusion or exclusion of an online index search, including the rules for deduplication and authenticity validation of the target batch. The subsequent Document Analysis method as proposed by Bowen (2009) and O'Leary (2014), is to analyse the documents in the corpus (by strati) and then to extract relevant text constructs and contextualise these to synthesise emerging themes in pursuit of

the research question. Corpus construction precedes document analysis, which is iterative process until the corpus is exhausted (indexed terms vocabulary) and the research task complete.

Table 6: A priori protocol for document search and section

CRITERION	INCLUSION	EXCLUSION
Publication Year	2001-2022	Studies outside this period
Search Language	English	Non-English Literature
Type of Literature	Peer-reviewed original research, conference proceedings, working papers, governmental reports	Non-scholarly, non-official or non-reputable sources
	Grey-literature including: reputable advisory reports and pertinent published articles and books	
Concepts	Policy relevant documents from original sources in context of Inclusive Sustainable Fiscal Policy (ISFP), including fiscal policy in context of pro-equity and pro-green and sustainable development outcomes	Documents without thematic relevance
Coverage	Document must cover Inequality, Climate Change issues in Sustainable Fiscal Policy context	Documents with only partial coverage
Relevance	Title and abstract relevant to the guiding question	Irrelevant titles and abstracts
Validation	Each source document validated for authenticity, credibility, representativeness and meaning (Kridel 2015, Scott 1990, etc.)	Exclude documents that are not genuine, are not free of errors, are atypical relative to subject or of insignificant source

Adopted from Weber & Chaiechi (2022)

The corpus plays an essential role in the objectivity of the research as it is the container of source documents serving as the study subject with respect to the research objective. Based on the specific acceptance criteria, as summarised in Table 6, each retrieved document from the positive online search is screened and amended with specific attributes that are extracted from the bibliographic and metadata analysis and used in the subsequent document classification task. The classification occurs with respect to the ontological structure of the corpus (strati) and additional requirements to minimise coverage and diversity bias in content and sources, with respect to the research objective. (Kanakia, et al., 2020; Webster et al., 2018, etc.). These acceptance criteria control the quality requirement of sourcing reputable and relevant documents for inclusion in the corpus (Silverman, 2015). The structural requirements work to control selection bias (Arksey and O'Malley, 2005), while balancing subject coverage and diversity (Pham, 2014) and thus, to maximise the representativeness of the corpus (Onwuegbuzie, 2007). According to Bauer (2000) structured corpora designs can significantly reduce the collection, selection and interpretation bias in documentary research. Conceptually, the derived corpus architecture (Figure 3) supports the research objective and entails a hierarchical process with two stages to a) identify documents for pre-screening at the universe level and b) cluster (classify) the selected documents from the universe into a corpus strati with the specified ontological structure matching the research objective. The universe constitutes prequalified documents that meet the general selection criteria for this study and thus, qualify for subsequent clustering. The three strati of the corpus (and a prequalified but unclassified bin of documents) correspond to the structure of the research question.

Basic corpus ontological structure

- "Sustainable fiscal policy" documents from select source repositories
- Stratified corpus with specified dimensions and rubrics holding prequalified and relevant documents
- Complementary bin with relevant documents that could not be classified into any of the strata bins

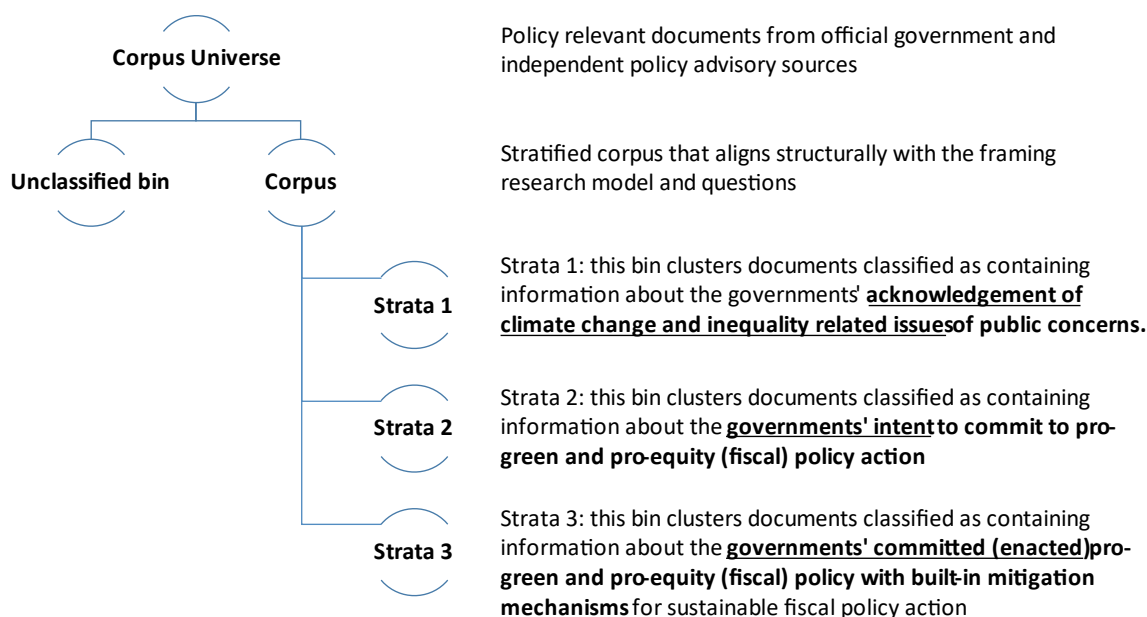


Figure 4: Corpus architecture and ontological structure

Source: authors

The purpose of the online search process is to produce (fill the quota of) the stratified corpus through a positive index search with structured queries that are crafted specifically to meet the individual syntax of the employed search engines. These were chosen based on their domain focus and coverage and included the following:

Search engines and domains

- Publicly accessible government repositories with pertinent policy information and documents (official policy repositories at federal, parliament, ministry, local governments levels, etc.)
- James Cook University (e-Library, permission-based index search of academic titles and databases)
- Google Scholar, Semantic Scholar, Scopus, Web of Science (free index searches of leading academic databases and journals)
- Subscription-based databases: Semantic Scholar, Web of Science,
- Alternative academic index search engines: RefSeek (publish and reference academic papers), BASE (Bielefeld Academic Search Engine), CORE (by supporting academic institutions)
- Microsoft Academic (was discontinued in January 2022)
- Public domain search engines for non-academic (grey literature): Google, Yahoo, DuckDuckGo, etc. (good subject coverage of grey literature, i.e. policy research and advisory)

Whether the online document search and retrieval task involves a manual, semi-assisted or fully automated process with technology tools (i.e., search bots, seeds and web crawlers) the queries must be carefully segregated with consideration to satisfying the mutually exclusive and collectively exhaustive principle of data collection and the given corpus ontology. Particularly, with respect to minimising coverage and diversity bias and controlling redundancy requirements of the corpus. The ontological framework to accommodate the stratified corpus, as shown in Table 7, is derived by structuring the search questions into

semantic segments which can be queried individually by search domain and repository, and the results logically combined afterwards.

Table 7: Ontological framework for stratified corpus (document search & classification)

ONTOLOGICAL FRAMEWORK	SEARCH BOUNDARY DIMENSIONS	SEARCH CRITERIA
(structured corpus building by domain specific concepts and categories)	(domain dimensions for definitions of positive search in qualified online sources)	(seed for positive search with prioritised keywords for structured queries specific to select databases and repositories)
CORPUS UNIVERSE Search sources to retrieve relevant documents for the corpus universe	Universe search boundaries, i.e. specify query terms to retrieve relevant documents that fit universe boundaries in these dimensions: - Geopolitical search criteria - Topical search criteria - Document sourcing criteria	Multilateral, i.e. at supra-regional policy coordination level Bilateral / bloc, i.e. at ASEAN / IEC policy coordination level Unilateral, i.e. at national / subnational policy integration level
CORPUS BY STRATA Screen corpus documents to select and classify documents for stratified corpus	Refine search boundaries to segment documents into stratified corpus	Add specific attributes and structure to domain queries for subsequent document classification by corpus strati.
Strata 1: search question part 1, research objective	- Narrow the universe search boundaries to qualify/classify documents for corpus strata 1	Classify policy documents in the universe for qualification and classification into corpus strata 1
Strata 2: search question part 2, research objective	- Narrow the universe search boundary definitions to qualify/classify documents for corpus strata 2	Classify policy documents in the universe for qualification and classification into corpus strata 2
Strata 3: search question part 3, research objective	- Narrow the universe search boundary definitions to qualify/classify documents for corpus strata 3	Classify policy documents in the universe for qualification and classification into corpus strata 3

A decision is to be made as to which online search engines should be employed to fill particular document classes of the corpus ontology. The resulting white-list of search domains may be derived from literature or a priori from knowledge. For each selected search engine a search strategy is required as derived from the overall data management strategy and the guiding search question to locate and retrieve the desired documents (batches) - and how to locate and screen relevant documents for inclusion in the universe. This involves a five-step process, which may be iterated until exhausted, i.e., until the strati quota of the corpus are met.

Five-step process to produce a balanced and structured (stratified) corpus:

- Step one: Structure the research question into semantic query constructs (the results of which can be logically combined match the research question), with specific search terms (keyword clusters) and logic which include the specifiers to select the specific geopolitical, b) topical, and c) sourcing dimensions of the guiding search question. Refer to APPENDIX A - Document Identification and Screening for an overview of the structured search queries for document identification and screening.

- Step two: Involves a pre-validation process of all admitted (downloaded) documents to the universe with respect to content and source coverage, diversity and redundancy requirements. (can be qualitative and/or statistical)
- Step three: Aims to cleanse the universe from unnecessary documents and control for redundancy. This step involves de-duplication of identical or incomplete documents across different sources and removal of similar versions of download documents, as well content and source balancing to control bias. This is achieved through a crude characterisation of all documents in the universe, i.e. text/document statistics across the bibliographic and metadata.
- Step four: Involves clustering the documents in the universe into batches that meet the stratified corpus ontology. This is achieved through document classification and again, this task may be carried out as a manual, semi-assisted or fully automated process.
- Step five: The final step of the corpus collation process involves validating and balancing each strata of the corpus and if necessary iterate the process to fill the strati quota before proceeding to the subsequent document analysis task.

A stratified corpus ontology and structured document collation process was to prevent possible reprocessing during the following document analysis phase due to an unbalanced sample with inherent source and content bias.

5.1 Techniques and Tools

Comparative Keyword Analysis (CKA) is a digital technique often used in qualitative online content analysis (Seale, C., et al., 2010; Seale, C., & Silverman, D. (1997). The technique describes a systematic approach to full-text indexing of documents with statistical word counts and frequencies of the unique indexed keywords in a flat (unstructured) vocabulary, along with the location references of the indexed terms (term vectors) i.e., relative position within the document's physical structure and the corpus. According to Seale (2012) the CKA procedure starts with running a word concordance on the text. The text is organised so that it reads not as narrative but as count of individual (indexed and de-stopped) keywords and their relative position in the document (term vector reference). Such mechanical computer search sorts the text in terms of its quantitative content without the researcher imposing any categories on the initial analysis. Note that apart from de-stopping the index, i.e. eliminating the stop words (like “the, a, at” etc.), no pre-processing is required at this stage, while grammatical or semantic decoding like stemming, disambiguation of synonyms andonyms, as thematic associations will be formed in subsequent steps. Forming thematical associations may be accomplished by conventional manual coding or technology-assisted techniques for identification, extraction, annotation, combining or decomposition of relevant text sequences and patterns within and across documents in the corpus (Fernández-Gómez, et al. 2011). Various technologies and techniques (application tools) exist, that may be combined in a human- or technology-assisted approach to documentary analysis (Kiyavitskaya 2006; Chýla 2012; etc). Specific technology options include the algorithmic and statistical tools (e.g., NVivo, etc.), and the human-assisted artificial intelligence (AI) applications (e.g., Rapid Miner, etc.) for trained and supervised learning and deep learning (AI/DL) approaches to automated text mining (TM) (Neves, 2021).

This study used several tools in combination, automating mechanical tasks, while leaving methodological space for human intervention where beneficial (Refer to Appendix-A and -B for a technical discussion of employed TM technology). Some of the tools used here, include Rapid Miner to model the pre-processing stage for corpus document collation and to identify and extract relevant text features (Slater, 2017), in combination with Nvivo for manual coding and contextualised themes that fit the research frame and objective, as proposed in Al-Khatib (1999). This step can be integrated with the online search process, through index- or sematic- search engines, so as to streamline the document retrieval and indexing process (Seale, 2012; 2010). Seale describes a mechanised approach to CKA-based coding, relying on statistical, algorithmic and AI-based technologies and tools for the auto-generation of themes in combination with

objective hierarchical clustering techniques. He concludes that CKA can be seen to assume a shared world of meaning that is accessible in the content of the texts. According to Seale it's not at all clear, however, that statements about the content tell us very much about producers' intentions or consumers' interpretations (Scott, 1990).

5.2 Corpus Evaluation

According to Yau (2014) the Latent Dirichlet Allocation (LDA) method is a popular and common modelling approach that is widely used for text mining and modelling of academic and grey literature topics in many fields. According to Yao (2009) topic models such as latent dirichlet allocation (LDA) (Blei et. al, 2003) have the ability to identify interpretable low dimensional components in very high dimensional data. Yao further, representing documents as topic distributions rather than bags of words reduces the effect of lexical variability while retaining the overall semantic structure of the corpus. Yau proposes an LDA-based method that can be used for single and multi-document summarisation of a corpus. Yau suggests further that, while supervised methods require training examples, which makes the method limited to predefined domains, unsupervised methods usually utilise clustering algorithms to find 'centred' sentences as the summary and thus make this method appropriate for document collection. Yao introduces the Sparse-LDA method as a more efficient, and computationally less expensive, method for text mining (as it was based on a more efficient implementation of the popular Gibbs sampling algorithm) - which is the algorithm also implemented in the popular RapidMiner (2022) software.

The specific corpus architecture for this study is discussed under Corpus Collation. Following Yao (2009) the researchers identified a set of crude corpus metrics to evaluate the informational quality and representativeness (Onwuegbuzie, 2007) of the corpus instance while balancing subject coverage and diversity (Pham, 2014) and controlling, through structured design (Bauer, 2000) for selection bias (Silverman, 2015; Arksey and O'Malley, 2005) prior to proceeding with the analysis task. According to Yao the following crude corpus metrics (Table 8) provide a robust characterisation of the corpus instance and indication of fitness and readiness for feature analysis.

Table 8: Corpus evaluation metrics

Qualitative and statistical measures of corpus constitution, content depth and constructs	Documents included in this repository - from positive index search and after screening	Document bibliographic data - author, title and publisher references	Document metadata - language, version/date, text length, structure, relevant keywords in title, header and abstract	Document crude syntactic and semantic text statistics - token frequency, recognised expressions and subject relevance	Corpus contextual and conceptual content analysis - relevant token entropy, clustering and exclusiveness of extracted features
Universe	643 html, pdf, txt - text only	all documents in corpus universe	all documents in corpus universe	all documents in corpus universe	all metrics in range
Corpus strata 1	217 html, pdf, txt - text only	all documents in corpus strata	all documents in corpus strata	all documents in corpus strata	all metrics in range
Corpus strata 2	92 html, pdf, txt - text only	all documents in corpus strata	all documents in corpus strata	all documents in corpus strata	all metrics in range
Corpus strata 3	48 html, pdf, txt - text only	all documents in corpus strata	all documents in corpus strata	all documents in corpus strata	all metrics in range
Corpus unclassified documents	286 html, pdf, txt, doc, xls, ppt, csv, rtf	all documents in corpus strata	all documents in corpus strata	all documents in corpus strata	all metrics in range

6 Analysis and Discussion

As shown in Table 8, this process yielded 643 documents that were selected into the universe. Of these, 357 were initially clustered into one of the 3 corpus strati, and 286 documents, which could not be grouped with sufficient confidence, were assigned to the unclassified bin for context analysis. In summary, the corpus metrics satisfy the epistemological criteria of the collated documents while meeting the ontological requirements of the stratified corpus and thus signify readiness to proceed with the analysis task. Please refer to APPENDIX B - Corpus Metrics for a summary of the main text mining metrics used to assess the fitness of the corpus universe (Yao, 2009), including a brief description of each metric, an acceptable range, computed value and assessment of the criteria for this study.

Using the described document and thematic analysis method each text in the corpus was dissected and examined in several passes to extract and catalogue the relevant text artifacts, i.e., constructs that consist of word formations and patterns (tokens), into an indexed vocabulary. Structured feature extraction involves a systematic process with procedures and techniques including tokenisation, removing unwanted stop-words and fragments, disambiguation, stemming and clustering of tokens by syntactic and semantic patterns. Post-processing the exposed tokens yielded an indexed vocabulary of some 48 thousand raw features, which are arranged to obtain frequency distributions and word vectors of each document, and of all documents in the corpus. The extracted raw feature set from the corpus also included meaningless tokens and general expressions of low relevance, which were removed at this stage to avoid thematic dilution. Figure 4 depicts the cleansed and pruned feature cloud, ready for subsequent classification of related features into thematically relevant and contextualised constructs to form emerging themes.



Figure 5: Thematic feature cloud

Source: authors, created using word-cloud generator

Next, the indexed and curated feature vocabulary was classified (segmented) into the corpus strati, an ontology, which mirrors the structure of the research question. For classification, the researchers used the LDA (Latent Dirichlet Allocation) method in an iterative optimisation process that had been looped until the satisfaction criteria was reached. With an unsupervised model the confusion metric (F-score) is not suitable since the true classes are unknown. Thus, the widely accepted perplexity (log-likelihood) metric was used for the model fitness metric, and the optimisation process was halted once the reached value of the strati exceeded that of the universe, indicating that the classified strati contained more specific constructs than the unclassified universe. Please refer to APPENDIX B for a brief discussion of this metric. Once the corpus was segmented into three strati that aligned with the conceptional model, and an additional bin for unclassifiable documents, the focus shifted to themes generation. The documents of each corpus strata were analysed in search of pertinent text artifacts (features) to be extracted for analysis and assignment to the fitting policy themes. Synthesising the inductively derived text features from the analysed policy documents in the corpus into contextualised policy themes, followed a thematic aggregation process of summarising, decomposing, segregating or concatenating semantic relations that formed meaningful and contextualised constructs with respect to the research question. The emerging policy themes with the mapped features were then assigned to the best fitting rubrics (cells in Table 9) of the conceptional model, for further dimensional analysis and interpretation. Redundant and non-fitting themes were reprocessed or eliminated to improve the model fit. Table 12 (Appendix C) depicts the synthesised policy themes and assignment to the conceptional rubrics.

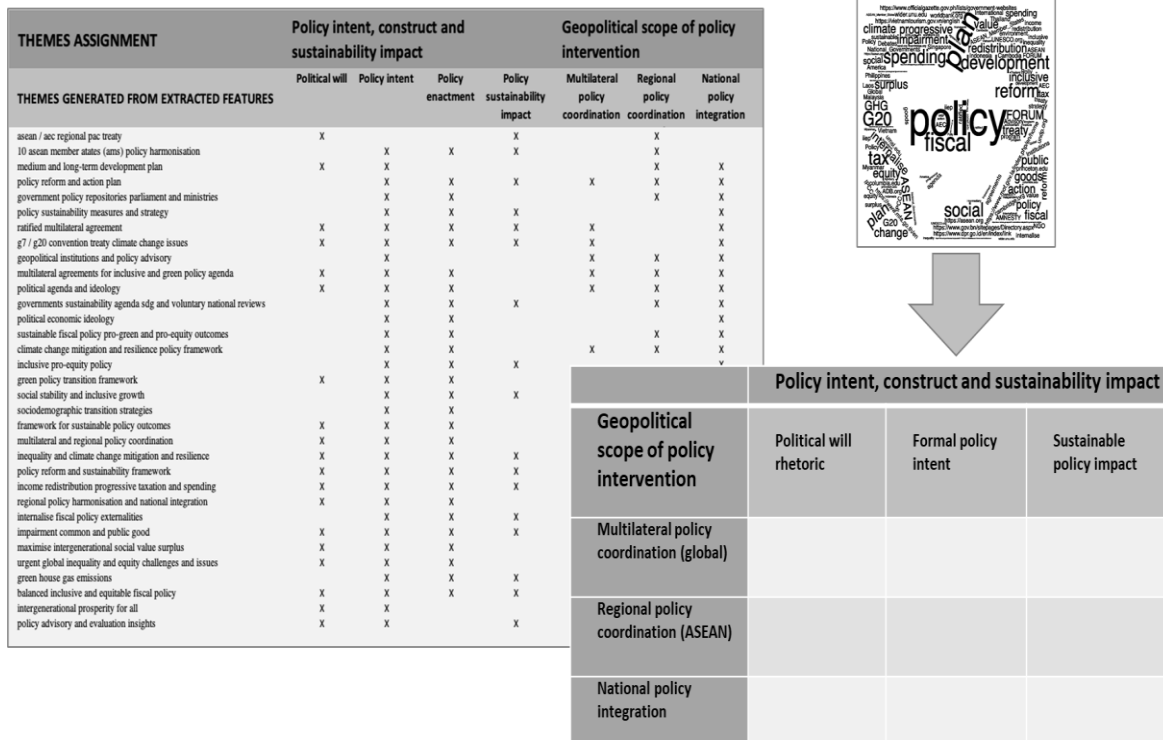


Figure 6: Themes analysis and assignment
Source: authors

As visualised in Figure 6 the framing conceptional model, now filled with the curated themes from the prior document analysis, which were derived by mapping the contextualised features from extracted text artifacts in the corpus, were associated with the thematic rubrics of the corresponding model dimensions for subsequent interpretation.

6.1 Interpreting the Model

Interpreting the conceptional model (Table 9) involved two passes to hierarchically condense the documentary evidence from the contextualised policy themes in the rubrics. The rubrics of each dimensions provided the premise to conclude the findings of the study and in turn, answer the research questions for each AMS. Whereas the Political Will Rhetoric and Formal Policy Intent rubrics were predominantly supported by qualitative evidence from the examined government policy and pertinent advisory documents, the Sustainable Policy Impact rubric also drew from recent macro-economic data to assess the actual policy impact. In addition to interpreting the documentary evidence of this study, specific macro variables and trends were examined, including national indicators of Inequality and CO2 emissions, to provide further evidence of the sustainability impact each AMS has achieved with enacted fiscal policies in its country.

Table 9: Conceptual model for interpretation

Geopolitical scope of policy intervention	Policy intent, construct and sustainability impact		
	Political will and rhetoric	Formal policy intent	Sustainable policy impact
Multilateral policy coordination (global)	<i>all AMS other than LAO PDR</i>	<i>only ID</i>	<i>SG**, ID**</i>
Regional policy coordination (ASEAN)	<i>all AMS</i>	<i>SG, ID, TH, VN, MY</i>	<i>all AMS moderate, but right trend</i>
National policy integration (sustainable FP)	<i>SG, ID, TH**, MY**, VT**</i>	<i>SG, ID, TH, other AMS**</i>	<i>ID, TH, VN, KH**, SG**</i>

10 ASEAN Member States (AMS) include: Brunei (BN), Cambodia (KH), Indonesia (ID), LAO PDR (LA), Malaysia (MY), Myanmar (MM), Philippines (PH), Singapore (SG), Thailand (TH), Vietnam (VN), source ASEAN / AEC, 2022.

** Stared countries did not provide definitive information for conclusive results

6.1.1 Political Will and Rhetoric

Documentary evidence suggests that at the global level, all ten AMS governments with the exception of Lao PDR engage publicly in pro-green and pro-equity rhetoric, with Indonesia transparently reporting through the Voluntary National Reviews (VNR, United Nations Sustainable Development) on progress versus committed inclusive policy and climate change mitigation goals. At the regional level, all ASEAN member states committed to initiatives supporting pro-green and pro-equity fiscal outcomes. However, at the policy level, only Singapore and Indonesia produced evidence of policy action and transparent reporting toward inclusive and sustainable policy outcomes, with Thailand, Vietnam and Malaysia following this lead.

6.1.2 Formal Policy Intent

Based on their Medium and Long-term Development Plans, documentary evidence suggested that again, Indonesia takes the lead by publicly and transparently committing to pro-green and pro-equity goals and policy action at all three intervention levels, followed by Singapore, Thailand, Vietnam and Malaysia who

committed to increasingly sustainable fiscal policy outcomes with regional alignment and support. However, national reporting lacks details and transparency. Other AMS governments did not produce documentary evidence of commitments to specific pro-green and pro-equity policy goals and action, neither transparent reporting of such achievements.

6.1.3 Sustainable policy impact

The macro indicators and trends by the World Bank (database, 2018) prior to the COVID-19 pandemic, show population growth data among the ASEAN Member States had stabilised around 1% p.a., with LAO PDR, Cambodia, Philippines and Malaysia growing between 1.3 and 1.5% p.a., Indonesia, Brunei and Vietnam between 1.1 and 0.9% and Myanmar, Singapore and Thailand between 0.6 and 0.3% p.a. In the same year the AMS reported stable GDP per-capita growth between 3% and 6% p.a., other than Brunei with a negative growth of -0.9% p.a.

At the same time, the GINI coefficient of the Philippines was at the highest level but declining, Indonesia's and Thailand's were lower with a clear downward trend, Vietnam's increased slightly and the other ASEAN countries did not report. The same year, the CO₂ emissions trends (metric tons per capita) among the AMS were about stagnant, with Myanmar, Cambodia, Philippines, Indonesia, Vietnam and Lao PDR below 3t, Thailand of 3.7t, Malaysia of 7.1t, and Singapore of 8.4t - other than Brunei, which showed increasing emission trends at a much higher level of 15.8t CO₂ per capita. The picture is different for CO₂ emissions reported by kg of PPP-\$ of GDP, with all AMS reporting stagnant emissions between 0.36 and 0.09 kg/\$. Finally, we examined the Central Government debt levels, as % of GDP, in the year leading up to 2018, when Singapore reported 110% with increasing trend, Malaysia, Philippines, Thailand and Indonesia between 52% and 27% of GDP with stagnating or slightly decreasing debt levels, other than Indonesia's that was slightly increasing. Yet, it should be noted that the average government debt ratio in the ASEAN is significantly lower than that of the more developed nations, while inequality is higher and comparable emissions are lower. Based on this analysis, it appears that in the ASEAN, the level of CO₂ emissions and inequality, as externalities of the government's fiscal conduct, is determined primarily by regime ideology, and to a lesser degree by the countries' socio-demographics and cultural heritage - more so, than by macro-economic factors.

Therefore, given the mostly stagnating or slightly decreasing trends in GINI coefficients and CO₂ emissions (per GDP) in most AMS, and the analysed literature evidence from policy-relevant documents, this study concludes that the AMS governments are aware of the urgency and posing threats of the climate change and inequality issues to their nations and indeed the planet. Furthermore, Indonesia, through discretionary add-on policies, is leading the region in terms of policy action (and voluntary reporting) to restrict deforestation, field burns, improve pollution controls and environmental preservation in mitigating climate change and inequality threats. While governments have engaged in unilateral and national policy discussions toward pro-green and pro-equity fiscal policy outcomes, in testing the research hypothesis, this study could not find documentary evidence of any of the ASEAN governments systematically implementing inclusive sustainable fiscal policies with internalised mitigation mechanisms - by design, rather than by discretionary policy add-ons. Furthermore, the near-stationarity in the macro-trends of inequality and emissions suggest that there is significant potential for policy improvements for all AMS with respect to achieving the aspired pro-green and pro-equity sustainable fiscal policy outcomes at the national, regional and global levels.

7 Conclusion

This study set out to examine the impact of sustainable fiscal policy and programs by the ASEAN Member States (AMS) in response to the pressing inequality and climate change issues - and the intervention mechanism and level i.e. multilateral policy coordination versus local integration.

Qualitative document analysis offers a suitable method for structured policy research. Especially, in combination with semi-assisted/automated text-mining techniques to identify, retrieve, screen and classify policy-relevant documents from a vast universe of government and independent policy relevant sources. The research objective was to synthesise extracted text artifacts from a stratified corpus into emerging policy themes to interpret the results of the document analysis.

Literature evidence confirmed that the AMS governments have recognised the urgency of climate change and inequality issues and acknowledged the need for sustainable fiscal policy - a new fiscal quality to achieve more balanced and inclusive policy outcomes, simultaneously to socio-economic stability and sustainable development and growth across generations. The study finds that the AMS are engaging in multilateral discussions at the global and regional levels, which, as of yet, lack in substance, formal commitment and transparency. However, this research could not produce evidence of enacted or planned fiscal policy and programs with internalised mechanisms for systematic corrective and/or preventive pro-green and pro-equity policy action - and thus, the hypothesis was rejected. However, given their public acknowledgement - it remains to be hoped - that these governments will develop a sense of urgency and form the political will necessary to solicit a public mandate to upgrade their policy frameworks, to achieve an intergenerational net social surplus, and so prevent dramatic socio-economic and political instability in the region.

8 Contributions and Limitations

These findings have relevance to independent policy advisors and analysts, policymakers and governmental authorities, and the private sector as a public partner, who are concerned with policy advisory, design, implementation and evaluation. Particularly, the findings of this study suggest that while the ASEAN governments have engaged in discussions at the policy and multilateral levels about mitigation of these fiscal externalities, they appear to lack clarity in their mandate to act decisively while missing the necessary experience in devising effective mitigation measures to make their fiscal policies more inclusive and sustainable.

8.1 Limitations & Suggestions

Studies analysing vast amounts of policy documents with advanced semi-assisted technology we found that automating the document search & retrieval, document qualification, classification and crude analysis tasks may save enormous time, provide added methodological consistency and reduce process bias. However, providing methodological room for human intervention especially at the design, advanced analysis and interpretation stages of the research is paramount to capture the latent and interpretative elements of the research. Advanced statistical and neural text mining and analysis technology (tools) should “only” play the role of supporting techniques embedded in methods and be well-integrated in the overall methodology of the research, in support of the framing conceptual model and research objectives.

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Appendix A - Document Identification and Screening

The aim is to retrieve policy relevant documents from select (whitelisted) search engines and domains through segmented search queries. A framework is presented to guide the development of structured queries for the execution of the document search to identify and retrieve matching text-only documents (of types: html, pdf, doc, xls, ppt, rtf, csv, txt) for the corpus (universe), as discussed under Corpus Collation. The accompanying guiding search question and document screening criteria (Weber and Chaiechi, 2022) are also discussed in that section.

Queries may be limited in length and complexity and thus require a structured approach to decomposing complex queries into multiple (smaller) parts for execution, while re-combining/filtering the partial search results through Boolean logic, as shown in Table 10. Queries contain three types of content specifiers (clustered keywords and supporting logic to define the a) geopolitical, b) topical and c) sourcing criteria for the search. The selected documents will be screened and if acceptable uploaded into the universe for further classification into the three strata of the corpus. Once complete the stratified corpus will provide for focused document analysis to identify and extract syntactic or semantic patterns and relevant features in the corpus. Features may then related to generate and interpret contextualised constructs and concepts within the given paradigm to answer the research questions.

Table 10: Structured query formation for domain search, document identification and screening

Policy relevant content segmented by topical dimensions to stratify corpus based on research objective	Independent sources with policy relevant document a) Academic policy research centres b) Private sector policy advisory c) Globally funded geopolitical institutions d) Policy relevant NGOs and activists	Government controlled sources by individual governments and official bodies a) Official government policy relevant communication and document sources (at the federal, parliament, congress, ministry, agency or local levels) b) Medium and Long-term Development Plans by individual government c) Geopolitical government fora and official representatives
Strata 1: official <u>acknowledgement</u> by governments and official representative sources of <u>inequality and climate change issues of public concern</u> arising from non-sustainable fiscal policy.	<ul style="list-style-type: none"> • Global Institutions: UNDP, UNFCCC/IPCCC, UNU/Wider, OECD, WORLBank, IMF, ADB, UNESCO • Policy Analysis & Research: Cambridge, Cornell, Columbia, Princeton, UMSL, IIEP, WEF, McKinsey, C7-G7 Policy Analysis • NGO's: Oxfam (International), Amnesty International • other organisations publishing reputable policy relevant documents 	Unilateral policy coordination level: G7 (G8), G20 <ul style="list-style-type: none"> • Official unilateral declarations, ratified agreements and treaties by individual governments
Strata 2: <i>official information about intention to act</i> and implementing sustainable fiscal policy to achieve	<ul style="list-style-type: none"> • Unofficial / non-government confirmed communication about 	Regional policy coordination level: ASEAN / AEC

<p>balanced, inclusive and sustainable fiscal policy outcomes and intergenerational prosperity for all.</p>	<p>government's intention to commit to pro-green and pro-equity policy will not be considered in this study as such intention must come from official government sources</p>	<ul style="list-style-type: none"> • Official declarations, ratified agreements and treaties at the regional/PAC level, i.e. 10 AMS • Regional (PAC level) Medium & Long-term Development Plans • National (PAC level) Medium & Long-term Development Plans
<p>Strata 3: official information about <i>committed (enacted) policy with built-in mechanisms for effective mitigation of inequality and climate change externalities as part of sustainable fiscal policy framework with pro-equity and pro-green outcomes</i></p>	<ul style="list-style-type: none"> • n/a, as only local governments can commit to policy 	<p>National / local policy integration level: 10 ASEAN Member States (AMS)</p> <ul style="list-style-type: none"> • official announcements and communication by individual national governments about committed and funded (<u>enacted</u>) <u>policy with inequality and climate change mitigation goals, respectively by:</u> Indonesia (ID), Malaysia (MY), Philippines (PH), Singapore (SG), Thailand (TH), Brunei (BN), Vietnam (VN), Lao PDR (LA), Myanmar / Burma (MM), Cambodia (KA)

The document search process involves a positive index search with structured terms (clustered keywords and logic) that define the geopolitical, topical and sourcing search boundaries and specific aspects pertaining to the individual strata of the corpus. This process can be performed manually with a browser, semi-assisted using tools like NVivo in combinations with an e-Library e.g. Zotero, or as automated process using a web crawler, like Octoparse, with seed arguments to identify the documents and retrieve the bibliographic and metadata, while a separate text mining tool, e.g. RapidMiner, retrieves and processes the documents as discussed under Corpus Collation. Particularly for advanced document analysis a mixed mode combining all three the approaches may suit the research process most effectively.

Once the structured search queries have been developed and tested with the target search engine the search process is executed. Now, the focus shifts to the search results of the returned document batches, which include bibliographic and metadata about each document in the batch for screening and selection to the universe, as discussed above. As more partial document batches are appended to the universe the crude corpus statistics can be used to gauge the level of completeness of the process. It may be necessary to restrict or expand certain queries with a particular search engine and domain to achieve the required result. The five-step approach below has produced useful results to fill all bins of the corpus with policy relevant documents pertaining to the research objective.

Five steps to optimise the queries in a structured search for best results:

1. Define initial seed terms for each structured query (include three specifiers for boundaries)
2. Restrict, augment the search terms, segment or concatenate queries as needed (test multiple versions of the queries to max. F-score, confusion matrix)
3. Screen and documents based on document source, bibliographic and metadata and if selection criteria are met, add screening attributes to each document and admit to the universe for subsequent processing
4. Characterise universe based on document attributes (crude text-statistics including document entropy, token frequency and length, uniform and corpus distributions and effective words, and exclusivity measures, etc. Yao, 2009).
5. Prune the universe from duplicates and similar document versions to control redundancy, while balancing coverage and diversity of the corpus universe for further processing.

Appendix B - Corpus Metrics

Table 11 - Corpus Metrics, summarises the text mining metrics of the corpus universe in the context of the research objective, including a brief description of each metric, an acceptable range, the computed value and assessment state for this study. This assessment is based on the guide to interpreting text metrics derived using the LDA (Latent Dirichlet Allocation) method, as published in LALLET (MACHINE Learning for Language Toolkit) by HUMASS AMHERST (Yao, 2009).

Table 11: Corpus Metrics

METRIC	MEANING	Acceptable Range	Instance	Decision
Avg. Tokens in Topics	This metric measures the (average) number of word tokens assigned to identified topic clusters	> .30%	47%	Acceptable
Avg. Document Entropy	This metric calculates the probability of documents given a topic, as the frequency of a topic over all documents, and normalised to get a distribution and its entropy. A topic with low entropy (ie high predictability) will be concentrated in a few documents, while a topic with higher entropy will be spread evenly over many documents.	< .5 (for universe)	.42	Acceptable
Avg. Word Length	The average length, in characters, of the displayed top words, as proxy for topic specificity. Longer words often carry more specific meaning. Therefore, if a topic consists of many short words - it's probably not a very specific.	5-15	7.6	Acceptable
Avg. Perplexity	Perplexity is one of the intrinsic evaluation metric, and is widely used for language model evaluation. It captures how surprised a model is of new data it has not seen before, and is measured as the normalised log-likelihood of a held-out test set. Focussing on the log-likelihood part, you can think of the perplexity metric as measuring	n/a	Strati relative to universe	Acceptable
Avg. Coherence	This metric measures whether the words in a topic tend to co-occur together. Large negative values indicate words that don't co-occur often; values closer to zero indicate that words tend to co-occur more often.	> -.7	-.54	Acceptable
Uniform_dist.	This metric measures the distance from a topic's distribution over words to a uniform distribution. Larger values indicate more specificity.	> 3.0	4.2	Acceptable
Corpus_dist	This metric measures how far a topic is from the overall distribution of words in the corpus, essentially what you would get if you "trained" a model with a topic. A greater distance means the topic is more distinct, a	> 3	3.5 (untrained)	Acceptable

	smaller distance means that the topic is more similar to the corpus distribution.			
Effective number of words	This metric is equivalent to the effective number of parties metric in Political Science. Larger numbers indicate more specificity. It is similar to distance from the uniform distribution, but produces a value that may be more interpretable.	n/a	n/a	not assessed
Rank 1 documents	A content-full topic will occur in relatively few documents, but when it does, it will produce a lot of tokens. A "background" topic will occur in many documents and have a high overall token count, but never produce many tokens in any single document. This metric counts the frequency at which a given topic is the single most frequent topic in a document.	n/a	n/a	not assessed
Exclusivity	This metric measures the extent to which the top words of a topic do not appear as top words in other topics, i.e., the extent to which its top words are 'exclusive.' Of the top words in the topic, how often do they occur in other topics? Exclusivity correlates (negatively) with token count, but also indicates vaguer, more general topics.	n/a	n/a	not assessed

As in unsupervised classifiers where the true classes are unknown the confusion matrix (F-score) is an unsuitable metric for goodness of model fit (Tijare, 2020; Ullah, 2016). According to Hofmann (2001) statistical objective functions like coherence and perplexity (log-likelihood) may provide a general yardstick for fit of model assessment in text learning and information retrieval. Kapadia (2019) suggests that perplexity is one of the intrinsic evaluation metrics and is widely used for language model evaluation. For this classification model we use the perplexity (log-likelihood) metric as a relative scores between the unclassified universe and the classified corpus strati.

In summary, the achieved corpus metrics satisfy the epistemological criteria of the collated documents as well meeting the ontological requirements of the stratified corpus and thus signify readiness to proceed to the analysis task.

Appendix C - Themes synthesis and mapping to conceptional rubrics

As shown in Table 12 the policy themes were derived from contextualising the extracted text artifacts from the corpus, i.e. assigning these text features to the emerging policy themes, which were then curated and mapped to the rubrics of the conceptional model.

Table 12: Themes analysis and assignment

THEMES ASSIGNMENT	Policy intent, construct and sustainability impact				Geopolitical scope of policy intervention		
	Political will	Policy intent	Policy enactment	Policy sustainability impact	Multilateral policy coordination	Regional policy coordination	National policy integration
asean / aec regional pac treaty	X			X		X	
10 asean member atates (ams) policy harmonisation		X	X	X		X	
medium and long-term development plan	X	X				X	X
policy reform and action plan		X	X	X	X	X	X
government policy repositories parliament and ministries		X	X			X	X
policy sustainability measures and strategy		X	X	X			X
ratified multilateral agreement	X	X	X	X	X		X
g7 / g20 convention treaty climate change issues	X	X	X	X	X		X
geopolitical institutions and policy advisory		X			X	X	X
multilateral agreements for inclusive and green policy agenda	X	X	X		X	X	X
political agenda and ideology	X	X	X		X	X	X
governments sustainability agenda sdg and voluntary national reviews		X	X	X		X	X
political economic ideology		X	X				X
sustainable fiscal policy pro-green and pro-equity outcomes		X	X			X	X
climate change mitigation and resilience policy framework		X	X		X	X	X
inclusive pro-equity policy		X	X	X			X
green policy transition framework	X	X	X		X	X	X
social stability and inclusive growth		X	X	X		X	X
sociodemographic transition strategies		X	X			X	X
framework for sustainable policy outcomes	X	X	X				X
multilateral and regional policy coordination	X	X	X		X	X	X
inequality and climate change mitigation and resilience	X	X	X	X			X
policy reform and sustainability framework	X	X	X	X	X	X	X
income redistribution progressive taxation and spending	X	X	X	X			X
regional policy harmonisation and national integration	X	X	X			X	X
internalise fiscal policy externalities		X	X	X			X
impairment common and public good	X	X	X	X			X
maximise intergenerational social value surplus	X	X	X		X		X
urgent global inequality and equity challenges and issues	X	X	X		X	X	X
green house gas emissions		X	X	X	X	X	X
balanced inclusive and equitable fiscal policy	X	X	X	X			X
intergenerational prosperity for all	X	X					X
policy advisory and evaluation insights	X	X		X		X	X

Themes were derived from contextualised features and semantic patterns