



Securing and Adapting Birth Registration Systems in Response to Climate Change- Induced Natural and Humanitarian Disasters

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Foreword

Birth registration is the foundation of legal identity and a fundamental right of every child. It enables access to essential services, protection and opportunities throughout life, while providing governments with vital data for planning and decision-making. As climate-related disasters, displacement and humanitarian crises become more frequent and severe, the resilience of Civil Registration and Vital Statistics (CRVS) systems is becoming increasingly important. When registration records are lost, infrastructure is damaged or services are disrupted, children and families face heightened risks of exclusion, statelessness and limited access to assistance precisely when they need it most.

In order to better understand these challenges and identify practical solutions, UNICEF undertook the study *Securing and Adapting Birth Registration Systems in Response to Climate Change-Induced Natural and Humanitarian Disasters*. Combining a global evidence review with in-depth case studies from Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines, the study examines how climate-related shocks affect CRVS systems and how countries are adapting to protect the continuity of registration services. A key contribution of this work is the development and application of a customized resilience framework that assesses CRVS systems across 7 core dimensions and 11 resilience competencies, including agility, inclusiveness, responsiveness, robustness, anticipation and transformation.

The findings demonstrate that resilient CRVS systems are built not through a single intervention but through sustained investments in legal and policy frameworks, governance and coordination, human resources, business continuity planning, digital transformation, interoperability, community engagement and data protection. The experiences of the five study countries show that innovations such as mobile registration, integration with health and social protection services, strengthened digital platforms and decentralized service delivery can significantly improve resilience and ensure that children remain visible and protected before, during and after crises. At the same time, important gaps remain in preparedness planning, disaster financing, infrastructure resilience and formal integration with disaster management systems.

This report calls for renewed commitment from governments, development partners, donors, international financial institutions, civil society and the private sector to strengthen CRVS systems as a critical component of climate adaptation, disaster risk reduction and sustainable development. Investing in resilient CRVS systems is an investment in children's rights, social inclusion, effective governance and national resilience. We hope that the evidence, lessons and recommendations presented in this report will help to accelerate collective efforts to ensure that every child is registered, recognized and protected, even in the face of growing climate and humanitarian challenges.

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Research consultant Midori Sato conducted the study under the expert guidance of a joint team from UNICEF Global Research and Foresight and UNICEF Child Protection and Migration Practice, comprising Dr Ramya Subrahmanian, Mr Bhaskar Mishra and Dr Josiah Kaplan. The team provided strategic direction throughout the research process, from study design and development of the analytical framework to reviewing and refining the synthesis findings and recommendations. We would like to extend special appreciation to Bhaskar Mishra for his extensive technical review and substantive contributions to improving the five country case study reports, as well as this synthesis report, ensuring both analytical rigour and practical relevance.

The selection of the case study countries, together with the rigorous processes of data collection, validation and stakeholder consultation, were undertaken in close collaboration with UNICEF regional and country offices. We are deeply grateful to UNICEF's child protection, birth registration and CRVS specialists across the five case study countries for their dedication, technical expertise and invaluable support throughout the research process. Their contributions helped to ensure that the findings accurately reflect country realities and emerging good practices.

We also wish to acknowledge the leadership and cooperation of the respective civil registration authorities, national statistics offices, identity management agencies, health sector counterparts and disaster management institutions in Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines. Their willingness to share experiences, participate in consultations, validate findings and review the country case studies was essential for the successful completion of this research.

Finally, this report benefited greatly from the technical oversight, expert advice and constructive feedback provided by members of the United Nations Legal Identity Agenda Task Force. Their guidance strengthened the analytical framework and ensured alignment with global efforts to advance universal legal identity and resilient CRVS systems.

To all those who contributed their time, knowledge and commitment to this study, UNICEF extends its sincere appreciation. Through such collective efforts and partnerships, we can advance resilient, inclusive and future-ready CRVS systems capable of protecting legal identity and safeguarding the rights of every child, even in the face of climate-related disasters and humanitarian crises.



Section 1: Introduction

1.1 Background

The escalating global disaster landscape and its impact on children

The world is experiencing an unprecedented rise in interconnected crises, including public health emergencies, armed conflicts, geophysical hazards and climate-related disasters. These shocks are driving large-scale displacement within and across borders, with climate-related disasters emerging as the leading cause of internal displacement over the past decade (United Nations Office for the Coordination of Humanitarian Affairs, UNOCHA, n.d.). As the frequency, scale and complexity of disasters continue to increase, governments face growing challenges in protecting affected populations and maintaining essential public services.

The implications for children are particularly alarming. Globally, more than 99 per cent of children are exposed to at least one climate or environmental hazard, while an estimated 850 million children are exposed to four or more hazards simultaneously (UNICEF, 2021a). Every day, approximately 20,000 children are displaced by weather-related disasters (UNICEF, 2023a), often disrupting access to health care, education, social protection and other critical services.

The scale of displacement associated with disasters is staggering. Between 2008 and 2023, climate-related and geophysical disasters triggered 402.4 million new internal displacements across 208 countries and territories. Floods accounted for 195.2 million displacements, followed by storms (151.4 million), earthquakes (40.9 million), droughts (5.4 million) and wildfires (4.5 million) (Internal Displacement Monitoring Centre, IDMC, 2024). In 2023 alone, 399 natural disasters were recorded worldwide, many of them climate- and weather-related, affecting millions of people and causing extensive social and economic damage (Centre for Research on the Epidemiology of Disasters, CRED, 2024). Recent events illustrate the magnitude of these impacts. Cyclone Freddy devastated Madagascar, Mozambique and Malawi, affecting more than 2.3 million people and causing 1,209 deaths in Malawi alone. Typhoon Doksuri caused widespread destruction across the Philippines and China, while Cyclone Michaung triggered severe flooding that affected 10.2 million people in India (CRED, 2024). The increasing frequency and intensity of such disasters pose significant risks to children's well-being and protection, exacerbating existing vulnerabilities and underscoring the need for resilient, adaptive systems capable of safeguarding their rights before, during and after crises.

The critical role of birth registration in disaster contexts

Birth registration establishes a person's legal existence and provides official proof of identity. As recognized under international human rights frameworks, it is a fundamental right of every child and a cornerstone of effective Civil Registration and Vital Statistics (CRVS) systems (UNICEF, 2013). Beyond recording a vital event, birth registration serves multiple critical functions: it provides the foundation for legal identity,¹ generates essential vital statistics, protects the rights of vulnerable populations and facilitates access to public services, social protection, humanitarian assistance and legal entitlements throughout the life course.

In an era marked by increasingly frequent and severe climate-related disasters, displacement and humanitarian crises, the importance of resilient CRVS systems has become even more pronounced. Functional and resilient CRVS systems are indispensable for disaster risk reduction and management (DRRM), enabling governments and humanitarian actors to access timely and reliable population data for preparedness, response, recovery and reconstruction efforts. They also help to ensure the continuity of registration services during crises and support the protection of fundamental human rights, particularly for populations affected by displacement, loss of documentation and disruption of public services.

At the same time, conflicts and natural or human-induced disasters often cause extensive damage to infrastructure, records and service delivery systems, severely disrupting CRVS operations and undermining the continuity of registration services. The consequences can be particularly severe

¹ The United Nations operational definition of legal identity: "[T]he basic characteristics of an individual's identity, e.g., name, sex, place and date of birth, which is conferred through civil registration and the issuance of a certificate by an authorized civil registration authority following the occurrence of birth. In the absence of birth registration, legal identity may be conferred by a legally recognized identification authority." While nationality is not included as one of the basic characteristics of the United Nations operational definition of legal identity, the link to nationality is derived from birth registration, which records where a person was born and the individual's parents – key pieces of information needed to establish nationality (Economic and Social Commission for Asia and the Pacific, ESCAP, 2023b; United Nations High Commissioner for Refugees, UNHCR, 2024).

for children. Those who remain unregistered face heightened risks of child labour, exploitation, trafficking, child marriage and recruitment into armed groups (Plan International, 2014). Refugee and displaced children separated from their families during humanitarian crises and disasters are especially vulnerable to statelessness, difficulties in proving their identity and nationality, and denial of asylum or other forms of protection (UNHCR, 2024; UNICEF, 2019). Robust and resilient CRVS systems are therefore essential for mitigating these risks, protecting legal identity and ensuring that vulnerable populations remain visible and protected during and after crises.

As climate and disaster risks continue to intensify, strengthening the resilience, adaptability and continuity of CRVS systems is not merely an administrative priority but an essential investment in human rights, social inclusion and sustainable development. Ensuring that birth registration systems remain operational before, during and after crises is fundamental to protecting legal identity and safeguarding the rights and well-being of affected populations, particularly children and other vulnerable groups.

Examining CRVS system resilience in five countries: Multi-country case studies

This report summarizes the findings of multi-country case studies that are part of UNICEF's multi-country research initiative, Securing and Adapting Birth Registration Systems in Response to Climate Change-Induced Natural and Humanitarian Disasters (2024–2025). It examines how climate-related shocks impact the performance of the CRVS system across different contexts, explores governance, institutional and technical vulnerabilities, and highlights examples of good practice, especially in hard-to-reach and high-risk areas. The analysis uses a multidimensional resilience framework, structured around 7 core elements and 11 cross-cutting system competencies (e.g., inclusive, anticipatory, robust, proactive), to assess system performance and guide recommendations.

1.2 Rationale and objectives of the study

While a substantial body of literature has examined the impacts of non-climate-related crises on birth registration and CRVS systems, including earthquakes and tsunamis (UNICEF, 2005), armed conflict (UNICEF, 2005; UNICEF Innocenti, 2007; UNICEF, 2018a, 2018b, 2018c, 2018d) and more recently the COVID-19 pandemic, comparatively little attention has been paid to the effects of climate-related disasters on the continuity, functioning and resilience of CRVS systems. This knowledge gap is particularly concerning given the increasing frequency and intensity of climate-induced shocks, which are disrupting public services, displacing populations and placing millions of children at risk of exclusion from legal identity and essential services.

In order to address this gap, UNICEF, in its capacity as co-chair of the United Nations Legal Identity Agenda Task Force, commissioned the study, Securing and Adapting Birth Registration

Systems in Response to Climate Change-Induced Natural and Humanitarian Disasters. The study aimed to identify existing vulnerabilities, challenges and gaps in birth registration systems within the context of climate change, while also documenting evidence-based good practices and lessons learned to strengthen the resilience of CRVS systems. Particular attention was paid to securing and adapting birth registration processes, including both the flow of new registration data and the stock of existing registration records, in the face of climate-related disasters and humanitarian emergencies.

Recognizing birth registration as an integral component of broader CRVS and legal identity ecosystems, the study adopted a systems perspective that examined the interconnections between civil registration, national identification systems, and the production and use of vital statistics. It explored how climate-related disasters affect the continuity of registration services, the protection and accessibility of civil registration records, and governments' ability to generate reliable population data for planning, service delivery, humanitarian response and recovery efforts.

The study was implemented through two complementary components: a desk-based review of global literature and evidence, and five in-depth country case studies. The desk review examined existing research, guidance and documented experiences related to CRVS resilience in disaster settings, identifying key risks, vulnerabilities, resilience factors and emerging good practices. Building on this foundation, the country case studies provided detailed insights into how CRVS systems in different contexts are preparing for, responding to and recovering from climate-related shocks.

This synthesis report brings together the findings from both components, offering a comprehensive assessment of the impacts of climate-related disasters on birth registration and CRVS systems, as well as practical recommendations for strengthening resilience, safeguarding legal identity and ensuring the continuity of registration services in an increasingly climate-affected world.

1.3 Desk review: Climate-related disasters and CRVS systems

This section summarizes the findings of a rapid desk review examining the relationship between climate-related disasters and CRVS systems, with a particular focus on birth registration. The full desk review report is available as a separate companion document. The review was undertaken to address the limited evidence base on how climate-related disasters affect the functioning, continuity and resilience of CRVS systems, and to identify practical measures for safeguarding legal identity in increasingly complex disaster contexts.

The review highlights the growing challenges posed by interconnected crises, including climate-related disasters, public health emergencies, conflicts and displacement, and it examines their implications for birth registration and broader CRVS systems. It identifies the key pathways through which climate-related shocks disrupt registration services, damage infrastructure and records, displace populations and undermine access to legal identity and essential services, particularly for children and other vulnerable groups.

The desk review also identifies emerging evidence and good practices for strengthening the resilience of CRVS systems before, during and after disasters. These include measures related to legal and policy frameworks, business continuity planning, digitalization, data protection and recovery, interoperability, decentralized service delivery, mobile registration, community engagement and integration with disaster risk management and humanitarian response systems.

Beyond generating evidence, the desk review served as the foundation for the broader study. Its findings informed the development of the analytical framework, research methodology and data collection tools used in the five in-depth country case studies. As such, it provides the conceptual basis for understanding vulnerabilities, assessing resilience, and identifying the policy and operational measures required to secure and adapt birth registration and CRVS systems in the face of increasing climate-related risks.

Effects of climate-related disasters on birth registration and CRVS systems

Climate-related disasters, including rapid-onset events such as floods, storms, heatwaves and wildfires, as well as slow-onset processes such as sea-level rise, desertification and land degradation, can significantly disrupt the functioning of CRVS systems. These impacts affect both the supply side of registration services, by undermining institutional capacity and infrastructure, and the demand side, by creating barriers that prevent individuals and families from accessing registration services. The resulting disruptions can compromise the continuity of birth registration, weaken the production of vital statistics, and limit access to legal identity and essential services.

Data loss and integrity challenges: One of the most significant vulnerabilities of CRVS systems during disasters is the risk of data loss, data corruption, security breaches and limited recoverability of records. Floods, fires, storms and other hazards can destroy or damage paper records, local databases and server infrastructure, while power outages and disrupted communications can render digital records temporarily inaccessible. The loss or inaccessibility of civil registration data not only disrupts the registration of new vital events, but may also compromise existing population registers that serve as the foundation for legal identity systems. These risks underscore the importance of robust data protection measures, secure digitalization, off-site and cloud-based back-ups, disaster recovery protocols and business continuity planning.

Infrastructure damage and service disruptions: Climate-related disasters frequently damage the infrastructure on which CRVS systems depend. Registration offices, health facilities, archives, communication networks, electricity systems, roads, bridges and transport networks may be partially or completely destroyed, disrupting the delivery of registration services. Such disruptions often reduce accessibility for affected populations and impede the ability of registration staff to carry out their duties. In many cases, disasters also affect the safety, availability and retention of personnel, further constraining service delivery at a time when demand for identity documentation and other services may be increasing.

Constraints on disaster response and recovery: Reliable and timely population data are essential for effective disaster preparedness, response and recovery. When CRVS systems are disrupted, governments and humanitarian actors may struggle to accurately identify affected populations, assess needs, target assistance and monitor recovery efforts. Incomplete or outdated records can hinder the planning and delivery of emergency shelter, health care, food assistance, social protection and other critical services. Conversely, resilient CRVS systems can serve as an important source of demographic and identity data, supporting evidence-based decision-making and improving the effectiveness and equity of disaster response interventions.

Increased vulnerability of children and marginalized populations: The impacts of disrupted birth registration systems are particularly severe for children and other vulnerable populations. Children living in poverty, remote locations, disaster-prone areas, conflict settings or marginalized communities often face the greatest barriers to registration and documentation. When birth records or certificates are lost, damaged or inaccessible, affected children may encounter difficulties accessing education, health care, social protection benefits, humanitarian assistance and legal protection. Disaster-related displacement can further heighten risks of exclusion, exploitation, trafficking, family separation and statelessness. In such contexts, recovery measures such as document replacement campaigns, mobile registration services, outreach initiatives and accelerated registration procedures become critical to restoring legal identity and protecting children's rights.

Overall, climate-related disasters highlight the importance of building resilient, adaptive and inclusive CRVS systems capable of maintaining the continuity of registration services, protecting critical records and databases, and safeguarding legal identity before, during and after crises. Such investments are increasingly essential as countries confront growing climate risks and more frequent displacement-related challenges.

Emerging good practices for building resilient CRVS systems

The desk review identified a range of emerging good practices across CRVS system dimensions and resilience competencies, pointing to a broader shift from reactive responses towards proactive, anticipatory, adaptive and transformative approaches. As climate-related disasters become more frequent and complex, strengthening the flexibility, resilience and responsiveness of CRVS systems requires coordinated improvements across legal, institutional, operational, technological and community-level domains.

Legal, governance and enabling environment: A strong legal and governance framework is fundamental to ensuring the continuity of CRVS services during climate-related disasters. Effective resilience requires close coordination between CRVS and disaster management authorities, clearly defined emergency plans and standard operating procedures (SOPs), and dedicated financial and institutional resources. Legal and policy frameworks should be periodically reviewed to address the needs of vulnerable populations, including refugees, internally displaced persons (IDPs), stateless populations and people living in remote or disaster-prone areas, while eliminating discriminatory barriers to registration.

Importantly, CRVS services should be explicitly recognized as essential public services within disaster management and emergency response legislation. Flexible legal provisions, such as simplified registration procedures, temporary waivers of fees and penalties, and acceptance of alternative forms of documentation, can help to ensure continuity of service delivery during crises. Pre-established data-sharing arrangements, coupled with strong privacy and data protection safeguards, further enhance system resilience. Fiji's rapid replacement of birth certificates following Tropical Cyclone Winston demonstrates the value of having such enabling measures in place before disasters occur.

Human resources and workforce preparedness: A resilient and well-prepared workforce is critical to maintaining CRVS operations during emergencies. Sustained investments in human resource development, disaster preparedness and implementation of national CRVS strategies help to strengthen institutional readiness. Training programmes on disaster risk management, business continuity, emergency operations and crisis response can significantly improve staff preparedness and operational effectiveness.

Clearly defined institutional arrangements and memoranda of understanding (MoUs) facilitate the mobilization of surge personnel, including health workers, teachers, local government officials and community leaders, during emergencies. Equally important is the protection and well-being of frontline personnel. Safe working conditions, psychosocial support and trauma-informed approaches help to maintain staff morale and ensure compassionate, people-centred service delivery during crises.

Business process improvement and operational continuity: Resilient CRVS systems embed flexibility and adaptability into routine operations and emergency preparedness measures. Comprehensive risk assessments, business continuity plans (BCPs), recovery protocols and surge capacity arrangements enable registration services to continue functioning at a minimum operational level immediately following disasters. This is particularly important for the rapid registration of births and the re-issuance of lost or damaged identity documents.

Simplified administrative procedures, temporary registration centres and mobile registration services can reduce barriers to access for affected populations. Experiences from countries such as Mozambique and Pakistan illustrate the value of taking services directly to communities when fixed infrastructure is damaged or inaccessible. Strong collaboration between CRVS authorities and sectors such as health, education, social protection and disaster management further enhances service continuity and outreach. Continuous monitoring, simulation exercises, stress testing and periodic process reviews help to identify vulnerabilities and promote ongoing system improvement.

Community engagement and demand creation: Maintaining demand for registration services before, during and after disasters requires a human-centred and community-based approach. Meaningful engagement of local stakeholders, civil society organizations, faith-based groups and community leaders in CRVS planning and implementation helps to build trust, improve responsiveness and strengthen service uptake.

Understanding local vulnerabilities, social norms and communication preferences is essential for effective outreach, particularly in fragile and disaster-affected settings. Multi-channel communication strategies, using radio, social media, community networks, schools, health facilities and religious institutions, can help to disseminate critical information on registration services. Tailored interventions targeting refugees, displaced populations, persons with disabilities and other marginalized groups can address specific barriers to access. Feedback and accountability mechanisms further support continuous service improvement and strengthen public confidence in CRVS systems.

Decentralization, service integration and interoperability: Decentralized and people-centred service delivery models significantly enhance the resilience and accessibility of CRVS systems, particularly for remote, vulnerable and disaster-affected populations. Integrating birth registration with health, education, social protection and humanitarian services can create efficient 'one-stop' service delivery models that remain functional during emergencies.

Mobile registration teams linked to national databases can support rapid outreach to displaced and hard-to-reach populations. Decentralization of both service delivery and data management reduces dependence on a single administrative centre, minimizes operational bottlenecks and

enhances continuity when localized disruptions occur. At the same time, interoperability between CRVS, identity management, health information and social protection systems enables timely data sharing, while maintaining appropriate safeguards for privacy and data protection.

Digitalization, data security and storage: Digital transformation has emerged as one of the most important enablers of CRVS resilience. Transitioning from paper-based systems to secure digital platforms improves efficiency, accessibility, data quality and continuity of operations during crises. Standardized data collection, routine data cleaning and the use of disaggregated data strengthen situational awareness and support targeted emergency response interventions.

Resilient digital systems require comprehensive data protection and disaster recovery measures, including off-site back-ups, cloud-based storage, mirrored servers and secure archiving arrangements. Integration within broader government data ecosystems facilitates evidence-based decision-making and coordinated service delivery. Investments in reliable connectivity, mobile technologies, online registration platforms and digital identity solutions can further ensure that CRVS services remain accessible, even when physical infrastructure is damaged or populations are displaced.

Collectively, these emerging practices demonstrate that resilient CRVS systems are not built through isolated interventions, but through a comprehensive approach that combines legal reform, institutional strengthening, operational preparedness, community engagement, service integration and digital innovation. Such investments are essential for ensuring the continuity of registration services, protecting legal identity, and safeguarding the rights of children and vulnerable populations in an increasingly climate-affected world.

1.4 Methodology

Case study questions

The multi-country case study sought to identify practical strategies for strengthening the resilience of birth registration and CRVS systems in the face of climate-related disasters. Building on the findings of the desk review, the study examined how CRVS systems have been affected by climate-related emergencies and explored the measures adopted to prepare for, respond to, recover from and adapt to these events. The analysis focused on experiences from selected countries over the period 2004–2024, with particular attention to birth registration as the foundation of legal identity and protection.

The study was guided by the following research questions.

RQ1 – Impact of climate-related disasters on birth registration and CRVS systems:

How have climate-related disasters between 2004 and 2024 affected birth registration and

CRVS systems? The study examined both the supply-side impacts on registration services, infrastructure, records, personnel and institutional capacity, and the demand-side impacts affecting individuals' and communities' ability to access registration services. Particular attention was paid to the implications for legal identity, service access and the protection of vulnerable populations, especially children.

RQ2 – System preparedness, response, adaptation and recovery: What measures have national and subnational birth registration and CRVS systems implemented to prepare for, respond to, adapt to and recover from climate-related disasters? The study explored policies, institutional arrangements, operational practices, technological innovations, community-based approaches and intersectoral coordination mechanisms that have helped to strengthen system resilience and ensure the continuity of registration services before, during and after disasters.

Together, these questions provide a framework for understanding both the vulnerabilities and resilience capacities of CRVS systems, and for identifying good practices that can inform future efforts to secure legal identity and build climate-resilient registration systems.

Study design and methodology

The study adopted a deductive and exploratory research approach, applying and testing an analytical framework developed from the desk review, while generating new evidence through a combination of secondary data analysis, a framework-guided survey and multi-stakeholder consultations. The methodology was implemented in seven sequential phases, enabling the study to move from conceptual development and evidence synthesis to country-level analysis, validation and the formulation of policy recommendations.

Phase I – Inception, study design and planning (September–October 2024): The inception phase focused on establishing the overall research design, defining the study objectives and scope, identifying key lines of enquiry and developing a detailed implementation plan. Initial consultations helped to refine the methodological approach and ensured alignment with the study's focus on the resilience of birth registration and CRVS systems in the context of climate-related disasters.

Phase II – Global rapid desk review (November 2024–February 2025): A global rapid desk review was undertaken to examine existing literature, policy documents, guidance materials, evaluations and country experiences related to climate-related disasters, birth registration, legal identity and CRVS systems. The review identified key vulnerabilities, resilience factors, emerging good practices and evidence gaps, providing the conceptual and analytical foundation for the subsequent phases of the study.

Phase III – Framework and tool development, and country selection (February–April

2025): Drawing on the findings of the desk review, the study developed a customized analytical framework and a framework-guided data collection tool. The framework was designed to assess the resilience of birth registration and CRVS systems across multiple dimensions and resilience competencies. During this phase, five countries were selected for in-depth analysis: Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines. The selection reflected geographic diversity, varying climate risks and differing levels of CRVS system development.

Phase IV – Data collection and analysis (April–May 2025):

Data collection was conducted through a framework-guided online and offline survey, complemented by a review of secondary sources, including national policies, legislation, administrative records, assessments and programme documentation. The analysis primarily focused on national-level experiences, examining the impacts of climate-related disasters on CRVS systems, existing resilience measures and opportunities for strengthening preparedness, response, recovery and adaptation.

Phase V – Stakeholder validation and consultation (June–September 2025):

Stakeholder validation workshops and consultation meetings were conducted in all five study countries. These engagements brought together representatives from civil registration authorities, government ministries, disaster management agencies, development partners and UNICEF country offices to review, validate and enrich the preliminary findings. The validation process helped to ensure that the case studies accurately reflected country realities and captured emerging practices and lessons learned.

Phase VI – Review and refinement of country case studies and the synthesis report

(October 2025–May 2026): Following validation, the country case studies underwent a comprehensive technical review process led by the UNICEF Programme Division. The review strengthened the analytical content, incorporated additional evidence and stakeholder feedback, improved consistency across country reports and ensured alignment with the overall study framework and objectives.

Phase VII – Policy briefs and good practice recommendations (May–August 2026):

The final phase focused on synthesizing findings across the desk review and country case studies to develop policy briefs and practical recommendations. This process identified cross-cutting lessons, promising practices and priority actions for governments, development partners and donors to strengthen the resilience of birth registration and CRVS systems in the face of increasing climate-related risks. The findings presented in this report form the basis for these policy and operational recommendations.

The study adopted the following case study unit and data analysis methods.

Case study unit: The study primarily examined the resilience of birth registration and CRVS systems at the national level across five countries: Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines. In order to capture important contextual variations and generate more granular insights, the analysis also incorporated selected subnational case studies, including the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) in the Philippines and seven regions in Ethiopia.

Data collection was undertaken through a structured, framework-guided survey completed by a wide range of stakeholders involved in CRVS, legal identity, disaster management, health and related sectors. Stakeholder validation workshops and consultations were subsequently conducted in all five countries to strengthen the accuracy and contextual relevance of the findings. These consultations provided an opportunity to verify findings, fill evidence gaps and identify additional examples of good practice and system resilience.

Data analysis: The study employed a deductive framework-based thematic analysis, complemented by an inductive thematic analysis to capture emerging insights. This mixed analytical approach reflected the dual objective of the study: to test an existing analytical framework for CRVS resilience, while also generating new knowledge from country experiences.

The analysis was guided by a customized resilience framework encompassing key CRVS system dimensions and 11 multidimensional resilience competencies. Survey responses, documentary evidence and stakeholder consultation findings were systematically coded against the framework to assess strengths, weaknesses, vulnerabilities and resilience capacities across countries. Results were synthesized and visualized using a colour-coded heat-map approach, supported by plot-dot scoring to facilitate comparison across system dimensions and resilience competencies (*see section 2 – Findings from cross-case synthesis*).

In addition to the structured framework analysis, qualitative information derived from survey narratives, policy documents and stakeholder validation meetings was subjected to thematic analysis. While the deductive framework provided the primary analytical lens, the study remained open to identifying emerging themes and patterns that did not fit within predefined categories. These inductively generated insights were analysed alongside the framework-based findings, allowing for comparison, triangulation and identification of areas of convergence and divergence.

Analytical framework for assessing CRVS resilience

Civil Registration and Vital Statistics systems are complex, context-dependent systems that perform a continuum of functions, including the notification, declaration, registration, certification and compilation of vital statistics. Their performance is shaped not only by business processes and technology, but also by the broader legal, political, social, economic and institutional environments in which they operate. Effective and resilient CRVS systems therefore depend on strong governance, adequate resources, community engagement, sound policies and reliable infrastructure (AbouZahr et al., 2021; ESCAP et al., 2021).

In order to assess how CRVS systems withstand, adapt to and recover from climate-related disasters, this study adopted a multidimensional resilience framework. The framework draws on the multidimensional systems resilience approach proposed by Carmen et al. (2021), and was adapted to the specific characteristics and operational requirements of birth registration and CRVS systems. It recognizes that resilience extends beyond the ability to absorb shocks and includes the capacity to anticipate risks, adapt to changing circumstances, learn from crises, transform systems and sustain essential services under adverse conditions.

The conceptual foundation of the framework is informed by two complementary bodies of work. First, the *Sendai Framework for Disaster Risk Reduction 2015–2030* (United Nations Office for Disaster Risk Reduction, UNDRR, 2015) provides a basis for understanding disaster risk reduction, preparedness, recovery and resilience-building within disaster-prone contexts. Second, the resilience model described by Graveline and Germain (2022) highlights the evolution of resilience thinking from reactive ‘bounce-back’ approaches towards proactive, adaptive and transformative strategies centred on learning, collaboration and the reduction of underlying vulnerabilities. Consistent with these perspectives, the study examined how countries strengthen CRVS resilience through preparedness, adaptation, learning, innovation and cross-sectoral collaboration.

In order to operationalize the assessment, the study examined CRVS performance across the disaster management cycle, including prevention, preparedness, response and recovery. The survey instrument and analytical approach were informed by a synthesis of key resilience and CRVS frameworks, in particular the Framework for Resilient CRVS Systems (Fruchtman et al., 2021) and other CRVS assessment and performance improvement frameworks. An exploratory best-fit framework synthesis approach (Carroll et al., 2011; Dixon-Woods, 2011) was applied throughout the desk review and country case studies, allowing the initial framework to be refined iteratively as new evidence and emerging themes were identified.

The resulting framework assesses CRVS resilience across the following seven interrelated system dimensions.

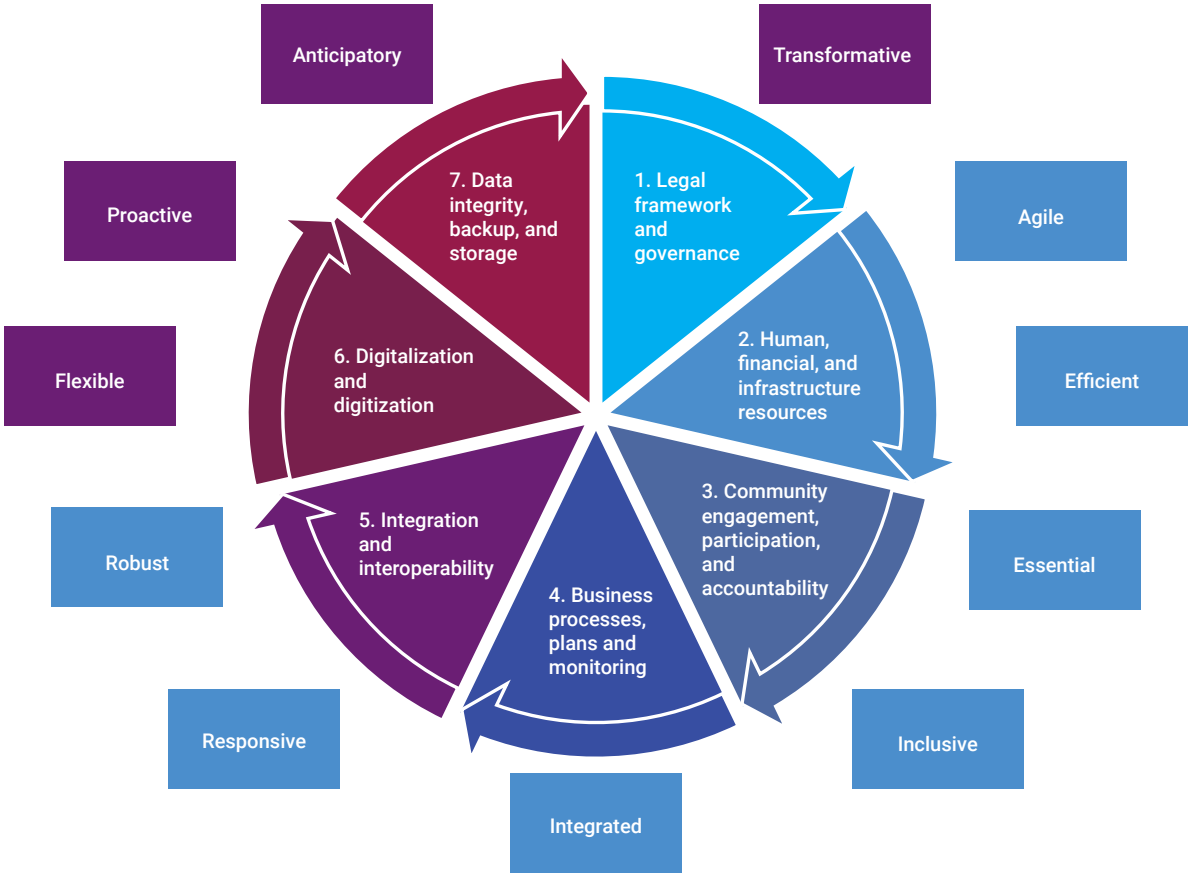
1. **Legal framework and governance:** Laws, policies, institutional arrangements, coordination mechanisms and accountability structures that govern the CRVS system and support continuity during emergencies.
2. **Human, financial and infrastructure resources:** The availability and sustainability of workforce capacity, financing, facilities, equipment and other resources required to maintain CRVS operations before, during and after disasters.
3. **Community engagement, participation and accountability:** The extent to which communities are informed, engaged, able to access services and contribute to improving CRVS performance, particularly in vulnerable and disaster-prone settings.
4. **Business processes, plans and monitoring:** Operational procedures, contingency arrangements, business continuity mechanisms, monitoring systems and performance management processes that support resilient service delivery.
5. **Integration and interoperability:** The degree of coordination, data exchange and functional integration between CRVS and related sectors, including health, education, social protection, disaster management and identity management.
6. **Digitalization and digitization:** The use of digital technologies to improve registration processes, data management, accessibility, operational efficiency and service continuity.
7. **Data integrity, back-up and storage:** Measures that ensure the quality, security, accessibility, back-up, recovery and long-term preservation of civil registration records and databases.

Each dimension was assessed against 11 resilience competencies that characterize the attributes of a resilient CRVS system:

- **agile** – able to adjust rapidly to changing circumstances;
- **efficient** – capable of delivering services using resources effectively;
- **essential** – recognized as a critical public service that must continue during crises;
- **inclusive** – accessible to all populations, especially vulnerable and marginalized groups;
- **integrated** – connected to complementary systems and sectors;
- **responsive** – able to react effectively to emerging needs and disruptions;
- **robust** – capable of maintaining core functions during shocks;
- **flexible** – able to adapt procedures and service delivery approaches as circumstances change;
- **proactive** – focused on preparedness and risk reduction before crises occur;
- **anticipatory** – capable of identifying and preparing for future risks and threats; and
- **transformative** – able to learn from crises and use them as opportunities for long-term system strengthening.

Together, these 7 dimensions and 11 competencies provided a comprehensive framework for assessing the resilience of birth registration and CRVS systems across the 5 case study countries. The framework guided data collection, analysis and validation, and served as the basis for identifying strengths, vulnerabilities, good practices and recommendations for building resilient, inclusive and climate-adaptive CRVS systems. (See Figure 1.)

Figure 1: Elements of multidimensional system resilience



Source: Based on the Framework for Resilient CRVS Systems (Fruchtman et al., 2021) and a global desk review of existing literature on CRVS quality improvement.

The seven core dimensions, foundational to effective CRVS systems, highlight the interaction between these dimensions and the core competencies (agile, efficient, essential, inclusive, integrated, responsive and robust). This unified framework demonstrates how these components help to build resilient CRVS systems, while maintaining vital relationships that boost performance and responsiveness during crises. This study uses this adapted framework, including additional subdimension details, to evaluate how these core functions connect within each of the disaster risk resilience dimensions in a climate-related disaster context.

Case study selection and contextual information

The selection of case study countries was undertaken by a cross-divisional UNICEF technical team. The selection process sought to ensure geographical diversity, varying levels of CRVS system maturity, and exposure to different climate-related risks and disaster contexts. Countries were assessed against a set of predefined criteria, including recent experiences with climate-related disasters, climate vulnerability, birth registration performance and the potential to generate lessons across key thematic areas relevant to CRVS resilience. (See Table 1.)

The final selection included Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines, representing diverse geographical regions, hazard profiles and stages of CRVS development. Together, these countries provide valuable insights into the challenges and opportunities associated with securing and adapting birth registration and CRVS systems in increasingly climate-affected environments.

Table 1: Case study selection criteria

Criteria	Descriptions
Primary list of nine countries proposed by UNICEF HQ	Bhutan, Ethiopia, Malaysia, Mozambique, Nepal, Nigeria, Philippines, Rwanda and Tanzania
Recent climate-related disaster experiences	Experiences with climate-related disasters in the past 5 years
Climate risks	Medium or high in at least 2 out of 3 climate risk index rankings
Birth registration completeness according to WHO SCORE and latest statistics from UNStats	WHO SCORE (Rank 5 – 90–100%; Rank 4 – 75%–89%; Rank 3 – 50%–74%; Rank 2 – <50%)
Potential thematic focus themes #1, 3, 5, 6, 7 will apply to all countries	Thematic areas: 1. Business process improvement 2. Decentralization of services 3. Engagement with the health sector 4. Digitalization 5. Demand creation 6. Safe storage of data 7. Reconstruction recovery mechanisms 8. Populations on the move

By combining countries with different hazard exposures, institutional capacities and CRVS system characteristics, the study aimed to capture a broad range of experiences and identify both common and context-specific approaches to strengthening the resilience of birth registration and CRVS systems in the face of climate-related disasters.

1.5 Case study context: a simple overview

A detailed explanation of each country-specific case study profile (including climatic and CRVS snapshots) is provided in each of the country case study reports, while only a brief socioeconomic and demographic snapshot is included in Table 2.

Table 2: Contextual overview of the case study countries

Category	Indicator	data source ³	Ethiopia	Nepal	Philippines	Papua New Guinea	Mozambique
Geographical	Land size	https://data.world-bank.org	1,128,571.4 km ² (2022)	143,350.0 km ² (2022)	298,170.0 km ² (2022)	452,860.0 km ² (2022)	786,380.0 km ² (2022)
	Borders	https://www.cia.gov/the-world-factbook/field/land-boundaries/	Eritrea, Djibouti, Somalia, Sudan, South Sudan, Kenya	India to the east, south and west, and the Tibet Autonomous Region of China to the north	No	Indonesia	Malawi; South Africa; Eswatini; Tanzania; Zambia; Zimbabwe
Government	Government system		The Federal Democratic Republic	The Federal Democratic Republic of Nepal. there are 6 metropolitan cities, 11 sub-metropolitan cities, 276 municipalities, 460 rural municipalities, and 6,743 ward offices	A republic; the chief of state and head of government is the president	A constitutional parliamentary democracy and a Commonwealth realm	A presidential republic

Category	Indicator	data source3	Ethiopia	Nepal	Philippines	Papua New Guinea	Mozambique
Demo-graphic	Population (mid-year estimate 2022–2023)	(UNSD, 01/2025)	107,191,489	29,164,578	11,912,437	7,275,324	32,419,747
	Last census		2007	2021	2020	2011	2017
	Population growth rate (average annual %)	https://data.un.org/	2.6 (2020)	1.5 (2020)	1.4 (2020)	2.0 (2020)	2.9
	Fertility rate, total (live births per woman)	https://data.un.org/	4.3 (2020)	1.9 (2020)	2.6 (2020)	3.6 (2020)	4.9
	Population age distribution (0–14/60+ years old, %)	https://data.un.org/	39.6 / 5.3 (estimate)	28.1 / 8.8 (estimate)	29.5 / 8.9 (estimate)	34.8 / 6.1 (projected estimate, (medium-fertility variant))	43.8 / 4.4 (estimate)
	Life expectancy at birth (females/males, years)	https://data.un.org/	67.9 / 64.1 (2020)	71.7 / 68.8 (2020)	75.3 / 67.1 (2020)	65.4 / 62.9 (2020)	62.8 / 57.0 (2020)
	International migrant stockg (000/% of total population)	https://data.un.org/	1,085.5 / 0.9 (2020)	487.6 / 1.7 (2020)	225.5 / 0.2 (2020)	31.1 / 0.3 (2020)	338.8 / 1.1
	Refugees and others of concern to UNHCR (000)	https://data.un.org/	2,519.3 (2020)	20.1 (2020)	376.5 (2020)	9.8 (2020)	332.2
Socioeconomic	GDP per capita (current US\$)	https://data.un.org/	827.5 (2019)	1,073.6 (2019)	3,323.8 (2019)	2,845.2 (2019)	503.7 (2019)
	Poverty rate at national poverty lines (% of population) (% population)	Poverty and Inequality Platform(WB): https://pip.worldbank.org/country-profiles	23.5% (2015)	20.3% (2022)	18.1% (2021)	39.9% (2009)	48.4% (2014)
	Adult literacy rate (females 15+ years/males 15+ years, %)	https://data.worldbank.org/indicator/SE.ADT.LITR.MA.ZS?view=chart	40 (2019) / 59 (2017)	63 / 81 (2021)	97 / 98 (2020)	62 / 78 (2017)	49 / 72 (2020)
	Population using safely managed drinking water (urban/rural, %)	https://data.un.org/	39.0 / 5.2 (2020)	24.7 / 15.7 (2020)	61.8 / 34.5 (2020)	n/a	n/a
	Population using safely managed sanitation (urban/rural %)	https://data.un.org/	15.9 / 4.1 (2020)	42.5 / 50.2 (2020)	54.9 / 65.8 (2020)	28.3 / n/a (2020)	n/a / 21.3 (2019)

1.6 Structure of the report

Drawing on the findings of the study, stakeholder consultations and a review of key literature, government documents and United Nations publications, this synthesis report examines the resilience of CRVS systems in the context of recurring climate-related, natural and humanitarian disasters. The report analyses how such shocks affect birth registration and broader CRVS functions, identifies factors that strengthen or undermine resilience, and highlights practical measures that can help to safeguard legal identity and the continuity of registration services during crises.

The report is organized into three substantive sections.

- **Section 2 – Findings from cross-case synthesis:** Presents the key findings from the five country case studies and cross-country analysis, examining the impacts of climate-related disasters on CRVS systems, existing resilience capacities, vulnerabilities and emerging good practices across the 7 analytical dimensions and 11 resilience competencies.
- **Section 3 – Good practice recommendations:** Synthesizes lessons learned from the case studies and desk review to provide actionable recommendations for governments, civil registration authorities, development partners, donors and other stakeholders seeking to strengthen the resilience of birth registration and CRVS systems.
- **Section 4 – Conclusions:** Summarizes the main findings of the study, reflects on their implications for policy and practice, and highlights priority areas for future investment, research and action to build resilient, inclusive and climate-adaptive CRVS systems.



Section 2: Findings from cross-case synthesis

The cross-case analysis of five country studies (Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines) highlights common challenges and various approaches to building climate-resilient CRVS systems. This section summarizes findings thematically using the resilience framework outlined in section 1.4 Methodology and provides comparative ratings alongside detailed individual country experiences.

2.1 Effects of climate-related disasters on CRVS systems

Both rapid-onset hazards, such as cyclones, floods, flash floods, landslides, storms, wildfires, earthquakes and volcanic eruptions, and slow-onset hazards, including droughts, climate variability and prolonged displacement associated with climate stressors, can severely disrupt the functioning of CRVS systems. Across the five case study countries, climate-related disasters were found to affect both the supply and demand sides of birth registration and CRVS services, undermining service continuity, damaging infrastructure and records, disrupting communications and transportation networks, and limiting access to registration services for affected populations.

The cross-country analysis shows that climate-related disasters consistently expose and amplify existing systemic weaknesses while creating new vulnerabilities. Common impacts include the destruction or loss of civil registration records, interruptions to service delivery, reduced accessibility to registration offices, constraints on workforce capacity, and challenges in maintaining data integrity and continuity of operations. These impacts are often compounded by conflict, population displacement, public health emergencies, weak infrastructure, limited connectivity and geographic remoteness, which further constrain both registration authorities and the affected communities.

The case studies also reveal important contextual differences. In Mozambique and Ethiopia, climate-related disasters intersect with large-scale conflict and displacement. In Papua New Guinea, geographic isolation, fragile infrastructure and limited digitalization create additional barriers. In the Philippines, recurrent typhoons and the specific vulnerabilities of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) highlight the importance of decentralized and disaster-responsive registration systems. While in Nepal, floods, landslides and earthquakes have exposed the need for stronger disaster preparedness and record recovery mechanisms.

Overall, the resilience of CRVS systems during disasters is shaped by the strength of legal and policy frameworks, institutional coordination, availability of financial and human resources, level of digitalization, data protection measures, and the extent of integration with health, social protection, disaster management and identity management systems. Where these capacities are weak, children, IDPs, refugees, stateless populations and other marginalized groups face the greatest risk of exclusion from legal identity, essential services, humanitarian assistance and protection mechanisms (UNICEF, 2021b; UNICEF Country case study reports, 2025²).

Loss of vital records

This is one of the most immediate and devastating consequences of disasters for CRVS systems. In Papua New Guinea, floods, landslides and volcanic eruptions threaten largely paper-based records, while limited storage capacity and the absence of resilient digital back-up systems leave birth, death and marriage records highly vulnerable. In Nepal, the 2015 Gorkha earthquake damaged ward and village offices housing civil registration records, destroying vital documents and disrupting access to registration and replacement certificates. In Mozambique, Cyclones Idai and Kenneth (2019), Cyclone Freddy (2023) and the Cabo Delgado displacement crisis severely affected civil registration systems, with 69 per cent of civil documents belonging to IDPs reported as burned, lost or destroyed, significantly constraining access to legal identity and public services. In Ethiopia, limited digitalization, continued reliance on paper-based systems, and climate- and conflict-related disruptions increase the risk of record loss and service interruptions. In the Philippines, Typhoon Haiyan (Yolanda) in 2013 caused extensive damage to civil registration infrastructure and records. The case study reports that civil registration records were completely

² UNICEF Country case study reports (Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines), 2025.

or partially destroyed in 44 Local Government Units (LGUs), while at least half of households in Western Samar and Leyte lost birth certificates or other documents.³ However, the existence of centralized digital records enabled the Philippine Statistics Authority (PSA) to reconstruct many lost documents and restore services more rapidly, demonstrating the protective value of robust digital back-up and disaster-recovery systems.

Damage to critical infrastructure

Damage to roads, bridges, power systems, telecommunications networks, government offices and health facilities can significantly disrupt civil registration services by isolating affected communities and limiting access to registration points. In Nepal, floods, landslides and the 2015 Gorkha earthquake damaged government buildings, transport networks and communications infrastructure, disrupting registration services, particularly in remote mountainous areas. In Papua New Guinea, landslides, floods, droughts and volcanic eruptions frequently damage roads, bridges, health facilities and local administrative infrastructure, leaving already isolated communities cut off from registration services. In Mozambique, cyclones, floods and conflict in Cabo Delgado have repeatedly damaged registration offices and public infrastructure, constraining access to services for affected and displaced populations. In Ethiopia, recurrent droughts, floods and conflict-related crises have strained infrastructure and service delivery systems, making it difficult to maintain consistent registration services. In the Philippines, recurrent typhoons and floods disproportionately affect residents of Geographically Isolated and Disadvantaged Areas (GIDAs) and the BARMM, where geographic isolation and weak infrastructure compound existing barriers to registration and legal identity services. Collectively, these experiences show how repeated shocks can delay recovery, weaken institutional capacity and underscore the need for resilient infrastructure, decentralized service delivery, mobile registration and digital platforms to ensure the continuity of CRVS services.

Service disruption and access barriers

These are among the most common consequences of climate-related disasters for birth registration and CRVS systems. Disasters can interrupt registration services by damaging civil registration offices, health facilities, transportation networks and communication systems, delaying registration, document replacement and certificate issuance. In Mozambique, cyclones, floods, conflict-related displacement and the COVID-19 pandemic exposed systemic vulnerabilities, with birth registrations declining by 31 per cent between March and July 2020 due to reduced operations and lower demand for services (Africa Programme on Accelerated Improvement of CRVS, APAI-CRVS, n.d.; UNICEF and Monahan, 2024). In Papua New Guinea, floods, landslides, volcanic eruptions and droughts frequently isolate communities from registration services; the 2015–2016 El Niño drought affected approximately 2.5 million people, placing additional pressure on already constrained public services. In Ethiopia, recurrent droughts, floods, conflict and population displacement have disrupted registration services, particularly in remote and

³ Accessed at <https://globalnation.inquirer.net/114230/unicef-helps-residents-replace-birth-certificates-lost-due-to-yolanda>

pastoralist areas, while increasing the demand for registration and replacement documents. In Nepal, floods, landslides and earthquakes have periodically disrupted access to registration services, especially in remote mountainous areas, where damaged infrastructure and difficult terrain hinder access to local registration offices. Repeated and compounding shocks gradually erode institutional capacity, create backlogs and widen existing coverage gaps, while financial hardship forces many households to prioritize survival and recovery over registration-related expenses, increasing the risk of exclusion from legal identity and related services for children, displaced populations and remote communities.

Disasters also divert already limited resources, causing prolonged service interruptions. Workforce strain and reduced operational capacity compound access barriers. Civil Registration and Vital Statistics staff are often affected by disasters themselves, with local offices struggling to maintain adequate staffing levels. In the Philippines, following Typhoon Haiyan, civil registration operations were significantly disrupted, contributing to registration backlogs and delays in document replacement. Nepal's earthquake damaged facilities and disrupted registration services, resulting in delays in birth and death registration. In Papua New Guinea, disasters can immobilize under-resourced mobile registration teams, while weak district-level capacity limits the ability to respond to surges in demand. Mozambique's civil registrars face security risks and operational disruptions during cyclones and in Cabo Delgado, with resource diversion further hindering service delivery. In Ethiopia, large-scale displacement and refugee influxes place additional pressure on registration systems, making it challenging for registrars to manage increased demand for registration and documentation services (Konjit Kefetew, 2024).

Increased risk of exclusion and unregistered births

This is a serious consequence. Disaster-related displacement, loss of documentation, existing barriers and low coverage rates all heighten the risk of exclusion and increase vulnerability to trafficking and exploitation, especially among marginalized groups. In Ethiopia, fear of retaliation stops families from reporting conflict-related deaths, leaving many crucial events undocumented (Sherine Guirguis et al., 2021). This results in thousands of displaced families losing or never obtaining identification documents, which delays their access to humanitarian aid and social services. Similarly, in Mozambique, over 1.3 million people displaced by conflict and climate disasters in Cabo Delgado often lack identification (Global Protection Cluster, 2021), and the destruction of health facilities has disrupted birth notification systems. In the Philippines, where remote, disaster-prone communities face ongoing geographic and infrastructural challenges, more than 100,000 Filipinos requested replacement birth certificates after Typhoon Haiyan, but many could not afford the cost of transportation or fees. Papua New Guinea requires paternal presence for birth registration, creating a barrier when families are separated. Financial hardships, worsened by crises, discourage replacements, as do fears of penalties for late registration, especially where waivers are inconsistently applied.

Delayed recovery and system backlogs, along with data integrity issues

These often occur after crises subside. Post-disaster periods see spikes in requests for replacement certificates, backlogs in vital event registrations and overwhelmed registry systems. In the Philippines, Typhoon Haiyan generated over 100,000 requests for replacement documents, with many more unfiled due to high costs. Delays worsen when CRVS systems lack contingency budgets or quick recovery protocols (Mozambique and Papua New Guinea). Compromised data integrity is another issue, as disasters also harm data quality and delay vital statistics crucial for emergency response and recovery. Nepal's earthquake exposed severe difficulties in collecting and reporting mortality data. Mozambique's cyclones destroyed Cabo Delgado's documentation, hampering population tracking and relief efforts. Papua New Guinea's manual, paper-based systems are highly vulnerable to loss and tampering, with few secure back-ups. Ethiopia's data flows are often interrupted during crises, especially where insecurity and displacement are widespread. Weak interoperability between CRVS, disaster management and social protection systems slows the identification of affected populations. The Philippines has made substantial progress with cross-sector linkages (PhilSys and social protection databases), although coordination gaps with disaster agencies still exist.

2.2 Enabling legal framework

The legal foundations for CRVS

All five countries show a commitment to universal registration by updating laws with a stronger focus on inclusivity and digitalization. However, preparedness for disaster scenarios and implementation in such situations vary.

The Philippines has fully integrated and is enforcing disaster-responsive (climate-induced or otherwise) CRVS legal provisions that explicitly outline and mandate emergency protocols, such as universal fee waivers, temporary mobile centres and automatic record reconstruction procedures. These legal provisions are included under comprehensive legal frameworks for both CRVS and DRRM, such as the foundational Civil Registry Law (Act No. 3753, 1930), supplemented by various administrative circulars (Editha R. Orcilla and PSA, n.d.). Republic Act (RA) No. 10821 (Children's Emergency Relief and Protection Act, 2016) specifically mandates the PSA to restore lost or damaged documents. The Philippine Identification System Act (RA No. 11055, 2018) connects civil registration with the national identification (ID) system (PhilSys). In the Philippines' BARMM region, while national laws are applicable, a process is ongoing to develop region-specific legal frameworks, offering an opportunity to formalize culturally relevant practices, such as recognizing genealogical records (*Tarsilas*) (Eloisa P. Minerva, 2023).

Ethiopia operates under a comprehensive and inclusive legal framework with disaster-specific provisions in Proclamation No. 760/2012, 1049/2017 (Revised), and the new Proclamation No.

1370/2025, which permits the reconstruction of lost or damaged records. Proclamation No. 1049/2017 and Refugee Proclamation No. 1110/2019 extend national civil registration to all, including IDPs, non-nationals and refugees (Child Identity Protection, 2024). These frameworks also clearly specify provisions for reconstructing lost or damaged records during disasters. Despite this, a key gap identified in the national CRVS strategy, and confirmed by this study, is the absence of a disaster-specific directive or regulation for IDP registration or record reconstruction that fully guides the implementation of the above legal frameworks (Immigration and Citizenship Service, ICS, 2021). Practical flexibility, such as accepting witness testimonies, *Kebele* letters and fee waivers, has been observed during past climate crises. However, CRVS services are not legally designated as essential during emergencies, which limits data sharing and cross-border provisions.

Mozambique's CRVS system is based on a solid legal framework, including the Constitution and Law No. 12 of 2004 on the Civil Registration Code, which mandates universal registration. Disaster management laws (15/2014, 10/2020) and the IDP policy (42/2021 Resolution) explicitly recognize civil documentation as essential for post-disaster recovery and for IDPs, signifying an anticipatory legal approach. These laws promote streamlined procedures and alternative evidence options, and uniquely guarantee asylum seekers, refugees and stateless persons full access to civil status documents with a unique identifier (UNHCR Guidance on Registration and Identity Management⁴). Flexible interpretations of laws support mobile registration campaigns with fee waivers and digital mobile teams. However, specific disaster provisions for extending registration deadlines or formal mechanisms for post-disaster record reconstitution are currently lacking, and responsibility lies solely with the civil registration authorities (Nazareth et al., 2024). Mozambique's 2018 Civil Registry Code also explicitly introduces the electronic Civil Registration and Vital Statistics System (Sistema Electrónico do Registo Civil e Estatísticas Vitais, e-SIRCEV), highlighting the importance of legal backing for digital transformation.

Nepal's CRVS system is backed by a strong, evolving legal framework. The 2015 Constitution recognizes birth registration as a child's right, and the National ID and Civil Registration Act (2020) grants CRVS a constitutional mandate to be an essential service during normal times. This Act supports universal and timely registration, and it aligns with the country's federal structure by empowering local governments' ward secretaries as local registrars. However, the Act and broader DRRM legislation do not yet specify CRVS-related protocols, such as delegating civil registration functions, establishing temporary mobile centres, waiving fees or outlining explicit record reconstruction procedures.

Papua New Guinea has historically lacked specific CRVS provisions for disaster situations, and its CRVS system has not been aligned with overarching disaster management laws, including the Disaster Management Act 1984, the National Disaster Management Plan, and the National

⁴ Accessed at <https://www.unhcr.org/registration-guidance>

Disaster Risk Reduction Framework 2017–2030, creating governance gaps during emergencies. A critical gap is the lack of formal recognition of birth and death registration as essential services during disasters. The new Civil and Identity Registration (CIR) Act (2024) modernizes the CRVS framework, mandates birth registration and introduces provisions for digital, mobile and remote registration. It also includes disaster-related provisions such as flexible registration timelines, free services and arrangements for mass casualty events. However, many operational regulations, disaster-specific protocols and fully digital registration processes are still under development and have not yet been fully implemented.

Across all five countries, these systems demonstrate some practical flexibility (e.g., waiving fees, extending deadlines or accepting alternative documents), in order to keep registration processes active during crises. For example, Nepal demonstrates practical flexibility by postponing national ID requirements during floods and using mobile registration camps.

Designation of ‘essential service’ (regular and climate-related disaster times)

The Philippines and Mozambique have legally designated CRVS as an ‘essential service’, ensuring civil registration activities continue even during severe climate-related events. The Philippines is the only country with an SOP guide for emergency registration and the replacement of lost documents, enabling quick resumption of services. Other countries (Nepal, Ethiopia) lack the legal designation of CRVS as an ‘essential service’ during climate-related disasters, although they designate it as such during regular times. Papua New Guinea has not yet legally recognized civil registration services as essential during disasters. This governance gap leaves registration functions vulnerable to disruption during emergencies, as highlighted during the COVID-19 pandemic.

Provisions for data sharing, protection and storage

These functions face significant vulnerabilities, especially during transitions from normal conditions to climate-induced disasters. While some countries may have frameworks in place during normal times, these are often insufficient or compromised during emergencies, leading to weaker data protection, compromised data accuracy validation and reduced cross-sector or cross-agency data exchange. Clearance and decision-making processes for data sharing are also typically less clear and less functional during disasters, and overall government access to data often becomes more limited. The Philippines and Nepal appear to maintain more consistent performance in data sharing, protection and storage during both normal and disaster conditions, whereas Ethiopia and Mozambique generally experience noticeable declines in these capacities during climate crises. Papua New Guinea faces significant challenges in these areas under both normal and disaster conditions, with climate-related shocks further exposing existing weaknesses in back-up, storage and interoperability systems.

Inclusion of refugees, stateless persons, IDPs and other vulnerable populations

The data showed varying degrees to which legal frameworks are fully inclusive and mainstream universal civil registration services for all during normal and disaster times. While the 1951 Refugee Convention and its 1967 Protocol,⁵ the 1954 Convention on the Status of Stateless Persons,⁶ and the UN Guiding Principles on Internal Displacement⁷ provide international definitions for these groups, national implementations differ significantly.

Mozambique has relatively comprehensive legal provisions that extend national civil registration to include refugees for all vital events (birth, death, marriage, divorce, adoption) and ensure unique identification for all population groups, including stateless persons and children born on its territory to stateless or unknown parents. Conversely, Nepal's inclusion of refugees is more limited, and is primarily through a 2003 directive for birth registration, with other vital events lacking explicit provisions. Papua New Guinea is at an early stage of strengthening its legal framework for inclusive civil registration. While the recently enacted CIR Act (2024) provides a foundation for future regulations and operational procedures, the current framework contains limited provisions addressing the registration and documentation needs of refugees, stateless persons and disaster-affected or displaced populations. Through Executive Order No. 163 and acts such as RA No. 10821, the Philippines aims to improve access to documentation and services for all 'persons of concern' (refugees, stateless persons, asylum seekers and IDPs), and explicitly includes Indigenous Peoples in its civil registration system.

In disaster settings, the legal and regulatory landscape for these vulnerable populations becomes even more varied and often less comprehensive. Mozambique, for example, provides important protection against statelessness through its nationality framework, which grants Mozambican nationality to children born in the country regardless of their parents' nationality or legal status. The Philippines has relatively stronger legal provisions than most of the other case study countries. Republic Act No. 10821 (Children's Emergency Relief and Protection Act) includes measures to safeguard children during disasters, including provisions for restoring and replacing lost civil registry documents. In addition, the PSA has established procedures for reconstructing and replacing disaster-related documents. Ongoing reforms through the proposed Omnibus CRVS Bill aim to modernize and harmonize the country's fragmented CRVS legislation, accelerate digitalization, strengthen interoperability, and improve access to registration and legal identity services for vulnerable and disaster-affected populations (Government of the Philippines, 2025).

5 Accessed at <https://www.unhcr.org/uk/media/convention-and-protocol-relating-status-refugees>

6 Accessed at <https://www.unhcr.org/media/1954-convention-relating-status-stateless-persons>

7 Accessed at <https://www.ohchr.org/en/special-procedures/sr-internally-displaced-persons/international-standards>

While some countries may adopt flexible administrative procedures in practice, the absence of explicit legal provisions often creates uncertainty and potential gaps in ensuring timely registration and documentation for refugees, stateless persons, displaced populations and other vulnerable groups during crises.

Overall, the case studies suggest that legal and policy frameworks are generally more developed for IDPs than for refugees and stateless persons, whose registration, documentation and legal identity needs are often only partially addressed or not explicitly covered in disaster-related legislation and CRVS policies. (See Table 3.)

Table 3: Cross-case synthesis (legal framework)

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Disaster-specific provision	●	●	●	●	●	●	●	●	●	●
Flexibility in interpretation and application		●		●		●		●		●
a) legal requirements waived/relaxed		●		●		●		●		●
b) digital/remote business process		●		●		●		●		●
c) legal provision on temporary mobile CR centres		●		●		●		●		●
d) who was authorized to notify, declare, register		●		DN		●		●		●
e) Extending time limit		●		●		●		●		●
f) fee/fines waiver/removal for late registration		●		●		●		●		●
g) fees for certification		●		DN		DN		●		●
Data share, data protection, storage										
a) Data protection and privacy	●		●		●		●		●	
b) Cross-sector, cross-agency data sharing agreements	●	●	DN	DN	●	●	●	●	●	●
d) Cross-border data sharing agreements	●	●	DN	DN	●	●	●	●	DN	DN
e) Safe storage or archiving	●		●		●		●		●	
Essential Service										
BR as essential service by law	●	●	●	●	●	●	●	●	●	●
In practice		DN		●		DN		●		●
DR as essential service by law	●	●	●	DN	●	●	●	●	●	●
In practice		DN		DN		●		●		●
R/DivR as essential service by law	●	●	●	●	●	●	●	●	●	●
In practice		DN		DN		●		●		●
Legal provisions for refugees	●	●	●	●	●	●	●	●	●	●
for stateless persons	●	●	●	●	●	●	●	●	●	DN
for IDPs	●	●	●	●	●	DN	●	●	●	●
for vulnerable groups	●	●	DN	DN	●	●	●	●	●	●

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Inclusivity										
legal provision for inclusion of Refugees in the country's mainstream CRVS	●	●	●	●	●	●	●	●	●	●
legal provision for inclusion of Stateless in the country's mainstream CRVS	●	●	●	●	●	●	●	●	●	DN
legal provision for inclusion of IDPs in the country's mainstream CRVS	●	●	●	●	●	NA	●	●	●	●
legal provision for inclusion of Vulnerable Populations in the country's mainstream CRVS	●	●	DN	DN	●	●	●	●	●	●

2.3 Governance and coordination

Effective governance structures translate legal provisions into operational resilience. All countries exhibit centralized oversight with varying degrees of functional decentralization, but coordination linkages with disaster management authorities are not consistently strong across all tiers.

For example, Ethiopia's CRVS governance, primarily through its Federal Vital Events Registration Agency, struggles with inconsistent coordination. National coordination mechanisms are rated as only partly effective, especially regarding identity management and disaster management authorities, which the national strategy explicitly identifies as having 'weak coordination' (ICS, 2021). While coordination with the Ethiopian Central Statistical Service is functional, provincial coordination is generally weak, and anticipatory mechanisms for service continuity during disasters are largely absent or informal (Center of Excellence for CRVS Systems, 2019). Formal disaster response and recovery coordination between CRVS and disaster management authorities is lacking, except for a multilateral MoU in the Somali region. At district and village levels, multi-sectoral coordination is limited, indicating fragmented intersectoral and intergovernmental coordination concerning disaster management and identification systems.

Mozambique was rated 'fully functional' for formal, multi-tier coordination between CRVS authorities and disaster risk management bodies, enabling legal mandates to be activated and resources mobilized during crises. Nepal's decentralized system, with ward-level registrars, was likewise assessed as highly functional in supporting agile local responses, particularly in flood- and landslide-prone areas. In contrast, Papua New Guinea continues to face coordination and governance challenges, with only modest levels of institutional integration between CRVS and disaster management systems. These gaps, combined with resource constraints and geographic barriers, can hinder effective response and recovery. Regular participation in disaster risk reduction (DRR) planning, simulation exercises and recovery coordination emerged as an

important predictor of response speed and coherence. Coordination with the health sector is a recurring strength, particularly in Nepal, the Philippines and Papua New Guinea. However, several countries still face challenges formalizing collaboration between CRVS and national disaster management agencies, which can weaken preparedness and lead to ad hoc responses during emergencies.

Mozambique's CRVS coordination is more organized nationally and provincially through the Inter-institutional Working Group on CRVS (Grupo Interinstitucional de Trabalho em Estatísticas Vitais, GITEV), supported by a United Nations Technical Team (Nazareth et al., 2024). Coordination with the national statistical authority is fully functional. However, coordination remains uneven at subnational levels, particularly during emergencies. While coordination with the National Institute for Disaster Risk Management and Reduction (Instituto Nacional de Gestão e Redução do Riscos de Desastres, INGD) exists, it is mostly informal, highlighting the need to strengthen formal links to prioritize CRVS during disasters. Coordination with the national ID system is only partially operational. The effectiveness of GITEV has fluctuated, with recommendations to revitalize it and expand membership to improve overall coordination.

Nepal's CRVS governance is centrally managed by the Department of National ID and Civil Registration (DoNIDCR) under the Ministry of Home Affairs, which operates a robust, multi-tier decentralized structure. National, provincial and local civil registration boards strengthen coordination, while empowered ward secretaries at the community level ensure flexible and rapid responses. Partnerships with health facilities and schools bolster CRVS outreach efforts. However, systematic integration with disaster management authorities is underdeveloped, limiting anticipatory planning for climate-related events. While death registration is often provided for compensation during disasters, birth registration is not consistently prioritized in emergency responses.

Papua New Guinea's Civil Identity and Registry (PNGCIR) oversees CRVS nationally, guided by a National CRVS Committee that includes the National Statistics Office (NSO) and the Ministry of Health. At the subnational level, provincial administrations and provincial health authorities support service delivery and outreach. However, significant capacity constraints persist, with only 6 of 89 districts having permanent PNGCIR offices, making mobile registration teams the primary service delivery mechanism. Anticipatory coordination mechanisms between PNGCIR and disaster management authorities remain underdeveloped, reflecting a broader lack of formal integration between CRVS and emergency response systems. In addition, formal cross-sector and cross-agency data-sharing agreements are not yet fully established.

The Philippine Statistics Authority (PSA) centrally manages CRVS, with Local Civil Registry Offices (LCROs) implementing it. Coordination across levels is functional in normal times (Grace et al., 2022), but falters during disasters due to weak institutional links with disaster risk

management agencies, resulting in inconsistent prioritization of CRVS in emergency planning. The PSA collaborates effectively with PhilSys and social protection programmes, enabling faster identification of vulnerable populations, but vertical integration with emergency response systems remains limited. The country utilizes a well-established cluster approach for disaster response, with CRVS falling under the Global Protection Cluster. While coordination between the PSA and the central disaster management authority is partially functional, and district/municipality-level CRVS coordination integrates well during emergencies, provincial and regional coordination is only partially effective, and clarity is lacking at sub-district/village levels (UNICEF Mindanao Child Protection Specialist⁸). A major gap is the absence of specific anticipatory mechanisms or pre-disaster plans across all government tiers between CRVS and the disaster management authorities. (See Table 4.)

Table 4: Cross-case synthesis (governance and coordination)

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
National Coordination	●		●		●		●		●	
with ID	●		●		●		●		●	
with Ethiopian Statistical Service	●		●		●		●		●	
with Disaster Management		●		●		●		●		●
Sub-national coordination										
Provincial coordination	●	●	●	●	●	●	●	●	●	●
District-level coordination	●	●	●	●	●	●	●	●	●	●
Village level coordination	●	●	●	●	●	●	●	●	DN	DN
Anticipatory coordination mechanism as preparedness	●		informal		●		●		●	
any other specific arrangement	●		●		●		●		●	

2.4 Resources (workforce, financial capacity and infrastructure)

Limited workforce capacity

All countries face challenges in establishing dedicated CRVS contingency budgets for preparedness and rapid response, and they struggle with limited reserve workforce capacity and pre-positioned deployment protocols. Dependence on manual systems or on digital systems vulnerable to power outages and poor connectivity remains a common infrastructure issue, especially in remote and disaster-prone areas.

⁸ Comments received during the stakeholder validation meeting held on 10 June 2025.

Ethiopia's workforce is severely underdeveloped, with significant regional disparities and a general lack of reserve capacity, emergency staff deployment protocols or disaster-response training. The study's survey analysis reveals significant gaps in surge staffing, disaster-specific BCPs and emergency training, especially in Mozambique and Papua New Guinea. Countries with integrated local registrars, such as Nepal and the Philippines (rated fully functioning for 'workforce agility'), were better able to maintain services through decentralized staffing and redeployment. Front-line staff safety and security are often overlooked, risking potential service withdrawal (Child Identity Protection, 2024). While Ethiopia's Amhara region has delegated CRVS responsibilities to health extension workers, who provide birth registration in crisis-affected and displaced communities during emergencies, and conduct staff well-being assessments – making them an excellent example of workforce agility – these are exceptions. Mozambique shows agility in workforce deployment, with provincial staff supporting mobile registration in affected districts. Investments in training for Mozambique's Ministry of Justice and the Ministry of Health aim to create a multiplier effect. However, pre-disaster protocol training for CRVS staff is lacking, and staff safety in insecure areas is not well structured.

Papua New Guinea has delegated CRVS staff responsibilities to local governments and other sectors, demonstrating flexibility. Opportunities exist to train and increase reserve capacity and enhance staff well-being. Nepal and the Philippines embed CRVS staff within LGUs, where they actively participate in disaster preparedness drills. Nepal's workforce resilience benefits from ward secretaries, who enhance digital literacy and the pivotal role of World Bank-funded Management Information System (MIS) operators for data input and digitization (UNICEF and New Legacy Digital, 2021). Retaining these operators at the *palika* (rural/urban municipalities) level offers an opportunity to retain capacity and improve agility. In the Philippines, the PSA and LCROs show agility, with the PSA's internal Emergency Response Team and BCP ensuring operational continuity during disasters such as typhoons and COVID-19 (Government of the Philippines and Santos, 2024). However, local workforce surge capacity and pre-positioned deployment protocols remain limited, especially in lower-capacity LGUs and BARMM provinces, where human resource constraints are more pronounced (Eloisa P. Minerva, 2023).

Protected and flexible financing

This allows continuous operations during emergencies. In the analysis, no countries except Nepal reported having a dedicated contingency budget line within the CRVS budget, although practical challenges remain in securing sustained post-disaster funding. Under the federal system, Nepal allocates resources based on local risk profiles, with specific budget lines for preparedness. Financial commitments to social welfare indirectly support CRVS, with notable international partnerships (e.g., the World Bank's Strengthening Social Security and Protection for Children (SSSPCR) project) (Ministry of Home Affairs, 2024; World Bank, 2023). The national DRR policy (2018) also requires 5 per cent of the development budget to be allocated for DRR activities, promoting the integration of DRR into sectoral budgets at the local level (Ministry of Home Affairs, 2024).

In Ethiopia, financial resources are severely limited by a lack of dedicated funds, which leads to unpredictable and delayed resource flows. Fund reallocation from regular programmes is limited, and while external donor funds contribute, they remain off-budget. Mozambique's financial resources are also a significant constraint, partly due to the absence of a dedicated budget line for CRVS preparedness and response, inadequate disaster recovery budgets and delayed allocations (Government of Mozambique, 2019). Fee waivers during emergencies are ad hoc and can face local opposition. Papua New Guinea removes cost barriers by bundling free CRVS with ID services, increasing uptake during and after disasters, and a dedicated budget line for CRVS disaster preparedness and response is in progress for the 2026 CRVS National Action Plan (Government of Papua New Guinea, 2023). Papua New Guinea has also demonstrated agility in reallocating funds for emergency responses, as seen during the Manam Volcano disaster. Fee waivers for certification or registration have not faced local opposition, indicating strong policy support. The Philippines' financial flexibility depends on regular budget reallocations, as it lacks a dedicated emergency fund for CRVS, which limits anticipatory action. Public-private partnerships (PPPs), such as the Civil Registry System – Information Technology Project (CRS-ITP), support service continuity and digital back-up. However, fee waivers during disasters, while essential, directly impact LGUs' strained budgets because civil registration is a devolved function, leading to inconsistent implementation.

Infrastructure resilience

This is crucial for operational continuity. In Ethiopia, infrastructure and supply chain issues are severe; essential supplies are not pre-positioned, and many centres lack secure storage or reliable electricity. Digital pilot systems often shut down during emergencies because of power outages and poor connectivity. Nepal, the Philippines and Mozambique maintain off-site data back-ups and digital disaster recovery systems, showing resilience in infrastructure preparedness. Nepal's ongoing internet expansion enables online registration in most wards, but connectivity gaps and power outages highlight the need for targeted infrastructure and back-up power solutions (UNICEF and New Legacy Digital, 2021). In Mozambique, physical infrastructure includes temporary relocation sites and standby provincial IT teams. The CRVS System (Sistema do Registo Civil e Estatísticas Vitais, SiRCEV) Operational Plan (2021–2028) outlines a plan for infrastructure updates and mobile unit expansion, although challenges remain in reducing dependence on online systems in remote areas with poor internet and unreliable power (Ao et al., 2024).

The Philippines' digitization through CRS-ITP2 has significantly enhanced data protection and efficiency, with centralized repositories and daily back-ups. However, offices in flood-prone areas face risks of physical damage, and power outages or poor connectivity hinder operations, especially in remote regions and the BARMM, where infrastructure is often poorly established, and manual records still exist (Editha R. Orcilla and PSA, 2014; Eloisa P. Minerva, 2023). It pre-positions mobile kits, emergency forms and back-up power at subnational levels to ensure uninterrupted operations. Papua New Guinea has invested in mobile and biometric registration kits, including

solar-powered equipment for remote locations, reflecting a proactive effort to expand CRVS coverage in hard-to-reach areas. However, the case study notes that PNGCIR's infrastructure preparedness and logistics systems remain insufficiently adapted to climate-related disruptions, highlighting the need for minimum standards and contingency arrangements for shock-responsive CRVS infrastructure (UNICEF, 2025). (See Table 5.)

Table 5: Cross-case synthesis (resources)

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Human Resources										
Delegation staff responsibilities to LG/ other sector		●		DN		● (all stages)		● (response time)		● (recovery time)
Reserve capacity/staff deployment protocol		●		● (response & recovery)		● (DN)		●		● (recovery time)
Staff training on disaster response protocols	●		●		●		●		●	
Staff training on emergency drills, activating personnel dispatch and com. procedures	●		DN		●		●		●	
Staff wellbeing assessment		●		●		●		●		●
staff training on stress mgmt	●		??		Other		●		●	
Psychosocial counselling service for staff		●		●		●		●		●
Pre-disaster training assessment (empathy and compassion)	●		●		Other		●		●	
Ensure safety and security of front-line staff		●		●		DN		●		●
Staff motivation and morale		●		●		●		●		●
Supportive supervision provided		DN		●		●		●		●
Supervision through health sector		DN		DN		DN		●		●
Physical Infrastructure, Supplies										
Pre-identifying & cataloging CRVS infrastructure vulnerabilities	●		DN		●		●		●	
Pre-Event Backup Infrastructure for CRVS	●		DN		●		●		●	
Pre-Event CRVS Planning: Displacement Risk & Flexible Infrastructure	●		DN		●		●		●	
Pre-positioned CRVS Supplies	●		●		DN		●		●	
Shock-Responsive CRVS Infrastructure Standards	●		DN		●		●		●	
Relocation Sites During Disasters		●		●		DN		●		●
Retrofitted existing buildings to withstand climate shock	●		DN		DN		●		●	
Assessing Power Source Reliability in Disaster-Prone areas	●		●		DN		●		●	
Underground Cable Installation	●		DN		●		●		●	
Satellite communication systems	●		●		●		●		●	
Installed drone-based connectivity	●		●		●		●		DN	
Rapid deployment of IT repair teams		●		●		●		●		●

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Financial Resources										
% of external donor budget within CRVS budget	0%		n/a		Very nominal		11		0,000	
Dedicated budget line for disaster preparedness and response	●		●		●		●		●	
CRVS for preparedness budget line in DM authority's budget	●		●		●		●		●	
Funds sufficient to cover/absorb shocks and recover from disaster		● not at all		● not at all		● not at all		● not at all		DN
Sustainable response and recovery funding major constraint		● greatly		● greatly		● moderately		●		● not at all
Delayed allocation of response and recovery funds a constraint		● greatly		● greatly		● moderately		● not at all		● not at all
Limited flexibility in reallocating funds from regular programs		● greatly		● moderately		● moderately		● not at all		● not at all
inefficient fund- utilization by LG/ CROs was a constraint		● not at all		DN		● moderately		● not at all		● moderately
Certification/registration fee waiver led to LG oppositions		● not at all		DN		● not at all		● not at all		● moderately
Tracking/auditing funds utilization		●		DN		DN		●		●

2.5 Business processes, operational management, plans and assessments

Our analysis reveals a spectrum of maturity levels, ranging from mostly reactive and fragmented methods to more proactive, digital and integrated systems. These findings offer valuable insights into key areas for enhancing resilience and responsiveness across various crises, including those driven by climate change. Effective business processes, proactive plans and regular evaluations are crucial for a CRVS system to function efficiently and adapt during emergencies. While the findings show some reactive agility, there is a critical need to shift towards proactive and anticipatory planning. Formalizing emergency business procedures, investing in comprehensive climate risk assessments, and developing resilient, decentralized and culturally appropriate contingency plans are essential for maintaining continuous, inclusive and resilient CRVS services in an increasingly unpredictable global landscape.

The adaptability of CRVS business processes greatly affects recovery speed. The Philippines has officially endorsed disaster-specific SOPs (at PSA central and regional levels) that streamline registration workflows from start to finish, allowing operations to continue, even in extreme conditions. The PSA's experience with climate-related disaster response includes mobile caravans and remote one-stop shops, ensuring service continuity in disaster-affected GIDAs (Eloisa P.

Minerva, 2023). The PSA also has a BCP under CRS-ITP2 that enables it to mobilize a skeletal workforce, secure data back-ups, use cloud recovery and maintain mobile registration services. However, the LGUs lack formal disaster-response protocols or contingency SOPs, leading to inconsistent responses. Although Rule 36 of Administrative Order No. 1 (1993) outlines the mass death registration process, a comprehensive CRVS continuity plan has not yet been created. The Philippine CRVS Strategic Plan 2023–2028 highlights ‘building resilience’, and the PSA has recommended including these provisions in the pending Omnibus CRVS Bill (PSA, 2023). For the BARMM, adapting procedures to cultural contexts (e.g., Islamic rites) and establishing clear protocols for mass registration during conflict-driven displacements are essential for improved responsiveness.

Ethiopia’s CRVS business processes are primarily reactive. Although a national CRVS strategy and a costed action plan exist, they lack specific provisions for disasters or emergencies, and they do not include comprehensive pre-disaster climate risk assessments. There is no formal emergency preparedness plan (such as a BCP, contingency plan or recovery plan) at the national level (ICS, 2021). Local disaster response procedures are mostly absent, although some regions like Amhara have shown flexibility, such as relaxing ID renewal requirements or setting up mobile registration sites in IDP camps (Amhara Regional State Vital Events Registration Agency, VERA, 2010). Innovative approaches include linking birth registration to social protection programmes in Central Ethiopia, Oromiya and Somali regions, and waiving fees for IDPs in several areas. The interpretation of the ‘abandoned children’ law to cover vulnerable children also offers some flexibility.

Mozambique’s CRVS processes demonstrate flexibility in mobile campaigns during response and recovery, supported by adaptable work arrangements. The vital events notification system enables ongoing data collection, even with diminished capacity. However, specific procedures for vital event registration during emergencies are missing, and simplified notification and registration processes have not yet been introduced. The country also lacks a comprehensive pre-disaster climate risk assessment focused on CRVS. Although the INGD manages general emergency plans, it is not tailored specifically to CRVS. A positive development is the inclusion of a dedicated section on CRVS in emergencies within the SiRCEV Operational Plan 2021–2028, based on United Nations recommendations (Government of Mozambique, 2021). The response after Cyclone Idai in Sofala showcased agile adaptation, with mobile teams streamlining procedures and delivering services directly to affected communities.

Nepal is actively improving its CRVS processes, focusing on integration with social protection and health, digitalization and efficiency. Online event registration is now available in most local offices, and the Vital Events Registration and Social Protection Management Information System (VERSP-MIS) simplifies registration, record management and reporting (Government of Nepal, 2023). The ongoing digitization of 20 million paper records will enhance data accessibility and lower

the risk of loss. Efforts are also in progress to establish national standards for birth registration. The 'Next Plan' for CRVS digitalization aims to expand the notification system, implement the nationwide rollout of Birth and Death Registration Management Systems (BRMS and DRMS), integrate application programming interfaces (APIs) for health facilities and develop a public portal (Government of Nepal, 2023), demonstrating a commitment to ongoing improvement and responsiveness.

Papua New Guinea is formalizing and adapting its CRVS business processes, with the Papua New Guinea CRVS Action Plan (2023–2025) emphasizing improved access to registration services, including in remote and disaster-prone areas (Government of Papua New Guinea, 2023). Efforts are underway to strengthen CRVS integration within national disaster management planning and response frameworks. Operational flexibility is demonstrated through expanded service entry points in the health sector and mobile outreach registration activities, including during the Manam Volcano response. Papua New Guinea's community-based outreach model, in which local leaders mobilize families and assist with document verification, builds trust and expands coverage. Memoranda of understanding with major hospitals to establish birth registration desks further support service integration. However, disaster-specific provisions within the national CRVS strategy remain under development, and disaster and climate risk assessments for the CRVS system remain limited. Future priorities include dedicated CRVS preparedness, contingency and recovery plans; formalized procedures for registration during disasters; and expanded temporary and mobile registration mechanisms. (See Table 6.)

Table 6: Cross-case synthesis (business process and plans)

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Plans and assessments										
Specific provision for emergencies in national CRVS strategy/action plan	● No	nr	● No	nr	● No	nr	● No	nr	● No	nr
comprehensive pre-disaster climate risk assessment of CRVS system	● No	nr	● No	nr	● No	nr	● No	● Yes	● No	● No
CRVS specific preparedness plans	● No	nr	● No	nr	● No	nr	● No	● No	● Yes	● partially
Contingency Plans for CC disaster scenario	● No	nr	● No	nr	● No	nr	● No	DN	● Yes	● No
Business continuity plan for CC disasters scenario	● No	nr	● No	nr	DN	● partially	● No	● No	● Yes	● No
pre-disaster recovery plan	● No	nr	● No	nr	● No	nr	● No	DN	● No	● No
Business Processes										
Specific business process (BR/DR) during any disaster	● No	● No	● No	● No	● Yes	● fully	● No	● No	● Yes	● fully
Specific business process (MR/DivR) during any disaster	● No	● No	● No	● No	● No	● partially	● No	● No	● Yes	● fully

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Operating Procedures at local level registration service points (CR offices and health facilities)	● No	● No	● No	● No	Other	● partially	● No	● No	● No	● No
Flexibilities in temporary registration mechanisms and/or alternative measures		● No		● No		● Yes		● No		● Yes
Implement any flexible and/or adaptable operational procedure, such as simplified notification, or declaration, or registration processes	● No	● No	● No	● No	● (Only notifications)	● None of the above	● No	● No	● Yes	● Yes (during, response & recovery)
implement any flexible and/or adaptable operational procedure, like increase service entry points through health sector services and systems?	● No	● No	DN	● No	Other	● None of the above	● Yes	● Yes before, during, response, recovery	● Yes	● Yes before, during, response, recovery
Flexible and/or adaptable operational procedure, like increase service entry points through other sectors,	● Yes	● Yes (response & recovery)	● No	● No	Other	● None of the above	● No	● No	● Yes	● Yes before, during, response, recovery
Adaptable operational procedure, like conducting mobile campaigns or outreach campaigns ?	● Yes	● Yes (response)	● Yes	● Yes (response & recovery)	Other	● None of the above	● Yes	● Yes (response, recovery)	● Yes	● Yes (recovery)
Any flexible and/or adaptable operational procedure, like change and adapt operating hours?	● No	● No	● Yes	● Yes (response & recovery)	Other	● None of the above	● Yes	● Yes (response, recovery)	● Yes	● Yes (recovery)
Flexible and/or adaptable operational procedure, like staff taking additional/ new responsibilities?	● No	● No	DN	● No	Other	● No	● No	● Yes (before, during, response, recovery)	● Yes	● Yes (recovery)

2.6 Community engagement and awareness initiatives

Community-level engagement consistently emerges as a vital component of resilience. While all five countries are making strides in strengthening their CRVS systems and community engagement, systemic weaknesses persist. All countries leverage existing community structures, such as religious and political leaders and traditional associations, to create demand and raise awareness. Mobile registration teams or caravans are a common and effective way of reaching remote and displaced populations. Cases widely recognize the need for more inclusive outreach to vulnerable groups, including youth. Across examples, early risk communication, feedback loops and participatory planning are considered helpful for increasing service uptake and enabling systems to anticipate and respond to evolving community needs.

In Ethiopia, religious and political leaders, along with traditional mutual aid associations (*Edir* leaders), are generally active in demand creation and awareness-raising, effectively utilizing existing grassroots networks for CRVS communication during disasters. Awareness campaigns are organized for refugees and IDPs, demonstrating an inclusive approach. However, community involvement in designing CRVS programmes for disaster situations remains limited, especially in the Afar region, which cites a lack of experience. Outreach to vulnerable, undocumented populations is mostly limited across most regions. Fear of discrimination or data misuse can hinder trust-building and uptake (Sherine Guirguis et al., 2021). Citizens are usually not informed about climate change impacts on CRVS or alternative provisions during disruptions.

Mozambique's CRVS strategy focuses on ongoing efforts to boost public awareness and encourage participation, promoting an inclusive system. Religious and community leaders are actively engaged to generate demand, reflecting strong grassroots networks. Anticipatory action messages for vulnerable communities are delivered through multiple platforms, including national radio, reflecting a proactive communication approach. Mobile units from the National Civil Identification Service (Direcção Nacional de Identificação Civil, DNIC) inform IDPs and vulnerable populations about civil identification. The 'Right to Have Rights' PPP project (2014–2018) is a notable best practice, utilizing mobile brigades to provide free, same-day birth certificates and ID cards, successfully reaching over 766,000 people (UNICEF Mozambique, 2021). However, community feedback and accountability mechanisms are not fully in place, and CRVS communication about climate change impacts is missing.

In Nepal, community involvement is recognized, with proposals for new client-centred services and integrated marketing and communications campaigns to promote understanding and demand (UNICEF and New Legacy Digital, 2021). Targeted awareness and promotion campaigns are essential for increasing social protection registration and ensuring inclusivity (World Bank, 2023). Although limited awareness has historically contributed to lower registration rates, the commitment to excellent service and national coordination efforts aim to boost public trust. The decentralized system, with ward officials leading the way, supports local efforts in re-establishing legal identity after disasters, emphasizing community-level action.

Papua New Guinea's CRVS strategy strongly emphasizes building an inclusive system by involving community leaders, including ward councillors, ward recorders, clan leaders and faith-based actors, in community mobilization and document verification processes. These community networks play an important role in extending registration services to remote and underserved populations. Existing mobilization efforts and innovative approaches, such as using Facebook and other community communication channels to promote mobile registration visits, provide a foundation for further strengthening outreach (Pacific Community, 2020). There is considerable potential to develop more systematic communication strategies for emergency registration

procedures, and to proactively identify vulnerable, remote, disaster-affected and marginalized populations for targeted CRVS awareness and legal identity support.

The Philippines increasingly recognizes the importance of community engagement, especially through the PhilSys Birth Registration Assistance Project (PBRAP), which targets Indigenous Peoples, Muslim Filipinos, the ‘poorest of the poor’ and GIDAs (Government of Philippines and Santos, 2024). The PBRAP offers free registration and is integrated with national ID enrolment. Mobile CRVS services, often partnered with local governments and civil society organizations, are deployed during service caravans and post-disaster outreach, demonstrating a responsive approach. The engagement of schools and religious institutions further encourages registration. In the BARMM, engagement requires sensitivity to cultural and religious norms, and collaboration with Islamic religious leaders (*Ulama*) and traditional community elders is vital (Eloisa P. Minerva, 2023). Mobile registration campaigns designed for displaced and remote communities, involving local BARMM government units and community organizations, are crucial. The joint effort in the BARMM between UNHCR, UNICEF and the Ministry of Social Services and Development, offering free birth certificates to individuals at risk of statelessness, demonstrates a strong community-led approach (UNICEF Philippines, 2024). However, community participation in designing CRVS services or disaster protocols remains limited, with most outreach being top-down. Fees imposed by some LGUs for delayed registration or reissuance, and lack of awareness about service continuity during disasters, hinder access. (See Table 7.)

Table 7: Cross-case synthesis (community engagement)

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Community Involvement in Pre-Emergency CRVS Communication Activities	● moderately		● Great extent		● moderately		● not at all		● moderately	
Community Feedback Mechanisms for Trust, Responsiveness, and Accountability	● moderately		● moderately		● moderately		● not at all		● moderately	
Citizens Informed About CRVS Disruptions and Alternative Provisions During Disasters?	● not at all		● not at all		DN		● not at all		● moderately	
Identification of Vulnerable Beneficiaries for Targeted CRVS Communication		● not at all		● moderately		● moderately		● not at all		● moderately
Refugee Outreach on Identity Rights and Procedures in Disaster Contexts		● moderately		● moderately		DN		● not at all		● moderately
Outreach to Stateless Populations on Identity Rights and Registration Procedures in Emergencies		● not at all		● not at all		DN		● not at all		● moderately
Outreach to IDPs on Legal Identity Rights and Registration Procedures in Emergencies		● moderately		● moderately		● Great extent		● not at all		● moderately
Awareness Campaigns for Vulnerable, Undocumented Populations		● not at all		● moderately		● moderately		● not at all		● moderately

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Religious and political leaders engagement in CRVS communication during disasters		● Yes		● Yes		● Yes		● not at all		● Yes
Youth Engagement in CRVS communication during Climate-related Disasters		● No		● Yes		● Yes		● not at all		● No

2.7 Interoperability and integration

A CRVS system must seamlessly share data and collaborate with other sectors and national ID systems to support comprehensive population management, effective service delivery and strong disaster response. Analysis shows that all countries see the health sector as a key entry point for birth and death notification, with varying success in co-location and data sharing. Nepal and Papua New Guinea have achieved significant integration with their national ID systems, serving as a strong model for improving birth registration. The Philippines is actively working on this with PhilSys, while Mozambique is in discussions. Ethiopia stands out as the only country with no integration. Social protection programmes are increasingly seen as drivers for birth registration, either through direct linkages (Nepal, Mozambique, the Philippines) or by identifying unregistered children (Ethiopia).

Ethiopia faces significant challenges in integration and interoperability. Birth and death registration data are not used effectively across all regions for assessment, planning and response, both in routine contexts and during climate change disasters. Some, but not all, health facilities have civil registration offices with officers responsible for registering and certifying births and deaths. However, health facilities and CRVS offices lack universal electronic interoperability, with only the Somali region reporting partial integration during climate change disaster scenarios. Civil Registration and Vital Statistics are integrated into National Immunization Days, providing birth registration and awareness efforts. The health and civil registration sectors use supportive supervision sessions to cross-check and verify data collected by both sectors.

Integration with social assistance programmes (e.g., Cash Plus) is ‘partially implemented’ to identify and register children, and there is a ‘partial linkage’ with the education sector to identify and register children under five. Crucially, interoperability with e-governance systems is limited to just Tigray and Oromia, and integration with the national ID system is completely absent, creating a major barrier to seamless data-sharing exchange (ICS, 2021).

Mozambique demonstrates integrated use of birth registration data in emergencies to identify children for various services, including social protection. However, CRVS posts are not fully co-

located in hospitals, and health professionals implement birth/death notification only partially. While hospitals fully implement medical certification of death, full interoperability with the District Health Information System (DHIS) is still in progress (UNICEF, 2020). A pilot project to capture birth/death information in DHIS2 and populate the e-CRVS database is a positive step. Social sector integration through Cash Plus programmes for birth registration is explicit, but full systematic integration during emergencies faces hurdles. Integration with the education sector is largely undeveloped. Critically, the National Unique Identification Code (NUIC) and CRVS systems currently operate separately and are not interoperable, although discussions are ongoing. The SiRCEV Operational Plan (2021–2028) aims to improve information sharing and implement the NUIC. Good practices from Cabo Delgado include a ‘single-window’ service delivery combining birth registration and identification.

Nepal is making significant strides. High rates of antenatal care and skilled birth attendance present a major opportunity for integrated birth notification at the point of care. The ‘Next Plan’ includes API integration for health facilities and a planned integrated interoperable CRVS system including civil registration, a Health Management Information System (HMIS) and an NSO (Government of Nepal, 2023). Social protection programmes have served as a key accelerator for birth registration, with the VERSP-MIS designed to manage both civil registration and social protection. The civil registration system is already integrated with social security, consular services, citizenship and national ID, enabling direct deposit of social security allowances into bank accounts. Integration with the Election Commission and Department of Education is ‘in progress’.

Papua New Guinea currently uses birth and death registration data only to a limited extent for climate disaster response, although strengthening integration between CRVS and disaster risk management systems is a priority in the CRVS Action Plan (2023–2025) (Government of Papua New Guinea, 2023). Establishing MoUs with major hospitals for co-located birth registration desks has strengthened service integration, while the electronic National Health Information System has significant potential to improve birth and death data flows. Verbal autopsy pilots are also helping to strengthen cause of death data. However, further opportunities remain to integrate birth registration with routine immunization services, and to enable seamless data sharing between health facilities and CRVS offices. Interoperability with social protection and education systems remains limited and represents an important area for future development. A notable strength is the relatively advanced integration between the CRVS system and the national ID system, which has contributed to improved birth registration coverage (Laxton, 2025). The CIR Act 2024 further supports future integration through provisions for cross-agency data sharing.

The Philippines uses CRVS data for Census-Based Population Projections (CBPP), involving multiple agencies (Government of the Philippines and Santos, 2024). The Department of Health’s Administrative Order 2020–0008 emphasizes verbal autopsy and medical certification of cause of death training, linking health data with CRVS. While routine CRVS and immunization programmes

are not officially combined, some health workers may conduct mobile registration during disaster responses if they are dual-trained. The CRVS Strategic Plan 2023–2028 highlights ‘linking CRVS with PhilSys’ as a key action, with the Birth Registration Assistance Project (BRAP) automatically enrolling newly registered individuals in PhilSys. Cross-agency committees (e.g., Inter-Agency Committee on CRVS) foster collaboration. Data matching and sharing agreements exist with the Philippine Health Insurance Corporation (PhilHealth), Government Service Insurance System, Social Security System and the Bureau of Internal Revenue. In the BARMM, strengthening ties with regional health services, social protection programmes (e.g., the Pantawid Pamilyang Pilipino Program, 4Ps) and education services is essential, with unique opportunities to integrate CRVS with peace-building efforts. (See Table 8.)

Table 8: Cross-case synthesis (integration and interoperability)

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
use of BR data		fully described		fully described		fully described				fully described
Use of death registration data		described		n/a		just started				fully described
Integration with Health										
CRO co-located within health facilities	● partially	● partially	● partially	● partially	● not integrated	● not integrated	● not integrated	● not integrated	● partially	● partially
Birth/Death Notifications done by HWs	● partially	● partially	● partially	● partially	● partially	● partially	● not integrated	● not integrated	● partially	● partially
BR in routine immunization (static, at health facility service)	● partially	● partially	● partially	● partially	● not integrated	● not integrated	● not integrated	● not integrated	● not integrated	● partially
BR in mobile immunization hard to reach/remote areas	● partially	● partially	● partially	● partially	● not integrated	● not integrated	● not integrated	● not integrated	● not integrated	● partially
Engaging community health workers to promote BR	● partially	● partially	● not integrated	● not integrated	● partially	● partially	● not integrated	● not integrated	● partially	● partially
with mobile campaigns (measles, Vitamin A, Polio campaigns)	● not integrated	● not integrated	● partially	● partially	● not integrated	● not integrated	● not integrated	● not integrated	● not integrated	● partially
Data exchange between health facilities and CRVS offices	● not integrated	● not integrated	● not integrated	● not integrated	● partially	● fully	● not integrated	● not integrated	● not integrated	● partially
Integrating CRVS data collection with routine health data collection	● partially	● partially	DN	DN	DN	DN	● not integrated	● not integrated	● not integrated	● partially
Doctors in hospitals are required to issue medical certificates of cause of death,	● partially	● partially	● fully	● partially	NR	NR	● not integrated	● not integrated	● fully	● fully
Integration with social protection sector										
Identify unregistered children	● partially	● partially	● partially	DN	● partially	● partially	● not integrated	● not integrated	● partially	● partially
Identify and refer unregistered	● partially	● partially	● not integrated	DN	● partially	● partially	● not integrated	● not integrated	● partially	● partially

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Certification as a condition	● not integrated	● not integrated	DN	DN	● fully	● fully	● not integrated	● not integrated	● partially	● partially
Integration with education sector										
Identify unregistered children		● partially		DN		● not integrated		● not integrated		● partially
Identify and refer unregistered		● partially		DN		● not integrated		● not integrated		● partially
Faciliate registration (proactively than refer)		● partially		DN		● not integrated		● not integrated		● partially
Offers/serves as a registration service point		● not integrated		DN		● not integrated		● not integrated		● partially
ONE-STOP-SHOP										
Coordinated one stop shop at evacuation centers		●		DN		●		●		● Yes
Integration with National ID system										
integration with National ID	● not integrated	● not integrated	● not integrated	NR	● Yes	● Yes	● Yes	● not integrated	● not integrated	NR

2.8 Digitization and interoperability

Digitalization and digitization are transforming CRVS systems by improving efficiency, data preservation and accessibility, all of which are especially important for resilience during disasters. Most countries are in a transitional phase of digitalization, with varying levels of online functionality alongside ongoing manual processes, mostly at the subnational level. Countries such as Nepal and the Philippines (CRS-ITP2) are developing centralized digital platforms for record management to enhance data accessibility and security. These efforts – such as the Philippines’ CRS-ITP2 and Nepal’s VERSP-MIS – are prime examples of how centralized digital systems significantly improve efficiency, accessibility and data management. Connectivity problems, power outages and a lack of IT equipment consistently prevent full digital functionality and implementation in rural and remote areas across all countries.

Robust digital infrastructure and data safeguards are essential for resilience. Nepal (>93 per cent digitalized) and the Philippines (>99 per cent digitalized) maintained uninterrupted services during recent disasters, supported by redundant power sources and mobile connectivity. Mozambique has digitalized all civil registration posts and half of its health facility registration points. Interoperability improves the usefulness of CRVS data for disaster response. Nepal’s MoUs link CRVS data to health and national ID systems, enabling targeted emergency grants and shelter allocation. The Philippines uses CRVS as the backbone of its PhilSys digital ID, supported by strong

data-sharing protocols. Mozambique's integration of CRVS units within maternity wards ensures real-time registration and helps to quickly identify beneficiaries during emergencies.

Ethiopia's digitalization journey is still in its early stages, mainly marked by pilot projects and a largely manual system. The digital status for birth and death registration is mostly described as 'localized to a few locations' or 'just started' (less than 10 per cent coverage). The migration of old paper records to digital systems has not yet taken place. Digital notification and declaration methods via mobile or online are entirely absent. Challenges include standardization issues, connectivity problems, a lack of IT equipment and inexperienced civil registrars. Some digital systems are designed to function offline, but unreliable power sources remain a problem (Amhara Regional State VERA, 2017).

Mozambique has made significant progress in digitalization since 2018. Birth registration is fully digital, while death registration is partially digital. All 68 conservatories and 156 hospital-based posts are now digitalized. The 2018 Civil Registry Code (Law 12/2018) introduced e-SIRCEV to modernize and simplify electronic registration. Online notification and registration are used moderately, and mobile networks transmit vital information for centralized digital collection. Certificates can be printed at district and health facility registration points, decentralizing the process (UNICEF Eastern and Southern Africa Regional Office, ESARO, 2020). Challenges include maintaining end-to-end process efficiency during disasters, migrating old data and delays caused by limited connectivity in remote areas.

Nepal's CRVS system is quickly moving towards full digitalization, a truly transformative process. Most local registrar's offices now offer widespread online registration. The VERSP-MIS is effectively used as a digital tool for managing civil registration and social protection, featuring data entry, validation, document imaging and workflow management (Government of Nepal, 2023). The shift to online registration decreases reliance on paper and helps to reduce the risk of data loss. The ongoing effort to digitize over 19 million paper-based records is systematic. The 'Next Plan' includes the nationwide rollout of a BRMS and DRMS, public portals and SMS/mobile notifications from female community health volunteers (FCHVs), showing a clear plan for digital expansion.

Papua New Guinea is progressing towards a more efficient, flexible and robust CRVS system. Since 2015, both birth and death registration systems have been semi-digitalized. The adoption of a centralized digital system and the deployment of mobile registration kits that capture data electronically and upload them when connectivity becomes available demonstrate efforts to improve flexibility and service delivery in geographically complex areas (Government of Papua New Guinea, 2023). While fully digital notification, declaration and registration processes are still under development, active plans are underway to achieve end-to-end digitalization. A notable achievement is the strong integration between the CRVS system and the national ID system, which has contributed to improved birth registration coverage. Opportunities remain to integrate

new digital capabilities with existing government systems, and to strengthen ICT infrastructure, data storage, interoperability and database management.

The Philippines has made significant progress in digital transformation through the CRS-ITP2 system, a centralized platform that manages over 197 million records and is accessible via 40 online Civil Registry System outlets nationwide (Marizza et al., 2023). This has greatly improved document issuance turnaround time (1–2 hours). The CRS-ITP2 system supports data matching and interoperability with various institutions. However, it remains mostly semi-digital, and the full rollout of e-CRVS at the LCRO level is still underway, with many LCROs (especially in rural areas and the BARMM) relying on manual processes due to insufficient staff training or experiencing disconnected IT systems due to limited internet access and power outages (Frederes and Schwid, 2019). Electronic systems can still shut down during disasters, requiring paper-based or mobile registration. (See Table 9.)

Table 9: Cross-case synthesis (digitalization and digitization)

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
BR system digitalization status	● few location		● fully		● fully		● Semi digitalized		● Semi digitalized	
DR system digitalization status	● few location		● Semi digitalized		● just started		● Semi digitalized		● Semi digitalized	
digital (mobile/online) notification		● no		● moderately		● Great extent		● no		● no
digital (mobile/online) declaration		● no		DN		DN		● no		● no
digital (mobile/online) registration		● no		● moderately		● Great extent		● no		● no
end-to-end business processes effective		● moderately		DN		● Great extent		● not at all		● moderately
Interoperability										
Interoperability with the overall National E-Governance System	● moderately	● moderately	● Great extent	● Great extent	● moderately	● moderately	● not at all	● not at all	● not at all	● moderately
CRVS system interoperability with the National ID System	● not at all	● not at all	● not at all	● not at all	● Great extent	● Great extent	● Great extent	● not at all	● not at all	● moderately
Interoperability with the DHIS (Health Information System)	● moderately	● not at all	● moderately	● moderately	DN	DN	● not at all	● not at all	● not at all	● not at all
linking CRVS systems to the Social Protection Database (e.g., Poverty Identification)	● not at all	DN	DN	DN	● Great extent	● Great extent	● not at all	● not at all	● not at all	● not at all
CRVS system interoperability with the EMIS	● not at all	● not at all	DN	DN	● not at all	● not at all	● not at all	● not at all	● not at all	● not at all

2.9 Data quality, integrity and storage

Robust measures for data integrity, privacy, security and back-up are paramount to building trust in CRVS systems and ensuring the availability of vital records, especially during crises. Data integrity remains inconsistent, but all countries generally have standardized birth and death registration forms, which are essential for data quality. Most are moving towards, or already have, centralized digital repositories for CRVS data (e.g., CRS-ITP2 in the Philippines, e-SiRCEV in Mozambique, VERSP-MIS in Nepal, or centralized digital systems in Papua New Guinea). Countries that have experienced major disasters (Philippines, Mozambique) explicitly recognize and invest in off-site disaster recovery locations and cloud storage. Many countries have or are developing legal provisions for data protection and privacy within their CRVS laws or national data privacy acts.

The Philippines has dual mirrored data centres and a dedicated disaster recovery facility, while Nepal has five encrypted regional back-up centres, providing strong protection against catastrophic loss. In contrast, reliance on vulnerable paper archives leaves Ethiopia, Mozambique and Papua New Guinea at ongoing risk. Ethiopia has taken steps towards data protection, but significant vulnerabilities remain. Data disaggregation is limited to gender, age and location. While standardization and data cleaning procedures are generally in place, regions such as Amhara, Afar and Somali perform these tasks only moderately, and Somali struggles during disasters. Data protection laws exist, but Oromiya reports ‘no’ protection against privacy concerns in regular contexts, and Somali is only ‘moderately’ protected. Cybersecurity measures are rated as ‘moderate’, but Tigray lacks data security and cybersecurity protection altogether. Data transfer generally functions at a ‘moderate’ level during regular and climate change disaster situations. However, most regions report that their databases are ‘not at all’ regularly maintained or checked for data accuracy to support emergency response planning. Staff often ‘do not’ follow standardized protocols for e-CRVS database maintenance. Notably, Somali relies solely on ‘on-site’ storage, which is a major obstacle to resilience.

Mozambique is taking proactive measures to enhance data quality, integrity and security. Birth and death registration data are standardized, and entered data must be approved to ensure quality control. Data are disaggregated by gender, age and location. Data protection, security and privacy are rated as ‘great’, supported by legal provisions in the CRVS Code 2018. All data are transmitted to a secure central server. The e-SiRCEV application is hosted on Microsoft cloud storage and a server at National Directorate of Registries and Notaries (Direcção Nacional dos Registos e Notariado, DNRN) headquarters, indicating a strong and geographically diverse back-up strategy. Reliable, timely data storage, back-up and recovery procedures are reportedly in place through cloud storage. The system’s digitization allows birth certificates to be replaced from any location. Past archives, consisting of physical records, are still maintained within conservatories without off-site physical storage, and there is no separate government data centre for CRVS records.

Nepal is dedicated to improving data quality, integrity and security. The VERSP-MIS supports data standardization. Efforts are ongoing to digitize, deduplicate and migrate data to the live system. The government is committed to publishing automated, disaggregated vital statistics reports. The VERSP-MIS includes security and access control features. The Civil Registry System database is backed up daily and the hard drive weekly. Future plans include integrating the national ID system for identity verification. Challenges include inconsistencies in data collection due to varying local practices and limited digital literacy among some ward secretaries.

Papua New Guinea has established important foundations for data integrity through standardized registration forms, routine data cleaning and validation procedures for birth registration, and increasing digitalization of CRVS functions. Data protection and security measures are in place, and the system supports registration through multiple service delivery channels, including mobile registration. However, significant challenges remain. Interoperability is limited, disaster-specific back-up and recovery arrangements are still evolving, and climate-related disruptions can affect data accessibility and continuity. While digital systems have reduced some risks associated with paper-based records, further investments are needed in disaster recovery planning, ICT infrastructure, data storage, back-up systems and business continuity mechanisms. A key vulnerability is the lack of fully developed emergency data recovery arrangements, creating potential risks during large-scale disasters.

The Philippines has significantly enhanced data integrity and security through digitization and centralization under CRS-ITP2, managing over 197 million records (Marizza et al., 2023). Lessons from Typhoon Haiyan prompted investments in off-site disaster recovery locations and the digitization of historical records. The system performs daily database back-ups and weekly tape back-ups. Digital submissions are securely stored in central repositories, allowing record recovery after disasters. Staff reconstruct lost or damaged physical documents using client-held copies or archived PSA records. The CRS-ITP2 system conducts monthly vulnerability assessments and privacy impact assessments. The Data Privacy Act of 2012 oversees personal data. Challenges include inconsistent application of data protection protocols at the local level (LGUs), limited secure storage at some LCROs (relying on 'on-site' storage vulnerable to hazards) and a lack of standardized interoperability protocols among CRVS, HMIS and PhilSys at the local level. (See Table 10.)

Table 10: Data quality, integrity, protection and storage

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Data quality, integrity										
BR forms standardized	● Yes		● Yes		● Yes		● Yes		● Yes	
Data cleaning procedures, such as deduplication and error checks	● Great extent	● Great extent	● Great extent	● Great extent	● moderately	● moderately	● Great extent	● not at all	● Great extent	● Great extent
DR forms standardized	● Yes		● Yes		● Yes		● Yes		● Yes	
Data cleaning procedures, such as deduplication and error checks	● Great extent	● Great extent	● Great extent	DN	● moderately	● not at all	● not at all	● not at all	● Great extent	● Great extent
Data disaggregated by gender, age, location, and other relevant variables			● no							
Gender	● no		● Yes		● Yes		● Yes		● Yes	
Age	● no		● Yes		● Yes		● Yes		● Yes	
Geographical	● Yes		● Yes		● Yes		● Yes		● Yes	
Ethnicity /race	● no		DN		● Yes		● Yes		● no	
Socio-economic status	● no		DN		● no		● Yes		● no	
Data Protection measures										
Data security	● moderately	● moderately	● great extent	● great extent	● moderately	● great extent	● great extent	● great extent	● great extent	● great extent
Cybersecurity	● moderately	● moderately	● great extent	● great extent	● moderately	● great extent	● great extent	● great extent	● great extent	● great extent
Protection against privacy concerns	● great extent	● great extent	● great extent	● great extent	● not at all	● moderately	● great extent	● great extent	● great extent	● great extent
Protection against Discrimination	● great extent	● great extent	DN	DN	● not at all	● great extent	● great extent	● great extent	● great extent	● great extent
Data flow, alternative measures										
Data transfer flow	● moderately	● great extent	● moderately	● great extent	● great extent	DN	● great extent	● no	● great extent	● great extent
birth certificate replacement irrespective of the location of the vital event		● great extent		● great extent		● great extent		● no		● great extent
Registration in another location than the vital event (birth) occurrence location?		● great extent		● great extent		● great extent		● great extent		● great extent
regular maintenance and check for data accuracy and reliability	● not at all		● great extent		● moderately		● not at all		● great extent	
CR staff follow the same protocol for the e-CRVS database maintenance and quality assurance measures		● no		● Yes		● Yes		● no		● Yes
Data storage, backup, archiving										
robust, timely backup, recovery procedures in place	● Yes	● great extent	● Yes	● great extent	● Yes	● moderately	● Yes	● not at all	● Yes	● great extent

● (fully, Yes), ● (partially), ● (Not functional, no mechanism, No)

Country Name	Ethiopia		Mozambique		Nepal		PNG		the Philippines	
Sub-category	Regular	CC-disaster	Regular	CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster	Regular	During CC-disaster
Type of storage	off site & on-site		cloud		off-site		off site		off site & on-site	
data archiving	● Yes		Other		● Yes		● no		● Yes	
timing of data archiving	automatically		everyday		automatically				automatically	
Other emergency data center other than CR authority mandated to store and archive	● Yes		DN		● Yes		● no		● Yes	



Section 3: Good practice recommendations

3.1 Summary of good practices

Building resilient and responsive CRVS systems is crucial for ensuring legal identity, especially in countries vulnerable to climate-related disasters and humanitarian crises. A comparative analysis highlights a variety of innovative and effective practices that improve CRVS operations in difficult situations. This section presents the good practices identified through the case studies for each category and country involved. They are also validated against the findings of the desk review (global evidence review) in the following tables. The country case study reports explain these good practices in more detail. (See *Table 11a–g*.)

Table 11a–g: Good practice evidence tables

(a) Enabling legal framework and governance

Good practices	Case study countries
Inclusive legal mandates for universal registration, review of existing laws and policies, including IDPs/refugees; removal of discriminatory and old laws	Ethiopia: Mandatory and inclusive legal foundation (Proclamations 760/2012, 1049/2017, 1370/2025, Refugee Proclamation 1110/2019 Art. 36) extending to IDPs, non-nationals and refugees. Mozambique: Comprehensive legal framework (Law No. 12/2004) mandates universal birth registration. The Policy and Strategy for the Management of IDPs (Política e Estratégia de Gestão de Deslocados Internos, PEGDI) emphasizes essential civil documentation for IDPs. Nepal: Constitution guarantees the right to birth registration; National ID and Civil Registration Act (2020) includes IDPs and promotes an inclusive approach.
Specific CRVS provision in disaster settings under the existing law	Ethiopia: Legal provisions for reconstruction of lost or damaged records. Philippines: Rule 36 of Administrative Order No. 1 (1993) outlines procedures for mass death registration; proposed Omnibus CRVS Bill seeks to strengthen disaster-related CRVS provisions. Papua New Guinea: CIR Act 2024 includes provisions for mass casualty registration, flexible timelines, free services and conditional data sharing during emergencies.
Fee waivers and flexible provision for registration requirements during disasters	Mozambique: Flexibility in implementation (ad hoc fee waivers for displaced persons during Cyclone Freddy; flexible working arrangements/extended hours by mobile brigades). Ethiopia: Flexible interpretation of law and procedural waivers during crises (e.g., witness testimonies/<i>Kebele</i> letters, registration with one parent, fee waivers, on-site registration, delegation of authority to register (health extension workers), acceptance of alternative documents such as passports). Ethiopia: Broad interpretation of ‘abandoned children’ law (includes all vulnerable children) and Amhara’s acceptance of alternative identification show pragmatic, ad hoc flexibility which ensures inclusion.
CRVS law, national strategy explicitly designated by law and practice as essential service (for regular and disaster times) aligned with international standards	Philippines: Philippine Constitution, Statistical Act of 2013 and Act No. 3753 establish legal mandates for continuous and compulsory civil registration; CRVS Strategic Plan 2023–2028 emphasizes ‘building resilience’. Mozambique: Constitutional recognition of CRVS as an essential service both during regular and disaster times enhances system legitimacy and prioritization.

Good practices	Case study countries
Pre-emergency legal frameworks (MoUs, SOPs) for data sharing and privacy legislative adaptation for climate displacement	The absence of pre-emergency data sharing and privacy arrangements, which is identified as a gap rather than a good practice.
Data protection, privacy and security	Papua New Guinea: Enhanced legal provisions for data protection, privacy under CIR Act 2024. Philippines: Data Privacy Act of 2012, anticipatory legal framework for disaster-specific CRVS data management.
Multi-sectoral coordination structures (CRVS steering committees, inter-agency collaboration); integration with health and disaster management for joint planning	Nepal: Multi-sectoral coordination and partnerships; National CRVS Steering and Coordination Committee. Philippines: Inter-Agency Committee on CRVS ensures coordinated governance and policy dialogue. Ethiopia: Multi-sectoral representation in CRVS committees.
Pre-emergency governance linking CRVS and disaster management authorities	Philippines: The Philippines' formal adoption of the cluster approach for disaster management, placing CRVS under the Global Protection Cluster, provides a structured framework for coordination. Mozambique: rated 'fully functional' for formal, multi-tier coordination between CRVS authorities and disaster risk management bodies during climate change emergencies.
Technical working groups with defined roles/communication	Nepal: National CRVS Steering and Coordination Committee and Technical Committee with defined coordination functions. Philippines: Inter-Agency Committee on CRVS and PSA-led technical coordination mechanisms. Mozambique: Formal coordination arrangements between CRVS, disaster management and humanitarian actors. Ethiopia: Multi-sectoral CRVS committees with defined institutional representation and responsibilities.

(b) Resources

Good practices	Desk review	Case study countries
Delegated CRVS authority to subnational/health actors during crises	✓	Ethiopia: Delegation of CRVS responsibilities to health extension workers and local authorities during conflict- and climate-related emergencies (particularly in Amhara), in order to maintain service continuity.
Proactive workforce development and resilience planning (reserve staff, protection measures) and digitalization training		Philippines: Regular earthquake, fire and disaster preparedness drills, alongside continuous staff training and capacity-building. Mozambique: investment in 'Train-the-Trainers' programmes and on-the-job peer education for long-term human resource development for digitalization and sustainability.
Staff redeployment and logistical support; formal MoUs defining surge roles/responsibilities	✓	Papua New Guinea and Mozambique: Redeployment of personnel, mobile teams and logistical support to affected areas, in order to maintain service delivery during emergencies. Nepal and Philippines: Embedding registration functions within local government structures strengthens service continuity.
Pre-disaster empathy and trauma-informed training, continuous capacity-building and drills	✓	Ethiopia: Well-being assessments and pre-disaster empathy training for CRVS personnel (more than 760 personnel trained in Amhara). Philippines: Regular staff training, including psychosocial support, stress management and disaster preparedness.
Regular and supportive supervision		Ethiopia: Joint supervision with health sector (Oromiya and other regions) regular supportive supervision (Amhara, Central Ethiopia, Tigray, Afar).
Dedicated contingency funding		Philippines: Availability of disaster response and contingency financing mechanisms supports continuity of services during emergencies. Nepal: Risk-informed local planning and budgeting support preparedness activities.
Reallocating funds for rapid response		Papua New Guinea and Philippines: Demonstrated ability to repurpose routine resources and mobilize available funding to support emergency response and service continuity during crises.
Institutionalized BCPs with back-up infrastructure	✓	Philippines: Developed disaster recovery and continuity arrangements following Typhoon Haiyan.
Pre-positioned supplies and mobile kits	✓	Papua New Guinea: Pre-positioned items at national and some subnational offices, along with mobile registration kits, for rapid deployment.
PPP and donor support		Nepal and Mozambique: Significantly benefit from international donor support (e.g., World Bank; Swedish International Development Cooperation Agency, Sida) for CRVS strengthening.

(c) Community engagement

Good practices	Desk review	Case study countries
Use of grassroots networks (religious, political, community leaders)	✓	Ethiopia: Leveraging existing grassroots networks (religious/political leaders, <i>Edir</i> leaders for demand creation, feedback, awareness). Mozambique: Active engagement of religious and political leaders in promoting birth registration messages, especially after disasters. Community radio and local meetings used to disseminate information. Nepal: World Bank SSSPCR project fosters community engagement. Papua New Guinea: Effectively leverages existing community structures with active involvement from ward councillors, ward recorders and clan leaders in mobilization and vetting processes. Philippines: In the BARMM, registrars collaborate with religious/community leaders/elders and tribal leaders to verify identities and encourage culturally acceptable alternative documentations (e.g., <i>Tarsila</i> genealogies or local marriage contracts).
Targeted awareness campaigns and outreach for IDPs/refugees	✓	Ethiopia: Awareness campaigns targeting refugees and IDPs to improve access to legal identity and registration services. Mozambique: Targeted communication and outreach for IDPs, particularly in Cabo Delgado and disaster-affected areas. Nepal: Targeted outreach to underserved and remote populations, in order to improve equitable access to registration services. Philippines: BRAP outreach and mobile registration initiatives target Indigenous Peoples, Muslim Filipinos, geographically isolated populations and other marginalized groups.
Cultural adaptations		Philippines (BARMM): Adapting approaches to unique cultural and conflict-affected contexts in collaboration with religious/community/tribal leaders; culturally acceptable alternative documentations (e.g., <i>Tarsila</i> genealogies).
Crisis communication, anticipatory preparedness messages	✓	Mozambique: Anticipatory action messaging disseminated through national and community radio channels to vulnerable populations before anticipated climate events.
Trust-building via responsive services and feedback, social listening and risk-sensitive messaging	✓	Mozambique: Community trust strengthened through responsiveness to citizen feedback and community engagement mechanisms. Papua New Guinea: Community-based outreach through ward councillors, ward recorders, clan leaders, and local networks helps to build trust and improve the inclusiveness of registration services.
Evidence-based vulnerability assessments for outreach	✓	

(d) Business process, plans, decentralized service delivery system

Good practices	Desk review	Case study countries
Mobile units/temporary offices for displaced and vulnerable populations		Ethiopia: Targeted outreach for refugees and IDPs (federal/national, Afar, Oromiya, Somali, Gambella, Central Ethiopia). Temporary mobile registration sites in IDP camps (almost all regions for information sessions; Oromiya, Central Ethiopia, Somali for registration). Mozambique: Deployment of mobile brigades after major disasters (Cyclones Idai, Freddy) for service continuity. Temporary registration units established in IDP camps. Mobile services dispatched based on rapid needs assessments. Nepal: Decentralized model complemented by mobile registration camps boosts accessibility and supports rapid emergency response. Papua New Guinea: Responsive adaptability through successful deployment of mobile campaigns during response and recovery periods.
National plan, BCPs and other plans		Philippines: PSA has business continuity arrangements, including deployment of skeleton staff and continuity measures during emergencies. Mozambique: Operational plans include provisions for CRVS service continuity during emergencies.
Flexible procedures (fee waivers, relaxed documentation, late registration)	✓	Ethiopia: Ad hoc fee waivers during crises (Amhara, Tigray, Central regions); flexible and operational procedures (relaxing requirements for renewed resident IDs) (Amhara). Mozambique: Flexible pragmatic processes in disaster contexts (despite absence of formal CRVS-specific emergency plan); late registrations without penalty; simplified documentation requirements (e.g., health facility slips or witness testimony). Philippines: Fee waivers and relaxed documentation requirements applied informally in many LGUs; use of <i>barangay</i>-level attestations and community witness verification is common. Papua New Guinea: System allows registration in a location different from where the vital event occurred.
Embedding CRVS in local government structures		Nepal: Empowering ward secretaries as local registrars facilitates community-proximate services.
Witness verification and operational waivers	✓	Ethiopia: Use of witness testimony, <i>Kebele</i> letters and alternative verification mechanisms during crises. Philippines: Community witness verification and local attestations are commonly used where supporting documentation is unavailable.
Rapid adjustments to hours/sites, reduced operations		Mozambique: The vital events notification system continued capturing data despite reduced operations during COVID-19, demonstrating operational adaptability. Papua New Guinea: Operational flexibility allows adjustments to service delivery arrangements during emergencies, particularly through mobile and outreach registration modalities.

(e) Integration and interoperability

Good practices	Desk review	Case study countries
Integration and data-sharing partnership with social protection to advance interoperability		Nepal: VERSP-MIS is extensively integrated with the national ID system, NSO, Department of Immigration, Centralized Citizen Management Information System (CCIMS), HMIS and the Social Security Allowance programme, facilitating direct benefit payments, reducing fraud and incentivizing registration. Philippines: PSA and Department of Social Welfare and Development (DSWD) collaborate to ensure beneficiaries of the Pantawid Pamilyang Pilipino Program (4Ps) are registered and enrolled in PhilSys. Ethiopia: Linkages between birth registration and social assistance programmes support identification, referral and issuance of birth certificates, including fee waivers in some regions (Central Ethiopia, Oromiya).
Integration and data-sharing partnership with health sector		Mozambique: Health workers notify births and deaths; some birth registration services provided during immunization campaigns; community health workers promote CRVS messages. Philippines: Partnerships with <i>barangays</i>/local health workers. Papua New Guinea: Proactively increased service entry points through the health sector via MoUs with main hospitals to set up birth registration desks. Ethiopia: Joint data collection and sharing with health sector (during immunization days, at health facilities).
Integration and data-sharing partnership with education sector		Ethiopia: Education sector utilization for child registration (preschool/ kindergarten periods, partial linkage in most regions, 'fully' integrated in Amhara). Nepal: Recommendation to link the existing Ministry of Health and Population HMIS and DoNIDCR's VERSP-MIS for efficient data exchange; future plans include testing the feasibility of digital notification through FCHVs, API integration with health facilities, public portal and SMS/mobile notifications, for continuous improvement and innovation. Papua New Guinea: Emerging health–CRVS linkages include ongoing efforts to co-locate birth registration desks within health facilities and verbal autopsy trials for cause of death data improvement.
Linking CRVS with national ID programme		Nepal: System integration through VERSP-MIS, broadly linked with national ID, NSO, HMIS and Social Security Allowance programme (same as above under Integration and data-sharing partnership with social protection). Papua New Guinea: Implements integrated model by linking birth registration with its national ID programme, serving as a powerful incentive for increased birth registrations and leveraging biometric technology. Philippines: BRAP supports automatic PhilSys enrolment; data-matching/ sharing agreements with PhilHealth, Government Service Insurance System, Social Security System, Bureau of Internal Revenue; cross-agency committees (e.g., Inter-Agency Committee on CRVS) foster collaboration stations.

Good practices	Desk review	Case study countries
Data sharing with other sectors and e-governance		Philippines: BARRM strengthening ties with regional health, social protection, education; integrating CRVS with peace-building/rehabilitation efforts. GeoAnalyticsPH⁹ leverages PSA's CBPP data for risk assessment/visualization.
CRVS data used for disaster risk analytics and planning/recovery		Philippines: <i>Compendium of Philippine Environment Statistics</i> incorporates population and disaster-related data, while DSWD maintains information on poor and displaced populations for planning and response. Ethiopia: Removal of ethnicity from residence ID cards reflects efforts to balance data use with privacy and protection concerns. Disaggregated data (i.e., ethnicity) for equity and targeting requires careful attention; while it can address the equity gap (Philippine example), it also raises concerns for privacy and risk of discrimination (Ethiopia example).
'One-stop-shop' services during emergencies	✓	Philippines: Integrated and mobile service delivery models, including BRAP and PhilSys-linked services, provide examples of one-stop approaches for registration and legal identity support during emergencies and recovery efforts.

⁹ An online platform developed by the Department of Science and Technology–Philippine Institute of Volcanology and Seismology (DOST–PHIVOLCS) as part of the broader GeoRiskPH Initiative.

(f) Digitalization and digitization

Good practices	Desk review	Case study countries
Mobile/offline registration for service continuity	✓	Ethiopia: Offline registration capability and offline data synchronization in selected e-CRVS pilot areas (e.g., Oromia). Philippines: Mobile boats/island-hopping teams in Tawi-Tawi and Basilan (BARMM), and mobile registration caravans serving informal settlements, evacuation centres and island communities. Mozambique: ‘Right to Have Rights’ PPP project (UNICEF, Sida, Lurio Green Resources) with agile mobile brigades for free, same-day birth certificates/ID cards (Nampula). Papua New Guinea: Mobile registration campaigns and digital registration kits support service continuity in remote and disaster-affected areas.
Country-specific centralized systems		Mozambique: Full digitization of birth registration and creation of central database e-SIRCEV since 2018, creating a central database for remote record-keeping, and enabling flexible issuance of replacement certificates from any location. Philippines: >99% digitalized; large-scale digitization under CRS-ITP and CRS-ITP2 significantly improved efficiency and accessibility; CRS-ITP2 operates a hub linking PSA central hubs with local outlets, enabling centralized verification and authentication services while maintaining local service delivery and nationwide access to civil registration documents. Nepal: >93% digitalized; pioneering digital transformation (VERSP-MIS); widespread adoption of VERSP-MIS in local ward offices for online event registration, efficient record management and improved reporting. Papua New Guinea: Adoption of a centralized digital system and deployment of mobile registration kits that capture data digitally, demonstrating leverage of technology for flexibility and robustness.
Rapid certificate issuance and service gains from digital transformation		Mozambique: Remote record-keeping and flexible issuance of replacement certificates from any location, even in severe climate-shocked areas. Philippines: Substantial reduction (days to hours) in processing time, rapid certificate issuance, online authentication of records, digital issuance of certificates (including e-apostille and Certificates of Live Birth in Security Paper, SECPA).

Good practices	Desk review	Case study countries
Leveraging digital innovations (mobile apps, portals) to overcome access barriers and digitization of archive records		Philippines: CRS-ITP and CRS-ITP2 digitally converted over 100 million civil registry documents, dramatically reducing certification issuance time. Mozambique: Use of back-up databases enabled partial data recovery after Cyclone Freddy. Nepal: Proactive digitization of historical records; ongoing digitization of over 19 million paper-based records for preservation, risk mitigation and improved accessibility. Strategic future digitalization plans: nationwide rollout of BRMS/DRMS integrated with health system; API integration for health facilities; public portal; SMS/mobile notifications from FCHVs (see Integration and data-sharing partnership with education sector). Papua New Guinea: PNGCIR maintains centralized archives dating back to 1849, with proactive plans for electronic archiving under new CIR Act 2024.
End-to-end business process, tracking and monitoring		Philippines: Tracks registration workflows, submissions, verification processes and issuance metrics across multiple administrative levels, supporting performance monitoring and accountability.

(g) Data integrity, quality, privacy and security

Good practices	Desk review	Case study countries
Standardized data forms	✓	All countries: Standardized forms in use nationwide.
Data architecture (cloud, off-site back-up, redundancy check) for legal data protection; back-up/recovery systems against disaster loss; disaster-driven off-site recovery infrastructure	✓	Mozambique: Back-ups on Microsoft cloud storage exist in soft copy on DNRN HQ server at provincial and national levels. Papua New Guinea: CIR Act 2024 includes specific legal provisions for data protection and privacy; existing policies cover data processing, access controls, back-up/recovery and audit logs. Philippines: Post-Haiyan lessons catalysed investment in off-site disaster recovery sites and digitalization of historical records; daily database back-ups and weekly tape back-ups; establishment of a disaster recovery site; digitally submitted data securely stored in central repositories; reconstruction of lost/damaged physical documents using client copies or archived PSA records; electronic endorsement and validation of court decisions; monthly vulnerability assessments and modular privacy impact assessments for CRS-ITP2; Data Privacy Act of 2012 regulates data.
Robust data flow and data quality (cleaning/deduplication) process in place		Ethiopia: Data cleaning procedures (deduplication, error checks generally well implemented in most regions, routine context). Data transfer flow functionality during emergencies (moderately functional across all regions for regular times and climate change disasters). Mozambique: Data cleaning protocols (error checking, deduplication) conducted regularly; legal protections exist for personal data; secure handling emphasized. Philippines: To mitigate disaster risks, electronic forwarding and secure central storage of documents through CRS-ITP2 system for post-disaster data recovery.
Focus on data security (paper-based and digital), cybersecurity	✓	Ethiopia: Robust user management (log-in monitoring, deactivation, password expiration); individual data security through encryption; restricted access for paper data security; penalties for data breaches. Philippines: Civil Registry System service outlets support electronic endorsement and annotation, and maintain a centralized signature specimen database for reliable authentication.
Data protection provisions in CRVS law		Ethiopia: Data protection provisions embedded within Proclamations 760/2012 and 1370/2025. Papua New Guinea: CIR Act 2024 contains explicit provisions on privacy, data protection, access controls, audit trails and cross-agency data-sharing safeguards. Philippines: Data Privacy Act of 2012 provides a comprehensive legal framework for the protection of personal data, including civil registration records.

In summary, these experiences confirm that resilient CRVS systems are built on robust laws and governance, agile human, financial and infrastructure resources, resilient digital and physical infrastructure, adaptable business processes, systemic integration with identity and social protection programmes, robust data safeguards and strong community partnerships. Together, these elements enable systems to not only withstand shocks, but also to adapt and transform, ensuring universal legal identity and timely recovery in the face of climate-induced crises.

3.2 Recommendations

Building resilient CRVS systems is essential to safeguard legal identity and maintain vital services, especially in regions vulnerable to climate-related disasters and humanitarian crises. Based on the experiences of Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines, these recommendations are organized around key thematic areas, each aimed at strengthening specific CRVS capabilities. (See Table 12.)

Table 12: Actionable recommendations

1. Legal framework Inclusive, flexible, agile and adaptive legal frameworks are essential for ensuring universal civil registration, including for vulnerable, displaced and disaster-affected populations. National legislation should explicitly recognize CRVS as an essential public service and provide the legal foundation for continuity during emergencies.	Regularly review and reform legal and policy frameworks to remove discriminatory or outdated provisions and ensure inclusive coverage of IDPs, refugees, stateless persons, non-nationals and other vulnerable populations. Integrate CRVS into national disaster risk management and emergency response legal provisions,¹⁰ and explicitly designate birth registration, death registration and other CRVS functions as essential services that must continue during emergencies and climate-related disasters. Establish disaster-responsive legal provisions that enable the reconstruction of lost or damaged records, allow fee waivers, extend registration deadlines, and permit the use of alternative documentation and verification mechanisms during crises. Develop and formalize pre-emergency legal and institutional arrangements for data sharing, privacy protection, interoperability and cross-sector collaboration among CRVS, health, social protection, disaster management and identity management systems. Strengthen data protection, privacy and cybersecurity provisions within CRVS legislation and operational frameworks, including safeguards for emergency data sharing, disaster recovery and the protection of vulnerable populations, while ensuring compliance with national and international standards.
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¹⁰ Example: The Philippines is seeking to further strengthen disaster-responsive CRVS through its proposed Omnibus CRVS Bill, which is expected to incorporate provisions on mass fatality registration, flexible registration procedures, digitalization and system resilience, building on existing disaster management and civil registration frameworks.

2. Good governance and coordination

Strong multi-sectoral governance, sustained institutional capacity and formalized coordination between CRVS and disaster management systems are critical for ensuring efficient, timely and coordinated responses during crises.

Strengthen linkages between existing CRVS coordination platforms and disaster management structures at national and subnational levels, ensuring regular communication, joint planning and coordinated decision-making before, during and after emergencies.

Formalize roles, responsibilities and coordination mechanisms through MoUs,¹¹ SOPs and other institutional arrangements between CRVS authorities and key sectors, including disaster management, national ID, health, social protection, education and statistics agencies.

Integrate CRVS into national and subnational disaster preparedness, response, recovery and resilience frameworks, including national adaptation plans, DRRM strategies, BCPs, preparedness and contingency plans.

3. Build resource resilience (human, financial, infrastructure) and responsiveness

Develop a resilient and responsive workforce through surge staffing plans, capacity-building, prioritizing staff well-being, allocating contingency funds and investing in climate-resilient infrastructure for crisis preparedness and response.

Establish clear legal mechanisms for delegation of CRVS responsibilities to authorities¹² during crises and institutionalize fee waivers, flexible procedures and document replacement mechanisms for disaster-affected populations.

Deploy mobile teams and temporary offices in displacement settings.

Implement mandatory, regular training for all CRVS personnel on emergency protocols, business continuity, backlog clearance, digital skills, first aid and trauma-informed care.

Prioritize workforce surge arrangements, staff redeployment mechanisms, emergency training and protective measures to maintain service continuity during crises.

Protect and support staff well-being.

¹¹ *Examples:* Mozambique provides a strong example of formal, multi-tier coordination between CRVS and disaster management authorities, while the Philippines benefits from established inter-agency coordination structures and includes CRVS within disaster coordination mechanisms.

¹² *Examples:* Ethiopia's Amhara region's Regulation No. 211/2024, which delegates responsibilities to health extension workers, offers a blueprint. Mozambique also implemented ad hoc fee waivers during Cyclone Freddy.

Conduct regular back-up and recovery drills for data systems and physical infrastructure, to ensure robustness and preparedness.¹³
Pre-position mobile kits, supplies and back-up infrastructure.

Maintain financial flexibility for rapid resource reallocation.

Establish dedicated preparedness and emergency response budget lines, and maintain flexibility to rapidly mobilize resources during crises.

Invest in sustainable and climate-resilient infrastructure,¹⁴ such as off-site data back-ups, data back-up power, disaster recovery systems, mobile connectivity and pre-positioning (mobile kits,¹⁵ emergency registration forms), to allow services to resume immediately after emergency disruptions.

¹³ *Examples:* Nepal's geographically dispersed back-up systems illustrate the importance of regularly testing disaster recovery and back-up procedures through drills and simulations. The Philippines already conducts daily database back-ups and weekly tape back-ups with off-site disaster recovery sites.

¹⁴ *Examples:* The Philippines emphasizes investing in back-up power, mobile kits and alternative service sites at the LCRO level, especially in high-risk areas like the BARMM. Mozambique and Papua New Guinea highlight the need for climate-resilient CRVS facilities, secure storage infrastructure, mobile registration equipment, connectivity solutions and disaster-resilient local registration offices.

¹⁵ *Example:* Papua New Guinea's deployment of solar-powered biometric kits for off-grid communities offers scalable solutions for reaching remote, disaster-prone populations.

4. Community engagement and demand creation

Trust-based, culturally sensitive engagement and responsive feedback mechanisms are essential for maintaining demand for registration services, particularly among vulnerable populations, and for ensuring that CRVS systems remain accessible, inclusive and trusted during crises.

Leverage grassroots networks, including religious leaders, tribal and traditional authorities, community leaders, local volunteers and civil society organizations, to support outreach, awareness raising, identification and verification of individuals requiring registration.

Conduct targeted communication and outreach campaigns for IDPs, refugees, stateless persons, remote populations, persons with disabilities and other marginalized groups most at risk of exclusion.

Adapt registration approaches to local cultural contexts and promote culturally acceptable verification and documentation mechanisms where appropriate (e.g., use of traditional genealogies and community validation mechanisms in the BARMM, Philippines).

Develop crisis communication plans and establish multiple communication channels (e.g., community radio, mobile messaging, social media, religious networks and local leaders) to maintain awareness and service uptake during emergencies. Establish accessible and systematic community feedback mechanisms to build trust, improve responsiveness and support continuous service improvement.

Implement inclusive outreach strategies, including community mobilization, proactive identification of vulnerable and at-risk populations,¹⁶ and integration of CRVS services with health, identity management, social protection and humanitarian response programmes, to expand coverage and facilitate access during crises.

¹⁶ Example: The Philippines' BRAP/PBRAP demonstrates how proactive outreach, mobile registration and targeted engagement with marginalized and underserved populations can help to reduce persistent registration gaps and improve access to legal identity services.

5. Optimize business processes and service delivery

Institutionalize scenario-based, inclusive and people-centred planning and stress testing, while simplifying procedures and expanding decentralized service points, ensuring CRVS operations are optimized and can continue smoothly during emergencies.

Institutionalize scenario-based planning, risk assessments, simulation exercises and stress testing¹⁷ for multiple hazard scenarios, including climate-related disasters, conflict, displacement and public health emergencies.

Move beyond ad hoc flexibilities by developing, institutionalizing¹⁸ and disseminating legally endorsed SOPs covering preparedness, response, recovery and business continuity across all emergency phases.

Simplify and streamline procedures for efficiency, waive/eliminate fees and permit late registration during emergencies.

Develop, test, periodically update and legally endorse disaster-specific SOPs, business continuity procedures and streamlined end-to-end workflows,¹⁹ to ensure uninterrupted registration services during emergencies.

Expand service points through mobile brigades, schools and health facilities, to increase accessibility by expanding decentralized service points to various locations, such as mobile units, schools and health facilities.

Integrate CRVS into national and subnational contingency plans, BCPs, preparedness plans and disaster-response frameworks, including surge capacity arrangements and backlog clearance mechanisms.

Leverage social protection and other sector programmes to motivate registration.

¹⁷ *Examples:* Nepal and the Philippines demonstrate the value of regular disaster preparedness exercises and simulations in strengthening institutional readiness, coordination and service continuity during emergencies.

¹⁸ *Examples:* Ethiopia has demonstrated flexible interpretation in practice (e.g., Amhara's acceptance of witness testimonies/*Kebele* letters, one-parent presence), but it needs to formalize these. Mozambique needs to develop specific disaster-related provisions within its CRVS Code to move beyond ad hoc responses. Nepal seeks to standardize procedures for post-disaster record reconstruction and mobile registration in affected areas.

¹⁹ *Examples:* The Philippines' operational procedures and Mozambique's co-located 'one-stop-shop' service models demonstrate how streamlined workflows can maintain access to registration and legal identity services during emergencies.

Regularly review, monitor, test and improve business processes through simulations, after-action reviews and stress testing, to identify and address operational weaknesses.

Formalize MoUs and delegated operational arrangements with health workers, local government officials, community-based actors and other authorized service providers, to ensure clarity, accountability and continuity during emergencies.

6. Advance integration and interoperability

Service integration and interoperability across health, social protection, education, electoral and identity management systems strengthen continuity of services, improve data quality and enable more effective disaster preparedness, response and recovery.

Integrate birth registration with maternal, newborn and child health services.

Establish 'one-stop-shop' service points during emergencies.

Link²⁰ CRVS to social protection, education and election systems.

Accelerate full, seamless digital integration and interoperability between CRVS and national ID systems.

Formalize data-sharing agreements and SOPs for inter-agency use, while ensuring compliance with privacy and data protection requirements.

Establish and operationalize robust electronic systems for real-time data exchange between CRVS and health information systems (e.g., DHIS/HMIS) to improve vital statistics.

Use CRVS data for disaster risk assessment, planning and recovery.

Develop and scale up coordinated 'one-stop-shop' service delivery models at crisis and evacuation centres, combining critical government services, including civil registration, to simplify and expedite access for affected populations.

²⁰ Examples: Nepal's integration of VERSP-MIS with the national ID system, HMIS, immigration and social protection programmes, and the Philippines' interoperability between CRVS, PhilSys, health and social protection systems, demonstrate how integrated data systems can improve service delivery, facilitate beneficiary identification, reduce duplication and support more targeted emergency response and recovery efforts.

7. Digitalization and digitization

Digitize records, enable mobile and offline registration, and build scalable, interoperable and resilient digital systems that ensure secure data access, business continuity and uninterrupted service delivery before, during and after crises.

Digitize historical and current civil registration records to reduce reliance on paper archives and protect against data loss, destruction and inaccessibility during disasters.

Expand mobile, online and offline registration capabilities, including automated synchronization once connectivity is restored, to ensure continuity of services in remote and disaster-affected areas.

Invest in secure cloud-based, redundant and disaster-resilient data infrastructure, including off-site back-ups, disaster recovery systems and routine data quality assurance, validation and deduplication processes.

Leverage digital innovations, including mobile applications, online self-service portals, biometric registration technologies, SMS notifications and digital identity platforms, to improve accessibility, efficiency and service delivery for hard-to-reach populations.

Strengthen human capacity through continuous training on digital systems, cybersecurity, data protection, privacy safeguards, system administration and disaster recovery procedures.

Prioritize and allocate dedicated resources for the systematic digitization and secure migration of historical paper archives into interoperable digital databases, including long-term preservation, archiving and retrieval mechanisms.

Accelerate end-to-end digital transformation and interoperability between CRVS, national ID, health information, social protection, disaster management and other government systems, to enable real-time information exchange and support evidence-based decision-making during crises.

8. Data integrity, security and back-up

Establish standardized, secure, resilient and recoverable CRVS data management systems that protect data integrity, ensure business continuity and maintain access to legal identity information before, during and after crises.

Implement robust data security measures, including encryption, access controls, user authentication, audit trails and role-based permissions, to protect CRVS data from unauthorized access, misuse and cyber threats.

Institutionalize regular data cleaning, validation, deduplication and error-checking procedures, to improve data quality, accuracy and reliability.

Establish and regularly test geographically distributed back-up and disaster recovery systems, including cloud-based, off-site and redundant storage arrangements, to safeguard records against disasters and system failures.

Strengthen and enforce legal and operational safeguards for personal data protection, privacy and secure data sharing, in particular during emergencies and recovery operations.

Use appropriately disaggregated data to identify underserved and vulnerable populations, support equitable service delivery and address coverage gaps, while ensuring privacy, protection and non-discrimination.

Conduct regular privacy, cybersecurity, vulnerability and disaster-recovery assessments, to identify risks and strengthen preparedness.

Develop and routinely test business continuity and disaster recovery procedures for both digital systems and physical records, to ensure rapid restoration of services following disruptions.



Section 4: Conclusions

The imperative to strengthen CRVS systems has never been more urgent. The experiences of Ethiopia, Mozambique, Nepal, Papua New Guinea and the Philippines demonstrate that CRVS systems are far more than administrative functions; they are foundational to legal identity, human rights, social protection, public health, disaster response and effective governance. Although these countries differ in CRVS maturity, institutional capacity, geography and exposure to climate-related risks, the findings point to a common conclusion: resilient CRVS systems are essential for protecting populations and maintaining service continuity during crises.

In all five countries studied, significant progress has been made through legal reforms, decentralization and digital transformation. The Philippines and Nepal have achieved comparatively high registration coverage and advanced interoperability between CRVS, national ID, health and social protection systems, demonstrating the transformative potential of integrated digital ecosystems. Mozambique's e-SiRCEV platform and Papua New Guinea's CIR Act 2024 reflect strong commitments to modernizing CRVS systems, while Ethiopia's efforts to decentralize services and expand access through local structures have improved service delivery in underserved areas. Collectively, these reforms illustrate growing recognition of CRVS as a strategic public service and a critical component of national resilience.

At the same time, climate-related disasters, displacement, conflict and other humanitarian crises continue to expose systemic vulnerabilities. Infrastructure damage, lost records, disrupted connectivity, population movements and constrained institutional capacity undermine both the supply of registration services and people's ability to access them. The case studies show that even the most advanced systems remain vulnerable to increasingly frequent and severe shocks. Building resilience therefore requires more than technological modernization; it demands sustained investment in legal frameworks, governance, human resources, community engagement, business continuity and disaster preparedness.

The findings highlight five strategic priorities for strengthening climate-resilient CRVS systems.

- **Strengthening legal and governance frameworks** that recognize CRVS as an essential public service, integrate CRVS into disaster management systems and provide flexible, disaster-responsive procedures for registration and document replacement.
- **Investing in resilient infrastructure, sustainable financing and workforce preparedness**, to ensure continuity of operations during emergencies and accelerate recovery afterwards.
- **Accelerating digital transformation**, including digitization of records, secure and geographically dispersed back-up systems, mobile registration capabilities and disaster recovery mechanisms.
- **Deepening interoperability and cross-sector integration** with national ID, health, social protection, education, and disaster management systems, to improve service delivery, data sharing and evidence-based decision-making.
- **Promoting inclusive, community-centred approaches** that leverage local networks, strengthen trust, and ensure that vulnerable and disaster-affected populations can access registration and legal identity services.

Climate-related disasters increasingly function as stress tests for CRVS systems, revealing weaknesses while also creating opportunities for reform. Repeated shocks can erode public trust when records are lost, services are disrupted, or recovery is delayed. Conversely, targeted investments have demonstrably strengthened resilience. After Typhoon Haiyan, the Philippines significantly expanded its digitalization and disaster recovery capabilities, helping to secure more than 197 million civil registration records and enabling rapid service restoration. Nepal's VERSP-MIS now supports online registration across most local governments, while Mozambique's digital reforms and mobile outreach mechanisms have improved service continuity in disaster-affected areas. Papua New Guinea's mobile registration model demonstrates the value of flexible service delivery for remote and crisis-affected populations, and Ethiopia's experience highlights the importance of adaptable legal and operational mechanisms, including mobile registration, delegated authority and fee waivers for vulnerable groups.

The reform agenda emerging from these case studies reflects a growing shift from reactive crisis management towards proactive, adaptive and anticipatory resilience. Initiatives such as the Philippines' proposed Omnibus CRVS Bill, Nepal's National ID and Civil Registration Act (2020), Mozambique's ongoing modernization efforts, and Papua New Guinea's Civil and Identity Registration Act (2024) seek to strengthen flexibility, interoperability, inclusiveness and preparedness. However, continued investment will be essential. Building resilient CRVS systems requires sustained commitment to digitalization, disaster preparedness, contingency financing, interoperable data systems and culturally responsive service delivery.

Ultimately, strengthening CRVS resilience is about safeguarding legal identity and ensuring that no child, woman or man becomes invisible during times of crisis. By institutionalizing good practices, addressing persistent vulnerabilities and embedding resilience across all dimensions of CRVS systems, countries can build robust, adaptive and future-ready systems that protect rights, support recovery and advance sustainable development in an increasingly climate-affected world.

4.1 Essential competencies promoting resilient CRVS systems

The case study of CRVS systems in five countries highlights the essential role of various competencies in building resilience, especially during climate-induced disasters and humanitarian crises. We found that systems with proactive preparedness, decentralized service models, and robust digital and legal infrastructure are more likely to keep operating during and after disasters. Countries rated as 'highly/fully functional' in multiple resilience areas recover services faster, reduce data loss and lower exclusion risks through pre-established SOPs, back-up systems and strong local governance. Conversely, countries lacking disaster-specific legal frameworks, contingency budgets and mobile service capacity experienced slower recovery and higher rates of unregistered events. The synthesis also shows that the experiences of these five countries collectively support the expanded set of 7 CRVS system dimensions and 11 competencies. The original Framework for Resilient CRVS Systems (Fruchtman et al., 2021) was adapted to fit the purpose of this study, showcasing how each competency contributes to building more resilient, inclusive and effective CRVS systems in challenging contexts, as follows.

Agile: CRVS systems' ability to handle rapid-onset/slow-onset emergencies and disruptions.

Systems' ability to actively embrace change and adapt quickly to new situations through transforming operations and responding flexibly to changing situations. This includes agile governance, flexible operational modalities (e.g., digitalization allowing remote registration), decentralization and involving communities in planning, response and recovery planning.

Efficient: Maximizing registration outputs (both quantity and quality of registration) through digitalization, system integration (with national ID, health, social protection, education), utilizing existing local and community networks, and consistent feedback loops to optimize resource allocation during emergencies.

Essential: Maintaining CRVS as a free, universal and prioritized essential service, especially during emergencies, with adequate resources and contingency plans for re-issuance of documents. Building awareness and consensus on the benefits of CRVS data (e.g., real-time population data for development and response planning, facilitating access to services and documentation by vulnerable populations), and developing and allocating adequate resources for contingency plans, preparedness activities, response and recovery. In the immediate aftermath of a disaster, prioritizing the re-issuance of essential documents to enable access to critical services is crucial. For disaster management stakeholders, it is crucial to prioritize that CRVS services are by law and in practice provided as essential services.

Inclusive: Promoting people-centred, community-based participatory approaches to meet community needs, empowering communities in outreach, identifying target groups and facilitating registration service access. There should be community involvement in the outreach programme design, identification of target groups, preparedness planning, effective disaster response and recovery, including the verification of identity documents. This participatory approach also fosters trust and ownership within communities, enhancing the sustainability and long-term impact of birth registration efforts.

Integrated: Requiring high levels of integration, coordination and data sharing among government agencies at all levels, non-state actors and across national borders. Also, integration within communities to ensure that beneficiaries seek services. This will improve efficiency, increase accessibility of services, enhance data quality and long-term sustainability.

Responsive: Focusing on addressing the needs of vulnerable groups, dealing with underlying societal/cultural factors, engaging communities pre/during/post emergencies, supporting service providers and building strong trust relationships. Responding to the needs and expectations of beneficiaries, with particular attention to vulnerable groups and hard-to-reach populations. Engaging communities and raising awareness about the services pre/during/post emergencies. Supporting service providers during and after disasters. Providing training on disaster preparedness, response and recovery, including skills in data management, first aid, and psychosocial and trauma care support. Strong, trusting relationships between registrars and communities are crucial.

Robustness: Implementing emergency preparedness and response plans, ensuring shock absorption, business continuity, reserve capacity and resource flexibility (financial, human, system), data back-up/security, off-site storage and disaster recovery to ensure the continuity of services.

Flexible: (Similar to and often used interchangeably with ‘agile’, but different.) Adjusting to changing circumstances while generally maintaining the current system. Adapting within existing constraints using (pre-)existing systems to make them accessible to affected populations. Formalizing temporary registration or alternative measures in emergencies. An effective and adaptable civil registration system can incorporate flexibility in its processes, enabling registration practices to adapt to the specific population they serve, ensuring that registration remains accessible and responsive, even in challenging circumstances (ESCAP, 2024c).

“In the aftermath of a disaster, CRVS systems may have to function at a level that is ‘good enough’ to ensure the urgent reissue of lost or damaged identity credentials to ensure individuals can access services and benefits; with a gradual shift to recovery and reconstruction and ‘gold standard’ operating procedures.” – Pacific Civil Registrars Network (PCRN, 2023)

Proactive: Proactive adaptation; integrating climate change scenarios into CRVS legislative reviews, strategy/policy development and disaster preparedness/response planning, addressing both short- and long-term changes (UN Economic Commission for Africa, 2024).

Anticipate: “Assess disaster risks (short and longer term, cumulative effects of a combination of various disasters scenarios) and prioritize. Process of ‘horizon scanning’ to identify potential dangers, registering those in a formal typology and recognition of the changing nature of risks that need to be continually identified and re-assessed.” (Rogers, 2011)

Transformative: “The capacity to create a fundamentally new system when ecological, economic, or social (including political) conditions make the existing system untenable.” (Walker et al., 2004)

Acronyms

APAI CRVS	Africa Programme on Accelerated Improvement of CRVS
API	Application programming interface
BARMM	Bangsamoro Autonomous Region in Muslim Mindanao
BCP	Business continuity plan
BRMS	Birth Registration Management System
CBPP	Census-Based Population Projections
CCMIS	Centralized Citizen Management Information System
CRS-ITP	Civil Registry System, Information Technology Project
CRVS	Civil Registration and Vital Statistics
DHIS	District Health Information System
DRMS	Death Registration Management System
DRR	Disaster risk reduction
DRRM	Disaster risk reduction and management
FCHV	Female community health volunteer
GIDA	Geographically Isolated and Disadvantaged Area
GITEV	Inter-institutional Working Group on CRVS (Grupo Interinstitucional de Trabalho em Estatísticas Vitais)
HMIS	Health Management Information System
ICS	Immigration and Citizenship Service
IDMC	Internal Displacement Monitoring Centre
IDP	Internally displaced person
INGD	National Institute for Disaster Risk Management and Reduction (Instituto Nacional de Gestão e Redução do Riscos de Desastres)
LCRO	Local Civil Registry Office
LGU	Local Government Unit
MIS	Management Information System
MoU	Memorandum of understanding
NSO	National Statistics Office
NUIC	National Unique Identification Code
PNGCIR	Papua New Guinea Civil Identity and Registry
PPP	Public-private partnership
PSA	Philippine Statistics Authority

RA	Republic Act
SiRCEV	CRVS System (Sistema de Registo Civil e Estatísticas Vitais)
SOP	Standard operating procedure
SSSPCR	Strengthening Social Security and Protection for Children
VERSP-MIS	Vital Events Registration and Social Protection MIS

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Appendices

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Data tables

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Appendix B: Glossary of terms

Terms	Definitions
Birth certificate	A vital record, issued by the civil registrar, that documents the birth of a child. Because it is a certified extract from the birth registration record, it proves that registration has occurred – making this document the first, and often only, proof of legal identity, in particular for children.
Certification	“The issuance by the civil registrar of a legal document certifying a vital event.” (AbouZahr et al., 2021).
Civil registrars	The officials authorized by law to carry out the registration of vital events, including births, within a well-defined area (such as a country or district), and to record and report information on those vital events for legal and statistical purposes.
Civil registration	“The continuous, permanent, compulsory and universal recording of the occurrence and characteristics of vital events pertaining to the population, as provided through decree or regulation in accordance with the legal requirements in each country.” (United Nations, 2014)
Compilation of vital statistics	The process of aggregating and summarizing information on vital events by classifying and tabulating the data within categories or groups to produce vital statistics according to a predetermined tabulation programme.
Dissemination	Timely publication of an annual national vital statistics report on births and deaths disaggregated by age, sex and subnational region, including numbers, completeness (coverage) rates, fertility and mortality levels and trends, and distribution of leading causes of death, in a public repository accessible to the different users.
Generation of unique identifiers	Individual identifying markers to facilitate the retrieval of records and sharing of data between databases and systems.
Generation of vital statistics	Activities whereby national or regional vital statistics are produced (excluding the production of reports for administrative purposes).
Legal identity	Operationally defined as the basic characteristics comprising an individual’s identity, including name, sex and date of birth. The primary vehicle for obtaining a legal identity is through the birth registration process.

Notification	“The capture and onward transmission of minimum essential information on a vital event by a designated informant, using a CRVS authorized notification form (paper or electronic), with that transmission of information being sufficient to support civil registration and certification of the vital event.” (AbouZahr et al., 2021)
Quality control	The standardized systematic set of controls and checks to assess the quality of vital statistics.
Registration	“The act of registering a vital event at a civil registration office. At this point, details of the event are entered into the official civil register by the registrar.” (AbouZahr et al., 2021)
Sharing information	Activities in which certain information items pertaining to an individual event are shared with other government systems (e.g., population register, electoral register, national ID).
Storage and archiving	The process whereby individual registration information is stored either digitally or on paper and incorporated into the permanent archives, so that copies of certificates can be retrieved as required.
Validation	The act by which a relevant authority validates all necessary documentation to prove the vital event information, so that the registration process can continue.

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