Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

What Counts as Climate Spending? Expenditure Attribution and Accountability in Viet Nam's Public Budgets

Vu Duyen

duyenvtm@thanhdong.edu.vn

Thanh Dong University https://orcid.org/0009-0007-2792-7315

Phan Duong

Thanh Dong University https://orcid.org/0009-0005-7062-6468

Le Huyen

Thanh Dong University https://orcid.org/0009-0004-0325-0678

Le Minh

Thanh Dong University https://orcid.org/0009-0007-2208-9957

Research Article

Keywords: climate budget tagging, expenditure attribution, accounting valuation, public financial accountability, valuation-pathway recoverability

Posted Date: November 3rd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11596097/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: The authors declare no competing interests.

Abstract

Climate-budget totals depend on recorded public-budget amounts and on decisions about which amounts count towards climate objectives. This documentary study examines those decisions in Viet Nam's Climate Public Expenditure and Investment Review (CPEIR), focusing on three provinces over 2010–2020, with 29 CPEIR localities providing context. It distinguishes eligibility, graded climate relevance and proportional attribution, and assesses the documentary recoverability of the relationships that support reported climate-related amounts. Formal rules and selected aggregates are retraceable; project-level applications and some reported relationships are only partially so. The study identifies an accounting-valuation configuration in which attribution changes the climate-related representation of a pre-existing monetary budget amount rather than its original value. It also specifies an upstream public-finance accountability question: can readers reconstruct how an amount came to count as climate-related? The claims concern reporting and documentation, not expenditure effectiveness or accounting misstatement.

INTRODUCTION

For budget offices and external fiscal reviewers, public reports of climate-related expenditure appear to offer a clear monetary account of government action. Yet the sum depends on an antecedent judgement: which budget items qualify as climate-related, and what proportion of items serving several purposes should be included? Their underlying monetary amounts have already been recorded in a budget or expenditure system. Climate-budget accounting does not necessarily establish a new price; it makes a policy-specific determination about an existing monetary amount. Consequently, the precision of a reported aggregate may conceal decisions over eligibility, relevance and weighting. The issue is both an accounting-valuation question—what does an attributed amount represent?—and a public financial-accountability question—can an external reader retrace how that amount was produced?

Public-budget research has examined environmental appropriations and institutional drivers of fiscal transparency (Duggan, Carr, & Yan, 2022; Deng, Xu, & Wang, 2025). Studies of government climate narratives and public-sector environmental reporting in Financial Accountability & Management have explored how environmental concerns are represented to stakeholders (Edgar & Stewart, 2025; Cappellieri, Lombardi, Pizzo, & Vinciguerra, 2025). This article addresses a different point in the reporting chain: before climate-related amounts are explained or disclosed, monetary budget items have to be qualified and attributed to the climate account. A change in the amount classified as climate-related need not entail a change in the underlying spending or planned allocation.

Valuation research shows how categorization, judgement and calculation render objects comparable and consequential (Kornberger, Justesen, Madsen, & Mouritsen, 2015; Plante, Free, & Andon, 2021). Accounting studies likewise show how qualification and calculation shape monetary representations (Fırtın, 2023; Jeacle, 2022, 2023). Public-sector scholarship already recognises the performative implications of calculative practices and measurement (Brorström, 2023; Vosselman & De Loo, 2023).

This literature establishes that classification matters; it does not follow that every instance of classification constitutes a new theoretical contribution. Here the more specific problem is how a budget amount that exists before climate assessment becomes a different, policy-attributable monetary representation.

Climate-budget tagging has long used relevance bands, expenditure components and weighting conventions to estimate the climate-related share of expenditure (Naumoski, Upadhya, & Zdraveva, 2022; International Monetary Fund [IMF], 2024). Neither tagging nor fractional attribution is claimed as a new technique. The analytical interest lies in the distinction between the monetary object entering the process and the monetary consequence of its qualification. Environmental-accounting research has demonstrated the constitutive role of classifications and indicators (Sobkowiak & Cuckston, 2025); the present study asks how this operates when what is being classified is already a monetary budget amount.

Viet Nam's Climate Public Expenditure and Investment Review (CPEIR) makes this process unusually visible. Its documented sequence identifies potentially relevant budget items, places them within the Typology for Climate Change Response Expenditure (TCCRE), distinguishes adaptation, mitigation and combined purposes, and applies a graded relevance factor to the annual budget amount (Ministry of Planning and Investment [MPI] & United Nations Development Programme [UNDP], 2022, pp. 39–44). Within the Climate Change Delivery (CCD) pillar, CCD2 ('Resilient society') encompasses city resilience, transport, waste management and disaster-risk tasks. It is thus a useful category for examining heterogeneous activities represented within a common accounting frame, without presuming that their monetary amounts measure resilience outcomes.

Accountability scholarship cautions against equating access to reports with the ability to hold organizations to account (Ferry, Eckersley, & Zakaria, 2015; de Fine Licht, 2019). Climate-finance traceability is often concerned with following labelled resources downstream to uses and impacts (Raeni, Thomson, & Frandsen, 2022), while government reporting research has highlighted the contested boundaries of recognition and presentation (Ellwood & Brown, 2026). The issue considered here is upstream: once a climate-related amount is published, how far can a budget reviewer or external reader work backwards through the classification, relevance judgement, attributable share and aggregation relationship on which it rests? This concern is narrower than transparency or auditability in general (Power, 2026) and does not equate calculative information with comprehensive accountability (Adebayo, Ackers, Erin, & Enwereji, 2026).

The analysis focuses on the longitudinal CPEIR folios for An Giang, Bac Ninh and Quang Nam, covering 2010–2020. Documentary information from the wider CPEIR set of 29 localities—which includes those three provinces—is used as context rather than as an independent validation sample. The public methodology identifies annual outturn amounts through 2019 but uses planned budget amounts for 2020; both are pre-existing monetary inputs to climate attribution, but they are not interchangeable measures of realized spending (MPI & UNDP, 2022, pp. 38–39). The research question is: how are

existing monetary budget amounts made eligible and proportionally attributable to climate objectives, and to what extent can the documentary pathway supporting those representations be retraced? The study does not estimate climate or resilience outcomes.

The article offers two bounded contributions. First, it characterises a form of accounting valuation in which qualification and graded relevance determine the policy-attributable share of an already-monetized budget item. The novelty claimed is the configuration of the monetary object and its attributed representation, not the invention of a weighting technique or the general observation that classification is consequential. Second, it specifies valuation-pathway recoverability as a documentary property of such representations: the extent to which a reader can reconstruct the upstream links that account for an attributed amount. For budget offices and external reviewers, this is an accountability-relevant condition for scrutinizing claims about climate-related public finance, not proof that an allocation is accurate, compliant or effective.

THEORETICAL POSITIONING

Accounting valuation: qualifying and evaluating what counts

Process-oriented valuation scholarship locates value in practices that qualify, compare and calculate objects, rather than treating it as an invariant property (Kornberger et al., 2015). Categories shape what can be compared and how it is evaluated (Plante, Free, & Andon, 2021); accounting can embed such distinctions in monetary representations (Jeacle, 2022, 2023). In Financial Accountability & Management, Brorström (2023) investigates how calculative practices mediate the implementation of sustainability strategy in a city organization, while Vosselman and De Loo (2023) offer a conceptual, performativist account of how performance measurement conditions what comes to count. Neither study examines proportional climate-budget attribution in the CPEIR setting. Their work is used as a theoretical precedent, not as empirical validation of the attribution method examined here.

An analytical distinction between qualification and evaluation is useful. Qualification identifies the attributes and boundaries through which an object enters a particular calculative domain, while evaluation differentiates the degree to which a qualified object possesses a relevant attribute (Fırtın, 2023). These operations may interact in practice; the distinction is not intended as a claim about the sequence of individual officials' decisions. Commensuration, in turn, involves representing heterogeneous items on a common metric (Espeland & Stevens, 1998; Samiolo, 2012). In the climate-budget setting, the key question is not merely whether items become comparable in currency, but how the policy-specific portion of each amount is established before aggregation.

Accounting decisions become monetarily consequential where classifications and evaluative conventions condition the figures that can be reported. Jeacle (2022, 2023) demonstrates this in historical practices of compensation; Ellwood and Brown (2026) show how governmental financial

reporting also involves contested recognition, measurement and reporting boundaries. The setting examined here differs in one respect: the annual budget item has a monetary amount before its climate relevance is determined. The resulting policy-attributable figure is therefore an attributed component of an existing amount, rather than a newly priced object.

We distinguish three analytical moments. Qualification determines inclusion within the climate-related accounting field; evaluation determines the degree of relevance within that field; and calculation translates the evaluation into an attributable monetary share. For an eligible annual item, the documented CPEIR method multiplies its recorded budget amount by the midpoint associated with the assessed relevance band (MPI & UNDP, 2022, pp. 43–44). That arithmetic is established practice. What merits theoretical attention is the resulting distinction between the source budget amount and the amount recognized under a policy-specific accounting description.

From qualification to the differential attribution of expenditure

Budget amounts are already denominated in currency before the CPEIR climate assessment. The valuation object is therefore not a previously unpriced ecological outcome: it is a monetary annual project amount, sourced from an outturn or a plan. Qualification allows that amount into a climate-accounting domain; graded relevance determines the fraction entering the policy-specific representation. Thus an identical source amount could yield a different attributed amount under a different documented relevance judgement, without the source budget amount changing. This is a conditional conceptual implication of the method, not an observed counterfactual test.

The procedure must be distinguished from ordinary cost allocation. Both involve fractions, but the present claim is narrower: the proportion is grounded in an evaluation of the item's relationship to a public-policy objective, and it determines what the reported climate budget purports to represent. Naumoski et al. (2022) and IMF (2024) establish that this form of proportional tagging already exists. The contribution is to identify the policy-specific monetary recognition that follows from qualification and evaluative attribution, and to investigate the supporting documentary pathway. The term ‘valuation’ here denotes that policy-specific judgement and monetary recognition; it does not imply an estimate of climate benefits or an assessment of spending quality.

From valuation outputs to the recoverability of the valuation pathway

Evidence and traceability have long been central to auditing and accountability. Ferry et al. (2015) examine the uneasy relationship between transparency and accountability in English local government, while de Fine Licht (2019) analyses the role of transparency in auditing. Ferry, Midgley, Murphie, and Sandford (2023) examine auditing and the constitution of governable territorial spaces in England; their focus is not project-level climate expenditure attribution. Power (2026) similarly draws attention to the evolving evidentiary conditions of auditability. These debates provide the context for documentary

recoverability, but do not themselves establish the narrower question about how the attributed portion of an existing budget amount was produced.

Once a policy-attributed amount appears in a report, a reverse question can be asked. Can the reader locate the source amount, establish why it was admitted to the climate account, identify the attributed purpose and relevance judgement, ascertain the weighting convention, and retrace the link to the total? This reverse inquiry differs from downstream tracking of funds to activities (Raeni et al., 2022). It is concerned with the documentary provenance of the reported monetary classification, not whether the funded activity achieved the intended climate objective.

We call this property valuation-pathway recoverability: the extent to which public documentation enables a reader to reconstruct the source-to-representation links that produced a particular climate-attributed amount. For this study, a relationship is treated as retraceable when the relevant source components, definition and calculation or crosswalk can be identified; it is only partially retraceable when a reported amount or rule is visible but an essential input or linkage is unavailable. These are qualitative assessments of specified documentary relationships, not a new quantitative index or a finding about every project. Recoverability may aid scrutiny but cannot on its own establish accuracy, compliance, use by stakeholders or accountable outcomes (Adebayo et al., 2026).

Analytical framework

Four linked dimensions guide the documentary reanalysis. Qualification examines the review boundary, pillar and task assignment. Graded relevance examines climate purpose and proportional attribution of an eligible amount. Aggregation and translation examine how attributed amounts are grouped across task-, pillar- and policy-facing representations. Recoverability asks which links can be independently reconstructed backwards from a reported figure. The first three concern the production of a climate-related monetary representation; the fourth concerns its evidentiary inspectability. Figure 1 depicts both directions. The dimensions organize a second-order reading of existing source-linked coding; they were not the original first-order coding categories.

METHOD

Research design and analytical object

This article undertakes a documentary reanalysis of the classificatory and monetary representations published through Viet Nam's CPEIR. The analytical unit is the documentary relationship between an existing annual budget amount and its subsequent climate-related representation, rather than the performance or environmental effects of a project. No interviews, field observations or confidential administrative decisions were available for this study. It therefore reconstructs formal rules, published amounts, selected arithmetic relationships and documentation gaps; it cannot infer the informal deliberations or actual motives of officials applying the rules. The approach is consistent with public-

sector accountability research that draws careful inferences from secondary documentary records (Ferry, Midgley, Murphie, & Sandford, 2023), while retaining a narrower object of analysis.

Documentary corpus and case selection

Three focal cases—An Giang, Bac Ninh and Quang Nam—have CPEIR long-horizon folios covering 2010–2020 (MPI & UNDP, 2022, Annex 3). They were selected for documentary continuity across years, not as representative or outcome-extreme provinces. The later CPEIR covers 29 selected localities in 2016–2020, including these same three; Annex 2 reports the other 26. The 29-locality material is used to identify the larger reporting architecture and illustrative contextual patterns, not to construct a statistically independent test of the three cases. The research does not generalize to all Vietnamese provinces.

The long-horizon design organizes 33 province-year records across three provinces and 11 years. These are reconstruction units, not independent observations in an inferential sample. Crucially, the CPEIR collected annual outturn project amounts up to 2019 and planned expenditure for 2020, while the three extended folios combine material from the earlier and later reviews (MPI & UNDP, 2022, pp. 38–39, 50–52). We therefore use ‘budget amount’ as the umbrella term and avoid treating planned expenditure as if it had been disbursed. Source materials cover selected investment and recurrent expenditures, including domestic and official development assistance (ODA), within the CPEIR boundary.

The retained second-order reanalysis matrix contains 26 source-linked evidence records. Its rows organize documentary claims, whereas the 33 province-years organize chronological reconstruction. Neither is presented as a sampling frame, an intercoder-reliability dataset or grounds for statistical generalization.

First-order documentary coding and evidence governance

First-order coding preceded the valuation-oriented interpretation presented here. It recorded scope and eligibility, CPEIR typology and CCD2 task, adaptation/mitigation/combined purpose, relevance and attributed amount, aggregate reporting, source provenance, missing information, reconciliation tension and permissible claim status. Source locations were documented before a category or interpretation was attached. The sequence was documentary item → source location → evidence-supported code → inference ceiling. This protocol did not independently recode the complete CPEIR project-year universe, and the published annex folios are not substitutes for that raw database. No double-coding or inter-coder reliability statistic is claimed.

Second-order analytical reorganization

The current study reorganises those earlier records into the four analytical dimensions in Fig. 1. Scope and task entries inform qualification; purpose, relevance and attributed amounts inform evaluative

attribution; total and policy mappings inform aggregation; and source links, omitted components and reconciliation discrepancies inform recoverability. This is an explicit second-order crosswalk, not a claim that the revised theoretical categories emerged inductively from a new round of field coding.

Original reported amounts and source locations were retained separately from author calculations and second-order interpretations. Contradictory or insufficient evidence was not made to fit the argument. In particular, where the public corpus did not supply project-level relevance assessments, source-to-total crosswalks or a metric denominator, that absence was coded as a documentary limit rather than replaced through conjecture. Table 1 identifies the distinct evidential layers.

Table 1
Documentary corpus and distinct analytical functions

Evidence layer	Coverage / documentary unit	Role and inference boundary
CPEIR methodology	2022 report, TCCRE, five relevance bands and midpoint conventions	Reconstructs formal eligibility and attribution rules; does not verify every application
Three long-horizon folios	An Giang, Bac Ninh, Quang Nam; 2010–2020; 33 province-years	Supports longitudinal documentary reconstruction, not inferential sampling
Second-order matrix	26 source-linked documentary evidence records	Crosswalk to four analytical dimensions; distinct from 33 province-years
Wider CPEIR context	29 localities including the three focal cases; 26 others in Annex 2	Places findings in context; not an independent robustness sample or national population

Source: Authors' documentary design based on MPI and UNDP (2022).

Quantitative reconstruction and reconciliation

The numeric work distinguishes source-reported entries, direct arithmetic on stated components and reconstructed relationships. A calculated value was retained alongside, not in place of, its original source amount and source location; missing or non-tabulated values were never converted to zero. Two checks ask whether separately reported amounts sum to a total under the same apparent reporting frame. Their interpretation requires attention to period, price basis, scope and denominator. For the numerical examples retained below, the manuscript reproduces the authors' documented reconciliation results; the complete project-year database is not available in the public report.

The purpose reconciliation was defined as:

(Adaptation + Mitigation + A/M) − reported total

where A/M denotes the mixed adaptation-and-mitigation component. The pillar reconciliation was defined as:

(ST + PG + CCD) − reported total

where ST is Scientific, Technological and Societal Capacity; PG is Policy and Governance; and CCD is Climate Change Delivery. The denominator for each reported relative gap is the relevant source-reported total. To direct source review, the study used an internal screening convention: PASS for an absolute relative gap of 0.1% or less, CHECK for above 0.1% to 1.0%, and FLAG for above 1.0%. These are not audit materiality thresholds or assurance standards.

A non-zero difference prompts scrutiny of source definitions and documentary connections; it is not by itself evidence of error or non-compliance. The recovery assessment is similarly relational: a stated rule may be accessible while its use in a particular project is not; a total may be reproducible while the project-level pathway is not. We label selected links recoverable when components and operations are available, partially recoverable when at least one necessary relation is unavailable, and unresolved where competing reported figures cannot be reconciled from the visible record. These descriptors apply to the reported examples rather than to an exhaustive scored dataset.

Inference boundaries

Inference is confined to publicly available rules and reporting relationships. The study does not observe individual officials' choices, verify all project-level weights, perform a financial audit, or identify causal effects on adaptation or resilience. Public documentation cannot establish the accuracy of decisions that it does not reveal; conversely, a missing link cannot establish fraud or deliberate opacity. The 2010–2019 outturn and 2020 planned-budget distinction, incomplete project-year transparency and the overlap between the three cases and the 29-locality context further delimit conclusions. No result is presented as representative of all provinces.

FINDINGS

Eligibility boundaries in climate-budget reporting

For public budget reporting, the CPEIR procedure screens potentially climate-relevant annual budget items and classifies them through the TCCRE. The hierarchy distinguishes PG, ST and Climate Change Delivery (CCD) pillars; within CCD, category CCD2 (‘Resilient society’) covers public health/social service (CCD2.1), city resilience (CCD2.2), transport (CCD2.3), waste management (CCD2.4), disaster-specific infrastructure (CCD2.5) and disaster-risk reduction (CCD2.6) (MPI & UNDP, 2022, pp. 40–42). These are heterogeneous public tasks. The classification identifies what can enter a policy-specific account but does not measure the resilience produced by an item.

The author-derived case reconstructions assign 27.5% of CCD-task monetary representations to CCD2 in Bac Ninh, 55.0% in Quang Nam and 51.7% in An Giang (Table 2). The ratios use the sums of the annual-mean CCD2.1-CCD2.6 task figures as numerators (VND 141.00, 484.10 and 295.39 billion per year, respectively), divided by the annual-mean amounts for all CCD tasks (VND 513.08, 880.20 and 571.85 billion). The values are derived from Fig. 5 in the corresponding provincial CPEIR folios (Annexes 3.1, 3.2 and 3.3, PDF p. 8). They are not shares of total climate-related expenditure and should not be

interpreted as measures of resilience, relative effectiveness or realized policy outcomes. Because the Fig. 5 values are themselves rounded, the reported shares are displayed to one decimal place.

Table 2
Selected long-horizon monetary reconstructions

Province	2010–2020 climate-budget total (VND bn)	CCD2 / all CCD tasks (%)	CCD2 annual mean (VND bn)	All CCD tasks annual mean (VND bn)
Bac Ninh	5,921.8	27.5	141.00	513.08
Quang Nam	9,713.4	55.0	484.10	880.20
An Giang	7,026.5	51.7	295.39	571.85

Source: Authors' arithmetic reconstruction of Annexes 3.1–3.3, Table 1 (PDF p. 3) and Fig. 5 (PDF p. 8). CCD2 annual means and denominator figures are based on the displayed task-level means; the one-decimal shares are rounded. The three 2010–2020 totals combine outturn for 2010–2019 with planned budget for 2020 and do not measure outcomes.

CCD2 is analytically useful because it groups substantively different activities under one named category. In particular, the original report itself notes a coding tension: locating transport (CCD2.3) inside the adaptation-oriented CCD2 category can obscure transport interventions with mitigation or mixed purposes (MPI & UNDP, 2022, p. 42). This is direct evidence that categorical location can shape the subsequent climate-purpose account; it is not evidence that any particular local transport project was miscoded.

Relevance weighting and the reported climate share

The CPEIR method assesses an eligible item's climate relevance in five bands: complete (100%), high (75–99%), medium (50–74%), low (25–49%) and marginal (1–24%). The midpoint of the applicable band is multiplied by the total annual project budget to estimate the climate-attributable amount (MPI & UNDP, 2022, pp. 43–44). Thus a pre-existing monetary amount enters the report under a policy-specific description only to the extent that it is qualified and weighted. For illustrative purposes, a hypothetical VND 100 billion item assigned a 62% relevance factor would produce VND 62 billion of attributed climate budget; this is an arithmetical illustration, not an observed CPEIR project.

This distinction matters because the resulting figure is neither a new price for the original project nor a direct estimate of its climate benefit. It is an accounting representation produced by applying an evaluative convention to an existing monetary budget item. Changing the convention or its documented application could change the attributed amount without changing that item. The CPEIR method is therefore an empirical setting for examining policy-specific monetary recognition rather than evidence for a new weighting method.

The public report does not disclose the complete application-level dataset for all 33 province-years. The study cannot reapply the bands independently to every underlying project or infer how particular officials exercised judgement where source records are missing. The defensible finding is that the rules define graded attribution and that the attributed share is documented for selected reporting relationships, not that the rules were uniformly applied to every project.

From item-level attribution to public-budget totals

The retained long-horizon reconstructions yield aggregate climate-related amounts of VND 5,921.8 billion in Bac Ninh, VND 9,713.4 billion in Quang Nam and VND 7,026.5 billion in An Giang (Table 2). These reported totals provide financial-reporting context, not an effectiveness metric. Because each 11-year series combines historical outturn with a 2020 planned amount, they are best understood as cumulative reported climate-budget representations within the CPEIR scope, not eleven years of uniformly realized expenditures.

The further step from item-level attribution to a public total is not purely a matter of arithmetic. The same attributed amounts can be organised by CPEIR task, policy purpose, broad pillar or national-policy mapping. The CPEIR report explicitly discusses the coding of transport within adaptation-oriented CCD2 and the difficulty this creates when re-categorizing a budget against national policies (MPI & UNDP, 2022, pp. 42, 66–67). This is a documented classification-to-reporting tension; the present data do not establish an end-to-end migration of a specific individual project through every reporting frame.

Accordingly, the aggregation claim is limited: changing classificatory frames requires mappings that may not be one-to-one, so the published total does not by itself display all the component judgements on which it rests. The question for accountability is whether a reader can recover the applicable crosswalk and inputs, not whether aggregation necessarily destroys information.

Retracing published climate-budget figures

Recoverability is uneven rather than absent. The report supplies the formal TCCRE taxonomy, adaptation/mitigation distinctions, relevance intervals and midpoint rule (MPI & UNDP, 2022, pp. 40–44). Some aggregates and case shares can be derived from source-linked reported components using explicit arithmetic, illustrating rule-level and selected total-level recoverability. However, publicly visible summaries do not provide a complete item-by-item trace from source budget amount through every attribution decision to each published total.

At the individual-application level, the reconstruction is conditional. When the original project amount, task and purpose, assigned relevance and attributed value are all identifiable, the reported link can be inspected; when one or more is absent, the analyst cannot verify that step. This does not establish

inconsistent application or an error. It distinguishes the documented existence of a rule from the public recoverability of its application.

Selected component-to-total calculations provide more specific contrasts. For Bac Ninh in 2018, the reported Table 1 total was VND 1,152.615 billion; its purpose components (adaptation 1,067.771, mitigation 0, combined A/M 18.963) sum to 1,086.734, a difference of -65.881 (-5.72%) billion (Annex 3.1, PDF pp. 3 and 6, Tables 1 and 3). The pillar components (ST 20.167, PG 3.797, CCD 1,063.144) sum to 1,087.108, a difference of -65.507 (-5.68%) billion (Annex 3.1, PDF pp. 3 and 7, Tables 1 and 4). These differences exceed the study's 1% research-review screening cutoff; their causes cannot be established from the visible aggregation relationships and neither gap is evidence of misstatement.

Table 3
Selected valuation-pathway recoverability contrasts

Reverse link or relationship	Visible documentary support / result	Inference ceiling
Formal qualification and weighting	TCCRE pillars, purpose coding, five relevance categories and midpoint rule are specified	Recoverable as formal rules; not proof of uniform application
Selected case aggregates and CCD2 shares	Reported components allow selected author-derived totals and shares to be reconstructed	Recoverability applies only to the specified source-linked relationships
Individual project-year attribution	Complete itemised annual assessments are unavailable across parts of the public record	Conditional / partial; neither a complete audit nor evidence of error
Bac Ninh 2018: purpose-to-total	Purpose: 1,067.771 + 0 + 18.963–1,152.615 = -65.881 VND bn (-5.72%); Annex 3.1, PDF pp. 3, 6 (Tables 1, 3).	FLAG for source review; unresolved, not an audit misstatement
Bac Ninh 2018: pillar-to-total	Pillars: 20.167 + 3.797 + 1,063.144–1,152.615 = -65.507 VND bn (-5.68%); Annex 3.1, PDF pp. 3, 7 (Tables 1, 4).	FLAG for source review; unresolved, not an audit misstatement
An Giang: ODA percentage	Published ODA measure 37.08% (Annex 3.3, PDF p.10); Table 1 ODA lines / annual totals = 2,452.7 / 7,026.5 = 34.91% (PDF p.3), with unproven denominator equivalence.	Partially recoverable. The denominator and scope of the published 37.08% measure are not independently established; no misstatement is inferred.

Note: Screening labels are internal review aids: PASS ≤ 0.1% absolute relative difference, CHECK > 0.1–1.0%, FLAG > 1.0%. They are not audit tolerance or materiality standards. Numerical results are retained from the source-linked reanalysis; unresolved gaps are not interpreted as accounting errors.

For An Giang, the folio reports an ODA measure of 37.08% (Annex 3.3, PDF p. 10), whereas adding Table 1 ODA lines and dividing by all annual Table 1 totals yields 2,452.7 / 7,026.5 = 34.91% (PDF p. 3). Because the published 37.08% metric does not have an unambiguously identified denominator and aggregation scope in the available record, the figures cannot be assumed to measure the same construct. The 37.08% value is therefore reported, but not independently reconstructed.

Across these examples, formal rules are comparatively accessible, selected aggregates are reconstructable, project-level applications are document-dependent, and specified reconciliations or metric definitions cannot always be closed from the public corpus. Table 3 records the visible basis, the reverse link that can or cannot be reconstructed, and the inference ceiling. The finding does not imply manipulation, deliberate opacity, nationally generalisable deficiencies or that aggregation is intrinsically responsible for loss of traceability.

DISCUSSION

Classification and public-budget reporting boundaries

The first finding illustrates the qualifying work through which a budget item enters the climate-related account. Classification is already known to shape valuation (Plante et al., 2021; Jeacle, 2023); Brorström (2023) shows the organizational roles of calculative practices in sustainability strategy implementation, while Vosselman and De Loo (2023) develop a conceptual argument about the performativity of performance measurement. This study does not treat such arguments as new, nor does it infer organizational effects of CPEIR classifications without actor-level evidence. Rather, qualification defines the eligible field for a subsequent judgement about how much of an existing monetary amount will be reported against a policy objective. The CCD2 example shows how a broad accounting category can hold heterogeneous governmental tasks without itself determining any climate outcome.

Policy-attributable amounts and underlying budget values

The principal implication of the second finding concerns the object and monetary consequence of valuation. Where valuation research examines how practices help make objects calculable and monetarily consequential (Fırtın, 2023; Jeacle, 2022, 2023), here the object is already a budget amount. Climate relevance determines a policy-attributable part of that amount. The novelty is not fractional weighting—already established in climate-budget methods (Naumoski et al., 2022; IMF, 2024)—but the recognition that accounting valuation can take the form of policy-specific monetary re-description rather than price creation. Brorström (2023) and Vosselman and De Loo (2023) demonstrate broader constitutive calculative processes; this study delimits a particular configuration: qualification followed by relevance-based attribution of an existing monetary record. The inference is conceptual and case-grounded, not a claim that the approach is unique to Viet Nam or that it changed officials' behaviour.

Aggregation and reporting provenance

Aggregation permits heterogeneous attributed amounts to appear within common monetary reports (Espeland & Stevens, 1998; Robson, 1992; Samiolo, 2012), but their comparability depends on prior classifications and weights. The third finding bridges the valuation contribution and the accountability question: a policy aggregate can be numerically precise while concealing the operations that determined the inclusion and attributed share of its components. The documented transport categorization issue gives one concrete reason why the mapping from task codes to purpose and policy frames merits

scrutiny. It does not prove that an individual amount was double-counted or that an entire series is unreliable.

Documentary traceability for external scrutiny

The fourth finding identifies a bounded upstream question alongside existing accountability and audit debates. Ferry et al. (2015) demonstrate that transparency and accountability need not be aligned in English local government, and de Fine Licht (2019) explores how auditing relates to transparency. Davidyan and Waymire (2025) examine management-letter disclosures in local government audit settings. These works caution against treating a published document as evidence of accountability achieved; they do not directly test climate-budget attribution. The present question is not simply whether information is publicly available, nor where climate-labelled resources go after allocation (Raeni et al., 2022). It asks whether a reported amount can be traced backwards to the evaluative conventions that made it count as climate-related. This distinct object of tracing is the paper's second contribution; the general importance of evidence trails is not presented as new.

The evidence supports a layered rather than binary conclusion. At the methodological level, the rules and relevance ranges are readable; at the aggregate level, some arithmetic can be reproduced; at the project-application level, missing component records constrain independent checking; and at the metric level, the Bac Ninh and An Giang relationships demonstrate more specific documentary discontinuities. Such variation matters because users may observe a precise public number without being able to assess all the policy-attribution judgements from which it arose.

Valuation-pathway recoverability accordingly identifies a bounded feature of an account: how much of the preceding qualification, assessment, weighting and aggregation can be retraced from its published documentary basis. It is not an index of overall financial-reporting quality, a compliance test, an accountability outcome or evidence that missing records conceal misconduct. In keeping with the conditional understanding of public reporting developed by Ellwood and Brown (2026) and the distinction between calculative information and wider accountability stressed by Adebayo et al. (2026), greater recoverability would make a claim more inspectable, not necessarily more correct or more consequential.

IMPLICATIONS, LIMITATIONS AND FUTURE RESEARCH

Implications for budget offices and independent fiscal reviewers

For public financial management, the case raises a practical reporting-design question. A climate-budget total would be more readily inspectable if supporting documentation linked the original annual amount and financial-source category, task and purpose code, assigned relevance band and midpoint, attributed monetary amount, and its route into reported aggregates. Such a record would not establish that the

classification was appropriate or that the investment succeeded; it would enable the relevant judgement to be scrutinised.

The distinction between upstream and downstream scrutiny is consequential. The former asks how a budget amount became climate-related for reporting purposes; the latter asks how the labelled funds were allocated, used and translated into activities or outcomes. Both can matter to public financial accountability, but the present study supplies evidence only about the upstream documentary relationship. It does not demonstrate that better documentation causes better accountability or climate outcomes.

For budget offices and independent fiscal reviewers, the immediate implication is to retain source identifiers and calculation provenance across reports, especially where a single TCCRE task maps imperfectly onto different policy categories. The recommendation is an implication derived from the documentary gaps, not an evaluated reform intervention. Public finance users should also preserve the distinction between realized outturn and a planned annual budget when comparing climate-attributed totals.

Limitations

The first limitation is source access: this documentary design excludes interviews, observation and confidential decision records. It therefore cannot assess informal judgement, motives or bargaining. A second limitation is granularity: public annex folios are not the complete project-year dataset, so the study does not independently verify the weight assigned to each individual expenditure. An unavailable link is not evidence of a misstatement.

Third, evidence is asymmetrical. The formal taxonomy and midpoint method are more accessible than full application and aggregation paths. The 26 second-order evidence records and 33 province-year reconstruction units are not a nationally representative sample. The three focal provinces are nested in the broader set of 29 CPEIR localities, which cannot serve as an independent validation population.

Fourth, recoverability is an inspection criterion, not a measurement of correctness, assurance, transparency or realized accountability. More visible documentation might improve external interrogation of a claim, but this analysis does not test whether readers use it or whether the original decisions were compliant or effective.

Fifth, 2020 values are planned budget expenditure, whereas earlier annual project amounts are reported as outturns in the CPEIR methodology; the combined 2010–2020 figures must therefore not be described as a continuous realized-expenditure series. Neither CCD2 shares nor attributed totals measure climate adaptation, resilience or cost-effectiveness.

Finally, the chronology of analysis matters. Original coding and claim-status rules preceded the four-dimension theoretical crosswalk used in this paper. The categories were not prospectively pre-registered

for the primary documentary coding, and the second-order interpretation retains unresolved and limiting evidence rather than implying a fresh independent project-level review.

Future research

Actor-focused research could use interviews and observation to examine how classifications and relevance judgements are negotiated in practice. Such evidence would allow the organizational processes hidden from the public documentation to be studied without imputing intentions from the final report.

A fuller project-level audit trail could follow original budgets, coded task and purpose, assessed relevance, assigned factor and attributed amount through to publication. This would allow the frequency and locations of documentary discontinuity to be assessed rather than inferring them from selected public examples.

Comparative work could investigate how different countries' climate budget tagging methods construct attributed shares and preserve provenance. Such studies might clarify which conceptual features travel across accounting systems and which depend on national classification frameworks.

Finally, research could connect attributed budgets with independently observed climate outcomes. Such designs require outcome measures and identification strategies beyond the documentary evidence used here; a climate-attributed budget amount cannot itself serve as a measure of realized resilience.

CONCLUSION

Reporting climate-related public finance requires an antecedent accounting decision: how much of an existing monetary budget amount should count towards a climate objective? The CPEIR evidence from three Vietnamese provinces shows how eligibility, purpose, relevance weighting and aggregation produce climate-attributed figures. It also shows that recoverability varies: rules and selected aggregates can be reconstructed from public documents, while some project-level applications and metric-to-total relationships cannot be retraced with the same confidence.

The first contribution is a bounded account of policy-specific accounting valuation. Relevance and qualification determine the climate-attributable share of an already-monetized budget item; they do not establish a new project price or quantify its climate benefits. The second contribution is valuation-pathway recoverability: the extent to which published evidence enables readers to reconstruct the upstream decisions behind a reported amount. This distinction identifies a specific object for public-finance and fiscal-accountability scrutiny without asserting that retraceability itself constitutes accountable government.

The findings concern documentary reporting relationships, not officials' motives, project compliance, climate outcomes or national representativeness. Their significance is that a precisely stated climate-

budget total need not have an equally retraceable derivation. Accounting for climate spending entails accounting for how the monetary amount came to be counted in the first place.

Declarations

DATA AVAILABILITY STATEMENT

The CPEIR methodology and provincial folios are publicly available via the MPI and UNDP (2022) publication. The public materials do not contain the full underlying administrative project-year ledger or a complete set of individual relevance assessments. No independently verified, downloadable first-order coding file or 26-row second-order reanalysis matrix is deposited with this manuscript. Any statement about the availability of author-generated worksheets or coding records must be confirmed by the authors against the original files and applicable sharing permissions before submission.

References

1. Adebayo A, Ackers B, Erin O, Enwereji PC (2026) The development of the biological diversity protocol and its effectiveness in discharging accountability for nature, species and biodiversity. Acc Auditing Account J 39:375–406. https://doi.org/10.1108/AAAJ-01-2025-7640
2. Brorström S (2023) The sustainability shift: The role of calculative practices in strategy implementation. Financial Account Manage 39:3–17. https://doi.org/10.1111/faam.12289
3. Cappellieri F, Lombardi R, Pizzo M, Vinciguerra R (2025) Environmental reporting in public sector organizations: A review of literature for the future paths of research. Financial Account Manage 41:159–199. https://doi.org/10.1111/faam.12411
4. Davidyan JY, Waymire TR (2025) Exploring local government auditor management letter practices: Linking transparency and accountability. Financial Account Manage 41:720–737. https://doi.org/10.1111/faam.70002
5. de Fine Licht J (2019) The role of transparency in auditing. Financial Account Manage 35:233–245. https://doi.org/10.1111/faam.12193
6. Deng Q, Xu J, Wang X (2025) The role of auditing institutions in advancing fiscal transparency: An empirical assessment of global practice. Public Budg Finance. https://doi.org/10.1111/pbaf.70009
7. Duggan AR, Carr DA, Yan W (2022) Conditional impacts of political and fiscal factors on state environmental budgets. Public Budg Finance 42:127–147. https://doi.org/10.1111/pbaf.12308
8. Edgar VC, Stewart E (2025) Making sense of climate change in central government annual reports and accounts: A comparative case study between the United Kingdom and Norway. *Financial Accountability & Management*, *41*, 116–135. https://doi.org/10.1111/faam.12409
9. Ellwood S, Brown R (2026) Government financial reporting: A study of nested controversy. Financial Account Manage 42:461–478. https://doi.org/10.1111/faam.70032

10. Espeland WN, Stevens ML (1998) Commensuration as a social process. Ann Rev Sociol 24:313–343. https://doi.org/10.1146/annurev.soc.24.1.313
11. Ferry L, Eckersley P, Zakaria Z (2015) Accountability and transparency in English local government: Moving from 'matching parts' to 'awkward couple'? Financial Account Manage 31:345–361. https://doi.org/10.1111/faam.12060
12. Ferry L, Midgley H, Murphie A, Sandford M (2023) Auditing governable space—A study of place-based accountability in England. Financial Account Manage 39:772–789. https://doi.org/10.1111/faam.12321
13. Fırtın CE (2023) Accountingisation of social care: The multiplicity and embeddedness of calculations and valuations in costing and caring practices. Qualitative Res Acc Manage 20:144–166. https://doi.org/10.1108/QRAM-03-2021-0048
14. International Monetary Fund (2024) Seychelles: Technical assistance report—Developing a framework for climate budget tagging (IMF Technical Assistance Report No. 2024/082). https://doi.org/10.5089/9798400288562.019
15. Jeacle I (2022) The gendered nature of valuation: Valuing life in the Titanic compensation claims process. Acc Organ Soc 99:101309. https://doi.org/10.1016/j.aos.2021.101309
16. Jeacle I (2023) Calculating a life: Classification, valuation and compensation in the British abolition of slavery. Acc Auditing Account J 36:1002–1031. https://doi.org/10.1108/AAAJ-01-2021-5087
17. Kornberger M, Justesen L, Madsen AK, Mouritsen J (2015) Introduction: Making things valuable. In: Kornberger M, Justesen L, Madsen AK, Mouritsen J (eds) Making things valuable. Oxford University Press, pp 1–17. https://doi.org/10.1093/acprof:oso/9780198712282.003.0001
18. Ministry of Planning and Investment, & United Nations Development Programme (2022) Climate public expenditure and investment review of Viet Nam. https://www.undp.org/vietnam/publications/climate-public-expenditure-and-investment-review-viet-nam
19. Naumoski A, Upadhya M, Zdraveva P (2022) Estimating public climate finance using objective-based cost component approach. Economic Development—Journal Inst Economics—Skopje 24:126–147. https://doi.org/10.55302/ED22244126n
20. Plante M, Free C, Andon P (2021) Making artworks valuable: Categorisation and modes of valuation work. Acc Organ Soc 91:101155. https://doi.org/10.1016/j.aos.2020.101155
21. Power M (2026) Auditability in the digital age. Int J Auditing 30:597–603. https://doi.org/10.1111/ijau.70038
22. Raeni R, Thomson I, Frandsen A-C (2022) Mobilising Islamic funds for climate actions: From transparency to traceability. Social Environ Account J 42:38–62. https://doi.org/10.1080/0969160X.2022.2066553
23. Robson K (1992) Accounting numbers as 'inscription': Action at a distance and the development of accounting. Acc Organ Soc 17:685–708. https://doi.org/10.1016/0361-3682(92)90019-O

24. Samiolo R (2012) Commensuration and styles of reasoning: Venice, cost-benefit, and the defence of place. Acc Organ Soc 37:382–402. https://doi.org/10.1016/j.aos.2012.04.001
25. Sobkowiak M, Cuckston T (2025) Solidity and fluidity in the quantification of nature recovery: Wild bird indicators in the UK. Acc Auditing Account J 38:1499–1517. https://doi.org/10.1108/AAAJ-05-2024-7088
26. Vosselman E, De Loo I (2023) Turning performance measurement on its head: From the measurement of performance to the performativity of measuring. Financial Account Manage 39:554–568. https://doi.org/10.1111/faam.12374

Figures

Accounting valuation and the documentary reverse inquiry

Existing monetary budget item	Qualification and climate purpose	Graded relevance and attribution	Aggregation and policy-facing report
Annual amount (outturn through 2019; plan for 2020)	TCCRE eligibility / CCD task / A, M or A/M	Band, midpoint factor and climate-attributable share	Task, pillar, year and policy aggregate

Forward: existing amount → qualified item → attributable share → aggregate. Reverse: from reported total towards source amount, rules, weights and component links. The reverse inquiry does not presume that every project can be followed end to end.

Figure 1

Accounting valuation and the documentary reverse inquiry