Unlocking the Potential of SEEA for Disaster-Related Statistics

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Contents

Acronyms and abbreviations

CEPA	Classification of Environmental Protection Activities
CES	Conference of European Statisticians
COFOG	Classification of the Functions of Government
DELTA Resilience	Disaster & Hazardous Events, Losses and Damages Tracking & Analysis
DRR	Disaster Risk Reduction
DRRE	DRR Expenditure (account)
DRSF	Disaster-related Statistics Framework (UNESCAP)
EPEA	Environmental Protection Expenditure Accounts
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
FRAME-ECO	Framework for Assessing Climate Change and Disaster-related Losses of Biodiversity and Ecosystem Services
G-DRSF	Global Disaster-Related Statistics Framework
GDP	Gross Domestic Product
IAEG-DRS	Inter-Agency and Expert Group on Disaster-related Statistics
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IUCN GET	International Union for Conservation of Nature Global Ecosystem Typology
PDNAs	Post-Disaster Needs Assessments
SEEA	System of Environmental-Economic Accounting
SEEA-CF	SEEA Central Framework
SEEA-EA	SEEA Ecosystem Accounting
SNA	System of National Accounts
SROCC	Special Report on the Ocean and Cryosphere in a Changing Climate (IPCC)
UKHSA	United Kingdom Health Security Agency
UNCEEA	United Nations Committee of Experts on Environmental-Economic Accounting
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
UNSD	United Nations Statistics Division
UNU-EHS	United Nations University Institute for Environment and Human Security
WMO	World Meteorological Organization

Executive summary

The *Global Disaster-Related Statistics Framework (G-DRSF)*, endorsed by the United Nations Statistical Commission in March 2026, is the first globally agreed conceptual framework for disaster-related statistics. It explicitly identifies the S*ystem of Environmental-Economic Accounting (SEEA)* as one of the statistical frameworks relevant to its implementation. This paper examines how SEEA – encompassing both the SEEA Central Framework (SEEA-CF) and SEEA Ecosystem Accounting (SEEA-EA) – can strengthen the production, interpretation and policy relevance of disaster-related statistics under the G-DRSF.

Rather than proposing a new accounting system, the paper argues that much of the information called for by the G-DRSF can be organised within SEEA's existing accounts. Using a "sudoku" metaphor, it shows how G-DRSF data on disaster risk (hazard, exposure, vulnerability and coping capacity), impacts from hazardous events and disasters, and disaster risk reduction (DRR) activity and expenditure can be inserted into SEEA cells that already exist, governed by rules that already exist, rather than requiring a new, parallel accounting structure.

Building on this conceptual case, the paper reviews concrete applications across the G-DRSF's three measurement areas – disaster risk, disaster impacts, and DRR activity and expenditure – illustrated with three boxed examples: a set of disaster-risk indicators that depend on SEEA data, and a two-part mountain-forest case study showing how ecosystems can be both a protective asset against hazards and a casualty of them.

At the same time, the paper identifies methodological gaps that still need to be closed, including the recording and valuation of disaster losses, the valuation of ecosystem-service impacts, the statistical treatment of exposure and vulnerability, the relationship between accounting and probabilistic disaster risk models, and the coordination of DRR expenditure with the emerging climate change expenditure module in the ongoing update of the SEEA-CF. These gaps are clustered into near-, medium- and longer-term priorities.

The ongoing SEEA-CF update process offers a timely, largely ready-made vehicle for addressing several near-term priorities. The paper sets out a wider set of practical recommendations, including: engaging directly with the specific SEEA-CF update issues most relevant to disasters; embedding SEEA linkages explicitly in G-DRSF and its implementation guidance; opening a technical dialogue with UNDRR's new DELTA Resilience system; encouraging more granular, hazard- and sub-nationally disaggregated SEEA compilation; and pursuing a small number of concrete pilot studies.

The paper is prepared as a discussion paper for the London Group on Environmental-Economic Accounting and closes with a set of questions inviting the Group's guidance on the approach and recommendations set out above.

1 Introduction

Hazardous events and disasters are increasing in frequency, severity and complexity, driven by climate change, environmental degradation, rapid urbanization and the growing exposure of people, assets and ecosystems to hazards. (IPCC, 2022)

Reducing disaster risk and accounting comprehensively for the impacts of disasters therefore requires statistics that capture not only their human and economic dimensions, but also their environmental dimensions — including changes in ecosystem extent, condition and services, and the depletion or degradation of natural capital that itself shapes future risk. Disaster-related statistics have historically concentrated on human and direct economic impacts, while the environmental and ecosystem dimensions of disaster risk and loss have remained comparatively underdeveloped, both conceptually and in statistical practice.

This gap has narrowed with the endorsement of the *Global Disaster-Related Statistics Framework (G-DRSF*) (IAEG-DRS, 2026a) by the United Nations Statistical Commission at its 57th session in March 2026. The G-DRSF establishes, for the first time, a globally agreed conceptual framework for disaster-related statistics, structured around three interrelated measurement areas — disaster risk; the occurrence and impacts of hazardous events and disasters; and disaster risk reduction (DRR) activity and expenditure — and it explicitly identifies the *System of Environmental-Economic Accounting (SEEA)* among the statistical frameworks relevant to its implementation. This recognition builds on the observation that the SEEA Central Framework (SEEA-CF) and SEEA Ecosystem Accounting (SEEA-EA) already provide internationally agreed concepts, classifications and accounts — for environmental and ecosystem assets, ecosystem services, and environmental protection and resource management expenditure — that are directly relevant to measuring disaster risk, impacts and DRR activity, and that could be built upon rather than developed from scratch.

Discussions during the drafting of the G-DRSF also identified a number of open conceptual and methodological issues that stand in the way of fully realizing this potential, including the scope of environmental and ecosystem losses to be covered by disaster-related statistics, the treatment of ecosystem services losses, the recording of catastrophic losses within SEEA asset and ecosystem extent accounts, and the institutional arrangements needed for national statistical offices to access environmental and ecosystem data that they do not themselves collect. UNECE's recently endorsed *Practical Implementation Guidelines for Disaster-risk-Related Indicators,* prepared by the Conference of European Statisticians (CES) Task Force on Measuring Hazardous Events and Disasters, reach a similar conclusion, noting that research and methodological guidance are needed to operationalise the links between SEEA and disaster-related statistics (UNECE, 2026a, para. 240). This paper responds directly to that observation.

Since then, the SEEA-CF has itself become the subject of a comprehensive update, mandated by the Statistical Commission at its 55th session in March 2024 explicitly to better respond to emerging demands for integrated environmental and economic data, including for disaster risk reduction, alongside climate change, circular economy, resource management and biodiversity policy. With work now underway on a defined list of 29 issues for the update, the update offers a timely and concrete opportunity to strengthen the treatment of disaster-related concepts within the revised SEEA-CF and to improve its alignment with the now-finalized G-DRSF.

Against this background, this paper examines how the SEEA — encompassing both the SEEA-CF and SEEA-EA — can strengthen the production, interpretation and policy relevance of disaster-related statistics under the G-DRSF. Rather than providing a detailed technical mapping between the two frameworks, the paper takes a broader view.

The paper

a) sets out why an integrated approach matters;
b) reviews how much of the information called for by the G-DRSF can already be organized within existing SEEA accounts;
c) identifies the methodological gaps that remain, particularly regarding disaster losses, ecosystem degradation, exposure, vulnerability, resilience, recovery, and accounting for disaster risk reduction and adaptation; and
d) proposes priorities for future methodological development, including in the context of the SEEA-CF update.

It is prepared as a discussion paper for the London Group on Environmental-Economic Accounting, with a view to informing discussion at its thirty-second meeting in Guatemala City, Guatemala, in September 2026, and to stimulating closer collaboration between the environmental accounting and disaster statistics communities.

The remainder of the paper is structured as follows. Chapter 2 sets out why the SEEA matters for disaster-related statistics, providing an overview of the G-DRSF and describing the added value of SEEA's accounting principles for organizing disaster-related information. Chapter 3 discusses how the G-DRSF aligns conceptually with the SEEA-CF and SEEA-EA. Chapter 4 sets out practical applications of the SEEA across the three measurement areas of the G-DRSF, distinguishing between what can already be implemented using current SEEA guidance and where further conceptual and methodological development is needed. Chapter 5 identifies and prioritizes the principal methodological gaps. Chapter 6 reviews opportunities arising from the ongoing update of the SEEA-CF. Chapter 7 sets out recommendations for future methodological development and collaboration, and Chapter 8 concludes.

2 Why SEEA matters for disaster-related statistics

The *Global Framework for Disaster-related Statistics (G-DRSF)* was endorsed by the United Nations Statistical Commission at its 57th session in March 2026 as the global statistical framework underpinning the production of disaster-related statistics. The framework was developed under the leadership of the Inter-Agency and Expert Group on Disaster-related Statistics (IAEG-DRS, 2026b), co-chaired by UNDRR, ESCAP and UKHSA. Its final version, submitted to the Statistical Commission, incorporated feedback received through a global consultation (IAEG-DRS, 2026c) with countries and relevant stakeholders.

The G-DRSF conceptual framework is structured around three interrelated measurement areas across the disaster risk management cycle:

- Risk component: Covering statistics on hazard exposure and vulnerability of populations, assets and flows, as well as coping capacity at the institutional, household and individual levels. These statistics provide information on the extent and spatial and temporal distribution of disaster risk and establish important baselines for assessing the impacts of hazardous events and disasters.
- Impact component: Covering statistics on the occurrence of hazardous events and disasters and their impacts on populations, assets and flows. The framework promotes a consistent approach to measuring the types, frequency and spatial distribution of hazardous events and disasters, together with their impacts.
- DRR activity and expenditure: Covering the measurement and accounting of expenditure and transfers associated with DRR activities undertaken by both the public and private sectors.

The SEEA-CF and SEEA-EA provide internationally agreed concepts, classifications and accounting principles for measuring the environment and its relationship with the economy, including natural resources, environmental assets, ecosystem extent and condition, ecosystem services, and environmental-related economic activities and transactions. These accounts are relevant across all three measurement areas of the G-DRSF and provide an important statistical and accounting foundation for understanding disaster risk, impacts and DRR activities from an environmental and economic perspective.

From a risk perspective, the environment and ecosystems are exposed and vulnerable to different types of hazards and may be affected by the impacts of hazardous events and disasters. Accordingly, relevant measurement concepts and recommendations related to the environment and ecosystems in the G-DRSF are aligned with the SEEA. Specifically, the SEEA is explicitly referenced in relation to the measurement of both physical and monetary aspects of:

- The exposure and vulnerability of environmental and ecosystem assets and the flows of ecosystem services: Existing subnational and spatially explicit SEEA-CF and SEEA-EA accounts, where available, provide important baseline information for risk assessment, particularly when their spatial data can be integrated or overlaid with hazard maps and other geospatial information to identify environmental and ecosystem assets, and ecosystem services located in areas exposed to hazards.
- The impacts of hazardous events and disasters on environmental and ecosystem assets and the flows of ecosystem services: SEEA-CF and SEEA-EA accounts provide important baseline and contextual information for post-disaster needs assessments (PDNAs) and other event-based impact assessments, including by supporting the measurement of changes in environmental assets, as well as ecosystem extent, condition and ecosystem services following a hazardous event or a disaster. While the G-DRSF provides the statistical concepts and measurement framework for disaster-related impacts, SEEA accounts provide a structured information base for assessing the environmental dimensions of those impacts.

Additionally, the accounting concepts and principles used in compiling Environmental Protection Expenditure Accounts (EPEA) and other environment-related transaction accounts under the SEEA-CF are also applied in the compilation of DRR expenditure accounts. Applying consistent accounting concepts and principles improves the coherence and comparability of DRR expenditure statistics with existing economic and environmental accounts, while facilitating their integration into broader statistical systems and policy analysis.

There may also be areas of shared value and synergized benefits between DRR expenditure and environment-related expenditure: investments in ecosystem restoration, sustainable land management, coastal ecosystem protection and other nature-based approaches may reduce exposure and vulnerability while also providing environmental benefits, raising the same primary- and secondary-purpose classification question that is being considered in the update of the SEEA-CF.

From an environmental perspective, SEEA accounts can be analysed to provide statistical information relevant to the environmental dimensions of DRR. For instance, information on ecosystem extent and condition, and spatial distribution of protective and mitigation-related services (e.g. coastal protection and flood mitigation) can be used to assess environmental characteristics that influence disaster risk to populations, assets and economic activities. Similarly, hazardous events and disasters may lead to increased generation of solid waste and wastewater and increased pollution, which may in turn lead to increased expenditure on environmental protection and management. This integrated analysis adds value and supports policy decisions that address DRR, environmental sustainability and sustainable development.

At the same time, statistics on the occurrence and impacts of hazardous events and disasters can provide important contextual information for interpreting significant changes observed in environmental and ecosystem accounts. The relationship is particularly relevant for environmental impacts that may not be fully captured through conventional impact assessments. For example, a disaster may result in changes in ecosystem extent or condition and disruptions to ecosystem services without causing direct physical damage to conventional economic assets.

An integrated approach drawing on both the G-DRSF and SEEA can, therefore, provide a more comprehensive statistical and analytical basis for understanding the interactions between disaster risk, the environment and the economy. Together, the frameworks can support analysis not only of the immediate impacts of hazardous events and disasters, but also of the underlying environmental conditions that influence disaster risk, the resulting economic and environmental consequences, and the resources and investments directed towards reducing future risk and strengthening resilience.

Box 1. Examples of disaster-risk indicators that depend on SEEA

The *Conference of European Statisticians (CES) Set of Core Disaster-Risk-Related Indicators*, developed by the CES Task Force on Measuring Hazardous Events and Disasters, comprises 53 indicators covering hazards, exposure, vulnerability, coping capacity, direct impacts and DRR activity (UNECE, 2025a).

Its accompanying practical implementation guidelines observe that SEEA-CF and SEEA-EA provide an essential measurement foundation for the indicators relating to environmental conditions, environmental impacts and DRR-related expenditure (UNECE, 2026a, section 3.3.3.6).

Three examples illustrate why.

1. Several expenditure indicators, e.g. government expenditure on DRR, on early warning systems, on risk-awareness programmes, and on strategic reserves, all expressed in relation to GDP – require a purpose-based classification of government spending that isolates this type of activity from the general budget. No standard government finance classification provides this; the SEEA-CF's Environmental Protection Expenditure Accounts, built on the Classification of Environmental Protection Activities, are the closest existing internationally standardised methodology, as already noted in chapter 4.
2. Indicators on the economic value of lost or damaged housing stock and on direct losses to damaged or destroyed cultural heritage require a consistent asset-valuation methodology; the SEEA-CF asset account's "catastrophic losses" line, discussed in chapters 3 and 5, provides a directly relevant accounting entry point for this.
3. The CES core set currently has no indicator on disruptions to ecosystem services following a disaster – arguably a gap that SEEA-EA's ecosystem-service accounts, discussed throughout this paper, are well placed to fill.

3 Integrating G-DRSF and SEEA

The SEEA provides the accounting structure for tracing the dependence of economic activity on the environment, and its impact on it. The G-DRSF, for its part, aggregates harmonised data on disaster loss, damage, exposure, vulnerability and disaster-related expenditures, drawing on national disaster databases, population censuses and registers, insurance records, satellite-derived hazard maps and relevant products, and other sources available within national statistical systems to produce comparable time-series statistics on the risk, frequency, intensity,

and socio-economic and environmental consequences of earthquakes, floods, storms and other hazardous events and disasters.

These two frameworks can be visualised using the Sudoku puzzle as a metaphor. In a Sudoku grid, each cell must adhere to a set of fixed constraints. The puzzle's solubility relies on the rules and mechanisms that govern the placement of the numbers. Similarly, an integrated accounting system operates by using the SEEA's classifications, measurement conventions and accounting logic as the "rules" that ensure internal consistency, comparability and relevance. Provided any new information respects these rules, the system can be connected and expanded by inserting data into previously empty cells or extending the grid without disrupting its logical structure.

When new challenges emerge, such as disaster risk management, the tendency is often to develop a separate accounting scheme. However, the Sudoku analogy suggests that, rather than creating a new system, analysts should identify the logical intersections already present among the existing modules and establish 'transmission channels' to convey the new data through the established architecture. This approach preserves the integrity of the underlying accounting principles while enabling the framework to evolve.

In the specific case of DRR, the SEEA already provides a robust accounting framework with a solid set of accounting mechanisms for the environment and ecosystems, and their interactions with the economy.

These mechanisms enable the tracking of cause-and-effect relationships between changes in ecosystems and their impact on the economy and society, and vice versa. The G-DRSF provides the foundational statistical framework to produce detailed statistics on losses, damages, exposures, vulnerabilities, coping capacities and expenditures associated with hazardous events. There is a possibility of establishing a connection between the two frameworks through the implementation of well-defined correspondences, for instance:

a) It is possible to map the **monetary loss estimates** according to the G-DRSF onto natural resource accounts within the SEEA. This allows for the quantification of disaster impacts on physical assets in a way that is directly comparable to routine economic accounting.
b) **Exposure metrics** – such as the number of people living in flood-prone areas – can be linked to data about those areas such as from land cover and land-use accounts.
c) **Damage to ecosystem services** can be integrated into the SEEA's ecosystem service accounts.
d) **DRR expenditure** — covering prevention, mitigation, preparedness, response and recovery — can be mapped onto the SEEA's EPEA, which already record comparable expenditure on activities such as ecosystem restoration and coastal protection using the same accounting concepts and classifications.

These linkages function as channels for the dissemination of disaster-related information within the broader environmental and economic discourse, while adhering to fundamental accounting principles.

Figure 1: How G-DRSF measurement areas connect to existing SEEA accounts (sudoku visualization). [1]

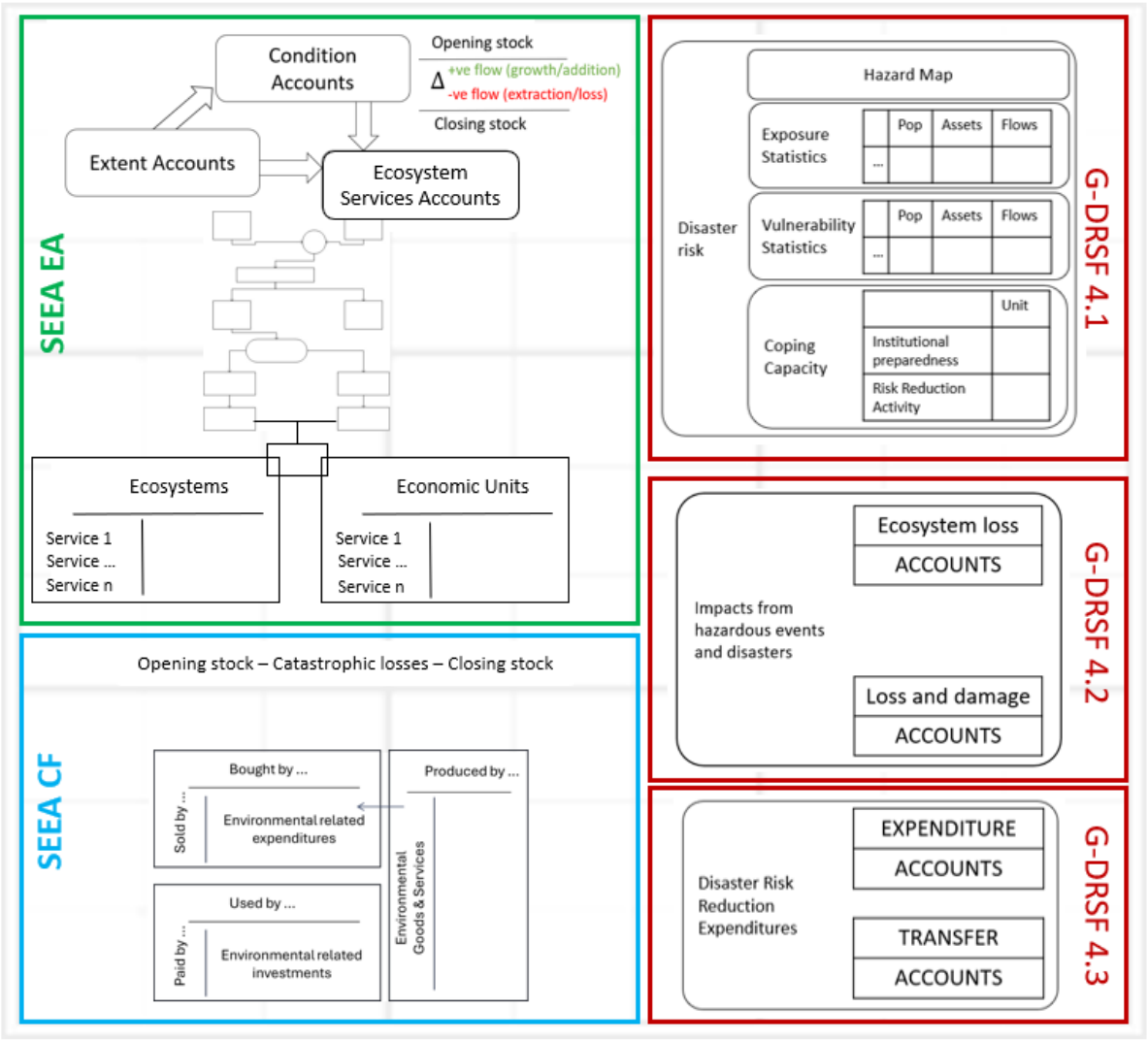

Figure 1 sets out these correspondences systematically, organised along the G-DRSF's three measurement areas:

- For **disaster risk** (see section 4.1), hazard, exposure, vulnerability and coping capacity each connect to SEEA-EA or SEEA-CF in various ways. Ecosystem extent, condition and services influence the characteristics of the hazard. At the same time, the condition and the services of the ecosystem can contribute to reducing vulnerabilities and enhancing coping capacities. Furthermore, extent accounts inform the exposure of the ecosystems.
- For **impacts from hazardous events and disasters** (see section 4.2), loss and damage links to the catastrophic-losses line of the SEEA-CF asset account, while ecosystem loss links to the SEEA-EA extent, condition and services accounts together. In particular, the linkage with ecosystem extent and condition can be quite straightforward, where the impact results in a land-cover/land-use change or ecosystem degradation.
- For **DRR activity and expenditure** (see section 4.3), DRR expenditure links to the SEEA-CF's environmental protection expenditure accounts. In fact, in SEEA CF there are specific accounts with a granular level of details that can feed the DRR module.

[1] Adapted from https://www.sciencedirect.com/science/article/pii/S0301479725039659

This sudoku-style approach offers three key benefits:

1. It **conserves analytical resources** by avoiding the time-consuming development, testing and validation of a parallel accounting system through the reuse of the SEEA's data structures.
2. It **improves data interoperability** because the combined dataset adopts the comparability and credibility standards that have already been established for SEEA accounts.
3. It **promotes more holistic, evidence-based governance** by facilitating policy integration, enabling decision-makers to evaluate disaster-risk reduction measures alongside other environmental and economic policies within a single, coherent accounting framework.

The integrity of the system rests on a stable set of accounting rules, and any extension must respect those constraints. When applied to DRR, this reasoning shows that the SEEA, when combined with specific channels to the G-DRSF, provides an accounting structure capable of capturing a range of disaster-related risks and impacts while maintaining the analytical rigour required for scientific assessment and policy formulation.

4 Applications of SEEA for disaster-related statistics

As Figure 1 shows, SEEA aligns with the G-DRSF and can thus be integrated to support compiling disaster-related statistics in the context of ecosystems in a more consistent manner. This chapter elaborates on the applications of SEEA for disaster-related statistics.

To keep the discussion closely anchored to the G-DRSF itself, this chapter is organized around its three measurement areas — disaster risk (section 4.1), impact of hazardous events and disasters (section 4.2), and DRR activity and expenditure (section 4.3), followed by a short discussion of the spatial and indicator dimensions that cut across all three (section 4.4). For each application, the discussion distinguishes between what can already be undertaken using current SEEA guidance and where further conceptual and methodological development is still needed.

4.1 Disaster risk: hazard exposure, vulnerability and coping capacity

The first measurement area of the G-DRSF is disaster risk and encompasses the measurement of hazard exposure, vulnerability, and coping capacity. Ecosystems can be exposed elements (Sebesvari et al., 2016) and vulnerable to hazards, especially when degraded (Birkmann et al., 2013; Sebesvari et al., 2016; IPCC, 2024). At the same time, ecosystems provide ecosystem services that can contribute to both reducing hazard exposure and vulnerability as well as enhancing coping capacities (Renaud et al., 2016; Walz et al. 2021, IPCC 2019).

SEEA helps unpack how ecosystems interact with each of the components of disaster risk. SEEA-EA treats ecosystems as assets - the primary spatial unit for ecosystem accounting, involving "contiguous spaces of a specific ecosystem type characterized by a distinct set of biotic and abiotic components and their interactions". Accounting for ecosystem extent, i.e. the size of the ecosystem asset, following the IUCN GET ecosystem functional group provides the spatial boundaries of the exposed element that is to be analysed in a risk assessment.

Furthermore, SEEA-EA comprehensively describes the assessment of ecosystem condition as a key information about ecosystem functions and the flows of services provided by the ecosystem. Indeed, the quantity and quality of the service provision depends on the ecosystem condition (Mitchell et

al., 2021; Kermagoret et al., 2019), with the degradation of ecosystems being reflected in the reduction in services (Diaz et al., 2019; Hall-Spencer & Harvey, 2019).

Both the condition and the services of an ecosystem can thus affect the intensity and size of different components of risk.

Healthy ecosystems can provide services that reduce the three components of risk, thereby contributing to mitigating the risk of damage occurring. Some of these services play a 'protective' role against physical risks such as flooding, landslides and avalanches, and biological risks such as pests and diseases. For example, flood control services can reduce the flood hazard. Other services play a 'capacity-enhancing' role, reducing vulnerabilities and strengthening coping capacities. For example, provisioning services and particularly those related to raw materials can increase the capacity to cope with impacts from disasters, e.g. access to timber can support building shelters or cooking and heating in the case of disrupted services due to a hazardous event (Walz et al., 2021).

Building the capacity of ecosystems to provide such services reduces the probability of disruptive economic and social impacts resulting from damage.

By guiding the accounting of ecosystems, their condition and services, SEEA-EA guides the understanding of the role of ecosystems on the different components of disaster risk and thereby supports the G-DRSF that recognises the importance of measuring the components of disaster risk in an ongoing manner to understand the risk and inform policymaking and action.

The same logic extends to environmental assets covered by the SEEA-CF more broadly, not only to ecosystems. Water, mineral and energy, timber, soil and land resources are also exposed and vulnerable to hazards — for example, drought affecting water resource stocks, or fire affecting timber resources — and their condition and availability shape coping capacity in much the same way that ecosystem services do. The standard SEEA-CF asset account already includes a line for "catastrophic losses", which could in principle be disaggregated by hazard and disaster type, providing a ready entry point for recording exposure and vulnerability statistics on natural capital beyond ecosystems (IAEG-DRS, 2023a, sect. 3.2.2).

What is not yet available is agreed guidance on how to apply that disaggregation consistently across countries, nor on how asset-account stocks should be linked systematically to the exposure and vulnerability statistics envisaged in the G-DRSF.

When working with ecosystem services, measurements often determine whether and where ecosystem services that mitigate any of the three risk components are provided. For example, hazard flood maps and the presence of human settlements and/or economic assets are inputs to the measurement of flood mitigation services. Methodologically, this implies that whatever modifies hazards, exposure or vulnerability will directly affect the protection services.

Box 2. Illustrative example – mountain forests as protection

Mountain forests in steep, avalanche- and rockfall-prone terrain illustrate the role that ecosystem services can play in disaster risk. A well-stocked protective forest intercepts falling rock, slows snow movement and stabilises soil on slopes, directly reducing the hazard reaching settlements, roads and infrastructure below. At the same time, these forests may provide materials for rebuilding or support mental wellbeing following a disaster, enhancing the coping capacities of communities. Within SEEA-EA, this protective and capacity-enhancing role would be reflected in the ecosystem's condition account and in the physical supply of a regulating ecosystem service such as mass-movement or erosion control as well as the provisioning service and cultural services like recreation-related or spiritual services.

4.2 Measuring impacts from hazardous events and disasters

The second measurement area of the G-DRSF looks at the impacts from hazardous events and disasters, complementing risk statistics to enable a comprehensive assessment of losses and damage, to assess disaster risk and to guide planning, recovery efforts and long-term DRR and climate adaptation efforts.

Being exposed to risks, ecosystems experience impacts from disasters that lead to losses in ecosystem services and biodiversity, which in turn harm societies (UNFCCC, 2024). Damages to ecosystems (caused by hazards and/or disasters), in fact, threaten an ecosystem's ability to provide services, such as the provision of ecological inputs (e.g., via biomass growth, pollination and water availability) and the removal of residuals (e.g., via air filtration, water purification and soil decontamination). This, in turn, can lead to economic disruption.

Although these losses threaten the quality of life for present and future generations (IPBES, 2019), the statistical records, analyses, categorization, and interpretation of these types of losses sometimes remain poorly understood.

SEEA-EA can guide the assessment of disaster-related losses of ecosystems, as it helps account for how disasters affect ecosystem extent, condition and services. In fact, the *Framework for Climate Change and Disaster-related Losses of Biodiversity and Ecosystem Services* (FRAME-ECO) (Walz and others, 2026) guides the assessment of such losses and builds on SEEA-EA for the assessment of the ecosystem context that comprises three dimensions:

i) ecosystem extent,
ii) ecosystem condition, and
iii) diverse values of nature and ecosystem services.

The spatial and temporal overlay of the ecosystem context with the hazard context (comprising a continuum of extreme and sudden-onset events and slow-onset events) can result in negative changes in the three dimensions of the ecosystem and may indicate disaster-related losses.

Box 3. Illustrative example – mountain forests as casualty

The mountain forest that in Box 2 had a risk reduction function could be affected by a wildfire. Its ecosystem condition deteriorates and the root systems that stabilise soil are lost, measurably reducing its capacity to intercept future rockfall for years afterwards (see Maringer and others, 2016; Müller, Vilà-Vilardell and Vacik, 2020). Such wildfires also alter the timber provision and the forest's recreational use with immediate site closures (see Englin and others, 2008). Under SEEA-EA, this would show as a deterioration in the ecosystem condition account and a corresponding reduction in the projected physical supply of the protective service and the recreation-related service, distinct from, but directly connected to, any timber losses recorded elsewhere in the accounts.

The two effects compound each other: a fire-damaged protective forest leaves the same population and infrastructure more exposed to subsequent hazardous events until the forest recovers. Recording both the condition of the forest and the flow of its services within the same ecosystem account rather than in separate, disconnected data sets, is precisely the kind of consistent linkage described in chapter 3.

Hazardous events and disasters also generate impacts on the residual side of the economy-environment interface: disaster debris and rubble, increased volumes of solid waste, and elevated air and water pollution in the aftermath of an event. These flows fall naturally within the SEEA-CF's

residual flow accounts, which record the generation of solid waste, air emissions and emissions to water and their subsequent management (United Nations and others, 2014a). The treatment of "residual flows" is itself one of the issues currently being addressed in the update of the SEEA-CF, which offers an opportunity to consider disaster-generated waste and pollution as a distinct component of these accounts, and to connect the resulting volumes to the environmental protection expenditure incurred in managing them (see section 4.3). At present, however, there is no standard treatment that would allow disaster-related waste and pollution to be consistently separated from other residual flows.

4.3 Disaster risk reduction (DRR) activity and expenditure

The third measurement area of the G-DRSF concerns DRR activity, reflected through expenditure and transfers relating to prevention, mitigation, preparedness, response and recovery, proposed to be captured through a DRR Expenditure (DRRE) account (IAEG-DRS, 2026a). The SEEA-CF already provides a directly relevant accounting structure for part of this measurement area through its EPEA and, where compiled, resource management expenditure accounts, which record expenditure on activities such as ecosystem restoration, coastal protection and sustainable land and water management. (IAEG-DRS, 2023a, sect. 3.2.4) Because a number of these activities — for example, mangrove restoration or coastal protection — serve both an environmental and a DRR purpose, countries that already compile EPEA have a ready-made starting point for populating a DRRE account, and the accounting concepts and classifications used in EPEA can be carried over directly to improve the coherence and comparability of DRR expenditure statistics with existing environmental and economic accounts. What remains unresolved is how to apply primary- and secondary-purpose criteria to record expenditure that serves both purposes. This issue is also being considered in the ongoing update of the SEEA-CF.

Recovery is itself one of the DRR activities within the scope of the G-DRSF's expenditure measurement area, and much of it, in an environmental context, takes the form of ecosystem restoration and rehabilitation. (IAEG-DRS, 2026a) SEEA EA's condition accounts record positive as well as negative change in ecosystem condition, so that a "build back better" recovery trajectory following a disaster could, in principle, be tracked using the same accounting structure used to record the initial loss. In practice, however, this application remains largely untested. Recent methodological work applying SEEA-EA to a real restoration case study found the framework fit for purpose in principle, but concluded that it requires further methodological refinement. These refinements should consider the fact that different ecosystems recover at very different speeds, from months to more than fifty years, before it can reliably be used to measure restoration outcomes within a standard annual accounting period. (Parkhurst and others, 2024) Recovery and restoration should therefore be treated as a priority area for further methodological development rather than as a fully implementable application today.

It is important to note that there may be a long-term connection between certain DRR activities and ecosystem services accounting. In particular, expenditures related to nature-based solutions have the potential to generate an increased number and quantity of service flows resulting from restored and enhanced ecosystems as well as reducing disaster risk. Thus, the presence of certain "protection" services can also reduce the necessity to invest in disaster preparedness and recovery measures.

5 Methodological gaps and priorities

The applications discussed in chapter 4 show that a substantial part of the information called for by the G-DRSF can already be organised within existing SEEA-CF and SEEA-EA accounts, following the same logic of inserting new information into an existing, internally consistent structure introduced in chapter 3. At several points, however, that discussion also identified specific issues for which current

SEEA guidance does not yet provide a complete or agreed answer. This chapter draws these issues together with the wider methodological literature into a more systematic account of the principal gaps, organised into four clusters:

1. measuring losses and damages;
2. measuring risk;
3. measuring DRR expenditure; and
4. cross-cutting measurement issues

It then sets out priorities for future work that connect directly to the opportunities discussed in chapter 6 and the recommendations set out in chapter 7.

5.1 Measuring losses and damages

The first cluster of gaps concerns the recording of disaster losses. As noted in chapter 4, the SEEA-CF asset account already contains a line for catastrophic losses within its reductions in stock, offering a ready entry point for disaster-related losses of environmental assets. What current guidance does not provide is an agreed definition of which events qualify as "catastrophic" for accounting purposes, nor a common approach for disaggregating this line by hazard and disaster type in a way that is comparable across countries. Closing this gap would directly strengthen the transmission channel identified in chapter 3 between G-DRSF loss and damage statistics and SEEA asset accounts.

A related but distinct gap concerns how the monetary value of environmental losses is estimated once recorded. SEEA-CF asset accounts value depletion and other reductions in stock using the same resource-rent principles applied to other changes in natural resource assets, but disaster losses often involve forms of degradation. For example, the salinisation of agricultural land following a storm surge, or the sedimentation of a water body, for which market-based rents are difficult to observe or do not exist. The literature on environmental asset valuation has long cautioned that using the unpaid cost of restoration as a proxy for the value of degradation is not conceptually consistent with the depreciation-based valuation methods used elsewhere in the accounts (Ogilvy and others, 2018). Agreeing a valuation approach for disaster-induced environmental damage that is both conceptually sound and operationally feasible for national statistical offices remains an open methodological question.

The valuation challenge is sharper still for ecosystem condition and services, and particularly for regulating and supporting services – including protective services such as flood mitigation – that are most directly relevant to disaster risk reduction. SEEA-EA's standard approach to monetary valuation, the residual value or resource-rent method, performs well for provisioning services exchanged in markets, but recent methodological work has questioned its suitability for regulating services that are rarely priced directly, cautioning that it risks under- or over-stating their contribution when applied outside the market-linked services for which it was designed (Pascoe and others, 2026). Because the case for integrating the G-DRSF and SEEA rests in part on the protective and mitigating role of ecosystem services discussed in chapter 4, resolving how to value the loss of these specific services following a disaster is a priority methodological question rather than a peripheral one.

5.2 Measuring risk

A second cluster of gaps concerns the risk side of the G-DRSF rather than the impact side. As discussed in chapter 3, exposure statistics – the number of people, assets or economic activities located in hazard-prone areas – do not correspond to a dedicated SEEA account, but instead require population, asset and economic activity data to be spatially overlaid onto SEEA-CF land accounts and SEEA-EA ecosystem extent accounts. There is currently no agreed statistical methodology for performing this overlay consistently: choices about spatial resolution, the treatment of partially exposed units, and

how land accounts and land-use classifications should be reconciled with more frequently updated hazard maps are left to individual compilers. A comparable gap applies to vulnerability, where the qualitative link between ecosystem degradation and vulnerability described in chapter 4 has not yet been translated into a repeatable statistical procedure.

A closely related but conceptually distinct gap concerns the relationship between accounting, which is inherently backward-looking, and disaster risk models, which are inherently forward-looking. Catastrophe risk models used in disaster risk management and in the insurance industry combine hazard, exposure and vulnerability modules to generate probabilistic measures of future loss, such as average annual loss or losses at a given return period. ("Catastrophe Risk Models: An Overview", n.d.) SEEA accounts, by contrast, record what has actually occurred, or the current stock of assets, within a defined accounting period. As observed in related work for the London Group, statisticians are generally not in a position to measure the real-world effects that ecological or catastrophe models estimate (La Notte, 2025). The two communities currently operate largely in parallel: there is no agreed methodology for using SEEA's observed stocks and flows to help validate risk models, nor for using probabilistic risk information to help prioritise which SEEA accounts should be compiled first in high-risk areas. Bridging this gap is less a matter of extending SEEA's own accounting rules than of establishing a shared methodological interface between the accounting and risk-modelling communities, for example by providing a common understanding of the baseline from which projections are made.

5.3 Measuring DRR expenditure

A further gap, cutting across the clusters discussed above, concerns DRR expenditure. As chapter 4 noted, the SEEA-CF's EPEA already provide a directly relevant accounting structure for DRR expenditure, and countries that compile EPEA have a ready-made starting point for populating a DRR account. What remains unresolved is how primary- and secondary-purpose criteria should be applied to expenditure. This measurement issue is relevant both in the context of environmental activities, DRR activities, and activities that may serve both an environmental and a DRR purpose.

This issue is sharper than it might first appear, because it is not confined to the SEEA–G-DRSF relationship alone. The SEEA-CF update is investigating an expenditure module for climate change mitigation and adaptation (Issue C5), and has identified the G-DRSF's DRR Expenditure Accounts reporting tables as a candidate basic structure for that module, since many disaster-related expenditures – for floods, droughts, storms, extreme temperatures and fires – are climate-related by nature (Hass, 2025).

The disaster statistics community's development of DRR expenditure accounts through the revision of the DRSF manual and the SEEA-CF's development of a climate change expenditure module are therefore proceeding in parallel, drawing on closely related source data and classification logic, but without a formal mechanism to keep the two consistent. Left unresolved, this creates a risk that DRR expenditure, climate adaptation expenditure and general environmental protection expenditure end up classified differently depending on which reporting exercise a country happens to be responding to – undermining exactly the coherence that motivates the integrated approach set out in this paper.

5.4 Cross-cutting measurement issues

As chapter 4 already noted in relation to ecosystem restoration, different environmental assets and ecosystems recover at very different speeds, in some cases over several decades. Because SEEA accounts are compiled as a time series, this progressive recovery can in principle be tracked and

recognised period by period, rather than requiring any single accounting period to capture it in full. What remains less developed is guidance on turning that time series into a recognisable recovery trajectory – for example, establishing the pre-disaster baseline against which recovery is assessed, or determining when an asset or ecosystem can be considered to have recovered. This is arguably closer to the kind of forward-looking analysis carried out in post-disaster needs assessments (PDNAs), which typically project damage and loss forward to estimate recovery funding needs, than to routine SEEA compilation itself. A comparable but more acute issue arises for produced assets and infrastructure, where multi-year time series can likewise track reconstruction, but where SEEA currently offers less guidance on how to distinguish "build back better" reconstruction – which changes the resilience characteristics of the rebuilt asset rather than simply restoring its pre-disaster state – from ordinary replacement in the accounts.

Both the exposure and recovery gaps just described point to a more general, cross-cutting issue: SEEA accounts are compiled, by convention, for fixed annual periods and, increasingly, for defined spatial units, while disasters are discrete events that rarely respect either boundary. A single hazardous event may span two accounting periods, or its full economic and environmental consequences may only materialise well after the event itself. The SEEA-CF update's work on making accounts more spatially explicit is directly relevant here (see chapter 6), but the temporal dimension (how event-based information should be reconciled with period-based accounting) has received comparatively less attention and would benefit from targeted methodological work, potentially in cooperation with the G-DRSF's own event-based reporting mechanisms.

Furthermore, disaster-related statistics are collected and reported through a wider set of instruments than the G-DRSF and SEEA alone, including the Sendai Framework Monitor and widely used event databases such as EM-DAT and DesInventar. Comparative assessments of these instruments have repeatedly found substantial inconsistencies in definitions, coverage and completeness (see Panwar and Sen, 2020; Khoza and others, 2022).

UNDRR's new *DELTA Resilience* system – developed with UNDP and WMO to succeed DesInventar Sendai – was designed from the outset for interoperability with the Sendai Framework Monitor and with national statistical and geospatial systems, which is a promising development for closing this gap (UNDRR, 2026a). Its current scope, however, centres on hazardous events and their human, economic and non-economic losses, and does not yet extend to the environmental and ecosystem dimensions that SEEA can provide. *FRAME-ECO* as a methodological framework defines how ecosystem and biodiversity losses should be identified, monitored and assessed building on SEEA-EA. It has the potential to serve as a module that DELTA Resilience builds upon to record losses and to enable producing loss metrics. At its roll-out stage, DELTA Resilience provides the functionality to record observed losses that have been assessed or estimated using FRAME-ECO for biodiversity and ecosystem services losses. Aligning DELTA's data model with SEEA-based environmental and ecosystem loss information is key for the credibility and uptake of the integrated approach set out in this paper.

5.5 Prioritising the gaps

Not all the gaps identified above are equally pressing, nor are they equally ready for resolution. Two criteria are useful for setting priorities: first, whether a gap already has an institutional vehicle through which it can be addressed, most obviously the ongoing update of the SEEA-CF discussed in chapter 6; and second, how central the gap is to the specific transmission channels between the G-DRSF and SEEA identified in chapter 3 – namely the recording of losses, the recording of exposure, and the recording of ecosystem-service impacts.

On this basis, three groups of priorities emerge:

a) **Near-term priorities** are those that already have a vehicle for resolution through the SEEA-CF update: making land and ecosystem extent accounts more spatially explicit (Issue A4); and resolving how primary- and secondary-purpose criteria should be applied to disaster risk reduction expenditure that also serves an environmental purpose, in coordination with the SEEA-CF's parallel work on a climate change expenditure module (Issues C2, C4 and C5).
b) **Medium-term priorities** are conceptually tractable within the existing structure of SEEA-EA and SEEA-CF but require new methodological guidance rather than a change of framework: valuing disaster-induced environmental damage and ecosystem service losses, particularly for regulating services without an established market analogue; developing a repeatable methodology for overlaying population and asset data onto SEEA land and ecosystem accounts to derive comparable exposure statistics; and aligning SEEA-based environmental and ecosystem loss information with UNDRR's DELTA Resilience system, given its ongoing country-by-country rollout and its design for interoperability with the Sendai Framework Monitor.
c) **Longer-term priorities** require engagement that extends beyond the SEEA community itself: reconciling SEEA's period-based accounts with event-based disaster reporting; and connecting environmental-economic accounting with probabilistic disaster risk models.

These priorities are not intended as a final or exhaustive list, but as a starting point for discussion within the London Group. The following two chapters build directly on them: chapter 6 examines how several of the near-term priorities identified here map onto specific issues in the ongoing SEEA-CF update, while chapter 7 sets out recommendations, including on collaboration and possible pilot studies, for taking forward the medium- and longer-term priorities.

6 Opportunities from the SEEA-CF update process

The earlier sections have highlighted the links between disaster statistics and the SEEA. Noting that the SEEA-CF is currently being updated, this section discusses the issues being considered in the update process that have a good connection to disaster statistics or provide opportunities for further development of the accounts and other measures outlined in the G-DRSF. The presence of a connection means that there is an opportunity to reinforce that connection in the updating of the SEEA-CF.

More generally, the updating process includes rounds of global consultation through 2026 and 2027 and these rounds may provide opportunities for increasing the engagement between the SEEA and disaster statistics communities. Aside from encouraging members of the disaster statistics community to participate in the SEEA update process, consideration may also be given to holding a stand-alone webinar in the first part of 2027 where the connections between these two domains of statistics can be highlighted and more direct inputs to the update process can be gained.

The following SEEA-CF update issues[2] are considered to have the highest relevance to the development of disaster statistics:

- **Issue A1** concerning the links between the SEEA-CF and the SEEA-EA: Further building these connections will support more integration of these two entry points to environmental-economic accounting and hence a better integration of data for specific purposes such as disaster statistics.

[2] See full list of the 29 SEEA CF update issues at https://seea.un.org/en/content/seea-central-framework-update-scoping-notes

- **Issue A4** concerning how SEEA-CF accounts can be made spatially explicit: This issue recognises the potential of various SEEA-CF accounts, including physical flow accounts, environmental activity accounts and natural resource accounts to be compiled at sub-national areas. While compiling such accounts will be dependent on data, this direction should facilitate the development of SEEA consistent data for the types of spatial scales more relevant for disaster analysis.
- **Issue A6** concerning strengthening the link to policy and thematic accounting: This paper itself it indicative of the relevance of this issue and in the context of the SEEA-CF update the aim is to give further promotion to the importance of linking accounts to specific applications and policy contexts.
- **Issue B6** concerning the development of pressure accounts: Although not developed with disasters in mind, this issue is one of the newer topics on the SEEA-CF agenda. It has the general aim of looking at how the accounts of the SEEA can be better connected, in particular concerning how releases of residuals link to environmental quality at particular locations. This approach starts to make connections between environmental pressures and environmental states (following a DPSIR type framing). The application in the context of disaster statistics would be worth further consideration – for example in the context of significant releases of pollutants to air and water (e.g. oil spills, toxic waste, etc).
- **Issue C2** concerning an integrated set of accounts for environmental activities and **Issue C4** concerning primary and secondary purpose: At this stage it has been proposed that disaster related expenditures should not be treated as environmental expenditures as a whole. However, as described in the G-DRSF, accounting for disaster related expenditures applies basically the same approach as used for environmental activities and hence the proposed developments in the accounting for environmental activities should be considered. These particularly concern the proposed integrated accounts and the extension of the scope of activities to include secondary purpose. How these developments might relate to recording expenditures on disasters could be further considered.
- **Issue C5** concerning climate mitigation and climate adaptation expenditure: As discussed in chapter 5, this issue is developing an expenditure module that considers the G-DRSF's DRR Expenditure Accounts reporting tables as a candidate basic structure. Close coordination between this issue and the DRR expenditure work discussed in chapter 4 would help ensure the two remain consistent.

7 Future directions and recommendations

The methodological gaps and priorities identified in chapter 5, and the SEEA-CF update opportunities reviewed in chapter 6, point to a concrete set of actions rather than only a research agenda. This chapter sets out recommendations organised around six areas: contributing to the SEEA-CF update; embedding SEEA more explicitly in G-DRSF implementation guidance; engaging with UNDRR's new DELTA Resilience system; supporting national implementation, including through more granular data than the standard SEEA accounts; possible case studies; and strengthening institutional collaboration.

7.1 Contributing to the SEEA-CF update

The near-term priorities identified in chapter 5 are, by design, already linked to specific issues under active consideration in the SEEA-CF update (Issues A4, C2, C4 and C5). The most direct action available to the disaster statistics community is therefore to participate in the global

consultation rounds on these issues through 2026 and 2027, submitting comments grounded in concrete disaster use cases — for example, the hazard-disaggregation example set out in chapter 5 — rather than general observations.

Task teams working on these issues would also benefit from including disaster-statistics expertise directly, in the same way the commenting team for Issue C5 already draws on national and IMF expertise; IAEG-DRS could be approached to nominate a contact for this purpose.

The stand-alone webinar proposed in chapter 6 should be concretely scheduled for early 2027, with a clear agenda tied to the priorities identified in this paper, so that it produces structured input to the update rather than a general awareness-raising session.

7.2 Embedding SEEA in G-DRSF implementation guidance

A second set of actions concerns the practical guidance through which countries actually implement these frameworks, rather than the frameworks themselves.

UNECE's *Recommendations on the Role of Official Statistics in Measuring Hazardous Events and Disasters* are currently being operationalised through *Practical implementation guidelines for disaster-risk-related indicators* (endorsed by the Conference of European Statisticians in June 2026). This guide, and the underlying *CES Set of Core Disaster-Risk-Related Indicators* it supports, would benefit from explicitly cross-referencing SEEA-CF and SEEA-EA accounts wherever relevant, following the precedent already set by UNECE's *Implementation Guidelines for the CES Set of Core Climate Change-Related Indicators and Statistics Using SEEA*, published in 2021.

The transmission channels set out in chapter 3 and the applications discussed in chapter 4 could be incorporated in G-DRSF implementation guidance. Because both the SEEA-CF and the G-DRSF implementation guidance are being revised/developed on broadly similar timelines, maintaining a shared, living concordance table cross-referencing account and indicator names on both sides — updated as either framework evolves — would help keep the two revision processes mutually consistent, echoing the coordination gap identified in chapter 5 for DRR and climate change expenditure.

Beyond process coordination, the two frameworks are also naturally complementary in substance: G-DRSF provides baseline data on the exposure of assets and populations, while SEEA accounts capture changes in the stocks and flows of ecosystems and other assets — including the disaster impacts, damage, losses and additional costs that follow. This complementarity is itself a good reason to align the implementation of the two frameworks more closely.

7.3 Engaging with DELTA Resilience

UNDRR's new *DELTA Resilience* system, discussed in chapter 5, is being rolled out to countries in successive waves over a 24-month period (UNDRR, UNDP and WMO, 2026). This active rollout is itself an opportunity: in addition to further enhancing FRAME-ECO to serve as a module of DELTA Resilience to track losses of biodiversity and ecosystem services, the SEEA and disaster statistics communities could open a technical dialogue with the DELTA Resilience development team (UNDRR, UNDP and WMO). Such dialogue now could serve to further explore the environmental and ecosystem loss fields while the system's data architecture is still being finalised in individual country deployments.

A practical first step would be to invite UNDRR to present DELTA Resilience's data model to the SEEA community, e.g. at a future London Group meeting or at the next OECD/UNECE Expert Group Meeting on SEEA Implementation, specifically to identify where SEEA-CF and SEEA-EA could be connected, and to test this in one of the system's ongoing regional rollout waves as a small, low-cost pilot rather than a separate initiative.

7.4 Supporting national implementation

Chapter 5 identified a gap between the SEEA's standard, national-level annual accounts and the more granular information that G-DRSF exposure and impact statistics typically require. Closing this gap does not necessarily require new accounting concepts, but it does require explicit guidance encouraging countries that already compile SEEA-CF and SEEA-EA accounts to produce and share breakdowns more granular than the standard published accounts, specifically: disaggregating the SEEA-CF asset account's catastrophic-losses line by hazard and disaster type, consistent with the near-term SEEA-CF update priority identified in chapter 5; and compiling land and ecosystem extent accounts at sub-national resolution, consistent with the SEEA-CF update's own work on spatial explicitness (Issue A4).

Because this granularity is more a matter of compilation practice than of new methodology, a short technical note or "quick-start" guide on producing a hazard-disaggregated catastrophic-losses line could realistically be produced ahead of the full SEEA-CF update. National statistical offices undertaking this work should coordinate directly with the national disaster-risk management agencies already producing the *CES Set of Core Disaster-Risk-Related Indicators*, so the classifications used on the SEEA side and the disaster-statistics side remain consistent from the outset, rather than being reconciled after the fact.

7.5 Possible pilot studies

Testing the priorities identified in chapter 5 directly, in a small number of volunteer countries that already combine mature SEEA compilation with active disaster-loss tracking (for example through DELTA Resilience or DesInventar), would generate concrete evidence to inform both the SEEA-CF update and the DRSF/G-DRSF implementation guidance. Three pilots would each test a distinct priority from chapter 5:

a) A pilot disaggregating the SEEA-CF catastrophic-losses line by hazard type for a specific past disaster event;
b) A pilot valuing the loss of a specific regulating ecosystem service, such as flood control, following a real flood event, testing the medium-term ecosystem-service valuation priority and producing a concrete case study for future SEEA-EA valuation guidance;
c) A pilot applying primary- and secondary-purpose criteria to DRR expenditure in a country that already compiles EPEA, testing the coordination between Issues C2, C4 and C5 identified in chapter 5.

Pilot results should be reported back to both the SEEA-CF Technical Committee and the IAEG-DRS, so a single piece of country evidence can inform both revision processes at once rather than being channelled through only one.

7.6 Institutional collaboration and next steps

None of the recommendations above will be delivered by either community acting alone. A small joint contact group between the London Group and the IAEG-DRS, meeting at least once before

the next full London Group session, would provide a light-weight mechanism for tracking progress against the priorities identified in chapter 5 without creating a new standing body.

UNCEEA and UNSD should also ensure the disaster-related use case is formally on record within the SEEA-CF update itself, rather than remaining an informal aside associated with a single London Group paper — for instance by referencing this paper's findings in the relevant guidance notes for Issues A4, B2, C2, C4 and C5.

Given that the SEEA-CF update, the DRSF manual revision and the DELTA Resilience rollout are all expected to continue over a broadly similar horizon to 2027–2028, disaster-related statistics should remain a standing agenda item at future London Group sessions until the priorities identified in this paper are substantively addressed.

8 Conclusions

This paper has argued that SEEA can substantially strengthen the production, interpretation and policy relevance of disaster-related statistics under the G-DRSF, and that much of this potential can be realised by connecting the two frameworks rather than building a parallel accounting system. Chapter 3 set out this argument conceptually, using a sudoku-style framing in which G-DRSF data is inserted into existing SEEA cells – accounts that already exist, governed by rules that already exist – rather than treated as a reason to construct a new grid. Chapter 4 showed that this is not only a conceptual possibility: a substantial part of the information called for by the G-DRSF's three measurement areas – disaster risk, disaster impacts, and DRR activity and expenditure – can already be organised within existing SEEA-CF and SEEA-EA accounts.

At the same time, chapter 5 showed that important methodological gaps remain, particularly regarding the recording and valuation of disaster losses, the valuation of ecosystem-service impacts, the statistical treatment of exposure and vulnerability, the relationship between accounting and probabilistic disaster risk models, and the coordination of disaster risk reduction expenditure with the emerging climate change expenditure module in the SEEA-CF update. None of these gaps require abandoning the approach set out in this paper; some can be addressed within the existing SEEA structure, while others require methodological interfaces with disaster-related-statistics.

The ongoing update of the SEEA-CF, reviewed in chapter 6, provides a timely and largely ready-made vehicle for addressing several of the near-term priorities identified in this paper, while chapter 7 set out a wider set of practical actions – spanning the SEEA-CF update itself, G-DRSF and DRSF implementation guidance, UNDRR's new DELTA Resilience system, national implementation practice, and possible pilot studies – through which the London Group, UNCEEA, UNSD and the wider disaster statistics community could take this work forward together.

The case made in this paper is a modest but important one: that two communities working on closely related problems – environmental-economic accounting and disaster-related statistics – stand to gain more from connecting their existing frameworks than from developing separate ones, and that the tools to make that connection are, in large part, already at hand. The London Group's engagement, both in reviewing the approach set out in this paper and in helping to prioritise the recommendations in chapter 7, would be a valuable next step.

9 Questions for the London Group

The authors welcome the London Group's views on the approach and recommendations set out in this paper, and in particular invite comments on the following questions:

a) Does the London Group agree with the conceptual framing set out in chapter 3 – integrating the G-DRSF and SEEA by identifying transmission channels into existing accounts, rather than developing a separate accounting system – as a useful basis for further work?
b) Does the London Group agree with the methodological gaps identified in chapter 5, and with their prioritisation into near-, medium- and longer-term groups? Are there gaps the London Group considers should be added, reprioritised, or removed?
c) Does the London Group support the recommendation in chapter 7 that the SEEA-CF update process (Issues A4, C2, C4 and C5 in particular) explicitly incorporate disaster-related use cases, and if so, how might the disaster statistics community best contribute to the relevant task teams?
d) Does the London Group support pursuing one or more of the pilot studies proposed in chapter 7? Are there London Group members, or their national statistical offices, in a position to volunteer for such a pilot?
e) What is the London Group's view on proactively engaging with UNDRR's DELTA Resilience system to explore incorporating SEEA-based environmental and ecosystem information into its data model?
f) Does the London Group support establishing a joint contact group with the IAEG-DRS and UNDRR to coordinate the SEEA-CF update and the development of the G-DRSF implementation guidance going forward, along the lines proposed in chapter 7?

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