The Global SDG Synthesis Coalition

What do we know about the evidence base for the SDG Planet Pillar?

A SCOPING REVIEW

JUNE 2025

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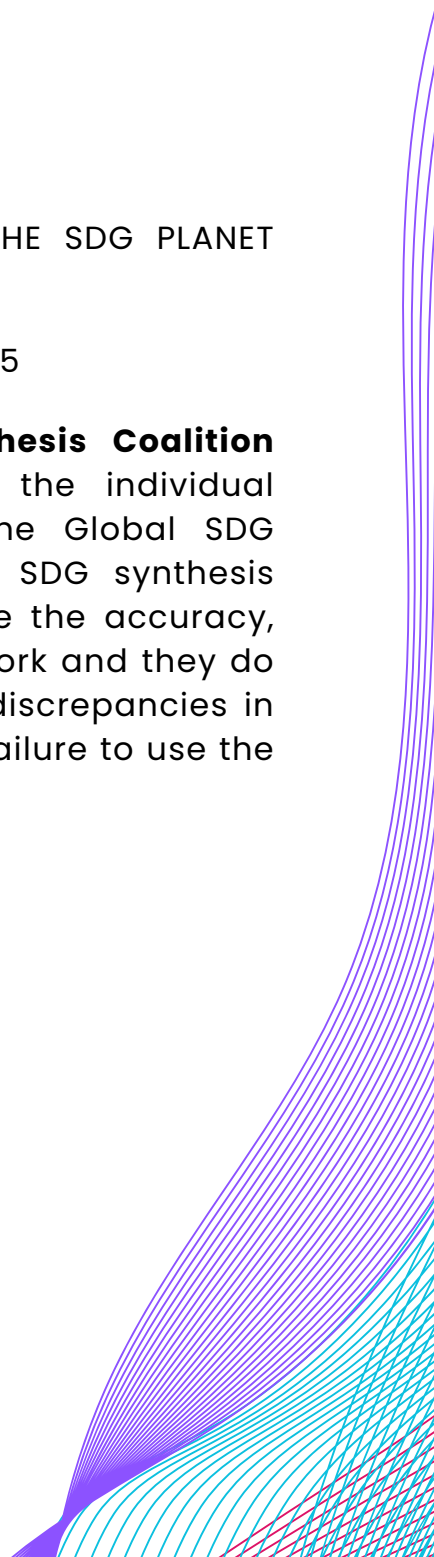

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Acronyms

EGM	Evidence gap map
ER	Evaluation report
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
SDG	Sustainable Development Goal
SR	Systematic review
SWEO	System-Wide Evaluation Office
UN	United Nations
UNDP	United Nations Development Programme
WASH	Water, sanitation and hygiene
WUE	Water-use efficiency

Executive summary

As of June 2024, progress towards the 46 targets within the Sustainable Development Goals (SDGs) Planet Pillar was varied. Specifically, the 2024 status report for the SDGs revealed that 7 targets were on track or already met; 3 targets displayed moderate progress; 13 targets exhibited marginal progress, requiring significant acceleration; and 18 targets showed signs of stagnation or regression. Consequently, 67 percent (31 out of 46) of the targets within the Planet Pillar were considered to have an unsatisfactory status, indicating that substantial efforts are necessary to achieve meaningful progress. This scoping review was commissioned to help identify specific topics within the Pillar for which living evidence syntheses, with the potential for catalytic change, could be developed.

This scoping review adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for scoping reviews. It focuses on systematic reviews (SRs) and United Nations (UN) evaluation reports (ERs) published in English, systematically identifying and synthesizing evidence meeting pre-specified eligibility criteria. Searches for SRs were conducted in the 3ie Development Evidence Portal and Social System Evidence databases. The United Nations Sustainable Development Group's evidence gap map (EGM) provided the information source for UN evaluations (ERs). Database searches were stratified by Planet Pillar Target Area and included free-text terms. A total of 792 records were identified. After removing duplicates and screening, 108 SRs and 232 ERs, totalling 340 studies, were retained for data extraction.

Since 2016, there has been an increase in Planet Pillar publications and UN ERs, with over 75 percent produced between 2021 and 2024. Evidence distribution is uneven, concentrated in Africa, Asia and the Pacific, and Latin America and the Caribbean, with 69 studies lacking regional identification. Nature-based interventions were the most studied intervention type in SRs (46), followed by policy-based (40) and behaviour change interventions (29). Most ERs reported contribution of UN projects or programmes to SDG 13 (161) and SDG 6 (68).

Four options are presented for moving forward with living syntheses, based on the available evidence and existing gaps:

- Option 1: Focus on areas needing accelerated action with concentrated evidence. These areas are water-related ecosystems, managing chemicals and wastes, terrestrial and freshwater ecosystems, and sustainable fishing.
- Option 2: Focus on areas with well-distributed evidence across all six UN regions. Evidence is dense for policy-based interventions for sustainable forest management; nature-based interventions for terrestrial and freshwater ecosystems; and structural and behavioural interventions for safe drinking water, sanitation and hygiene (WASH).
- Option 3: Focus on interventions that could exploit interlinkages among the Planet Pillar Target Areas. This covers nature-based and policy-based interventions, for which there is evidence for all Target Areas, which could create synergies across multiple areas, as well as energy interventions with cross-cutting impacts.
- Option 4: Focus on behaviour change in Target Areas where evidence from all regions is available. Evidence on behaviour change interventions for WASH (targets 6.1, 6.2, and 6.3) and climate change resilience and adaptive capacity (target 13.1) is available for all regions. WASH has been extensively studied since 2007, with significant evidence (40 SRs and 57 ERs). Further synthesis in WASH may not add scientific value unless it focuses on sustained adoption. Climate change resilience is a crucial and emerging area, with some evidence of effectiveness of various interventions. This area stands to benefit from living syntheses for collaborative sharing.

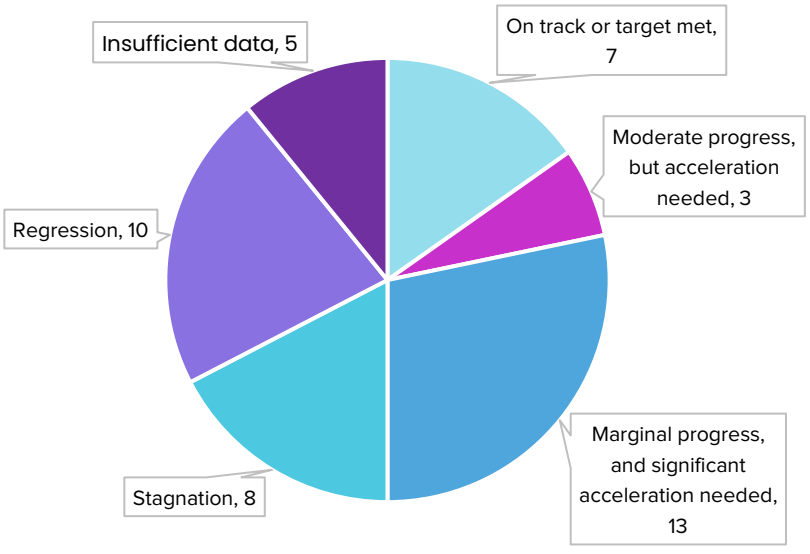
Chapter 1. Introduction

1.1. The Planet Pillar

The SDGs Planet Pillar encompasses five SDGs: SDG 6 on clean water and sanitation; SDG 12 on responsible consumption and production; SDG 13 on climate action; SDG 14 on life below water; and SDG 15 on life on land. Collectively, they reflect the international community's resolve to protect the planet by sustainably managing its natural resources, tackling the drivers of and fallout from climate change, and promoting sustainable consumption and production.

Global progress towards targets related to the five SDGs has been variable. As of June 2024, 7 of 46 targets within the Pillar were assessed as being 'on track or met'; 3 were assessed as achieving 'moderate progress'; 13 targets achieved marginal progress, with significant acceleration being required; and 18 targets had a status of stagnation or regression (Figure 1). There were insufficient data to determine the status of the remaining 5 targets. Overall, 67 percent (31) of the targets in the Planet Pillar could be deemed as having an unsatisfactory status—that is, marginal progress requiring significant acceleration, or stagnation or regression (Table 1).

Figure 1. Overall progress on SDG Planet Pillar targets



Note: n=46.
Source: *The Sustainable Development Goals Report 2024* (United Nations, 2024).

Table 1. SDG Planet Pillar outcome targets with marginal progress, stagnation or regression, as of June 2024, as reported in The Sustainable Development Goals Report 2024

Marginal progress	Stagnation	Regression
SDG 6 ▪ 6.1. Safe drinking water ▪ 6.3 Water quality ▪ 6.4. Water-use efficiency SDG 13 ▪ 13.1. Resilience & adaptive capacity SDG 14 ▪ 14.1. Marine pollution ▪ 14.2 Marine and coastal ecosystems ▪ 14.5 Conservation of coastal and marine areas SDG 15 ▪ 15.2. Sustainable forests management ▪ 15.9. Biodiversity in national & local planning	SDG 6 ▪ 6.5. Transboundary water cooperation ▪ 6.6 Water-related ecosystems SDG 12 ▪ 12.2 Sustainable use of natural resources ▪ 12.4 Managing chemicals and wastes. ▪ 12.5 Reduction in waste generation SDG 15 ▪ 15.1 Terrestrial and freshwater ecosystems ▪ 15.4 Conservation of mountain ecosystems	SDG 12 ▪ 12.3 Food waste and food losses SDG 13 ▪ 13.2 Climate change policies SDG 14 ▪ 14.3 Ocean acidification ▪ 14.4 Sustainable fishing ▪ 14.7 Marine resources for Small Island Developing States and least developed countries. SDG 15 ▪ 15.3 Desertification and land degradation ▪ 15.5 Loss of biodiversity

Note: SDG outcome targets are denoted by numbers (e.g. 6.3), and process targets are marked with letters (e.g. 14.a).

Source: *The Sustainable Development Goals Report 2024* (United Nations, 2024).

Evidence of effective or promising strategies is needed to assist the international community to reverse regression and accelerate progress to achieve the Planet Pillar outcome targets. The Global SDG Synthesis Coalition is therefore producing a series of 'living' syntheses with the potential for catalytic change. This scoping review is intended to inform decisions about the living syntheses to be developed. Ideally, these

syntheses should focus on the areas where there is marginal progress, stagnation or regression. However, a rapid pre-scoping on the Planet Pillar found that available evidence is concentrated around SDG 6, SDG 13 and SDG 15, with less evidence on SDG 12 and SDG 14 (Yearwood, 2024b; Yearwood and Uitto, 2024). Given the availability of research and bearing in mind the principles of SDG accelerators,[1] this scoping review will focus on the areas outlined in Table 2. In the remainder of this report, these areas are collectively referred to as **Planet Pillar Target Areas**.

Table 2. Planet Pillar Target Areas for consideration in this scoping review

SDG	Target[1]	Planet Pillar Target Area	
SDG 6	6.1, 6.2, 6.3	Safe drinking water; access to sanitation and hygiene; water quality (WASH)[2]	Energy-interlinkages (SDG 7.1, 7.2)[3]
	6.4	Water-use efficiency (WUE)	
	6.6	Water-related ecosystems (freshwater ecosystems)	
SDG 12	12.3	Food waste and food losses	
	12.4	Management of chemicals and wastes	
SDG 13	13.1	Climate change resilience and adaptive capacity	
SDG 14	14.2	Marine and coastal ecosystems	
	14.4	Sustainable fishing	
SDG 15	15.1	Terrestrial and freshwater ecosystems	
	15.2	Sustainable forests management	

Note:

[1] Climate change mitigation outcome targets 13.2 and 13.3 were recommended by the Management Group for inclusion. They were omitted for the following reasons: (i) *The Sustainable Development Goals Report 2024* (United Nations, 2024) reported insufficient data to assess progress on target 13.3; and (ii) indicators for 13.2 (nationally determined contributions, long-term strategies, national adaptation plans and adaptation communications) are policy related. It is unlikely there will be significant policy analysis research for this area.

[2] Targets 6.1, 6.2 and 6.3 all relate to the broader SDG 6 concept of WASH, and their corresponding Planet Pillar Target Area has been labelled as such for this review.

[3] The entire 2030 Agenda for Sustainable Development is interconnected. However, SDG 7—particularly target 7.1 on modern energy services (electricity, clean fuels) and target 7.2 on renewable energy sources—is highly relevant to achieving the Planet Pillar target outcomes. The effect of energy interventions on the Planet Pillar Target Areas is therefore considered.

[1] The United Nations Department of Economic and Social Affairs outlined two important attributes of SDG acceleration actions: integrated policy actions to leverage interlinkages among SDGs; and actions for leaving no one behind (United Nations Department of Economic and Social Affairs, 2023).

1.2. Objectives

As outlined in an approach paper (Yearwood, 2024a), the objectives of this scoping review are (i) to identify the existing literature that explores interventions (including projects or programmes) that impact the Planet Pillar Target Areas, and (ii) to identify the existing literature that explores the impact of modern/renewable energy interventions on the Planet Pillar Target Areas.

1.3. Research questions

The specific questions that are addressed in the scoping review are as follows:

1. What is the extent (size, and distribution by publication date, geographic location and study type) and nature[2] (characteristics of interventions or programmes) of the literature about interventions to impact the Planet Pillar Target Areas?
2. What is the extent (size, and distribution by publication date, geographic location and study type) and nature (type of energy intervention) of the literature on the impact of modern/renewable energy interventions on Planet Pillar Target Areas?

[2] Although evidence reviews often focus on the nature of study designs, this scoping review addresses intervention types.

Chapter 2. Methods

The scoping review follows the guidelines described by the checklist for the PRISMA extension for scoping reviews (known as PRISMA-ScR) (Tricco and others, 2018).

2.1. Eligibility criteria

The eligibility criteria for the review are presented in Table 3. They are categorized according to the Population–Concept–Context framework recommended by Peters and others (2015) and Peters and others (2024).

Table 3. Eligibility criteria

Framework element	Definition
Population	Any individuals (any age, any sex), animals, populations, species, ecological communities, human communities, ecosystems, biome. These take place across all scales, from individuals, households, firms, communities, districts, regions, countries.
Concept	1. Any systematic review or systematic literature review with meta-analysis reporting effect of interventions on Planet Pillar Target Areas. 2. Any UN evaluation reporting contribution of a project or programme to Planet Pillar Target Areas. 3. Any systematic review reporting effect of modern energy services (electricity, clean fuels) or renewable energy interventions on the Planet Pillar Target Areas. 4. Any UN evaluation reporting project or programme contribution to modern energy services (electricity, clean fuels) or renewable energy interventions.
Context	Any developed or developing country. No publication date limit was set to deliberately leave it open to capture as much research as may be available.

Study design

SRs, systematic literature reviews with meta-analyses, and UN ERs, published in English, are the study designs of interest. SRs are defined as studies that identify, appraise and synthesize all the empirical evidence that meets pre-specified eligibility criteria to answer a specific research question. Systematic literature reviews with meta-analyses are defined as studies that identify all empirical evidence that fits pre-specified eligibility criteria to answer a clearly formulated research question, using statistical methods to estimate effect size. Hereafter, we refer to both type of reviews as SRs.

Geographical and time scope

As shown in Table 3, the scope of the review is global, and there is no publication date limit.

2.2. Information sources

We ran searches for SRs in two databases: the 3ie Development Evidence Portal[3] and Social System Evidence.[4] The United Nations Sustainable Development Group System-Wide Evaluation Office (SWEO) EGM[5] was the information source for ERs. All records tagged in this EGM as SDGs 6, 7, 12, 13, 14 and 15 were obtained for screening. The United Nations Development Programme (UNDP) Independent Evaluation Office provided the citation files for these records.

2.3. Search strategy

Database searches were stratified by Planet Pillar Target Area and included free-text terms. The search terms used are presented in Annex 1. We also included for screening the SRs that were identified from the 3ie Development Evidence Portal and Social System Evidence during the rapid pre-scoping study (Yearwood, 2024b; Yearwood and Uitto, 2024). We also searched (using Google Scholar) to locate the research

[3] See https://developmentevidence.3ieimpact.org/.
[4] See https://www.socialsystemsevidence.org.
[5] See https://www.sdgsynthesiscoalition.org/sites/default/files/2024-10/UNSWE_Interactive%20Evaluation%20Evidence%20Map_SDGs_v1.0.html.

articles of any protocols identified when we ran the database searches. For each protocol, we searched for author, title and date. When the article was located, we confirmed that it reported findings for the protocol, by cross-referencing the protocol registration number or protocol website cited in the article.

2.4. Selection of sources of evidence

Studies were deduplicated using EPPI-Reviewer 6 software. The screening process was done in one step—that is, after reviewing titles, abstracts, and the study's research question(s) or objective(s).

2.5. Data extraction process

EPPI-Reviewer 6 was also used for the data extraction process.

2.6. Data items

The data items extracted were (i) citation details (author(s), publication year, study title); (ii) publication type (SR, evaluation report); (iii) evaluation type (global, regional, country programme, joint programmes and pooled funding, emergency response, synthesis/summary); (iv) intervention; (v) Planet Pillar Target Area; (vi) SDG; (vii) geographical/UNDP region (the region(s) where the intervention was conducted or the region of the beneficiary country(ies) of the UN project or programme); (viii) implementation barriers/facilitators (reported yes/no); (ix) study mediators/moderators (reported yes/no); and (x) economic or costs considerations (reported yes/no).

2.7. Synthesis of results

Data from SRs were categorized and reported by intervention type and Planet Pillar Target Area. The intervention categories used are listed in Table 4, along with their definitions.

Table 4. Categories for summarizing reported interventions

Intervention type	Definition	Example
Policy-based	Activities that use legal, economic or voluntary instruments to achieve outcomes.	Laws; subsidies; insurance; vouchers; standards; guidelines.
Nature-based	Activities that use ecosystems and biodiversity and sustainable management, conservation and restoration of ecosystems to achieve outcomes.	Agroforestry, restoration of wetlands; rehabilitation of fish habitats.
Structural	Activities that use structural components to achieve outcomes.	Dams; desalination plants; construction of outdoor toilets.
Technological	Activities that apply specific technologies to support the achievement of outcomes.	Drones equipped with sensors to detect forest fires; food biotechnology.
Behaviour change	Activities that inform, educate or use other coordinated approaches to influence change in behaviour.	Training programmes; reminders; checklists.
Institutional	Activities that involve development of organizational arrangements to achieve outcomes.	Governance systems; organizational decision support systems.
Energy	Activities that use modern energy services (electricity and clean fuels) or renewable energy sources.	Clean fuels: solar, electricity, biogas, liquified petroleum gas, alcohol, biomass stoves—tier 4 or tier 5. Renewable energy: solar, wind, geothermal, hydropower, ocean energy, bioenergy.

Intervention type	Definition	Example
Mixed or multicomponent	Interventions that combine two or more of the above categories.	Policy-based and behaviour change.
Other	Activities that cannot be classified using the above categories.	

As noted in the approach paper (Yearwood, 2024a), we also intended to extract (i) the target populations covered by interventions (e.g. indigenous peoples), and (ii) for each Planet Pillar Target Area, the specific outcomes measured (e.g. forest cover for target 15.2). However, given time constraints, it was not possible to code studies to this level of detail.

Data from ERs were categorized and reported by type of evaluation and Planet Pillar Target Area, where possible. However, some reports provided insufficient details to extract the programme's contribution to a specific Planet Pillar Target Area. We followed the evaluation type classification used in the SWEO EGM.

For SRs, we also documented if the paper provided information related to the following:

1. barriers or facilitators (positive or negative factors that influenced implementation or uptake of the interventions);
2. mediators (factors explaining the process through which the intervention and outcome were related); and
3. moderators (factors affecting the strength and direction of the intervention–outcome relationship).

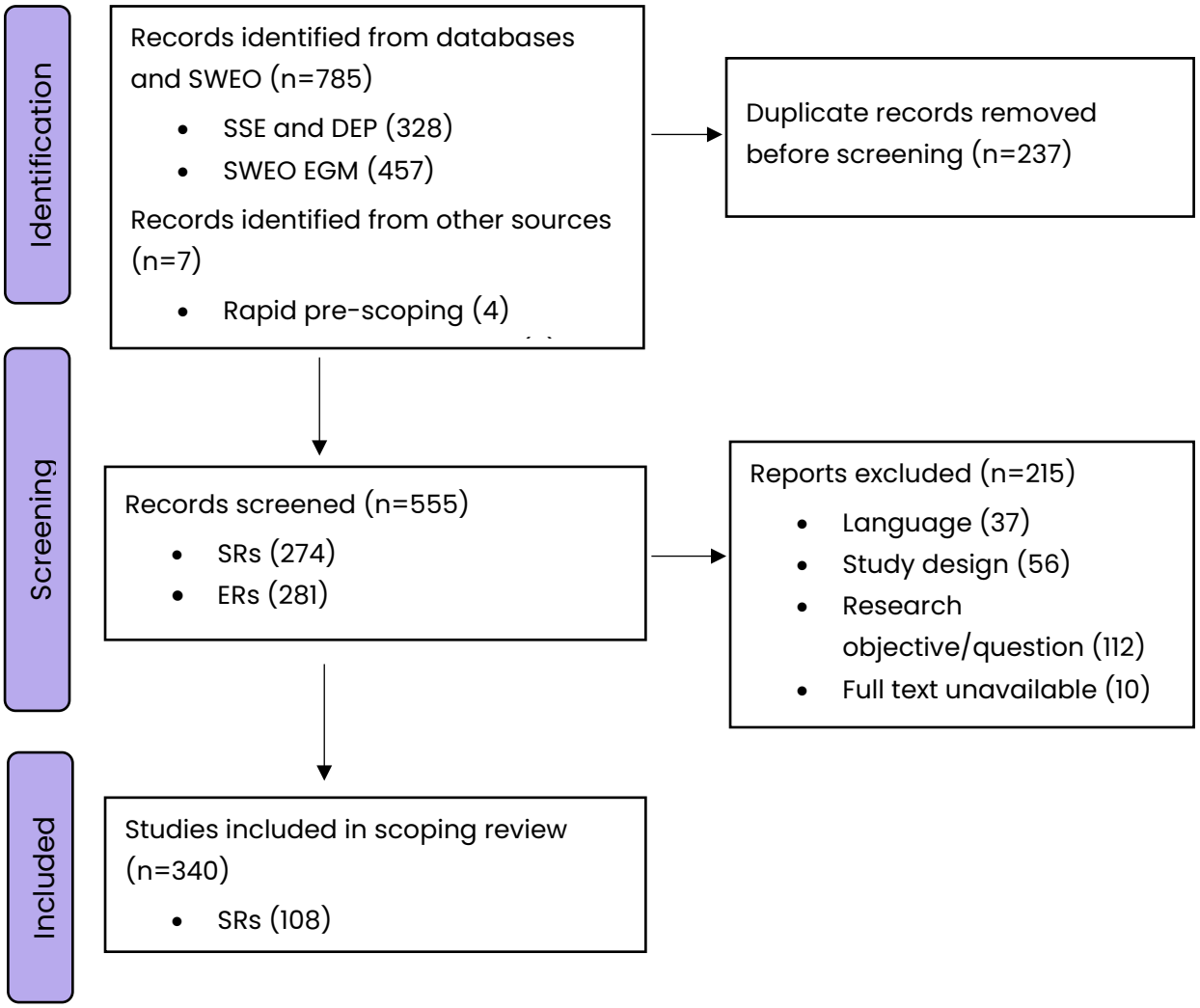
All findings were summarized descriptively using simple frequences.

Chapter 3. Results

3.1. Results of the search / study selection process

A total of 792 records were identified. The search strategy from databases yielded 328 SRs. Four SRs identified during the pre-scoping, and 3 studies from protocols were also found. A further 457 ERs were identified from the SWEO EGM. After de-duplication and screening, 108 SRs and 232 ERs (340 studies in total) were retained for data extraction (Figure 2). The full list of included studies is reported in Annex 2.

Figure 2. PRISMA flow chart of the study selection process



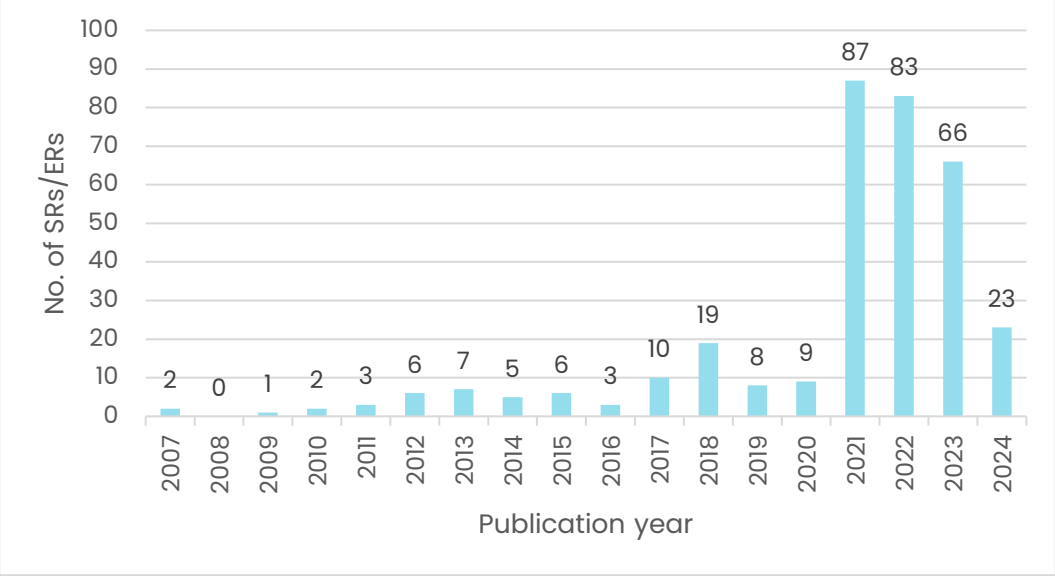
Note: SSE = Social System Evidence; DEP = 3ie Development Evidence Portal.

3.2. Characteristics of included studies

Distribution of studies by publication date

Since 2016, there has been an increase in the number of Planet Pillar related SRs and UN ERs published. More than 75 percent of the available evidence from these two sources was produced within the last 4 years (2021–2024) (Figure 3).

Figure 3. Distribution of SRs and ERs by publication date

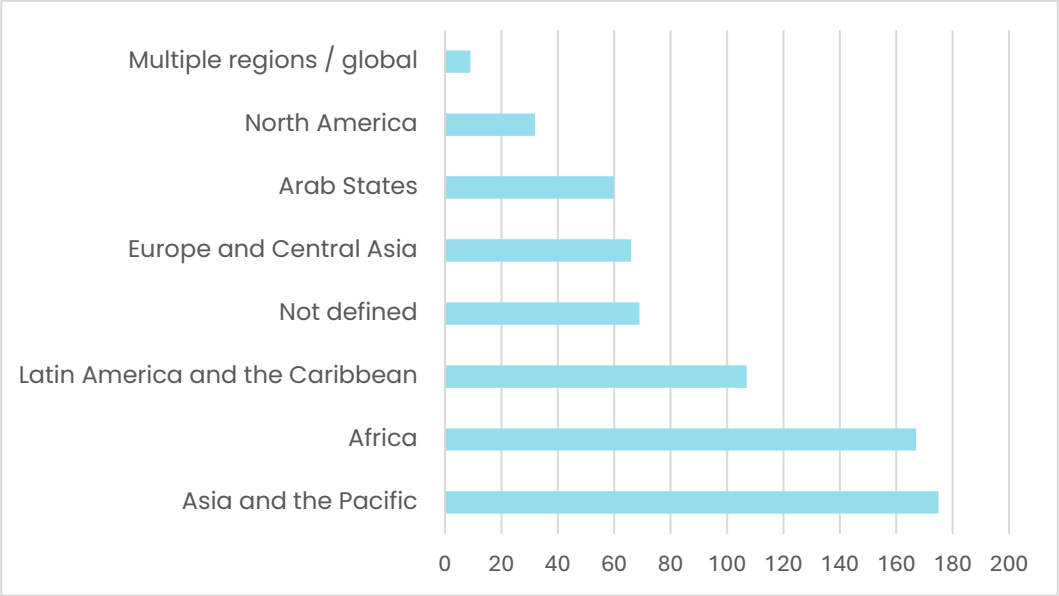


Note: The sum of all the SRs and ERs shown in the figure is 340.

Regional distribution of studies

The regional distribution of available evidence is somewhat uneven. Figure 4 shows the number of SRs reporting interventions conducted in each UN region and the number of ERs reporting projects or programmes delivered for beneficiaries, by region. Although all regions are represented, the available evidence is concentrated in Africa, Asia and the Pacific, and Latin America and the Caribbean. The region in which the intervention, project or programme took place could not be defined in 69 studies.

Figure 4. Distribution of studies by UN region

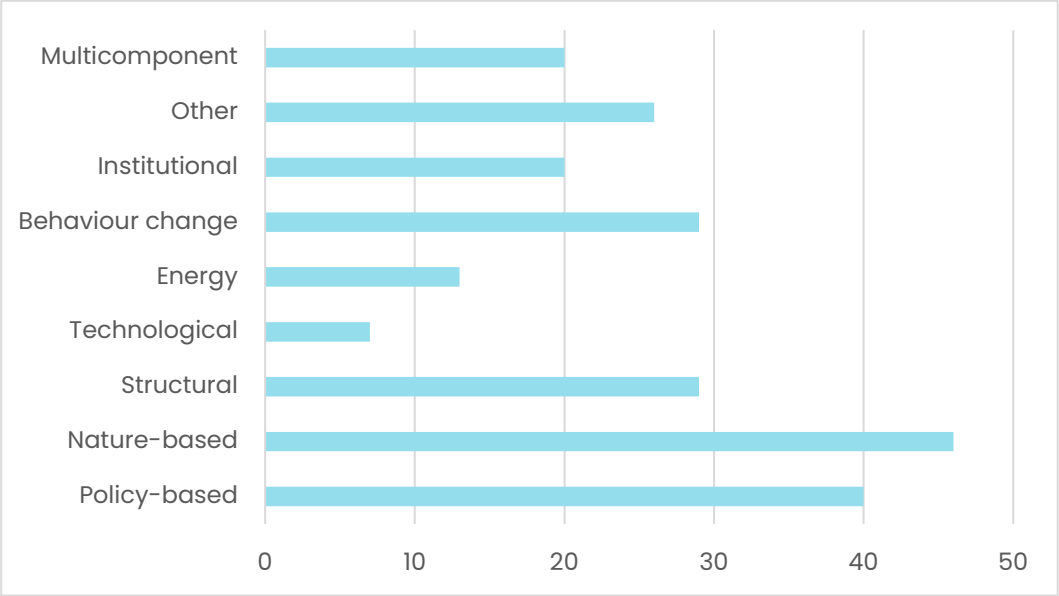


Note: The SRs and ERs shown in the figure sum to 685, whereas 340 were included in the scoping review. Some studies applied to multiple categories (regions) and were therefore counted more than once.

Intervention types studied across SRs

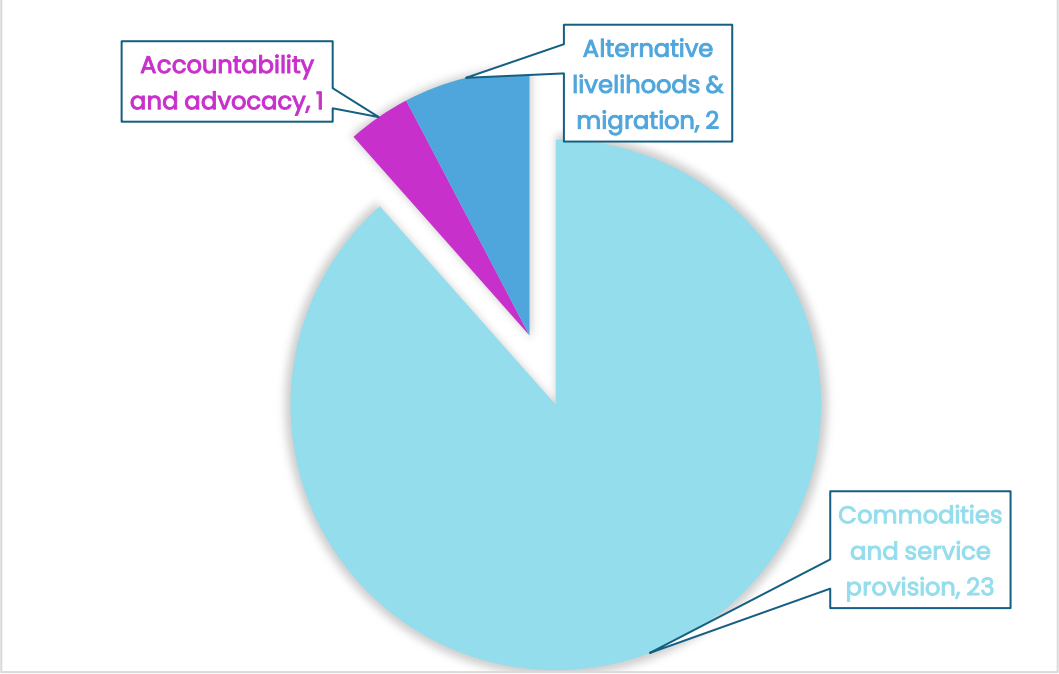
The taxonomy used to categorize interventions (Table 4) was applicable, as most SRs were coded using this pre-defined structure. Figure 5 shows the type of interventions included in SRs. Nature-based interventions were by far more frequently studied (n=46), followed by policy-based (n=40) and behaviour change (n=29) interventions. Of the 108 included SRs, 26 reported interventions that could not be classified using the generic structure and were coded as 'Other'. Most of them were service provision and commodities related to WASH (n=23), followed by alternative livelihoods and mitigation (n=2), and accountability and advocacy (n=1) (Figure 6).

Figure 5. Types of interventions studied in SRs



Note: The SRs shown in the figure sum to 230, whereas 108 were included in the scoping review. Some SRs applied to multiple categories (types of interventions) and were therefore counted more than once.

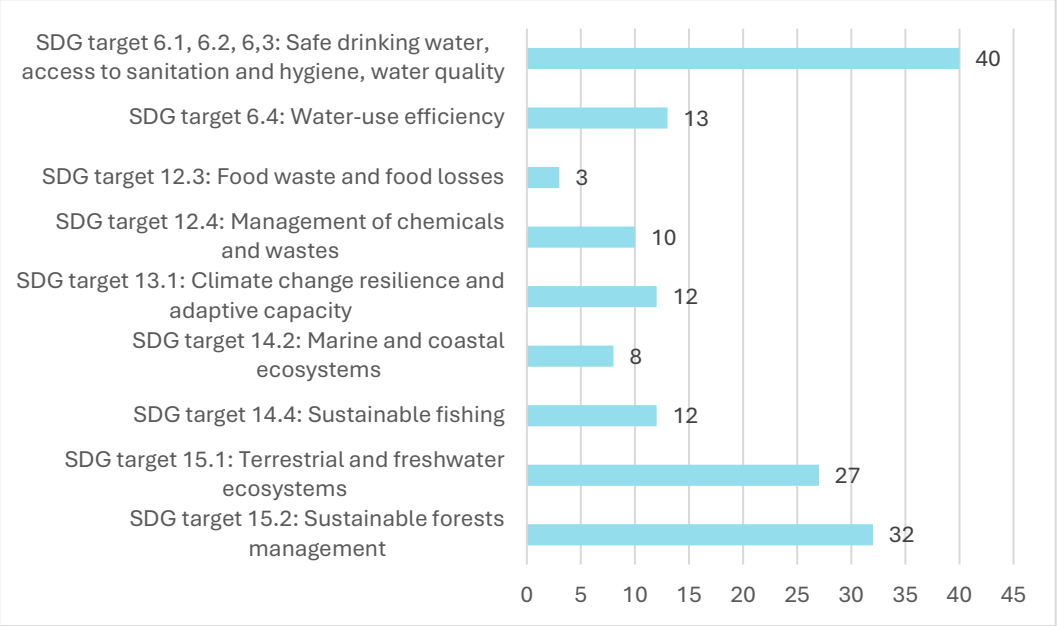
Figure 6. Types of interventions in SRs classified as 'Other'



Planet Pillar Target Areas studied in SRs

The Planet Pillar Target Areas of interest reported in included SRs are shown in Figure 7. Much like in the rapid pre-scoping, SDGs 6,13 and 15 were found to be frequently studied. The most frequently examined Planet Pillar Target Area was WASH (n=40), followed by sustainable forests management (n=32), terrestrial and freshwater ecosystems (n=27), WUE (n=13), climate change resilience and adaptive capacity (n=12), sustainable fishing (n=12), water-related ecosystems (n=11), chemicals and waste management (n=10), and marine and coastal ecosystems (n=8). Very few SRs investigated food waste and food losses (n=3). It is important to note that a single SR could report on multiple Planet Pillar Target Areas.

Figure 7. Planet Pillar Target Areas reported in SRs

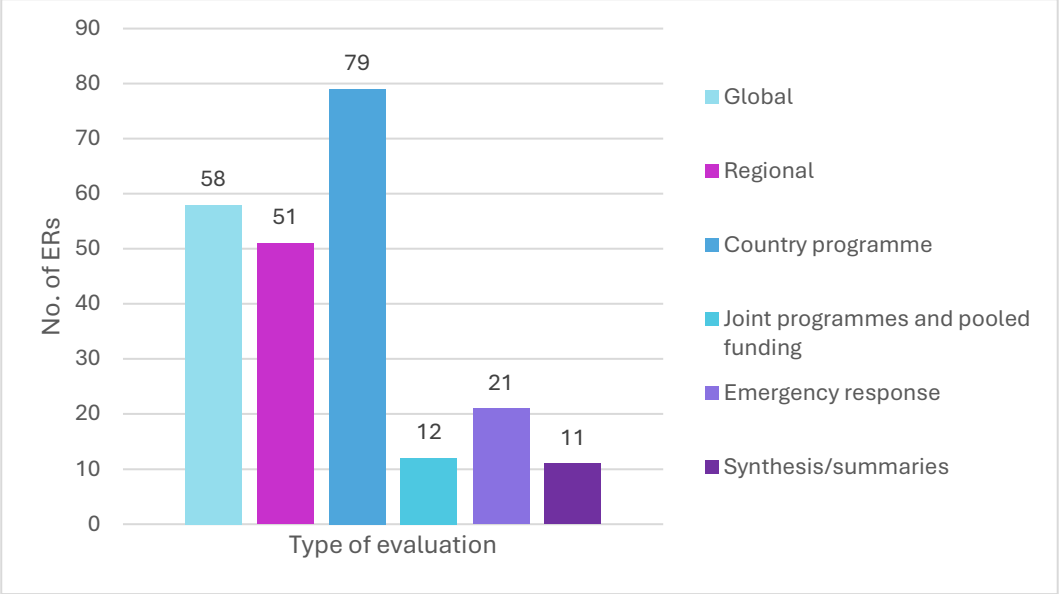


Note: The SRs shown in the figure sum to 168, whereas 108 were included in the scoping review. Some SRs applied to multiple categories (Planet Pillar Target Areas) and were therefore counted more than once.

Types of included ERs

ERs of all types were included in the scoping. Most were evaluations of country programmes (n=79), global evaluations (n=58) and regional programme evaluations (n=51) (Figure 8).

Figure 8. Distribution of ERs by type

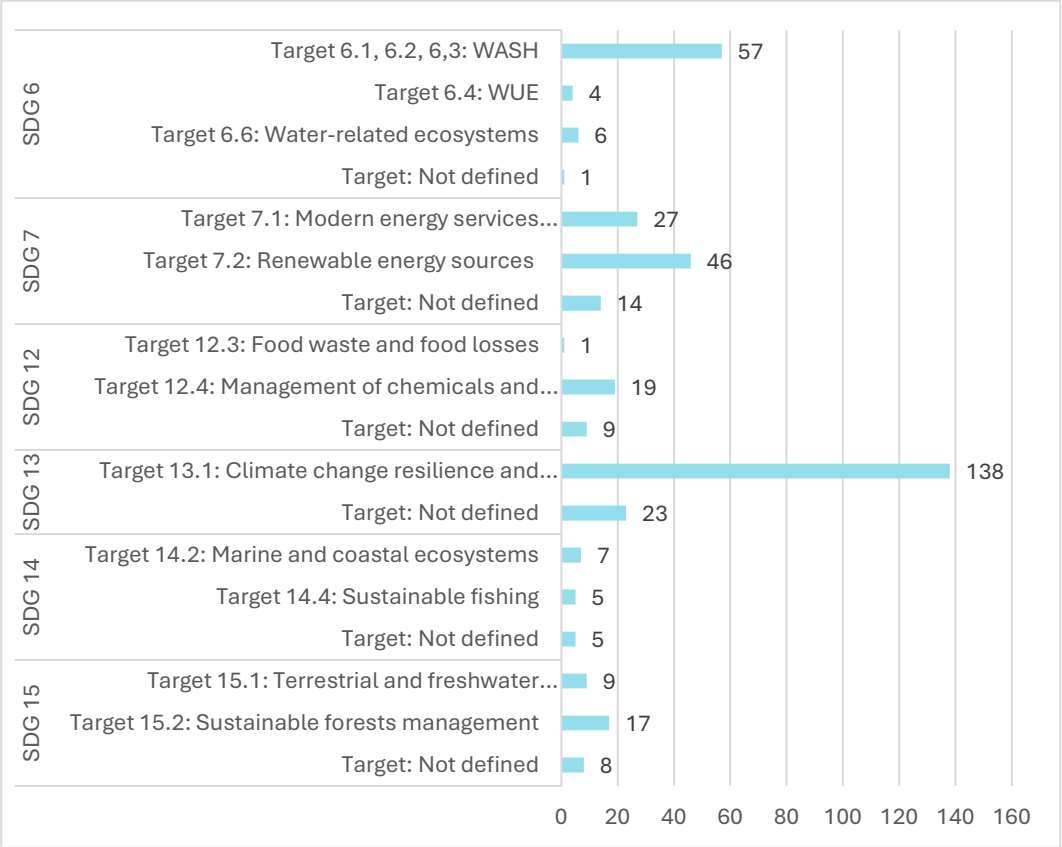


Note: The sum of all the ERs shown in the figure is 232.

Evaluation types by Planet Pillar Target Areas

Most ERs reported contribution of UN projects or programmes to SDG 13 (n=161) and SDG 6 (n=68). As with SRs, a single ER could report contribution to multiple SDG target areas. Overall, 62 ERs did not provide sufficient details to enable the specific SDG Planet Pillar Target Area to be coded (Figure 9).

Figure 9. Planet Pillar Target Areas reported in ERs



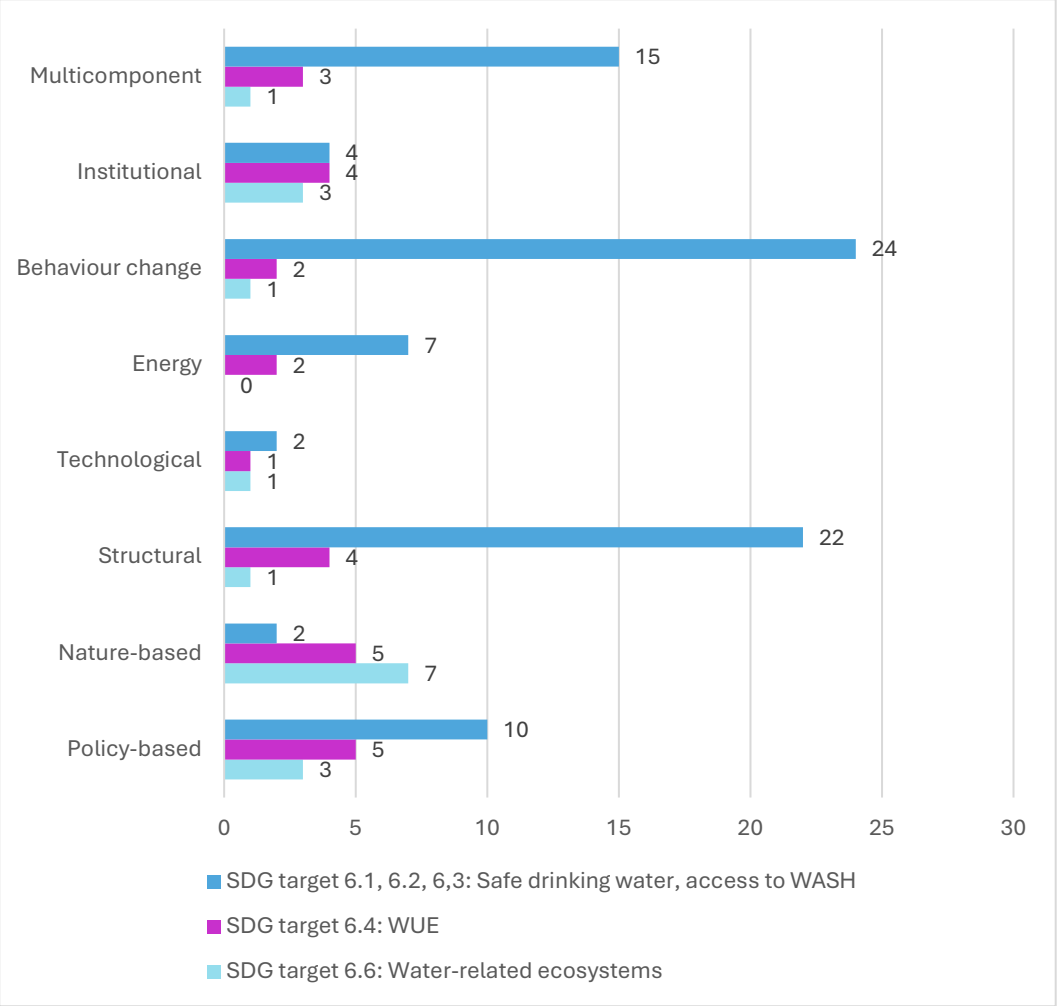
Note: The ERs shown in the figure sum to 396, whereas 232 were included in the scoping review. Some ERs applied to multiple categories (Planet Pillar Target Areas) and were therefore counted more than once.

3.3. Synthesis of results

SDG 6: targets 6.1, 6.2, 6.3 (WASH), 6.4 (WUE) and 6.6 (water-related ecosystems)

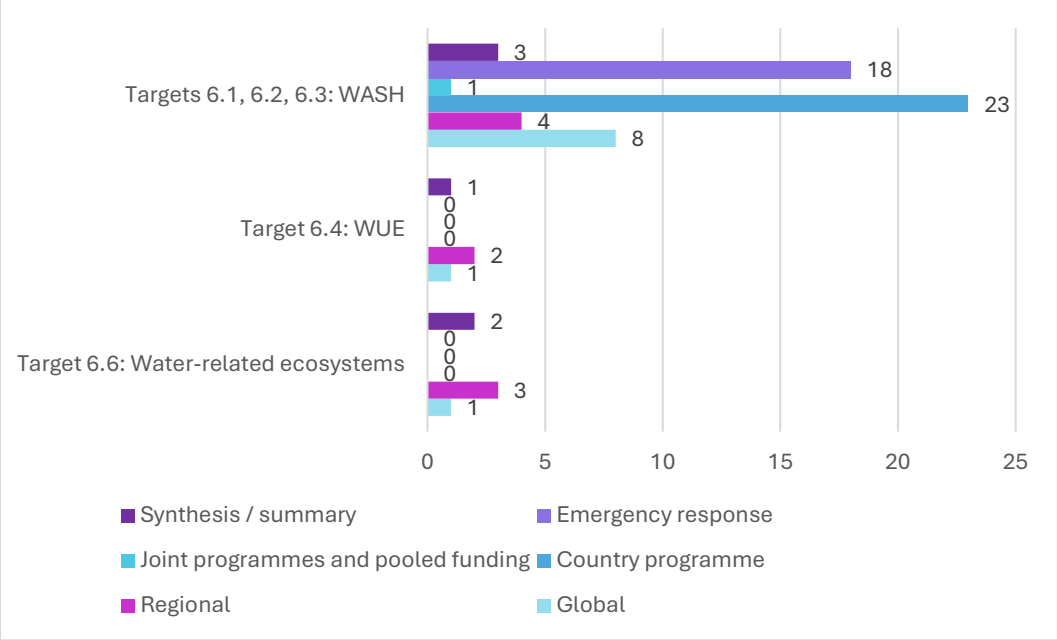
There is substantial evidence from SRs and UN evaluations about WASH. In all, 40 SRs (Annex A2.1) and 57 ERs (Annex A2.2) reported interventions, projects or programmes to improve WASH. For SRs, the evidence is across all intervention categories; however, behaviour change and structural interventions were more frequently reported in the literature (Figure 10). Examples of behaviour change interventions included promotional approaches to promote handwashing, latrine use or safe faeces disposal. An example of a structural intervention was reconstructing or maintaining piped water infrastructure. For ERs, most of the evaluative evidence on WASH came from country programmes and emergency response programmes (Figure 11).

Figure 10. Types of interventions reported in SRs related to Planet Pillar targets 6.1, 6.2, 6.3, 6.4 and 6.6



Note: The SRs shown in the figure sum to 129, whereas 108 were included in the scoping review. Some SRs applied to multiple categories (types of interventions related to specific Planet Pillar Target Areas) and were therefore counted more than once.

Figure 11. Types of evaluations related to Planet Pillar targets 6.1, 6.2, 6.3, 6.4 and 6.6



Note: Some ERs may have applied to multiple categories (types of evaluations related to specific Planet Pillar Target Areas) and were therefore counted more than once.

Thirteen SRs (Annex A2.3) and 4 ERs (Annex A2.4) reported interventions, projects or programmes to address WUE. Interventions for WUE, reported in reviews, were across all categories; however, policy-based and nature-based interventions were a bit more dominant (Figure 10). Policy-based interventions included regulation, decentralization, voluntary mechanisms such as farmer organizations, and payment-based mechanisms. Examples of nature-based interventions were agroecological initiatives such as agroforestry, systems of rice intensification, and water efficient irrigation. Evaluative evidence on WUE was found in a global evaluation (n=1), regional evaluations (n=2) and a synthesis/summary evaluation (n=1) (Figure 11).

Water-related ecosystems had relatively less evidence than the other Planet Pillar SDG 6 water areas. In all, 11 SRs (Annex A2.5) and 6 ERs (Annex A2.6) reported on this Planet Pillar Target Area. Nature-based interventions were by far the most frequently reported intervention category (Figure 10). The swidden fallow system, controlled groundwater management techniques and mangrove restoration were some examples of nature-based interventions studied. One global programme, 3 regional programmes, and 2 syntheses/summaries provided available evaluative evidence on this Target Area (Figure 11).

Factors explaining implementation success, the relationship between interventions and outcomes, and costs associated with interventions for Pillar targets 6.1–6.3, 6.4 and 6.6

Seventeen SRs reported barriers/facilitators or mediators/moderators for WASH;[6] 8 reviews reported barriers/facilitators or mediators/moderators for WUE,[7] and 6 reviews reported these factors for water-related ecosystems.[8] The frequency at which SRs mentioned cost considerations related to interventions was as follows: WASH (n=13), WUE (n=5) and water-related ecosystems (n=4).[9]

SDG 12: targets 12.3 (food waste and food losses) and 12.4 (chemicals and wastes management)

Three SRs reported interventions to address food waste and food losses (Annex A2.7); however, only 1 ER provided evidence on this Pillar Target Area. The 3 SRs reported policy-based, nature-based, institutional and multicomponent intervention types. The policy-based interventions studied were waste hierarchies and interventions across stages in the food value chain.

Interventions for management of chemicals and wastes were reported in 10 SRs (Annex A2.8). The most frequently reported intervention type was nature-based (n=5), followed by policy-based (n=3) (Figure 12). Examples of the interventions studied were the composting of green waste and techniques for removal of contaminants from groundwater. Of the included ERs, 19 reported the contribution of projects or programmes to chemicals and wastes management (Annex A2.9). Of these, just over

[6] Als and others, 2020; Annamalai and others, 2016; Annamalai and others, 2017; Bizikova and others, 2020; De Buck and others, 2017; Devkar and others, 2013; Garn and others, 2017; Hepworth and others, 2013; Hepworth and others, 2022; Hulland and others, 2015; Jones-Hughes and others, 2013; Prasad and others, 2021; Venkataramanan and others, 2018; Waddington and others, 2009; Yates and others, 2017a; Yates and others, 2017b; Yates and others, 2018. See annex A2.1 for full publication details.

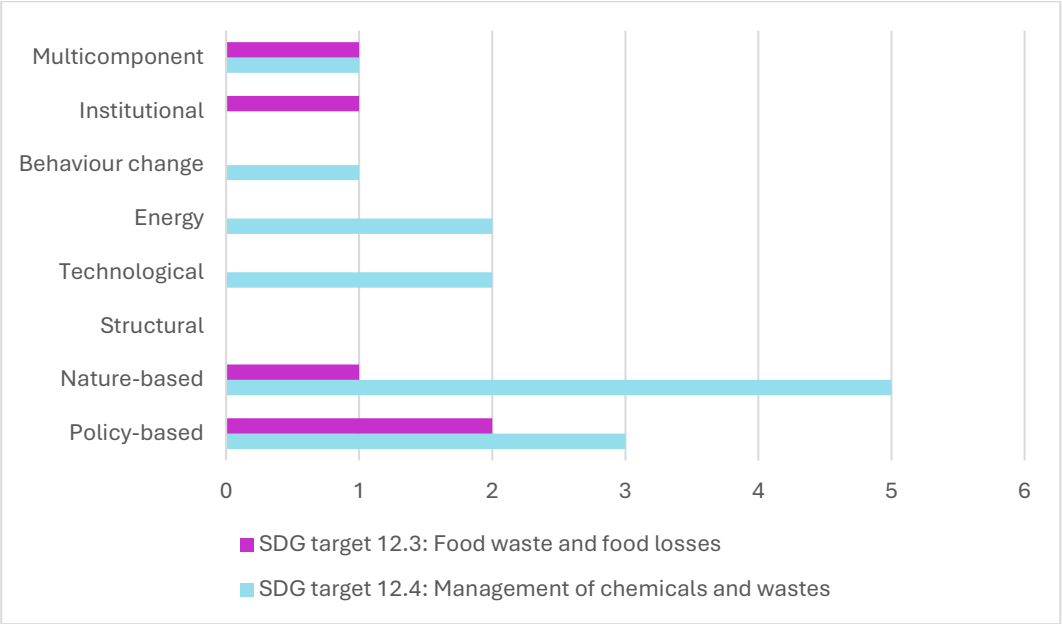
[7] Bizikova and others, 2020; Blom and others, 2024; Castle and others, 2021; Hepworth and others, 2013; Hepworth and others, 2022; Maryono and others, 2024; Sabater and others, 2018; Yates and others, 2018. See annex A2.3 for full publication details.

[8] Bizikova and others, 2020; Castle and others, 2021; Hepworth and others, 2013; Hepworth and others, 2022; Jones-Hughes and others, 2013; Su, Freiss and Gasparatos, 2021. See annex A2.5 for full publication details.

[9] Annamalai and others, 2012; Annamalai and others, 2016; Annamalai and others, 2017; Hepworth and others, 2013; Hunter and others, 2019; Jones-Hughes and others, 2013; Khogali and others, 2022; Prasad, Lane and Glandon, 2021; Roe and others, 2014; Waddington and others, 2009; Yates and others, 2017; Yates and others, 2018). Some SRs mention multiple targets. See annex A2.1 for full publication details.

a third were global evaluations (n=7) (Figure 13). One ER addressed food waste and food losses (Annex A2.9) (Figure 13).[10] Post-harvest loss prevention using hermetic storage, and development of fumigation capacity are examples of programme activities pursued in this area.

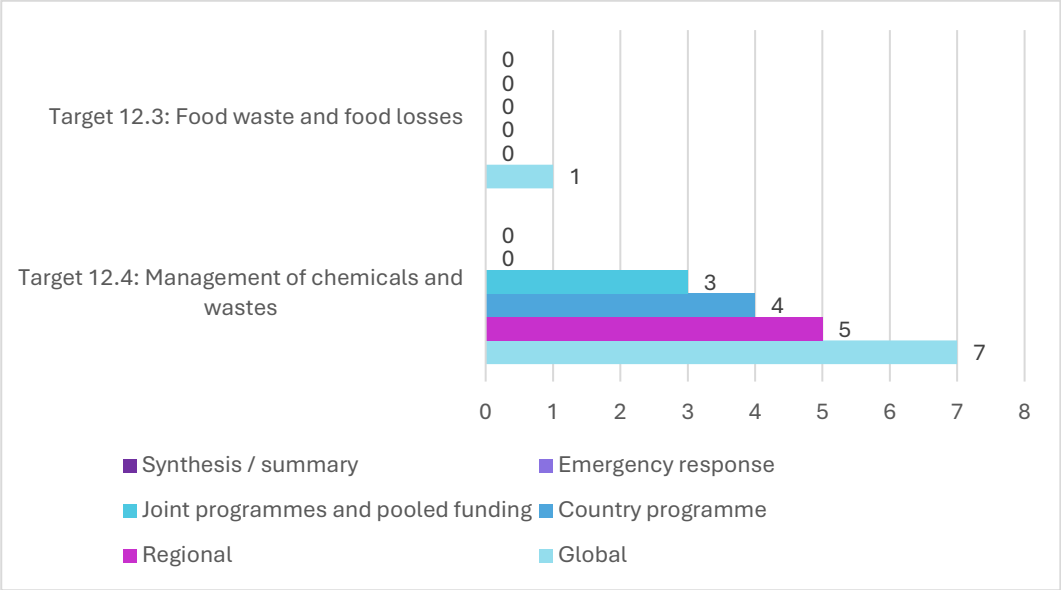
Figure 12. Types of interventions reported in SRs related to Planet Pillar targets 12.3 and 12.4



Note: Some SRs may have applied to multiple categories (types of interventions related to specific Planet Pillar Target Areas) and were therefore counted more than once.

[10] The definitions of food waste and food loss used in this review were as follows: Food loss happens when food unavoidably becomes unfit for human consumption before people have a chance to eat it. It's most prevalent in lower-income countries when food is unintentionally damaged or destroyed by pests or mould. Food waste happens when food that is still fit for human consumption is discarded, either before or after it spoils. It happens most often in high-income countries at restaurants, hotels and homes (https://www.wfpusa.org/articles/food-loss-vs-food-waste-primer/). SRs were only coded for SDG Target 12.3 if the intervention was designed to have an effect on these areas as defined. ERs were only coded if they reported project or programme contribution to these outcomes as defined.

Figure 13. Types of evaluations related to Planet Pillar targets 12.3 and 12.4



Note: Some ERs may have applied to multiple categories (types of evaluations related to specific Planet Pillar Target Areas) and were therefore counted more than once.

Factors explaining implementation success, the relationship between interventions and outcomes, and costs associated with interventions for Pillar targets 12.3 and 12.4

Most SRs (n=6) studying chemicals and wastes management provided details about implementation barriers or facilitators, or the factors that affected the relationship between interventions and outcomes.[11] Of the 10 SRs reporting on chemicals and wastes management, 4 also provided information about intervention costs.[12] Only 1 SR reporting on food wastes and food losses provided insights about implementation factors or costs.[13]

SDG 13: target 13.1 (climate change resilience and adaptive capacity)

Interventions to address climate change and adaptive capacity were reported in 12 SRs (Annex A2.10), whereas a large number (n=138) of ERs reported project or programme contributions to this area (Annex A2.11). The nature of the interventions

[11] Bizikova and others, 2020; Blom and others, 2024; Jones-Hughes and others, 2013; Maryono and others, 2024; Su, Freiss and Gasparatos, 2021; Waddington and others, 2014. See annex A2.8 for full publication details.
[12] Blom and others, 2024; Hunter and others, 2019; Jones-Hughes and others, 2013; Su, Freiss and Gasparatos, 2021. See annex A2.8 for full publication details.
[13] Redlingshöfer, Barles and Weisz, 2020. See annex A2.7 for full publication details.

studied in SRs was varied (Figure 14). Policy-based interventions (n=10) included financial measures—for example, insurance schemes and voluntary instruments such as farmers' organizations. Nature-based interventions (n=8) included irrigation and water management, eradication of invasive species, and climate smart agriculture. Technological interventions (n=5) included genetics for crop and animal varieties, and the use of information and communication technology. The examples of institutional interventions (n=5) were decentralized governance systems.

More than one third (n=56) of the ERs reporting UN and related agencies' contribution to climate change resilience and adaptive capacity were country programme evaluations. Evidence from global evaluations (n=35) were also frequently reported (Figure 15).

Figure 14. Types of interventions reported in SRs related to Planet Pillar target 13.1

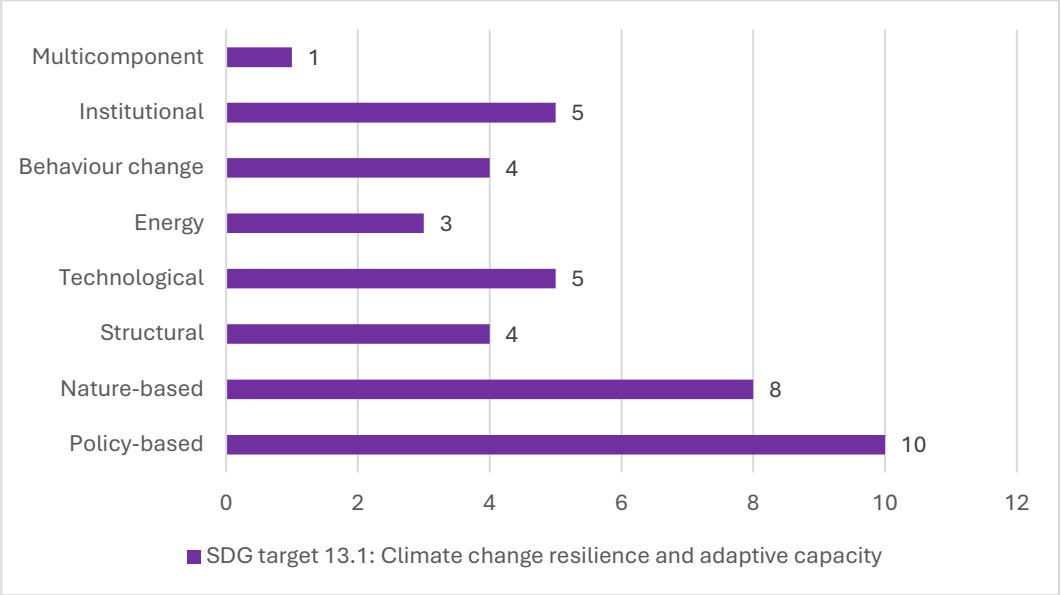
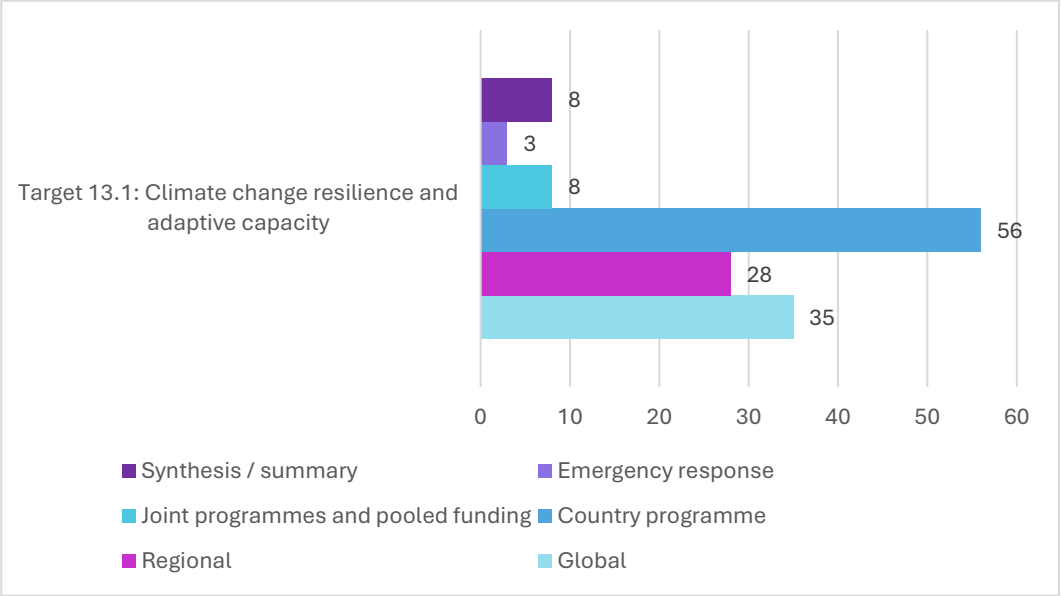


Figure 15. Types of evaluations related to Planet Pillar target 13.1



Factors explaining implementation success, the relationship between interventions and outcomes, and costs associated with interventions for Pillar target 13.1

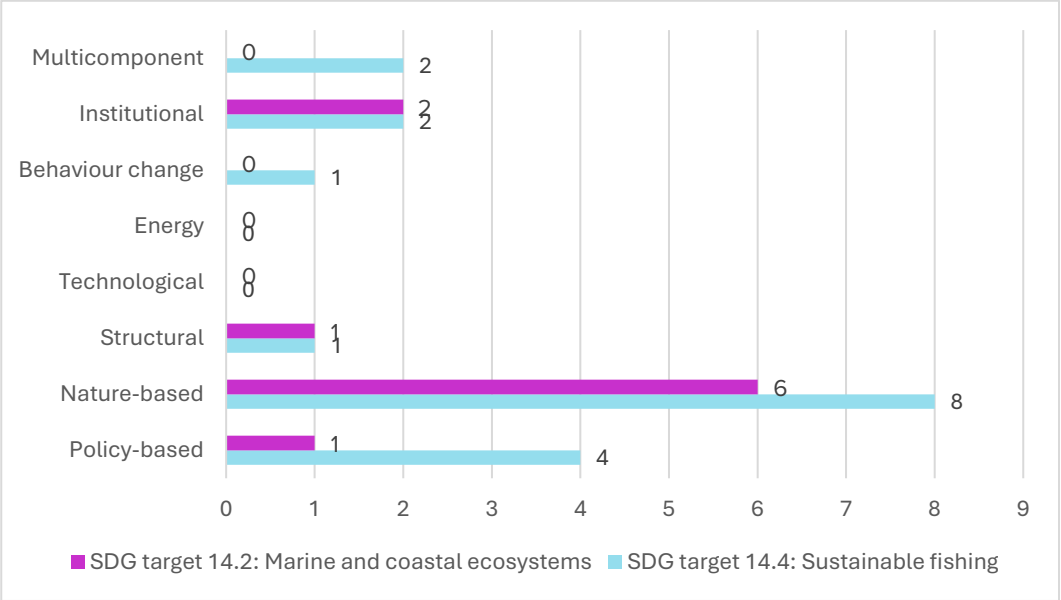
Roughly half (n=7) of the SRs describing climate change resilience and adaptive capacity interventions, also provided insights about implementation factors or factors affecting the relationship between studied interventions and outcomes.[14] Cost considerations associated with interventions were provided in 2 reviews.[15]

SDG 14: targets 14.2 (marine and coastal ecosystems) and 14.4 (sustainable fishing)

Interventions for marine and coastal ecosystems were reported in 8 SRs (Annex A2.12) and 7 ERs (Annex A2.13). For SRs, most interventions were nature-based (n=6), followed by institutional interventions (n=2) (Figure 16). Community-based conservation and controlled drainage are two examples of the types of nature-based interventions reported.

[14] Bizikova and others, 2020; Blom and others, 2024; Call and Sellers, 2019; Castle and others, 2021; Dula and others, 2022; Maryono and others, 2024; Yeung and others, 2024. See annex A2.10 for full publication details.
[15] Blom and others, 2024; Dula and others, 2022. See annex A2.10 for full publication details.

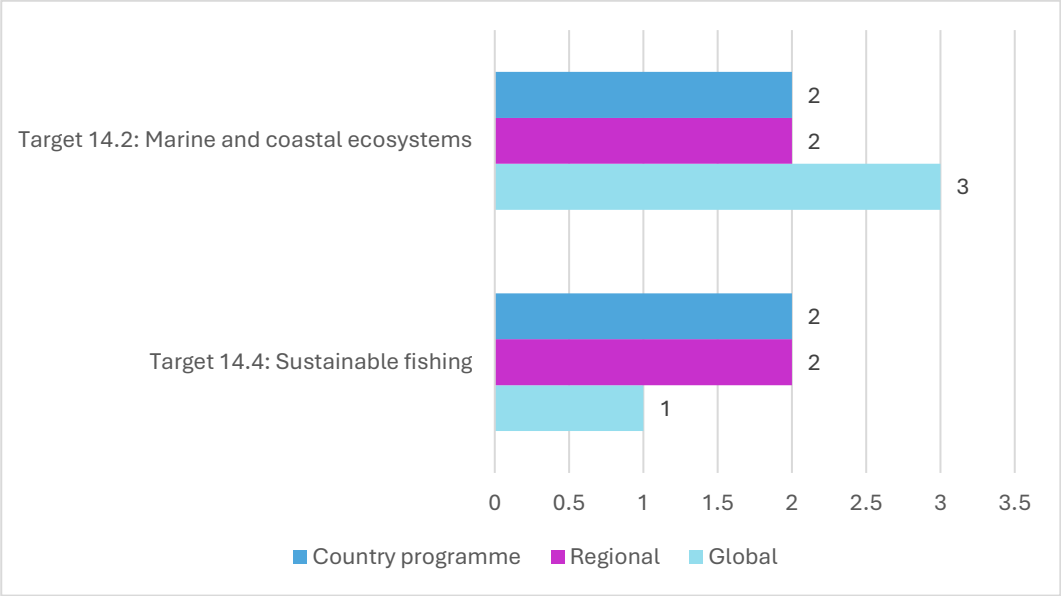
Figure 16. Types of interventions reported in SRs related to Planet Pillar targets 14.2 and 14.4



Note: Some SRs may have applied to multiple categories (types of interventions related to specific Planet Pillar Target Areas) and were therefore counted more than once.

Figure 17 shows the distribution of ERs related to target 14.2. Only country programme, regional and global evaluations reported project or programme contributions to marine and coastal ecosystems. Global evaluation studies provided most (n=3) of the evaluative evidence on this Planet Pillar Target Area.

Figure 17. Types of evaluations related to Planet Pillar targets 14.2 and 14.4



Note: Some ERs may have applied to multiple categories (types of evaluations related to specific Planet Pillar Target Areas) and were therefore counted more than once.

Twelve SRs (Annex A2.14) and 5 ERs (Annex A2.15) reported interventions related to sustainable fishing. Nature-based and policy-related interventions were the most frequently reported intervention type in SRs (n=8) and (n=4) respectively (Figure 16). Community-based conservation projects and eco-engineering are two examples of nature-based interventions reported in the literature. Property rights regimes are an example of a policy-based intervention. Two country programme evaluations, 2 regional programme evaluations and 1 global evaluation reported project or programme contributions to sustainable fishing (Figure 17).

Factors explaining implementation success, the relationship between interventions and outcomes, and costs associated with interventions for Pillar targets 14.2 and 14.4

Of the 12 SRs dealing with interventions for fishing and fisheries, 5 provided details about barriers/facilitators or mediators/moderators[16] and 4 provided information

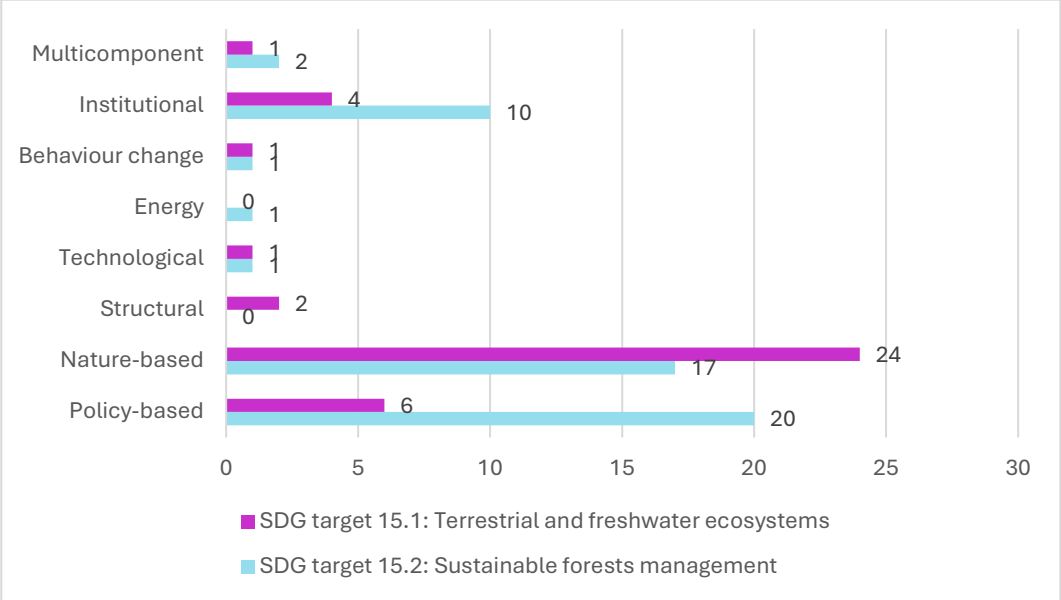
[16] Brooks, Waylen and Mulder, 2013; Castle and others, 2021; Hellebrandt and others, 2011; Ojanen and others, 2017; Su, Freiss and Gasparatos, 2021. See annex A2.14 for full publication details.

about intervention costs.[17] For SRs addressing marine and coastal ecosystems, implementation barriers/facilitators were reported in 2 reviews[18] and cost considerations in 3 of them.[19]

SDG 15: targets 15.1 (terrestrial and freshwater ecosystems) and 15.2 (sustainable forests management)

Twenty-seven SRs (Annex A2.16) and 9 ERs (Annex A2.17) provided evidence on interventions for terrestrial and freshwater ecosystems. Again, given the characteristics of this Planet Pillar Target Area, nature-based interventions (n=24) were the most frequently reported intervention type in SRs. Other intervention categories included policy-based (n=6) and institutional (n= 4) (Figure 18). Some examples of nature-based interventions covered in SRs were protected area management interventions and agroecological interventions.

Figure 18. Types of interventions reported in SRs related to Planet Pillar targets 15.1 and 15.2

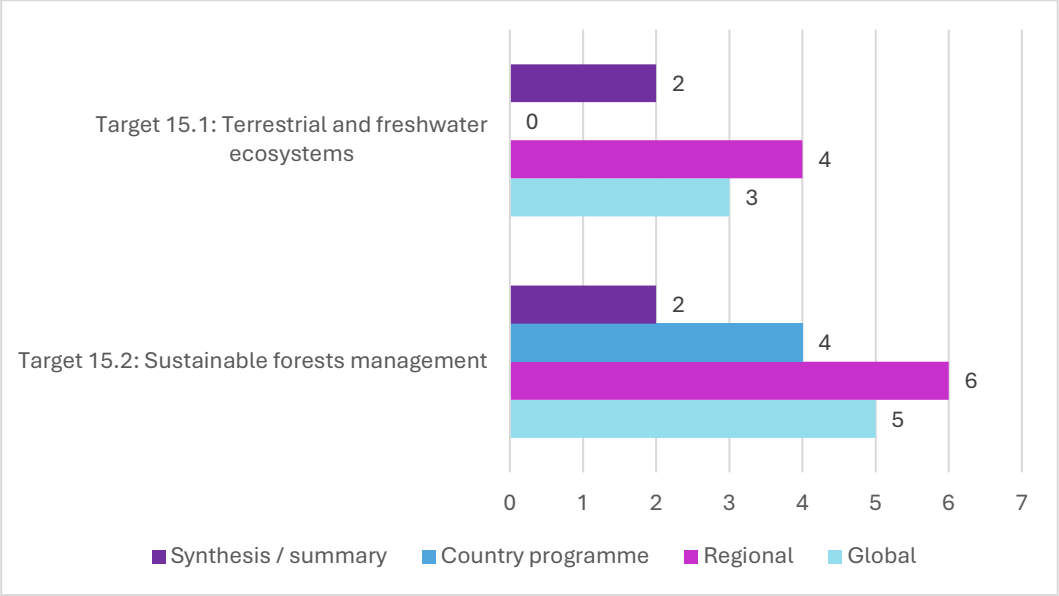


Note: Some SRs may have applied to multiple categories (types of interventions related to specific Planet Pillar Target Areas) and were therefore counted more than once.

[17] Brooks, Waylen and Mulder, 2013; Hellebrandt and others, 2011; Morris and others, 2018; Su, Freiss and Gasparatos, 2021. See annex A2.14 for full publication details.
[18] Brooks, Waylen and Mulder, 2013; Su, Freiss and Gasparatos, 2021. See annex A2.14 for full publication details.
[19] Brooks, Waylen and Mulder, 2013; Morris and others, 2018; Su, Freiss and Gasparatos, 2021. See annex A2.14 for full publication details.

Evidence from global ERs (n=3), regional evaluations (n=4) and evaluation syntheses (n=2) of UN projects and programmes also contributed to the evidence base on terrestrial and freshwater ecosystems (Figure 19).

Figure 19. Types of evaluations related to Planet Pillar targets 15.1 and 15.2



Note: Some ERs may have applied to multiple categories (types of evaluations related to specific Planet Pillar Target Areas) and were therefore counted more than once.

There is a good body of evidence on interventions for sustainable management of forests. Thirty-two SRs provided insights about these interventions (Annex A2.18), the majority of which were policy-based (n=20), followed by nature-based (n=17) and institutional (n=10). Seventeen ERs contributed evidence to this area (Annex A2.19). The majority of these were from evaluations of regional (n=6) and global (n=5) programmes (Figure 19).

Factors explaining implementation success, the relationship between interventions and outcomes, and costs associated with interventions for Pillar targets 15.1 and 15.2

Few SR studies (n=8)[20] shed light on implementation factors or relational issues between interventions and terrestrial and freshwater ecosystem outcomes. Six studies provided insights about intervention costs.[21] Conversely, almost 60 percent (n=18) of SRs on sustainable forests management provided details on implementation barriers or facilitators and relational factors between study interventions and outcomes.[22] Fewer (n=8) reported associated cost considerations.[23]

Literature on energy interventions related to the Planet Pillar Target Areas

Thirteen SRs (Annex A2.20) reported energy interventions. Modern energy services interventions were reported in 5 reviews and renewable energy interventions in 11 reviews. Seven SRs reported energy interventions related to WASH (Figure 20). These interventions were described as solar disinfection (n=6) and electrification (n=1). Two SRs reported energy interventions related to WUE (Figure 20). These interventions were described as solar and wind pumps and solar photovoltaic energy systems used in the health care setting. The effect of energy interventions on chemicals and wastes management was investigated in 2 SRs. Solar and biogas/biodigester systems and solar photovoltaic energy systems were the types of energy interventions investigated. Modern energy services and renewable energy interventions for climate change adaptation were mentioned in 3 reviews. Two of these were the same reviews that described photovoltaic electricity generation and biogas/biodigester systems. One review described the impact of small-scale renewable energy technologies (improved cook stoves, biogas plants and solar home systems) on deforestation and

[20] Brooks, Waylen and Mulder, 2013; Castle and others, 2021; Di Girolami, Kampen and Arts, 2023; Dula and others, 2022; Hepworth and others, 2013; Kuyah and others, 2019; Sabater and others, 2018; Su, Freiss and Gasparatos, 2021. See annex A2.16 for full publication details.

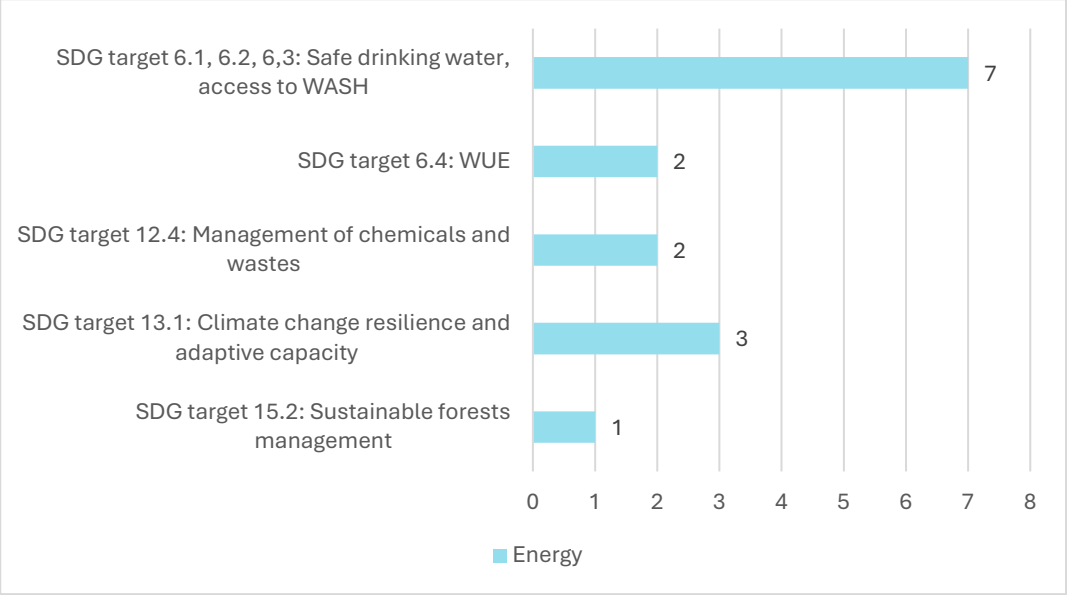
[21] Brooks, Waylen and Mulder, 2013; Dula and others, 2022; Hepworth and others, 2013; Hunter and others, 2019; Poudyal, Maraseni and Cockfield, 2018; Su, Freiss and Gasparatos, 2021. See annex A2.16 for full publication details.

[22] Bizikova and others, 2020; Bowler and others, 2012; Brandt and Buckley, 2018; Brooks, Waylen and Mulder, 2013; Carrilho and Chervier, 2023; Castle and others, 2021; Di Girolami, Kampen and Arts, 2023; Diansyah, Abas and Sakawi, 2021; Dula and others, 2022; Garrett and others, 2021; Hajjar and others, 2020; Hellebrandt and others, 2011; Ma and others, 2020; Ojanen and others, 2017; Samii and others, 2015; Snilstveit and others, 2019; Su, Freiss and Gasparatos, 2021; Wassie and Adaramola, 2019. See annex A2.18 for full publication details.

[23] Bowler and others, 2012; Brandt and Buckley, 2018; Brooks, Waylen and Mulder, 2013; Dula and others, 2022; Hellebrandt and others, 2011; Samii and others, 2015; Snilstveit and others, 2019; Su, Freiss and Gasparatos, 2021. See annex A2.18 for full publication details.

forest degradation. No SR reported on the effects of energy interventions on fishing or fisheries, marine and coastal ecosystems, or terrestrial and freshwater ecosystems.

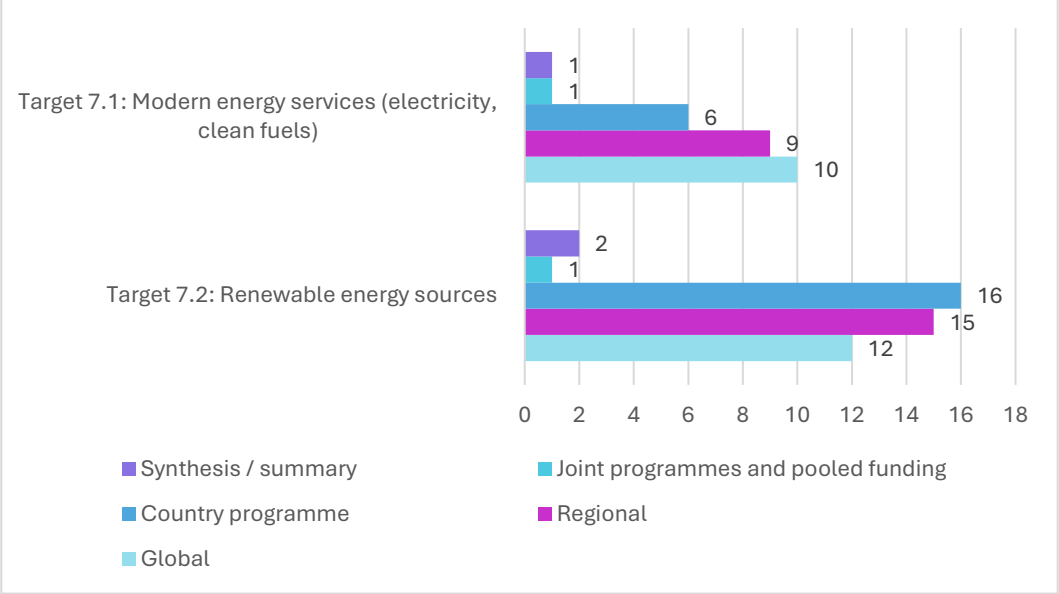
Figure 20. Energy interventions (modern energy services and renewable energy sources) reported in SRs by Planet Pillar Target Area



Note: Some SRs may have applied to multiple categories (types of energy interventions related to specific Planet Pillar Target Areas) and were therefore counted more than once.

Forty-eight UN evaluations (Annex A2.21) reported project or programme contributions to modern energy services and renewable energy sources. ERs of all types (country, regional, global, joint or pooled funding and syntheses), except emergency response, reported contributions to renewable or modern energy projects or programmes for beneficiary countries (Figure 21).

Figure 21. Types of energy interventions reported in ERs



Note: Some ERs may have applied to multiple categories (types of evaluations related to specific energy interventions) and were therefore counted more than once.

Chapter 4. Discussion

4.1. Summary of evidence

There is a sizeable amount of evidence on interventions for clean drinking water, sanitation and hygiene, sustainable forests, and terrestrial ecosystems. Other areas with a good evidence base are WUE, sustainable fishing, climate change resilience and adaptive capacity, water-related ecosystems, and chemicals and wastes management. There is also a fair amount of evidence on the effect of energy interventions on Planet Pillar Target Areas. The available evidence on food waste and food losses and on marine and coastal ecosystems is limited. There is comparably more evaluative evidence from UN sources on climate change resilience and adaptive capacity energy interventions, and chemicals and waste management than from published academic sources. However, evidence from evaluation studies on food waste and food losses and on marine and coastal ecosystems are likewise limited. Combined frequencies for all SRs and ERs across all Planet Pillar Target areas are presented in Table 5. Figure 22 illustrates the number of SRs identified by intervention type and Planet Pillar Target Area.

Figure 22. EGM illustrating the number of SRs identified by intervention type (rows) and Planet Pillar Target Area (columns)

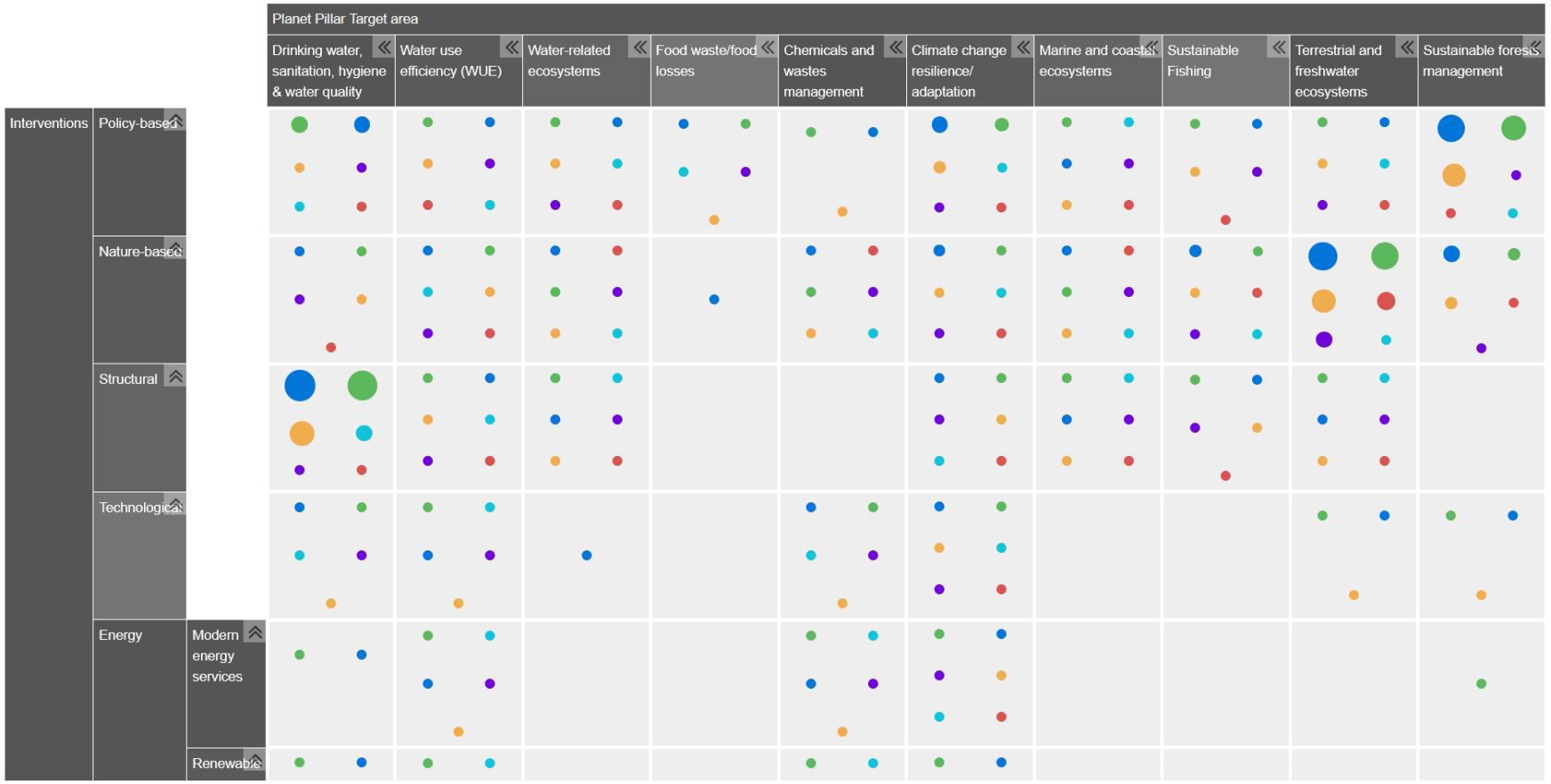


Table 5. Number of SRs and ERs reporting findings for the SDG Planet Pillar Target Areas

Number of SRs										
Type of intervention	SDG targets 6.1, 6.2, 6,3: Safe drinking water, access to sanitation and hygiene, water quality (WASH)	SDG target 6.4: Water-use efficiency	SDG target 6.6: Water-related ecosystems	SDG target 12.3: Food waste and food losses	SDG target 12.4: Management of chemicals and wastes	SDG target 13.1: Climate change resilience and adaptive capacity	SDG target 14.2: Marine and coastal ecosystems	SDG target 14.4: Sustainable fishing	SDG target 15.1: Terrestrial and freshwater ecosystems	SDG target 15.2: Sustainable forests management
Policy-based	10	5	3	2	3	10	1	4	6	20
Nature-based	2	5	7	1	5	8	6	8	24	17
Structural	22	4	1	0	0	4	1	1	2	0
Technological	2	1	1	0	2	5	0	0	1	1
Energy	7	2	0	0	2	3	0	0	0	1
Behaviour change	24	2	1	0	1	4	0	1	1	1
Institutional	4	4	3	1	0	5	2	2	4	10
Multi-component	15	3	1	1	1	1	0	2	1	2
Number of ERs										
Type of evaluation										
Global evaluation	8	1	1	1	7	35	3	1	3	5
Regional evaluation	4	2	3	0	5	28	2	2	4	6
Country programme	23	0	0	0	4	56	2	2	0	4
Joint programmes and pooled funding	1	0	0	0	3	8	0	0	0	0
Emergency response	18	0	0	0	0	3	0	0	0	0
Synthesis/summary	3	1	2	0	0	8	0	0	2	2

4.2. Limitations of the scoping

There are several limitations to acknowledge in this scoping review. First, screening and data extraction were done by a single reviewer, which makes results more prone to errors when compared with double reviewing.

Second, some SRs had multiple research questions, whereas for others the research question was broad. The research question in one review, for example, was "Is community-based conservation an effective conservation tool?" (Brooks, Waylen and Mulder, 2013). The effect of community-based conservation interventions on the following Planet Pillar Target Areas were described: marine and coastal ecosystems; sustainable fishing; terrestrial and freshwater ecosystems; and sustainable forests. This means a single SR was reported multiple times throughout the scoping.

Third, we did not correct for the inherent duplication contained in the SWEO EGM evaluation type taxonomy (i.e. global, regional, country programme, joint programmes, pooled funding, emergency response and synthesis/summary). For example, the following records were identified by SWEO as three separate global ERs: *Mid-term Review of the Medium-term Strategy of the Adaptation Fund; Rapid evaluation of the Adaptation Fund;* and *Thematic Evaluation on the Adaptation Fund Accreditation Process* (Technical Evaluation Reference Group of the Adaptation Fund, 2021; Adaptation Fund, 2023; Technical Evaluation Reference Group of the Adaptation Fund, 2024). Although these ERs were counted multiple times, they relate to a single programme area.

Fourth, few SRs reported findings according to the UN regional classification. This applied particularly to countries within the Arab States Region (most SRs would have classified those countries within Asia or Africa) and the Asia and the Pacific Region (SRs frequently reported those countries within Asia and/or Oceania). To address this limitation, an alternative distribution of SRs by geographical region is provided in Annex 3.

Fifth, some ERs reported contribution of a project or programme to one of the Planet Pillar SDGs, without describing the specific Planet Pillar Target Area. For example, the *Evaluation of the Strategic Positioning of IOC-UNESCO* only reported contributions to

SDG 13: Climate Action and SDG 14: Life Below Water (Stephens and others, 2021). The projects contributing results in these areas were not distilled, thereby not allowing us to code for the respective Planet Pillar Target Areas. Findings from these ERs were not included in the synthesis of results. However, collated data for these ERs are provided in Annex 4.

Sixth, we could not classify and report ERs by intervention type because the necessary details were not always provided. ERs of country programmes, for example, often described a portfolio of projects. However, details on all component projects were seldom provided, meaning we could not systematically code them for intervention type.

Finally, it should be noted that the examples of interventions provided throughout the results section are not exhaustive, but rather are illustrative, as we did not code studies beyond the intervention types provided in Table 4.

4.3. Areas for development of living syntheses

This scoping review was conducted to assist the SDG Synthesis Coalition to identify specific topics for which living syntheses, with the potential for catalytic change, could be produced. We examined the overall body of evidence (availability and gaps) and suggest the following options for moving forward.

Option 1: Focus on areas where accelerated action is most needed, and evidence is concentrated

Water-related ecosystems, managing chemicals and wastes, terrestrial and freshwater ecosystems, and sustainable fishing, were the four Planet Pillar Target Areas with stagnation or regression status, as reported in *The Sustainable Development Goals Report 2024* (United Nations, 2024). Available evidence for these areas is shown in Table 6.

Table 6. Number of studies providing evidence on water-related ecosystems, chemicals and wastes management, sustainable management of fisheries, and terrestrial and freshwater ecosystems

Planet Pillar Target Area	No. of SRs	No. of ERs	Total
Target 6.6: Water-related ecosystems	11	6	17
Target 12.4: Management of chemicals and wastes	10	19	29
Target 14.4: Sustainable management of fisheries	12	5	17
Target 15.1: Terrestrial and freshwater ecosystems	27	9	36

These four thematic areas could be approached as a single bucket. SDG target 6.6 focuses on the protection of water bodies, including monitoring changes in size, quality and quantity of water-related ecosystems, whereas SDG target15.1 employs a more diverse approach, including policy strengthening, and community engagement. Target 14.4 addresses fisheries, with the aim to restore and maintain fish stocks, eliminate overfishing, and combat illegal, unreported, and unregulated fishing. SDG target 12.4 aims for environmentally sound management of chemicals and wastes to minimize adverse impacts on the environment and on human health. Proper management of chemicals and wastes is crucial for preventing pollution of water bodies and terrestrial ecosystems. This Target Area is therefore important to maintain the health of both terrestrial and aquatic ecosystems, thus supporting the aims of SDG targets 6.6, 15.1 and 14.4.

Option 2: Focus on areas where evidence is concentrated and geographically well distributed

As the EGM showed (Figure 21), evidence from SRs is relatively dense, and available for all six UNDP regions in the following areas: policy-based interventions for sustainable management of forest (target 15.2); nature-based interventions for terrestrial and freshwater ecosystems (target 15.1); and structural and behaviour change interventions for safe drinking water, sanitation and hygiene (targets 6.1, 6.2, and 6,3). Living evidence syntheses can be developed for these three areas.

Option 3: Focus on interventions that could exploit the interlinkages among the Planet Pillar Target Areas

For this option, we draw attention, firstly, to the intervention types implemented across all the Target Areas. As Table 7 illustrates, evidence about the effects of nature-based and policy-based interventions, are available from SRs for all of the Pillar Target Areas. Nature-based interventions involve the protection, sustainable management and restoration of natural or modified ecosystems. They leverage the inherent processes and functions of nature to provide benefits to the planet. Nature-based interventions are therefore intrinsically linked to multiple Pillar Target Areas. Pursuing nature-based solutions can create synergies, amplifying the impact on individual Target Areas. Similarly, policy can also be used as a cross-cutting strategy to achieve required goals.

Secondly, energy was an area with interlinkages across the Pillar, which the scoping review explicitly explored. Evidence from systematic reviews on the effects of these interventions (renewable energy and modern energy sources) on the Target Areas are available, but less so (Table 7).

Table 7. Number of systematic reviews reporting policy-based and nature-based interventions, by Planet Pillar Target Area

Planet Pillar Target Area	Number of systematic reviews		
	Nature-based interventions	Policy-based interventions	Energy interventions
SDG targets 6.1, 6.2, 6,3: Safe drinking water, access to sanitation and hygiene, water quality (WASH)	2	10	7
SDG target 6.4: Water-use efficiency	5	5	2
SDG target 6.6: Water-related ecosystems	7	3	0
SDG target 12.3: Food waste and food losses	1	2	

SDG target 12.4: Management of chemicals and wastes	5	3	2
SDG target 13.1: Climate change resilience and adaptive capacity	8	10	3
SDG target 14.2: Marine and coastal ecosystems	6	1	0
SDG target 14.4: Sustainable fishing	8	4	
SDG target 15.1: Terrestrial and freshwater ecosystems	24	6	0
SDG target 15.2: Sustainable forests management	17	20	1

Option 4: Focus on behaviour change in Target Areas where evidence is available from all geographic regions

Behaviour change is an indispensable component for achieving positive environmental outcomes and protecting the planet. Evidence on behaviour change interventions is available for all Planet Pillar Target Areas, except for food waste and food losses, and marine and coastal ecosystems. However, for only two Target Areas (WASH and climate change resilience and adaptive capacity), evidence from all regions was available. WASH has been under study since 2007, and there is a substantial evidence base on this topic (40 SRs and 57 ERs). Continuing to develop syntheses in this area may not provide added scientific benefit, unless the focus is on factors that affect sustained adoption of the many proven WASH interventions. Climate change resilience and adaptive capacity, on the other hand, is a promising area for attention. This Target Area is concerned with the capacity of systems to withstand, recover and adapt. Natural, environmental, structural, economic and social interventions are therefore necessary. Evidence for all intervention types examined in this scoping review were available for this Planet Pillar Target Area. The evidence for this area is emerging. The earliest SR was published in 2018. It is therefore very likely that existing and new findings could emerge, thus warranting production of living syntheses for sharing across collaborative platforms such as the Evidence Synthesis Infrastructure Collaborative.

Chapter 5. Conclusions

This scoping review provides a systematic assessment of the evidence base from academic sources and from evaluations published by the United Nations agencies. The findings in this report can be used to inform decisions for moving forward with living syntheses for the Planet Pillar. The following issues may also be useful for consideration:

1. Although the scoping did not address climate change mitigation outcome targets (SDG 13.2 and 13.3), the intersection between climate change mitigation and adaptation in the academic literature was noticeable. Living syntheses could perhaps consider climate change mitigation and adaptation as a combined area of focus.
2. There is good evidence from systematic reviews on sustainable forests across most intervention types. There is also a logical interrelationship between nature-based, policy-based and institutional interventions (governance arrangements) aimed at reducing deforestation and forest degradation and achieving sustainably managed forests. Focusing on the intersection of these thematic issues could be valuable for a living synthesis.
3. Due to the complex interrelationships between and within each Planet Pillar Target Area, developing supporting theories of change for each synthesis is critical, with intermediate and final outcomes identified along the causal pathway. Many ERs have documented project or programme contributions to intermediate outcomes related to the Planet Pillar Target Areas. These ERs can serve as useful sources of information to guide the development of theories of change.

Annexes

Annex 1. Search strategies

Database: 3ie Development Evidence Portal

Search field: Basic search

Search for Planet Pillar Target Area	Terms	Filter
SDG 15.2	forest* AND (conserv* OR "land use" OR LULUCF OR regeneration OR "natural regeneration" OR timber OR NTFP OR "forest conservation" OR "carbon sequestration" OR deforestation OR reforestation OR REDD OR "forest management" OR degradation OR afforestation OR agroforestry OR "forest transition")	Study type: systematic reviews
	title:("forest conservation" OR "natural regeneration" OR timber OR "forest product" OR deforestation OR reforestation OR REDD OR "forest management" OR afforestation OR agroforestry OR "forest transition")	Study type: systematic reviews
SDG 15.1	terrestrial AND ecosystem*	Study type: systematic reviews
SDG 14.2	ocean OR marine OR coastal AND (ecosystem* OR conserv* OR restoration OR "ecosystem functions" OR "ecosystem services" OR acidification OR warming OR eutrophication OR "marine management" OR "ocean management" OR "protected area" OR "marine protected area")	Study type: systematic reviews
	title:("marine ecosystem" OR "marine conservation" OR "marine ecosystem functions" OR "marine	Study type: systematic reviews

Search for Planet Pillar Target Area	Terms	Filter
	ecosystem services" OR "marine management" OR "ocean management" OR "marine protected area")	
SDG 14.4	fish* AND ("ocean literacy" OR ecosystem OR overfish* OR "fish stock" OR "sustainable use" OR "traditional use" OR harvesting OR abundance OR unregulated OR "fisheries management")	Study type: systematic reviews
	title:("sustainable fishing" OR overfishing OR "fish stock" OR "unregulated fishing" OR "fisheries management" OR "ocean literacy" OR abundance OR fish*)	Study type: systematic reviews
SDG 13.1	"climate change" AND (adaptation OR CCA OR resilience OR vulnerability OR "adaptive capacity" OR "climate action")	Study type: systematic reviews
	title:("climate change adaptation" OR "climate change adaptive" OR ("climate change" AND resilience) OR ("climate change" AND vulnerability) OR "climate action")	Study type: systematic reviews
SDG 12.4	"waste management" AND (chemical OR chemicals OR mercury OR pesticides OR hazardous OR electrical OR solid OR pollutants OR POPs OR electronic OR e-waste OR "WEEE" OR medical OR radioactive OR dumping)	Study type: systematic reviews
	title:("waste management" OR "solid waste management" OR "hazardous wastes" OR "medical waste" OR "persistent organic pollutants" OR e-waste OR "electrical waste" OR "electronic waste" OR "chemicals and wastes management")	Study type: systematic reviews
SDG 12.3	"food waste" OR "food loss" OR "supply chain" OR "food system"	Study type: systematic reviews

Search for Planet Pillar Target Area	Terms	Filter
	title:("food waste" OR "food loss" OR "food system" OR "supply chain")	Study type: systematic reviews
SDG 6.6	freshwater OR wetlands OR swamp OR river OR stream OR lake OR groundwater OR aquifer OR "water-related ecosystem" OR estuary OR mangrove	Study type: systematic reviews
	title:("water-related ecosystems" OR freshwater)	Study type: systematic reviews
SDG 6.4	"water efficiency" OR irrigation OR "irrigation water productivity" OR "water conservation" OR "drought resistance"	Study type: systematic reviews
	title:("water efficiency" OR "irrigation water productivity" OR "water conservation" OR "drought resistance")	Study type: systematic reviews
SDG 6.1; 6.2, 6.3	WASH OR sanitation*OR contamination OR hygiene*OR sewage OR "water scarcity" OR "water harvesting" OR "untreated wastewater" OR latrines OR "open defecation" OR "water education"	Study type: systematic reviews
SDG 7.1, 7.2	"Clean fuel" OR electric* OR "sustainable energy" OR "energy efficiency" OR "energy access" OR "energy transition" OR "renewable energy" OR "geothermal energy" OR hydropower OR "ocean energy" OR bioenergy OR biogas OR biomass OR "liquefied petroleum gas"	Study type: systematic reviews
	title: ("Clean fuel" OR "sustainable energy" OR "energy efficiency" OR "energy access" OR "energy transition" OR "renewable energy")	Study type: systematic reviews

Database: Social Systems Evidence

Search field: Basic search

Search for Planet Pillar Target Area	Terms	Filter
SDG 15.2	forest* AND (conservation* OR "land use" OR LULUCF OR regeneration OR "natural regeneration" OR timber OR NTFP OR "forest conservation" OR "carbon sequestration" OR deforestation OR reforestation OR REDD OR "forest management" OR degradation OR afforestation OR agroforestry OR "forest transition")	Document type: overviews of evidence syntheses; evidence syntheses of effects
SDG 14.2	ocean OR marine OR coastal AND (ecosystem* OR conservation* OR restoration OR "ecosystem functions" OR "ecosystem services" OR acidification OR warming OR eutrophication OR "marine management" OR "ocean management" OR "protected area")	Document type: overviews of evidence syntheses; evidence syntheses of effects
SDG 14.4	fish* AND ("ocean literacy" OR ecosystem OR overfish* OR "fish stock" OR "sustainable use" OR "traditional use" OR harvesting OR abundance OR unregulated OR "fisheries management")	Document type: overviews of evidence syntheses; evidence syntheses of effects
SDG 13.1	climate change AND (adaptation OR CCA OR resilience OR vulnerability OR "adaptive capacity" OR "climate action")	Document type: overviews of evidence syntheses; evidence syntheses of effects

Search for Planet Pillar Target Area	Terms	Filter
SDG 12.4	"waste management" OR “chemicals and wastes management” OR pesticides OR “hazardous wastes” OR “electrical waste” OR “solid waste” OR “persistent organic pollutants” OR POPs OR e-waste OR “WEEE” OR “medical waste” OR “radioactive waste” OR dumping	Document type: overviews of evidence syntheses; evidence syntheses of effects
	"waste management" AND (chemical OR chemicals OR mercury OR pesticides OR hazardous OR electrical OR solid OR pollutants OR POPs OR electronic OR e-waste OR “WEEE” OR medical OR radioactive OR dumping)	Document type: overviews of evidence syntheses; evidence syntheses of effects
SDG 12.3	"food waste" OR "food loss" OR "supply chain" OR "food system"	Document type: overviews of evidence syntheses; evidence syntheses of effects
SDG 6.1, 6.2, 6.3	WASH OR sanitation OR hygiene OR sewage OR "water scarcity" OR "water harvesting" OR "untreated wastewater" OR latrines OR "open defecation" OR "water education"	Document type: overviews of evidence syntheses; evidence syntheses of effects

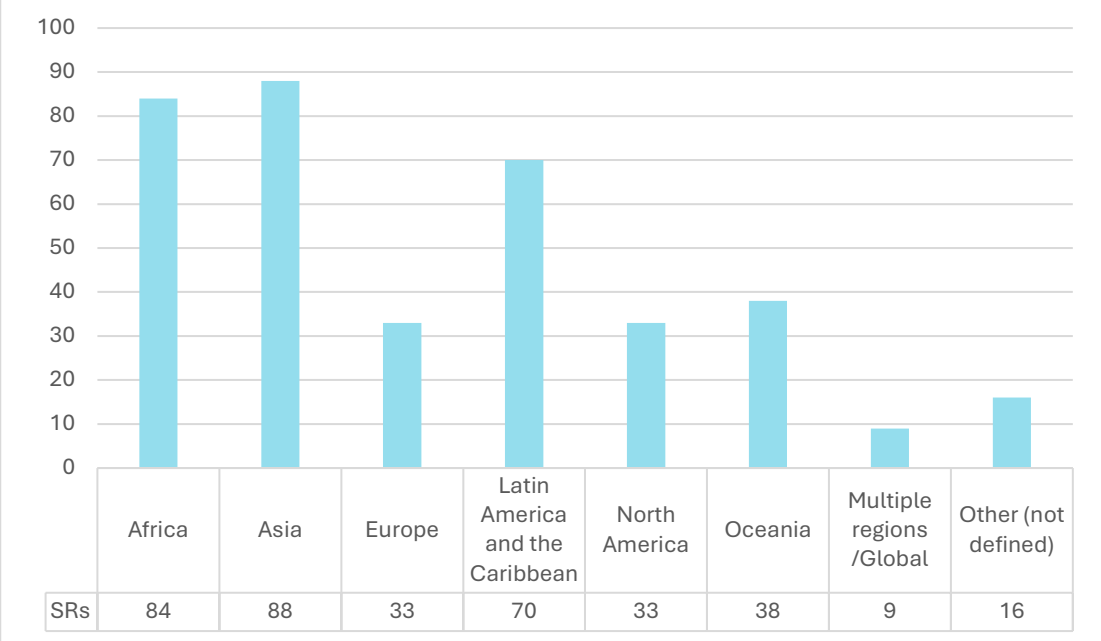
Search for Planet Pillar Target Area	Terms	Filter
SDG 6.6	freshwater OR wetlands OR swamp OR river OR stream OR lake OR groundwater OR aquifer OR "water-related ecosystem" OR estuary OR mangrove	Document type: overviews of evidence syntheses; evidence syntheses of effects
SDG 6.4	"water efficiency" OR irrigation OR "irrigation water productivity" OR "water conservation" OR "drought resistance"	Document type: overviews of evidence syntheses; evidence syntheses of effects
SDG 7.1, 7.2	"Clean fuel" OR "sustainable energy" OR "energy efficiency" OR "energy access" OR "energy transition" OR "renewable energy"	Document type: overviews of evidence syntheses; evidence syntheses of effects
	terrestrial AND ecosystem*	Document type: overviews of evidence syntheses; evidence syntheses of effects

Annex 2. List of studies included in the scoping review

References for all the UN evaluation and external evaluative evidence, including systematic reviews included in this scoping review, are in a separate document available here: Annex 2 - List of Studies

Annex 3. Distribution of included SRs, by geographical region

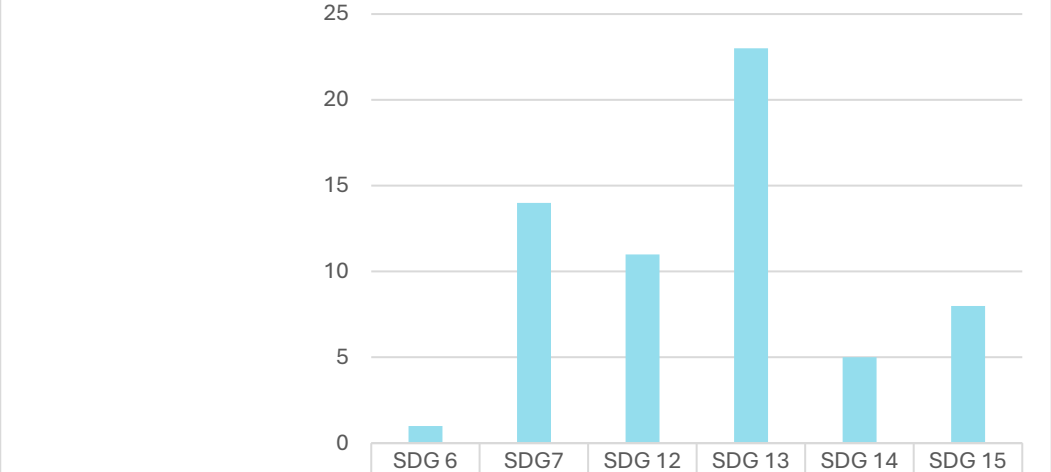
Figure A1. Distribution of included SRs by geographical region



	Africa	Asia	Europe	Latin America and the Caribbean	North America	Oceania	Multiple regions /Global	Other (not defined)
SRs	84	88	33	70	33	38	9	16

Annex 4. Distribution of ERs, by SDG

Figure A2. ERs with undefined Planet Pillar Target Areas, by SDG



	SDG 6	SDG7	SDG 12	SDG 13	SDG 14	SDG 15
Number of ERs with undefined Planet Pillar Target Areas	1	14	11	23	5	8

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