Health system resilience in the face of climate change: A policy scoping review of Indonesia

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Abstract

Indonesia has experienced more frequent climate-driven disasters and a rise in climate-sensitive diseases, underscoring the need for stronger climate adaptation strategies in health. This study assessed policies across health and supporting sectors to evaluate their contribution to building a climate-resilient health system (CRHS) and strengthening emergency response capacity. We conducted a scoping review of national-level policies published between January 2015 and October 2025 to examine how regulations and programs contribute to the development of a CRHS and resilient emergency response. The analysis applied the World Health Organization framework to assess CRHS and the World Bank Frontline Scorecard to evaluate health system capacity for emergency response and climate- and disaster-risk management (CDRM). Ninety-eight policy documents and nine datasets were included. Overall progress toward a CRHS and capacity for emergency response and CDRM remains at a moderate or emerging level. Stronger performance was observed in leadership and governance alongside integrated disaster-response regulations, primarily reflecting long-standing programs addressing infectious diseases and recurrent natural hazards. However, substantial gaps persist in resilient infrastructure and technologies, surveillance systems, financing, health workforces, and climate and health research. Policies also remain concentrated mainly at the national level, with limited translation into technical guidance, insufficient attention to emerging risks such as heatwaves, and inadequate consideration of vulnerable populations. These findings indicate that, while Indonesia has established a policy foundation for a CRHS, advancing climate resilience will require stronger government commitment, multisectoral and cross-country collaboration, better integration of climate information into existing policies, sustainable and equitable financing, investment in health and climate research, as well as development of more technical guidance.

Introduction

The gradual onset of climate change and ongoing debate over its impacts fostered a false sense of security that there is still time to mitigate its effects, leaving many sectors, including health, insufficiently prepared for its consequences. Furthermore, and somewhat ironically, although developing countries contribute relatively less to global carbon emissions, they are often the ones most significantly affected by its consequences [1]. Indonesia is no exception to this fact. Over the past three decades, the country's average annual temperature has risen by 0.6°C [2]. This warming has increased heat-related morbidity and mortality and intensified dengue transmission, with cases rising by 9.67% per 1°C increase [3]. Extreme weather events further compound these risks. In 2024, hydrometeorological hazards accounted for 86% of recorded disasters nationwide [4]. These events have damaged critical health-supporting infrastructure, disrupted essential health services, and placed additional economic strain on already vulnerable households [5–8].

These pressures emphasize the urgency of strengthening health system resilience to climate change [9]. The World Health Organization (WHO) defines a climate-resilient health system (CRHS) as one that anticipates, responds to, recovers from, and adapts to climate-related shocks while sustaining population health [10]. Achieving a CRHS thus requires sustained investment to ensure that all six-health system building blocks can mitigate and adapt to climate risks. The Government of Indonesia (GoI) has ratified several policies, including the National Action Plan (NAP) for Climate Change Adaptation, which recognizes health as a priority sector. Previous studies have examined aspects of health system resilience, noting that while climate and disaster risk management measures incorporate health, climate-related disasters and health impacts remain

underrepresented in disaster policies [6]. Another study noted that existing approaches to infectious disease and disaster management at the primary care level only partially support adaptive capacity [11].

Despite this, evidence remains limited on how Indonesia's policies align with CRHS indicators and the health system's capacity to withstand shocks such as disasters and pandemics. These gaps can be addressed using the WHO indicators for assessing health system resilience to short-term climate risks and the World Bank (WB) Frontline Scorecard for evaluating health emergency response capacity [12,13]. In response to these gaps, this study aimed to evaluate policies across Indonesia's health and supporting sectors to assess their contributions to the development of CRHS and emergency response capacity.

Methods

Study design and framework

We conducted a scoping review of Indonesia's national policies using the Arksey and O'Malley framework and reported the process in accordance with the PRISMA-ScR checklist [14,15]. Aligned with the objective, the review addressed the following question: *'How do policies across the health and related sectors contribute to the development of a CRHS and capacity for emergency response?'* We applied indicators from two established frameworks: the WHO framework, which assessed national health system resilience to short-term climate risks, and the WB Frontline Scorecard, using its rapid assessment version, to evaluate the health system's capacity to respond to climate-induced disasters and pandemics [10,12].

Search strategy and selection criteria

The search strategy was designed to capture national-level policies, grey literature, and datasets relevant to both frameworks. One reviewer (FFA) conducted the searches between October and November 2025 using the Audit Board Regional Database, relevant ministerial websites, the United Nations Framework Convention on Climate Change, ReliefWeb, and PreventionWeb. Keyword combinations in English and Indonesian included “climate change”, “health”, “health crisis”, “disaster”, “infectious diseases”, and “food security”, adapted to each source. Additional Google searches were conducted to capture Frontline Scorecard indicators not covered in the identified documents. Details of the search strategy are provided in **Table A** in **S1 File**. In line with Frontline Scorecard guidance, datasets and index scores were also sourced from the WHO, the WB, and Google Search.

Eligible records were publicly accessible documents published between January 1, 2015, and October 17, 2025, formally ratified by or developed in collaboration with the GoI, and implemented at the national level. Only the most recent policies that remained in effect were included. We excluded news, opinion pieces, meeting reports, temporary directives, and documents that described climate change impacts without detailing policies or programs.

Screening was conducted in three stages: title and summary screening, duplicate removal, and full-text review. Due to the imprecise search tools, titles and summaries were screened prior to duplicate removal. Records were compiled in a Google Sheet. Two reviewers (FFA and BWL) independently conducted full-text screening; disagreements were resolved through discussion and validated by other writers.

Charting and extraction

Selected documents and datasets were classified by record type and extracted in Google Sheets based on their characteristics and alignment with key health functions and pillars on both frameworks, as outlined in **Table B** in **S1 File**.

Analyzing and summarizing

The screening and selection process is presented using a PRISMA flow diagram. Extracted policies were analyzed in three stages to address the study objective, as shown in **Fig 1**. For assessments using the WHO and WB frameworks, we evaluated the extent to which selected records aligned with each indicator within the respective analytical components.

Fig 1. Connections between the aim, the analyses conducted, and the indicators

For scoring, we assigned numeric values to WHO resilience levels to calculate average indicator scores for each key health function and overall resilience (**Table C** in **S1 File**) [13]. Frontline Scorecard indicators were scored using the traffic-light system (**Table D** in **S1 File**). We assessed quantitative indicators through cross-country comparisons, index scaling, or benchmarking against WHO or global standards, and then averaged within each pillar and across CDRM domains [12].

Results

Of the 7,965 documents identified, 98 were included in the final analysis, comprising 75 regulations and 23 reports or strategies. Nine datasets were selected for use with qualitative indicators in the Frontline Scorecard (**Table E** in **S1 File**). The whole selection process is presented in **Fig 2**. The PRISMA-ScR checklist is also outlined in **S1 Checklist**.

Fig 2. PRISMA flow chart

Characteristics of Selected Records

Selected records were classified into six types: Law, government regulation, presidential regulation or decree, ministerial or national agency regulation or decree, strategic and planning document issued by the GoI, and dataset. **Table F** in **S1 File** presents the definition and the record counts for each type. Most records were ministerial or national-agency regulations or decrees, primarily issued by the Ministry of Health (MoH) (n=36) and the National Agency for Disaster Countermeasures (BNPB) (n=12). This was followed by strategic and planning documents, mainly performance reports, guidelines, and strategic plans for climate- and disaster-related programs.

Details of the extracted information from selected records are presented in **S1 Table**. Our assessment identified that each of the ten health functions and four pillars was represented by five to thirty-eight policies (**S1 Fig**). Most policies were published between 2021 and 2025 (n=72), primarily addressing adaptation strategies (n=45). Across all policies, the most frequently addressed risks are extreme weather and natural disasters (n=64) and vector-borne diseases and

pandemics (n=40). In contrast, rising temperatures, heatwaves, and their impacts on mental health are not addressed in any identified regulations or programs.

Health System Climate Resilience Analysis Results

Details of the indicators, assessment results, and associated policies for each of the ten key health functions are presented in **S2 Table**. Our scoring of the 39 indicators resulted in a moderate level of climate resilience for Indonesia's health system (see **Table 1**).

Table 1. Climate resilience levels and the number of records across the ten key health functions

Key Health Functions for Climate-resilient Health System	n	Number of Indicators at Different Resilience Levels			Average Score*
		Low	Med	High	
Leadership and Governance	43	0	4	1	**2.2**
Health Workforce	24	1	2	0	**1.7**
Vulnerability and Adaptation Assessments	17	0	4	1	**2.2**
Integrated Risk Surveillance and Health Early Warning System	23	1	4	0	**1.8**
Health and Climate Research	7	1	2	0	**1.7**
Climate Resilient and Sustainable Technologies and Infrastructure	44	2	2	0	**1.5**
Management of Environmental Determinants of Health	36	0	3	1	**2.3**
Climate-informed Health Programs	33	0	4	0	**2.0**
Emergency Preparedness and Management	32	0	2	1	**2.3**
Climate and Health Financing	13	1	1	1	**2.0**

n: number of relevant policies or datasets; Med: medium/moderate; (*): color represents the traffic-light system for level of resilience

Management of environmental determinants of health and emergency preparedness and management achieved the highest resilience score. These scores were supported by the inclusion of health co-benefits within the resilient food system strategy in the NAP [33,39–42], regulations on environmental health, water, and sanitation [16–23], and established disaster risk management systems reflecting Indonesia's high exposure to natural hazards, supported by decentralised mechanisms such as regional Health Clusters, which coordinate public–private contingency planning at the local level [17,24–31].

Leadership and governance, alongside vulnerability and adaptation assessment (VAA), ranked second. Our score for these were predominantly driven by the recent the VAA Report and the Health National Adaptation Plan for 2025 to 2030 [17,23,32]; the integration of CRHS-relevant targets that emphasize rising awareness of climate-related health risks, resilient health facilities, and integrations of CDRM into the MoH's 2025 to 2029 Strategic Plan [32,33]; and the designation of the Directorate of Environmental Health as the focal point for climate strategy and the Health Crisis Centre for climate-driven health emergencies [17,34,35]. However, in terms of governance, none of the identified records described an operationalized mechanism for multisectoral collaboration on climate change adaptation programs that involve diverse stakeholders, such as community organizations and private institutions.

Climate-informed health programs received a moderate score, with indicators reflecting the inclusion of campaigns and programs targeting climate-sensitive diseases, but also revealing

limited integration of climate and weather information, the absence of initiatives addressing the distinct vulnerabilities of different population groups, and a lack of technical guidance on how to effectively embed climate information into existing health programs [17,26,33,36–40]. Climate and health financing exhibited a similar pattern. Our analysis of the policies revealed that, although budget tagging was recently introduced in the MoH's 2025–2029 strategic plan, funding for climate action in the health sector remains focused mainly on adaptation, is unevenly distributed across subnational levels, and relies primarily on national budget allocations [33,36,39,41,42].

Integrated risk surveillance and early warning systems for health, the health workforce, health and climate research, and climate-resilient and sustainable technologies and infrastructure received the lowest scores. These results reflect persistent gaps in integrating climate information, such as temperature, into surveillance systems to support forecasting and early warning [17,18,33,38,43–46]; limited routine and measured training for health workers on sustainable health facilities and on technical processes for incorporating climate change risks into health programs and services [5,17,18,26,29,33,35,40]; the absence of sustained mechanisms for climate and health research collaboration [17,18,43]; and weak standards and enforcement for climate-proof health facilities [16,17,23,47–49].

Furthermore, for infrastructure and technology, the analysis identified several technical guidelines for climate-resilient and sustainable health facilities that are partly linked to health facility accreditation standards [23,44,49,50], as well as efforts to expand laboratory capacity and strengthen local production of vaccines and other technologies for climate-sensitive diseases

[33,42,49]. Nevertheless, the availability of sustainable and climate-resilient products and technologies within health procurement systems remains limited [16,17,23,51].

Health System Capacity for Shocks Analysis Results

The assessment covered 84 indicators across nine categories within four pillars of supporting health system functionality during emergencies (see **S3 Table**). Overall, our scoring indicated an emerging capacity for the health system's emergency response, as detailed in **Table 2**. Consistent with previous findings, disaster management and emergency response are better supported by existing regulations and programs, whereas policies and programs for resilient technologies and infrastructure are less developed [28,30,31,48,52–55].

Our assessment indicated that policies addressing aspects of lifeline infrastructure resilience, including transport, water, and public facilities, do exist. Still, they focus mainly on earthquakes, floods, and fires, with no specific building code for climate-proof infrastructure that addresses other climate change risks, such as storms and extreme heatwaves [19,21,22,56–61]. The limitation of these policies is also emphasized by the moderate score received for indicators on quality of electricity, transport networks, and port [52], alongside persistent deficiencies in water, sanitation, and air quality that undermine health protection [53,62,63]

Table 2. Average resilience scores across essential pillars for health system resilience in Indonesia

Pillar	Essential Pillars for Health System Resilience	Records (n)	Average Score*
2	Health Facility	106	2.1
3	Health System	129	2.2

4	Integrated Emergency Response	121	2.5
5	Lifeline Infrastructure	49	2.0

n: number of relevant policies or datasets; (*): color represents the traffic-light system for the level of resilience

For the health facility pillar, we found that national policies provide guidance on safe, resilient, and sustainable hospital design, including building codes, emergency operations, electrical surge protection, and internal communication systems [23,44,48–50]. However, few facility-level plans address disaster training, real-time monitoring systems, or protection of vulnerable communities [26,29,44,49,49,50]. Scoring for the health system pillar indicated a similar emerging capacity, supported by policies and funding mechanisms for integrated information systems and emergency response during pandemics and disasters [17,39,64–67], while indicators related to business continuity planning, preparedness for lifeline failures and cyberattacks, and coordinated emergency action across health facility networks received the lowest scores [26,30,44,61,68,69].

Among the nine CDRM categories, only two achieved a green score: codes, regulations, and laws, and public communication and warning capacity (see **Fig 3**; more details in **Table G** in **S1 File**). These scores were supported by widespread cross-sectoral regulations mandating disaster mitigation, response, and recovery actions [26,30,31,47,56,66,70], and high levels of internet access and use [71]. In contrast, policies on infrastructure standards that focus only on earthquakes, fires, and floods [44,47,49,56,58,72], limited logistics storage and distribution capacity [5,17,33,40,65], and information systems lacking real-time or predictive data on hospital capacity and climate-driven health emergencies [27,28,31,50,73] contributed to moderate scores for information systems, physical assets, and supplies and distribution (average scores 2.3–2.4).

The public health category received the lowest score, driven by low population health indicators that reduce capacity to respond to subsequent disasters or pandemics [53,62,63,74]. Financing and funding, as well as plan and planning, followed, reflecting limited technical guidance for facility-level and subnational governments to implement climate change adaptation programs, and a heavy reliance on national and international funding [17,28,30,31,35,68]. The personnel category also scored low due to inadequate regulations that integrate climate and health education and training, and the absence of sustained programs to strengthen CDRM capacity and support equitable workforce distribution [23,26,29,49].

Fig 3. Scores for the nine categories of climate and disaster risk management in Indonesia's health system

Discussion

This review showed that, although policies addressing key health system functions for a CRHS and pillars supporting emergency response capacity exist, capacity in both areas remains moderate or emerging. Based on scoring, policy efforts have focused mainly on disaster and health emergency management and on strengthening existing programs for selected climate-sensitive diseases, with more limited investment in climate-informed surveillance and climate-resilient technologies and infrastructures. Regulations and programs supporting enabling systems, including financing, health workforce capacity, climate and health research, and planning, also remain insufficient. These capacities suggest that existing policies may be insufficient to ensure an effective, timely, and equitable health system response to escalating climate-related risks.

With the rising threat of climate change, health sector adaptation is gaining momentum globally, particularly in countries with medium and low Human Development Index (HDI) [75]. Our review indicates that Indonesia is part of this shift, with policies addressing climate-related health risks identified in earlier research, including the increasing burden of vector-borne diseases and the impacts of extreme weather on sanitation, water systems, and health facilities [6,8,76,77]. Progress in adopting a national health adaptation plan and designating focal institutions further demonstrates Indonesia's advancement toward a CRHS, especially when compared with countries such as the Philippines and Iran, where dedicated CRHS focal points at national and subnational levels have yet to be formalized [78,79]. Nevertheless, the low to moderate scores across for CRHS and emergency response capacities indicate unresolved limitations in identified policies.

Based on the results, the resilience scores are primarily driven by long-standing regulations and programs addressing natural disasters and communicable diseases prevalent in Indonesia, particularly dengue, malaria, and pneumonia, rather than by the systematic integration of a climate change perspective into health policies. This gap is evident in the limited incorporation of climate information within regulations and programs governing surveillance and early warning systems. Previous studies similarly note that climate-informed surveillance is limited by inadequate data and uneven health facility infrastructure [77,80], a pattern commonly observed in low- and middle-income countries such as Iran, the Philippines, Thailand, Viet Nam, and India [78,79,81–83]. By contrast, most World Meteorological Organization member countries (161 of 193) report routine provision of climate services to the health sector, highlighting Indonesia's lag despite its membership [75].

Another persistent gap concerns infrastructure and technologies, which remain underrepresented in the extracted policies, as reflected in the limited adoption of climate-oriented building standards, weak enforcement of existing regulations, and insufficient investment in resilient and sustainable technologies across health supply chains. At the health facility level, although technical guidelines for resilient health facilities have been developed and incorporated into accreditation standards, implementation remains uneven, with fewer than 60% of required standards met even among highly accredited hospitals [84]. These weaknesses are exacerbated by the moderate quality of lifeline infrastructure, which previous studies in Indonesia have shown to frequently fail during disasters, delaying emergency response, particularly in rural and informal urban areas where regulatory enforcement is weakest [85–87]. Similar challenges are reported in other limited-resource settings, where, despite the presence of building codes that partially address climate risks, health facility retrofitting remains constrained by limited technical guidance on how to implement the regulations, poor connectivity between health facilities and critical infrastructure, and insufficient monitoring of facility design and construction [79,82,88,89].

In terms of technologies, resilient and sustainable health supply chains are essential not only for reducing emissions within the health sector but also for supporting effective climate adaptation. However, our assessment found that existing policies provide limited technical guidance and few incentives for health facilities and private actors to develop and adopt climate-resilient and sustainable technologies across procurement and supply chains, a gap also noted by Puspitasari et al. [90]. Similar challenges have been observed in other countries, with the mentioned barriers including inefficient use of resources and medicines, limited workforce capacity to operate new

technologies, unreliable power supplies, and low or declining private-sector engagement in climate and health initiatives [75,78,79,82,83,91].

Our results also highlight critical gaps in enabling systems that must be addressed to advance CRHS and strengthen emergency response capacity, particularly in the lowest-scoring health functions and CDRM categories. First, resource distribution remains uneven, with persistent constraints in financing and the health workforce. Low scores on indicators requiring substantial investment and multisectoral coordination, such as infrastructure retrofitting and sustainable health procurement, point to limited resources and uneven progress across provinces. The lack of dedicated, sustainable funding to accelerate climate adaptation at the subnational and facility levels is particularly concerning, as financing remains largely centralized within national budgets or reliant on international donors. These findings are consistent with previous studies that identify financing gaps and weak intersectoral coordination as major barriers to subnational climate adaptation in the health sector in Indonesia and other developing countries [8,11,75,78,79,83,91,91,92]. Other studies also highlight the absence of a clear financial strategy for CRHS and limited information on the costs of implementing CRHS-related programs, patterns also observed in Indonesia's policies, as barriers to the development of evidence-based and cost-effective interventions for CRHS [78,81,88,91,93]. Hence, research to expand financing options and strategies, particularly at the subnational and health facility levels, is essential.

Regarding health workforce capacity, our review indicates that while regulations and training programs are in place to enhance capacity, evidence of their effectiveness remains limited, with training frequency and scope still inconsistent. Similar gaps are reported in other studies, which

emphasize the importance of sustained professional education and practical, hands-on emergency response training to strengthen competencies [78,79,83,93,94]. Orhan et al. and Sorensen et al. further recommend integrating climate and disaster risk management into health and public health education curricula, as implemented in parts of Europe and the United States [95,96].

Second, the scoring highlights the need for greater investment in climate and health research and stronger planning, particularly to provide technical guidance that supports the integration of climate perspectives into health systems and fosters multisectoral collaboration. Although recent regulations call for expanded adaptation research in priority sectors such as health, the assessment found no active collaborative mechanisms or ongoing research initiatives. This finding is consistent with studies identifying limited research and data to inform planning as a major barrier to advancing a CRHS in countries with resource and vulnerability profiles similar to Indonesia's [78,82,83,92,97,98]. The 2025 Lancet Countdown Report further shows low levels of scientific knowledge production and engagement on climate and health in medium- and low-HDI countries, reinforcing this gap [75].

Planning gaps are reflected in the moderate scores across most indicators, as many regulations and strategies lack detailed technical guidance, insufficiently address the needs of vulnerable populations, and provide limited support for multi-sectoral collaboration. These findings are consistent with previous studies that highlight weak institutional coordination and the absence of enforceable operational guidance or shared frameworks for managing climate-related risks, particularly for vulnerable groups [6,8,99,100]. Similar challenges have been reported in Thailand and the Philippines, particularly regarding inadequate technical guidance, limited organizational-

level adaptation planning for specific climate risks, and weak policy enforcement for multisectoral and stakeholder collaboration [78,81].

Addressing gaps will require stronger commitment from the GoI and the MoH, alongside active cross-sector collaboration to better integrate climate and health considerations across policies, particularly in resilient infrastructure, healthy environments, and climate-informed surveillance systems. As discussed throughout this section, many barriers to developing a CRHS and strengthening emergency response capacity are common across resource-constrained settings. Given that climate-related risks and emergencies often transcend national borders, scaling up national efforts through cross-country and regional collaboration could provide significant added value. Several studies have noted the benefits of coordinated approaches, including shared investments in climate and health research, regional early warning systems, and joint response mechanisms [75,89,91,93]. Based on the gaps identified in this study and supported by the broader literature, priority actions include diversifying funding sources through greater private-sector engagement, strengthening skills-based training and curricula for the health workforce, expanding community-based approaches that actively engage vulnerable groups, and refining national regulations to reflect climate risks better while ensuring their translation into clear, enforceable technical guidance at subnational levels [75,89,90,93,96,101]. This perspective is supported by an investigation by the Partnership for Health System Sustainability and Resilience (PHSSR), which, in its latest iterations, includes and underscores multifaceted environmental sustainability issues (among others, through good governance) [102].

Methodologically, this study has several limitations. First, the small body of literature on health system resilience to climate change in Indonesia limits comparative analysis, as most studies focus on vulnerability and exposure rather than adaptation. Second, access to policy documents was also constrained by fragmented databases, inconsistent ministerial search functions, and restricted access, which may have led to the omission of some documents. Nevertheless, the study offers essential strengths. It is the first to evaluate both CRHS and emergency response capacity through a policy scoping review, scoring relevant indicators drawn from established frameworks. By examining policies beyond the health sector and drawing on current national regulations and strategic documents, the analysis provides a practical baseline for the MoH, health practitioners, and development partners to identify priority health functions and sectors, inform program design, and strengthen cross-sector collaboration.

Conclusion

This scoping review highlights that Indonesia has established regulatory foundations and strategic plans to support the development of a climate-resilient health system (CRHS) and strengthen health emergency response capacity. However, persistent gaps in financing, health workforce capacity, research, infrastructure and technologies, climate-informed surveillance, and operational planning continue to constrain progress. The findings point to several priority actions, including stronger integration of climate and health perspectives into relevant policies, the development of more precise, technical guidance to ensure national policies translate into effective action at the facility and subnational levels, and the expansion of national strategies through cross-country and regional collaboration. Further research is therefore needed to examine better examine the enabling and constraining factors underlying these gaps and to identify effective and efficient strategies for

translating the abovementioned recommendations into concrete actions that strengthen health system climate resilience.

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Supporting Information

S1 Checklist. PRISMA-ScR Checklist

S1 File. Supplemental Materials

Table A. Database and Keywords or Strategies to Identify Policies and Grey Literature; **Table B**. Variables for data extraction; **Table C**. Scoring category for the World Health Organization's indicators on climate-resilient health systems; **Table D**. Scoring category for the Frontline Scorecard's indicators; **Table E**. The Frontline Scorecard indicators that require quantitative data or index scores, databases, and datasets; **Table F**. Type of records included in the scoping review; **Table G**. Scoring results for climate and disaster risk management capacity using the World Bank Frontline Scorecard.

S1 Table. Identified and selected policies and strategies

S2 Table. Assessment results and related policies for Indonesia's health system resilience to short-term climate change risks based on the World Health Organization's guidelines

S3 Table. Assessment results and related policies for Indonesia's health system capacity for climate and disaster risk management

S1 Fig. Number of records aligned with the ten key health functions for a climate-resilient health system and the four health pillars for responding to shocks

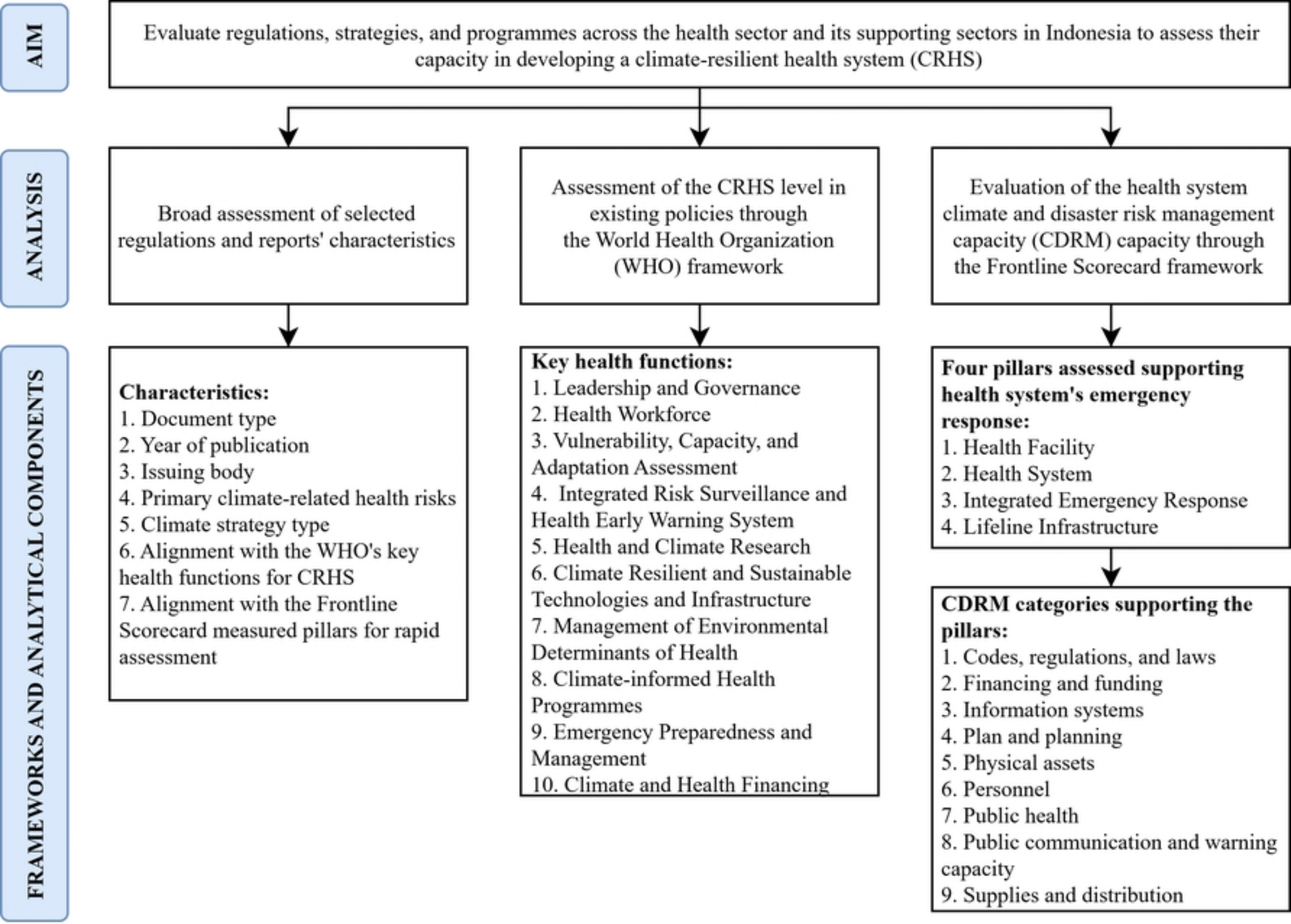

AIM
Evaluate regulations, strategies, and programmes across the health sector and its supporting sectors in Indonesia to assess their capacity in developing a climate-resilient health system (CRHS)
ANALYSIS
Broad assessment of selected regulations and reports' characteristics
Assessment of the CRHS level in existing policies through the World Health Organization (WHO) framework
Evaluation of the health system climate and disaster risk management capacity (CDRM) capacity through the Frontline Scorecard framework
FRAMEWORKS AND ANALYTICAL COMPONENTS
Characteristics:
1. Document type
2. Year of publication
3. Issuing body
4. Primary climate-related health risks
5. Climate strategy type
6. Alignment with the WHO's key health functions for CRHS
7. Alignment with the Frontline Scorecard measured pillars for rapid assessment
Key health functions:
1. Leadership and Governance
2. Health Workforce
3. Vulnerability, Capacity, and Adaptation Assessment
4. Integrated Risk Surveillance and Health Early Warning System
5. Health and Climate Research
6. Climate Resilient and Sustainable Technologies and Infrastructure
7. Management of Environmental Determinants of Health
8. Climate-informed Health Programmes
9. Emergency Preparedness and Management
10. Climate and Health Financing
Four pillars assessed supporting health system's emergency response:
1. Health Facility
2. Health System
3. Integrated Emergency Response
4. Lifeline Infrastructure
CDRM categories supporting the pillars:
1. Codes, regulations, and laws
2. Financing and funding
3. Information systems
4. Plan and planning
5. Physical assets
6. Personnel
7. Public health
8. Public communication and warning capacity
9. Supplies and distribution

Fig 1

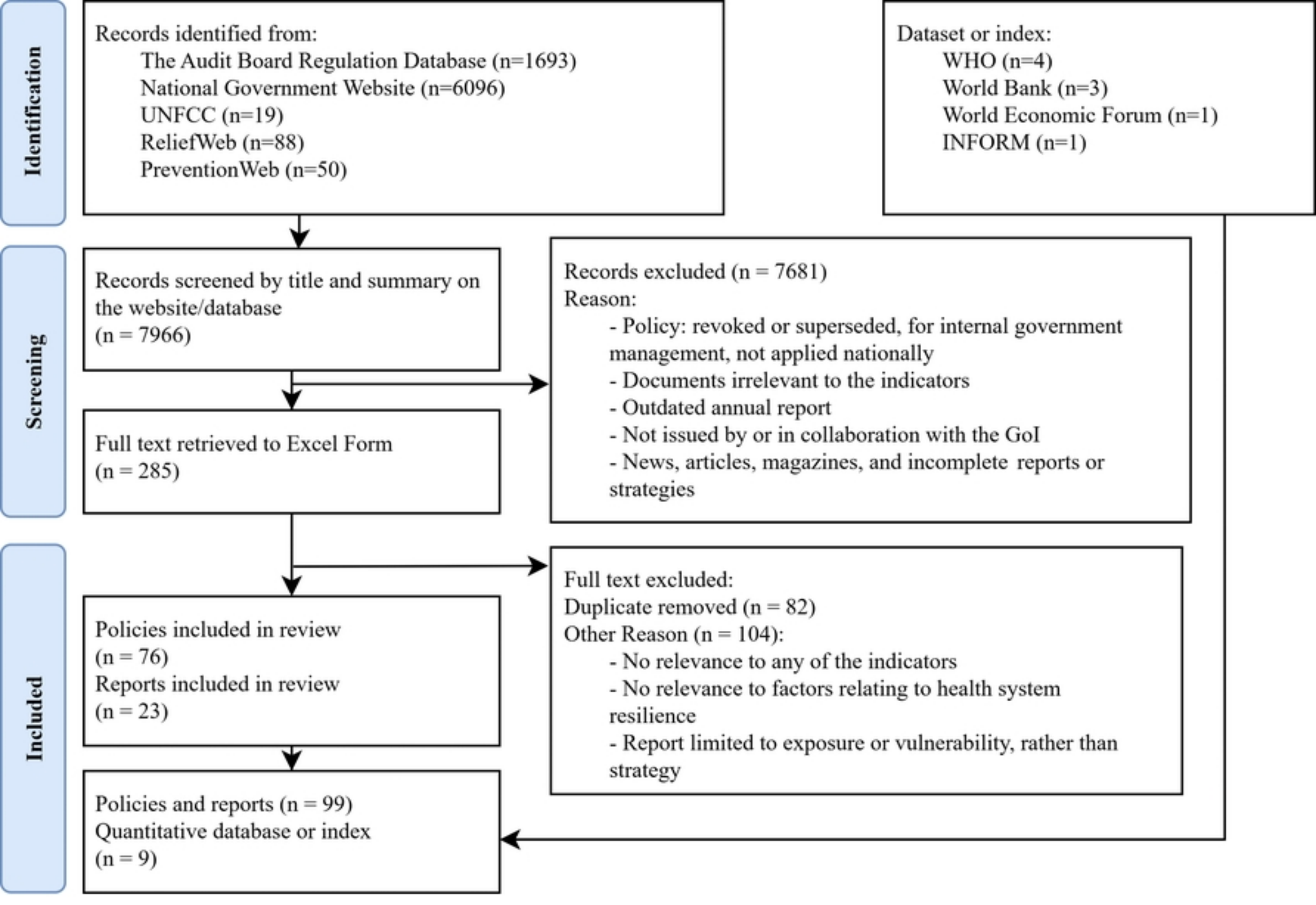
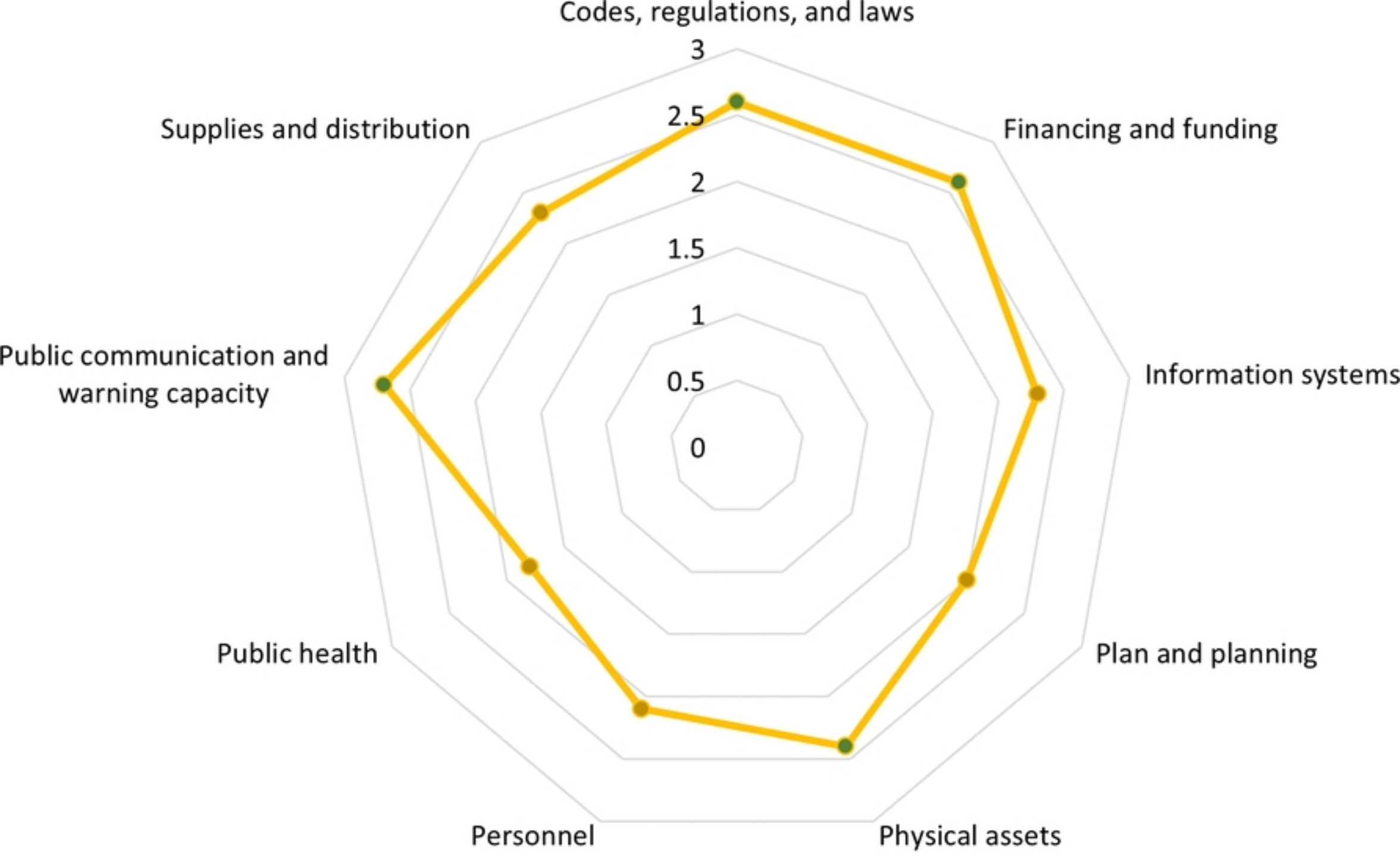

Identification
Records identified from:
The Audit Board Regulation Database (n=1693)
National Government Website (n=6096)
UNFCC (n=19)
ReliefWeb (n=88)
PreventionWeb (n=50)
Dataset or index:
WHO (n=4)
World Bank (n=3)
World Economic Forum (n=1)
INFORM (n=1)
Screening
Records screened by title and summary on the website/database
(n = 7966)
Records excluded (n = 7681)
Reason:
- Policy: revoked or superseded, for internal government management, not applied nationally
- Documents irrelevant to the indicators
- Outdated annual report
- Not issued by or in collaboration with the GoI
- News, articles, magazines, and incomplete reports or strategies
Full text retrieved to Excel Form
(n = 285)
Included
Full text excluded:
Duplicate removed (n = 82)
Other Reason (n = 104):
- No relevance to any of the indicators
- No relevance to factors relating to health system resilience
- Report limited to exposure or vulnerability, rather than strategy
Policies included in review
(n = 76)
Reports included in review
(n = 23)
Policies and reports (n = 99)
Quantitative database or index
(n = 9)

Fig 2


Codes, regulations, and laws
3
2.5
2
1.5
1
0.5
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Financing and funding
Information systems
Plan and planning
Physical assets
Personnel
Public health
Public communication and warning capacity
Supplies and distribution

Fig 3