National Disaster Risk Reduction Strategy

(2023- 2030)

Second edition

المركز الوطني للأمن وإدارة الأزمات

UNDP

UNDRR

From
the People of Japan

The Hashemite Kingdom of Jordan

National
Disaster Risk Reduction Strategy

Second edition (2023- 2030)

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The National Center for Security and Crises Management

Today, the world is facing natural disaster risks that have increased in recent decades posing a real threat at all national, regional and international levels. They are no longer threatening life at present but also a reality that threatens future generations with their increasing dangers and impacts day by day on the life of citizens, natural resources and infrastructure.

In recent years, the world has faced an unprecedented threat in the modern age. The COVID-19 pandemic rapidly spread all over the world causing humanitarian crises and loss of life and disrupting normal life. Moreover, the global economy was at risk and the global health systems were overburdened and under high pressure, threatening the public health of societies and people.

We in the Hashemite Kingdom of Jordan are committed to keeping pace with modernization and development in line with national programmes and plans. Thus, all state institutions worked under one legislative umbrella as a team to address the disaster risks and crises so as to achieve sustainable development.

The National Center for Security and Crises Management (NCSCM), which is the national entity (umbrella) that manages crises and disasters, has institutionalized, coordinated and consolidated national efforts with participation of state institutions in order to update the National Disaster Risk Reduction Strategy in Jordan (2023-2030) – by formulating and developing the second edition that complements the first edition of the Strategy (2019-2022)- in coordination with all partners.

The development and updating of the Strategy is the result of continuous cooperation and significant efforts of the participants and those in charge who linked it to the first Strategy which has been a main reference to reach a common understanding of disasters and crises, evaluate risk reduction systems and build national capacities.

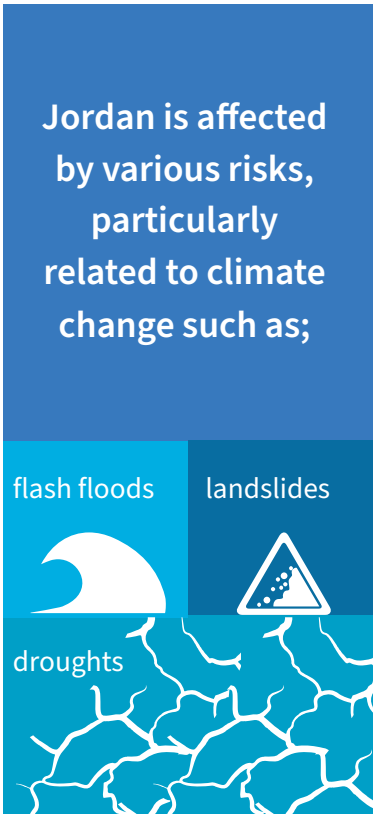
Recognizing the development objectives and priorities in Jordan, the Strategy aims to achieve a number of objectives, the most important of which are developing main disaster risk reduction arrangements and guidelines, raising awareness and knowledge of institutions and individuals, endorsing the legal and institutional foundations for effective planning and implementation, and contributing to incorporating disaster risk reduction into development policies and programmes.

With this constructive participatory effort in the service of humanity, we at the National Center for Security and Crises Management (NCSCM) introduce the second National Disaster Risk Reduction Strategy. We extend our sincere gratitude to everyone who contributed to its development, provision of information and data, as well as participated in enriching the meaningful scientific discussions during the consultative meetings held for this purpose.

Ali bin Al-Hussein
Chairman of the National Center for Security and Crises Management (NCSCM)

Foreword

Disasters are increasing worldwide, bringing about catastrophic impacts that make it difficult for countries to achieve their development goals while safeguarding the well-being of their citizens and meeting their basic needs. These complex disasters, which result from various risks, occur concurrently, and with increased frequency and severity more than ever. As per global statistics, while the number of disasters around the world doubles in number, the average number of disasters related to natural hazards in the region is increasingly doubling. In the Middle East region and in Northern Africa, the increased exposure and vulnerability to natural hazards, in addition to accelerated urban growth, water scarcity, and climate change, collectively act as serious challenges to policies, planning, and development.



Jordan is affected by various risks, particularly related to climate change (such as flash floods, landslides, and droughts), which are becoming more frequent, causing loss of life and property, and costing millions of economic damages each year in different regions. Since these risks clearly have a significant adverse impact on the economy, as well as on the people, Disaster Risk Reduction (DRR) has become a national priority. Additionally, the nature, prevalence and cost of disasters require mainstreaming DRR at the national and local levels. DRR strategies and activities contribute to mitigating disaster risks and adverse impacts, in addition to achieving sustainable development, and alleviating poverty by facilitating the integration of DRR into development.

This strategy is a roadmap aimed to reach a shared understanding of prevalent disaster risks, and evaluate the current DRR system and its ability to achieve DRR objectives endorsed by the National Center for Security and Crises Management (NCSCM) that coordinates all national efforts in this area supported by national consultations with all the national stakeholders.

Strategy Rationale

This strategy is guided by Jordan's development objectives and priorities, and specifically aims to achieve the following objectives:

- Establishing basic arrangements and guidance for DRR in Jordan;
- Increasing awareness and knowledge of DRR methods and opportunities;
- Endorsement of the legal and institutional foundations for effective planning and implementation of DRR mechanisms;
- Contributing to mainstreaming DRR in development policies, programmes and projects;
- Monitoring the operationalization of public and private sector cooperation in DRR;
- Contributing to local community resilience to disaster threats and impacts;
- Enhancing risk management capacities;
- Creating safe and resilient communities in the face of disasters.

Summary of National Objectives

as per MOPIC Strategic Plan 2020-2022

The strategic plan of the Ministry of Planning and International Cooperation (MOPIC) counts with the following overall objectives:

Achieving **sustainable growth** rates to ensure a good standard of living for all citizens.

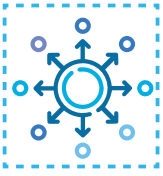
Creating **an investment environment** capable of attracting foreign capital and encouraging domestic investments.

Maintaining financial and monetary stability, balancing the fiscal deficit, and **building an efficient and low-risk financial system**.

Reducing poverty and unemployment, and building an effective social protection system.

Improving the level of services provided to citizens, and achieving equity in their distribution.

Building a generation capable of **creativity and innovation** with high productivity.



Achieving **development balance** among governorates in the light of decentralization.

Improving **the efficiency of the judicial system**, and reinforcing its independence and integrity.

Strategy Summary

Vision, Mission, Strategic Objectives and Relevance to the priorities of the Sendai Framework for DRR 2015-2030

Vision: Strengthening Jordan's Resilience.

Mission: Risk reduction and boosting resilience, through coordinated and integrated participatory efforts that involve all stakeholders, in addition to the optimal use of resources with respect to prevention, preparedness, response and recovery.

Strategic Objectives – linking them to Sendai Framework priorities

1

Improving the legal and institutional basis for DRR (priority 2 of the Sendai Framework).

2

Raising awareness of DRR and opportunities **through information sharing, strategic partnerships**, education and training (priority 4).

3

Promoting and supporting scientific research on disaster and crisis risk assessment and reduction, forecasting and strengthening linkages between science, policies, and management (priority 1 & 4).

4

Sustaining coordination and **promoting collaboration among stakeholders**, including women and youth sectors, and vulnerable groups, to sustain DRR activities (priority 2).

5

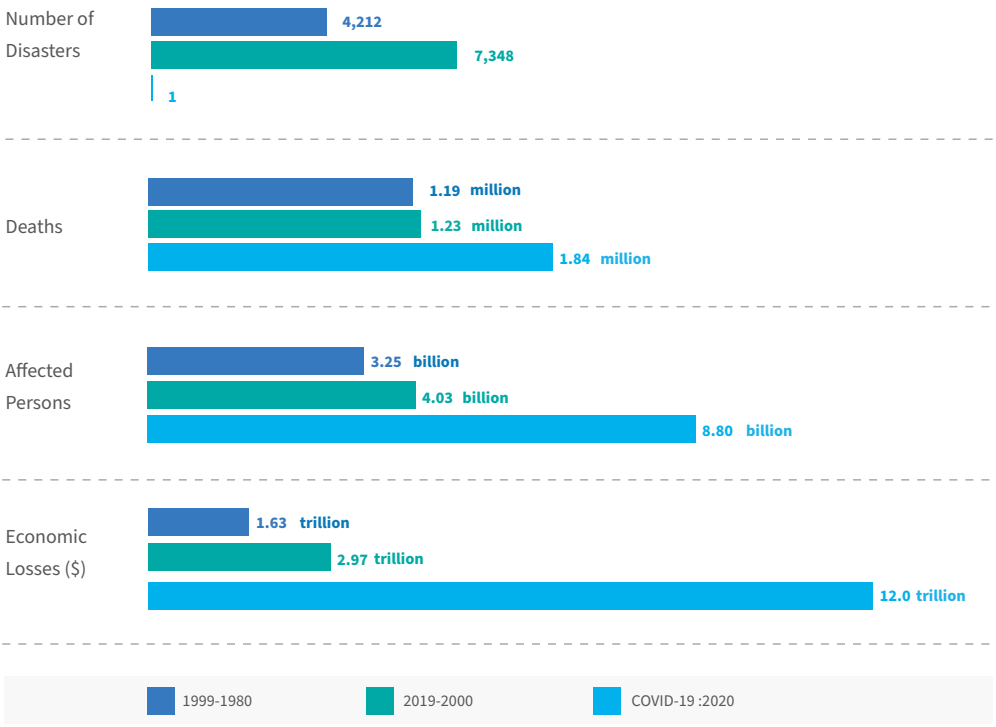
Integrate DRR and crises management concepts within relevant national strategies, policies and priorities, such as climate change, water, agriculture, and sustainable development plans and programmes (priority 2 & 3).

Overall description of risks and trends, globally, regionally and nationally

Global statistics (EM-DAT, Worldmeters, and World Bank) show that losses caused by risks have increased significantly over the past two decades (2000-2019), much more than during the years (1980-1999). This increase is related to the number of disasters, deaths, affected persons, and economic losses. Underlying factors are the increasing population that has led to an increase in urbanization, thus leading to increased exposure to risks and increased vulnerability. On the other hand, the coping capacity was not commensurate with the increased impact of these factors.

The Sendai Framework for Disaster Risk Reduction 2015-2030 in this area focuses on paying attention to a set of recommendations that need to be taken into consideration and that could attenuate the increase in such losses. For example, the Sendai Framework points out that more attention needs to be paid to systemic and emerging (e.g. biological and cyber) risks, and to the impact of climate change on increased vulnerability. It also points out the concept of risk assessment and risk management as part of a comprehensive approach, and that the impact of risks will not stop at the borders of a state or a territory. Therefore, the responsibility to deal with risks should be a national and international responsibility. The lack of proper attention to these recommendations has led the world to be taken aback by the magnitude of the biological hazard (novel coronavirus COVID-19 pandemic), as the numbers indicate in the figure 1 below. This disaster alone, and within just one year, resulted in greater losses than the total disaster losses over the past 40 years. The damage was not confined to a specific region, but has swept across the entire world.

Figure 1: Number of disasters globally, and the description of losses since 1980
(according to various sources, including EM-DAT, Worldmeters, and World Bank)



Statistics and figures also indicate the increased impacts of risks (in terms of numbers and losses) in our regional environment in general, which are due to increased exposure and high vulnerability. This happens due to their correlation with rapid and unplanned urbanization, water scarcity, the increased impact of climate change, the challenges that come with implementing sound policies and proactive planning, as well as conflicts and wars that strain infrastructure, increase poverty, and deteriorate food security.

Jordan, being one of the countries in the region, has been affected by these factors. Moreover, the implications of refugees, particularly from Syria, have aggravated these impacts, as Jordan is affected by many types of risks. Risks related to climate change (flash floods, landslides, and drought) have become more frequent and severe events, causing loss of lives and costing millions of economic losses each year in different parts of the Kingdom. The floods that hit Jordan in 2018, which killed 35 people, may be evidence of the magnitude of these losses.

For more details on risks and exposure vulnerability in Jordan, see Annex-2.

Risks related to climate change have become more frequent and severe events, causing loss of lives and costing millions of economic losses each year in different parts of the Kingdom.

Key challenges and gaps to be addressed

(as per Sendai Framework for DRR)

Clearly, there is a lack of common vision for disaster risk reduction and management (such as the goals and objectives agreed upon across different sectors and levels to meet Jordan's commitment to the Sendai Framework, and therefore to meet the Sustainable Development Goals). Below, there is a review of some of the challenges and gaps that need to be addressed, in accordance with the priorities of the Sendai Framework.

Priority 1: Understanding disaster risks

- Lack of accessibility to comprehensive information on risks by decision-makers.
- The dispersion and fragmentation of information between climate and disaster data; between humanitarian and development data, as well as among different sectors and ministries, and among the national and municipal levels.
- Lack of appropriate access to disaster risk information by ministries, municipalities, as well as by the private sector and citizens in general.

Priority 2: Strengthening disaster risk reduction governance for resilience

- Jordan's legislative and political framework for disaster risk management remains incomplete.
- Overlapping and lack of clarity in defining roles and responsibilities among institutions at the central and local levels.
- There is no effective mechanism to ensure coordination of disaster risk management activities among sectors and among the central and local levels.

Priority 3: Investing in disaster risk reduction for resilience

- The lack of a concordant and consistent planning framework for the sectors and levels supported by the spatial and urban planning strategies.
- Lack of technical skills and difficulty in accessing information to integrate risk reduction management into national and local plans.
- Lack of technical capacity to integrate measures to reduce exposure to earthquakes and flash floods in construction/housing investment plans.

- Weak capacity to enforce existing instructions.
- Lack of an information management system to share risk information within the water, agriculture, and environment sectors.
- Lack of technical skills to produce, use and apply risk information.

Priority 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

- Disaster response responsibilities are centralized and focused.
- Early warning capacity is limited and there is no integrated early warning system for slow and rapid disasters.
- Lack of use of risk and hazard assessment for appropriate preparedness purposes.
- Insufficient information management and analysis skills across disaster risk management structures; e.g., many data are not updated regularly or with an appropriate mechanism.
- There are a lot of data and information in different ministries and at all levels, but are not systematically shared on a specific basis, nor is there appropriate use or application of them.
- Absence of a legislation on information management, data, and communication protocols in DRR and management.
- Lack of a specified budget for response and recovery at national and local levels.

Analysis of Strengths, Weaknesses, Opportunities and Threats of DRR system

Strengths

- High institutional capacity for disaster response, of civil defense, armed forces, and royal medical services.
- Distinct individual capacity in important topics, such as risk assessment and strategic planning, among others. State-of-the-art academic and research institutions, such as the University of Jordan, Jordan University of Science and Technology, and the Royal Scientific Society.
- Political will to work hard on DRR and related topics, such as climate change and sustainable development.

Opportunities

- Growing global attention on disaster risk reduction and related topics, such as climate change, sustainable development and other topics.
- Availability of international financial support (international donors and international cooperation organizations) to invest in DRR.

Weaknesses

- Lack of a comprehensive and complete legislative and political framework for disaster risk management in Jordan.
- Absence of an effective mechanism to ensure coordination of disaster risk management activities between sectors, and between central and local levels.
- Weak capacity to enforce existing DRR instructions and systems.
- Lack of a specified budget for national and local prevention/ risk reduction, response and recovery.
- Overlapping and lack of clarity in defining roles and responsibilities among institutions at the central and local levels.
- Lack of adequate access to disaster risk information by ministries and municipalities, as well as by the private sector and citizens in general.
- Weak infrastructure and limited resources for its maintenance and modernization.
- Implications and impacts of the refugee crises in general; Syrian refugees in particular.

Threats

- Emerging risks, such as biological risks and cyber threats.
- Armed conflicts and political instability in the region.
- Global environmental degradation and its direct impact on the region and Jordan in particular.
- Global financial crises, and their direct impact on increasing poverty and unemployment.

Aligning the National DRR Strategy with national priorities, strategies and policies

The following are national priorities, strategies, and policies that the National Disaster Risk Reduction Strategy 2022-2030 aligns with.

Economic Modernization Vision

The Economic Modernisation Vision, which was launched mid-2022, is the most recent paper that establishes the framework for an inclusive national vision for all sectors. It has two strategic pillars: Accelerated growth by unleashing the full economic potential and improving the quality of life for all citizens. Sustainability is a cornerstone of this future vision.

This vision is based on Jordan's resilience that has been maintained despite the challenges facing it in the past years; for example, the impacts of the global financial crisis, the Syrian crisis, which resulted in waves of refugees that burdened Jordan, the COVID-19 pandemic, and the Russia-Ukraine crisis that led to disrupted supply chains and a food crisis.

The focus on disaster risk reduction took an important part in the discussions that accompanied the development of this paper, as it is one of the topics that intersects with the eight drivers of economic growth that have been proposed in the implementation of this vision.

Jordan Vision 2025

Jordan Vision 2025 charts the way forward and outlines the integrated general framework that will govern economic and social policies based on opportunity for all. Key principles include strengthening the rule of law, equal opportunity, greater participatory policy formulation, achieving financial sustainability, and institutional strengthening. To accomplish this, it is essential to upgrade infrastructure, raise education and health levels, as well as enhance the role of the private sector and civil society institutions to contribute to the development process. Based on these principles, the Jordan Vision 2025 proposes a roadmap for the future that requires broad consensus in the society on the milestones and roles of all stakeholders in the economy, primarily the private sector, which should play a prominent role in achieving the objectives. The government should also provide the enabling environment to that

end. The Jordan Vision 2025 also argues that success in achieving its goalsimplementing its policies requires a commitment from citizens, government, the private sector, and civil society, translating the “Active Citizenship”-slogan referred to by His Majesty in his discussion papers.

The central objective of the Jordan Vision 2025

is to improve and ensure the safety of citizens, and to ensure continued delivery of basic services. In fact, this also is the primary goal of DRR, which protects people, property, and the environment at all times (especially in the manifestation of potential risks).

The criteria for transforming the development model in the Jordan Vision 2025 include legal and ethical accountability, equality of opportunity, a culture of active citizenship, replication of the best global practices, and sustainable and comprehensive growth. All of these standards have been considered as a reference for achieving national strategic goals for DRR.

The Jordan Vision 2025 analyzes various national sectoral challenges under four key pillars:

This is largely in line with the analysis shown by the National Disaster Risk Reduction Strategy to achieve its strategic objectives. The Jordan Vision 2025, on many occasions, emphasizes various aspects of DRR, such as food, energy, water security, environmental protection,

good governance, decentralization, and other related topics. For example, the Jordan Vision 2025 specifically emphasizes:

Strengthening local partnership between government agencies, municipalities, civil society institutions, and the private sector to promote local development.

Empowering municipalities in the areas of planning and development, as well as improving and ensuring the quality of their services in order to play their role in development.

Promoting respect for vulnerable people and supporting people with special needs to participate in all activities of society.

Mitigating the adverse impacts of environmental changes on humans.

Raising public awareness on environmental protection.

Improving institutional efficiency in the environment sector.

Jordan's National Climate Change Policy 2022-2050

Climate change is expected to increase the frequency and intensity of certain types of hazardous events in the country (such as flash floods, extreme temperatures, and drought). Climate change is likely to have a significant impact on people's vulnerability. There is considerable uncertainty about the risks and impacts of future climate change, as climate change may generate new threats that Jordan and its population have no experience with.

Development, DRR, and adaptation to climate change include common areas that create a synergy between policy, strategy, and action. The key challenge is achieving this convergence at the conceptual, strategic, and operational levels. DRR and climate change adaptation goals have common and overlapping objectives. They share the goal of mitigating the impacts of shocks by anticipating risks and addressing vulnerabilities.

The high-level strategic guidance under the National Climate Change Policy 2022-2050 aims to enhance the development of strategies, plans and processes to address cross-cutting and emerging issues that may either provide opportunities, such as disaster risk management or act as additional stresses like urban migration, and the refugees situation. The National Climate Change Policy also emphasizes that Jordan's aspirations for sustainable development face many challenges associated with water scarcity, rapid population growth and urbanization, high unemployment rates, forced displacement and migration, limited economic resources, ongoing regional conflicts, and low levels of technology adoption, as well as natural hazards (such as earthquakes, land degradation, floods, landslides, and frequent droughts), many of which are exacerbated by climate variability. Individuals, families, and communities are also vulnerable to extended losses of assets and livelihoods, which is expected to worsen with climate change.

The adaptation policies and actions identified by the National Climate Change Policy 2022-2050 clearly support the adaptation policy statement on reducing vulnerability, and increasing resilience to climate change impacts and climate variability in a proactive manner. The cornerstone of the proposed policies and actions is to take into account gender, children, youth, and vulnerable groups. For example, the National Climate Change Policy 2021-2050 calls for better preparedness to reduce the risk of climate-related disasters in urban areas and to mitigate the impact of extreme weather events on urban livelihoods (measures include mapping and continuous surveillance of all critical habitats, including the presence of species that can serve as vectors for zoonotic diseases).

With regard to enablers or drivers of change for the implementation of adaptation and mitigation policies and actions, the national climate change policy called for the urgent modernization of other relevant sectoral government policies, legislation, strategies and action plans, to impose detailed assessments of vulnerability to climate change (including climate variability and natural hazards).

National Water Strategy of Jordan 2016–2025

Jordan views water as a core element of socio-economic and political issues affecting agriculture, energy, cities, trade, finance, and national security. The National Water Strategy of Jordan (2016-2025) identifies steps to ensure a sustainable future for the water sector in Jordan. This strategy clearly links the issue of water to national security with DRR; for example: It identifies drought as a challenge, while the National Disaster Risk Reduction Strategy considers it one of the main national risks. Both strategies concur with the need to address drought management and adaptation to climate change through appropriate policies and systems in an integrated manner. The following are some other examples for the links:

The current volatile and insecure regional situation has led the Ministry of Water and Irrigation to adopt and implement the water resources protection plan effectively. The plan aims to strengthen and protect water resources from risks, including terrorist acts. Security measures will be implemented at three levels: Introducing surveillance and warning systems, and safety and security capabilities for administrative, technical, and infrastructure groups, to increase security.

The rapid and accelerated influx of Syrian refugees has increased the burden on infrastructure and systems capacity for resilience.

These efforts will be an integral part of the national security plans, and will be coordinated and implemented with the engagement of Jordan's security organizations and authorities. Risk information will be shared with the designated authorities. The scope of the plan will include all water bodies and infrastructure, including dams, reservoirs, transportation and distribution systems, pumping stations, wells, water treatment facilities, wastewater treatment plants, as well as administrative buildings. The government will continuously monitor surface and groundwater quality and quantity and the impact of potential pollution activities, and will initiate corrective measures to reduce pollution risks by establishing and expanding protection zones for both surface and groundwater.

The rapid and accelerated influx of Syrian refugees has increased the burden on infrastructure and systems capacity for resilience. The government has developed a multi-sectoral Jordan Response Plan (JRP) to respond to the influx of refugees and enhance resilience in hosting communities. There is an urgent need for public investment in sectors under significant stress, including but not limited to education, health, water and sanitation, energy, and municipal services.

Exposure to climate change, water shortages, and economic and security risks prevalent in the region, which directly affect the quality of life in the country, have increased as a result of conflicts in neighboring countries. It has also placed an additional burden on Jordan for having to host and provide basic needs, especially water, for displaced persons.

These challenges require that Jordan is deemed ready to deal with disaster risks by systematically addressing risks on the right time and protecting its population from shocks

and adverse consequences of disasters and conflicts. Given the scale and complexity of the humanitarian crisisin the region, and its direct and harmful impact on Jordanians with regard to water and sanitation, the Ministry of Water and Irrigation will streamline sectoral coordination mechanisms. This will improve the use of resources for citizens within the Jordanian borders affected by the crisis.

Preparedness and response to natural hazards, such as extreme weather conditions, floods, as well as external and internal conflicts will be part of this water strategy. The Ministry of Water and Irrigation should consider an advanced human response plan for health, sanitation and hygiene at the national level.

Jordan's Way to Sustainable Development

First National Voluntary Review on the Implementation of the 2030 Agenda

The Sendai Framework plays an important role in the implementation and achievement of the 2030 Agenda for Sustainable Development, and vice versa. Both have the ability to shape the efforts of the public and private sectors and build partnerships to address the underlying primary drivers of risks, and future risk and resilience levels, if implementation is consistent. Furthermore, the ongoing discussions to develop the indicator framework for both the outcome document and the Sendai Framework should be coherent, to ensure and demonstrate how progress and achievements can contribute to each other.

In 2016, the government of Jordan presented its roadmap with the objective of creating partnership, ownership, and implementation of the 2030 Agenda for Sustainable Development. The roadmap includes multiple action points covering several topics. It also clearly supports most of the proposed priorities and actions for DRR and its management, which are outlined in this strategy.

Examples of such measures include:

Raising awareness of the 2030 Agenda, its objectives, targets, indicators and means of implementation, with a view to enhancing national ownership of the agenda and advocating for its objectives.

Ensuring alignment of objectives, targets and indicators with national policy and planning frameworks. This requires aligning the Sustainable Development Goals, and the objectives and indicators with those contained in the Jordan Vision 2025, as well as with the objectives, policies, initiatives, and indicators of executive development programs, which form the country's national plan for the coming years.

Incorporating and mainstreaming the Sustainable Development Goals into national development plans and planning frameworks, thus ensuring their implementation in order of priority.

Incorporating and mainstreaming of the Sustainable Development Goals in local plans.

Developing capacity and technical support in all areas related to the 2030 Agenda, including the mainstreaming of the Sustainable Development Goals, as well as targets and indicators on the national and local levels, alongside monitoring and evaluation.

Mainstreaming the gender perspective by linking it to the Sustainable Development Goals, along with current and future strategic planning and national strategies, in addition to identifying the detailed indicators needed to monitor progress.

Continuing to enhance institutional mechanisms, and build on existing policy and framework structures, to coordinate and implement the Jordan Vision 2025.

Enhancing national statistical systems and data availability, providing technical and financial support to the Department of Statistics, and working to improve and enhance the quality of available data.

Financing through internal and external sources.

Assessment of National and Local Capacity in Disaster Risk Management in Jordan, 2017 (CADRI Report)

In response to the request of the United Nations Resident Coordinator in Jordan to the Capacity for Disaster Reduction Initiative (CADRI).The CADRI partnership organized a reconnaissance mission to Jordan from 24-26 October 2016. Its objective was to identify the scope, thematic focus, method and timeline for participation in the CADRI partnership in Jordan. The CADRI partnership mission was carried out in collaboration with the United Nations International Strategy for Disaster Reduction (UNISDR) to achieve the following objectives:

- Facilitating a comprehensive multi-sectoral analysis of the capacities, needs and loopholes in Jordan's disaster risk management system, through extensive interviews, meetings and discussions at the national and local levels, as well as carrying out field visits to several locations.
- Conducting a risk information survey with the government and partners.
- Giving recommendations for capacity strengthening in areas identified as requiring adaptation/support.

One of the main recommendations of CADRI's mission was "developing a comprehensive national strategy for disaster risk reduction." Specific recommendations have been identified to develop this strategy:

- The comprehensive DRR strategy should be designed through a series of participatory and inclusive consultations leading to the prioritization of measures.
- This process should be inclusive of all sectoral ministries, in addition to a diverse representation of local authorities.
- The strategy should reflect the needs and requirements of vulnerable groups (women, children, the disabled, migrants, displaced persons, and refugees) as well as the needs and demands of private sector stakeholders (construction, tourism, information and communication technology).

- To develop the context of the strategy, this should be based on a shared understanding of the exposure and vulnerability of different populations (including refugees), and the vulnerability of the Jordanian economy to climate and disaster risks.

- The strategy is built according to Jordan's socio-economic priorities established in the Jordan Vision 2025, the Sustainable Development Goals, and other national strategies and policies

- The strategy should include a clear monitoring and evaluation framework (connected to the monitoring of the Sendai Framework) supported by a participatory monitoring and evaluation mechanism linked to the Sustainable Development Goals monitoring mechanism, under the Ministry of Planning and International Cooperation.

- For this strategy to be supported nationally, the design process should provide sufficient time for internal review by ministries, sectors, and other entities responsible for implementing the strategy.

- The National Disaster Risk Reduction Strategy should be supported through a communication and dissemination plan to all ministries, sectors, governorates, and municipalities, as well as main entities, such as Chambers of Commerce and Industry.

Guidelines for initiatives and activities that can support the achievement of the strategic objectives

The following are the guiding principles for the main proposed initiatives and activities that can support the achievement of the strategic objectives:

- DRR requires the sharing and allocation of responsibilities by the central government and relevant national authorities (as needed, taking into account their governance), as well as the different sectors and stakeholders.

- DRR requires the participation of all segments of society, as well as empowerment, and inclusive, facilitated and non-discriminatory participation, while paying particular attention to people disproportionately affected by disasters, especially the most impoverished. Gender, age, special needs, and cultural perspectives must be integrated into all policies and practices; promoting women and youth leadership is also a must.

- Disaster risk reduction and management aims to protect people, property, health and livelihoods, as well as cultural and environmental assets, while promoting and protecting all human rights, including the right to development.

- DRR requires an approach that addresses all potential risks and makes informed decisions based on open exchange and dissemination of detailed data, such as gender, age and disability, as well as easy access to up-to-date information and data supported by traditional knowledge.

- The development, promotion and implementation of relevant policies, plans, practices and mechanisms should aim to achieve sustainable development, food security, public health and safety, climate change, and environmental management. DRR is crucial for sustainable development.

- While the drivers of disaster risk may be local, national, regional or global in their scope, disaster risk has specific local characteristics that must be understood in order to identify the necessary measures for DRR at the national level.

- Addressing risk factors underlying disasters through public and private investments is more cost-effective than a basic reliance on disaster response and recovery, and directly contributes to sustainable development.

- In post-disaster recovery, rehabilitation and reconstruction phase, it is critical to prevent and mitigate disaster risks by “building back better” and increasing public awareness and awareness of disaster risk.

- An effective global and regional partnership, as well as increased and enhanced international cooperation, including the fulfilment of relevant commitments made by developed countries for development assistance, are two essential criteria for effective disaster risk management and reduction.

Proposed tools for implementing the strategy

Decentralization – strategic planning at the national level, and operational implementation at the local level.

Creating partnerships – at international, regional and national levels (public and private).

Technology and innovation – data and smart solutions.

Resource mobilization and financing – establishment of private funds, allocation of part of the institutional budget to support risk reduction activities.

Identification of responsibilities and duties of all stakeholders within the stages of prevention, preparedness, response and recovery.

Decentralization – strategic planning at the national level, and operational implementation at the local level

Over the past few years (and with the support of the Decentralization Act, which was ratified in 2016), the Jordanian government has systematically delegated a group of its national (central) responsibilities to become local (decentralized). This procedure can bear positive results on DRR.

Sharing responsibilities between central and local levels of the government helps mainstream DRR across government structures, as well as giving local levels a greater sense of ownership and responsibility, as they are closer to affected and directly connected communities. Furthermore, decentralization can bear positive results because local government institutions are less politicized than central government institutions, which can facilitate the development of public-NGO partnerships to strengthen local capacity.

Creating Partnerships - international, regional, national (public and private)

Building partnerships is not simple or straightforward; it requires a great deal of time, negotiation, sustained effort, transparency, trust, commitment, and institutional support. Organizations with such leadership roles should seek to support rather than guide the partnership process. Partnerships based on existing institutions and relationships can produce good results more quickly.

Although partnerships of all types are often keen to provide cash and in-kind support for emergency relief, they are less involved in DRR in the long term. The degree of participation in DRR issues is associated with the overall level of awareness of these issues. More systematic efforts should be made to encourage the private sector to participate in initiatives to mitigate commercially viable risks, and support the poor and vulnerable, for example, through partial insurance. More efforts need to be done to make firms aware that they depend on local people, resources, and infrastructure, and they must take steps to protect these buildings and goods.

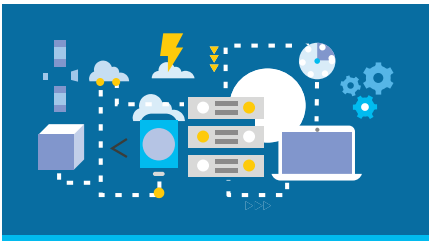
Technology and innovation – data and smart solutions

Technology is a combination of materials, tools, equipment, knowledge, skills, organization, and products. A wide range of feasible technology options can significantly contribute to DRR, for example, through construction engineering, to control risks, protect facilities and provide safe spaces in times of disaster.

Recently, innovations in technical products and services have greatly improved the ability to locate potential serious threats, and assess risks and vulnerability, as well as provide long-term and short-term forecasts of hazardous events and estimates of their potential impacts, send warnings of imminent disasters tovulnerable populations, coordinate emergency response, and assess disaster damages and needs. Many organizations are

exploring and developing the enormous potential of internet, mobile phone, and social media technologies, such as data collection, communications, and coordination tools.

It is important to recognize that technology diffusion does not happen automatically, as technologies of all kinds must be enhanced, and users should have the resources to acquire them, and the skills to use them.



Access to technology can be promoted in different ways, including providing training to communities, promoting information sharing or collaboration with other organizations, participating in scientific and technological work, and improving people's self-capacity to innovate and adapt technologies in a changing environment.

Resource mobilization and financing

Establishment of private funds, allocation of part of the institutional budget to support risk reduction activities

Modern technology and equipment, such as disaster risk management systems, early warning systems, measurement stations, internet connectivity, modern communications systems, and others, are critical support tools for DRR that need to be purchased, enhanced, and optimized. DRR financing should be reached as part of a comprehensive national policy. It is critical that The National Center for Security and Crises Management (NCSCM) endorses and recommends financing related to disaster preparedness and relief.

Each ministry, sector, and municipality should include DRR activities in their budget. The Ministry of Finance and the Ministry of Planning and International Cooperation should ensure that different ministries and departments provide prevention, mitigation and preparedness programs in national development plans and annual budgets.

External financing for DRR should be obtained on an ongoing basis through the NCSCM. This funding includes capacity financing and specific DRR initiatives by UN agencies (UNDP, UN OCHA, etc.), international development agencies (USAID, SIDA, JICA, etc.), relevant international organizations (World Bank, EU, IUCN, etc.), and other potential partnerships and sources of funding.

Identification of responsibilities and duties of all stakeholders within the stages of preparedness, response and recovery

Disaster Risk Reduction is a common responsibility and it is vital that all sectors and ministries mainstream and incorporate DRR in their strategic planning processes and allocate the necessary capacities and resources for effective implementation and follow up.

Three-Year Action Plan (2023-2025)

Activity Title (Project) 1: National Risk Register and Local Risk Registries Identify Risks and Priorities at the National and Governorate Levels	
Activity Description	Selecting a specific methodology, standardizing concepts, holding regular consultation meetings and workshops within specialized working groups for specific types of risks, as well as identifying, analyzing, and estimating risks.
Linking to the Strategic Objective	Objective 2: Raising awareness of disaster risk reduction and opportunities through information sharing, strategic partnerships, education and training (priority 4). Objective 3: Promoting and supporting scientific research on disaster and crisis risk reduction and assessment, forecasting and strengthening linkages between science, policies, and management (priority 1&4).
Implementation Timeframe	February 2023 – October 2023
Implementing Agency	National Center for Security and Crises Management (NCSCM)
Supporting Agencies	Ministry of Interior (MoI) – Public Security Directorate PSD (Civil Defense) - UNDP
Budget and Sources	150,000 United States dollars – International organizations
Performance Indicator	National risk register, and local registries identifying risks and priorities
Linking to Sendai Framework Priorities	Priority 1: Understanding disaster risks

Activity Title (Project) 2: Comprehensive Assessment of Risks Prioritized at the National Level	
Activity Description	Detailed risk analysis, assessment of exposure, vulnerability, coping capacity to deal with these risks, and assessment of the impact of such risks – with a focus on biological and emerging risks.
Linking to the Strategic Objective	Objective 2: Raising awareness of disaster risk reduction and opportunities through information sharing, strategic partnerships, education and training (priority 4). Objective 3: Promoting and supporting scientific research on disaster and crisis risk assessment and reduction, forecasting and strengthening linkages between science, policies, and management (priority 1&4).
Implementation Timeframe	June 2023 – December 2023
Implementing Agency	Public Security Directorate PSD (Civil Defense)
Supporting Agencies	National Center for Security and Crises Management (NCSCM), Royal Jordanian Geographical Center (RJGC), Ministry of Water and Irrigation (MWI), Ministry of Agriculture (MoA), Ministry of Environment (MoE), Royal Scientific Society (RSS), and the Hashemite University (HU)
Budget and Sources	700,000 United States dollars – International organizations, and Ministry of Planning and International Cooperation (MoPIC)
Performance Indicator	Risk maps and detailed assessment of priority risks
Linking to Sendai Framework Priorities	Priority 1: Understanding disaster risks

Activity Title (Project) 3: Review of Legislation and Laws Related to Disaster Risk Reduction and Crises Management	
Activity Description	Legislation and laws governing DRR and crises management activities, and identification of responsibilities and duties of all relevant entities
Linking to the Strategic Objective	Objective 1: Improving the legal and institutional basis for disaster risk reduction
Implementation Timeframe	June 2022 – June 2023
Implementing Agency	National Center for Security and Crises Management (NCSCM)
Supporting Agencies	Legal departments of government ministries and institutions
Budget and Sources	100,000 United States dollars - National Centre for Security and Crises Management (NCSCM), and Ministry of Planning and International Cooperation (MOPIC)
Performance Indicator	Legislative proposal submitted to the House of Representatives
Linking to Sendai Framework Priorities	Priority 2: Strengthening disaster risk governance to manage disaster risk

Activity Title (Project) 4: Knowledge and Awareness Raising Program for middle-sized Departments and Decision makers	
Activity Description	Raising knowledge and awareness of middle-sized departments and decision makers, within a standardized methodology that ensures that national efforts are harmonized with risk reduction and crisis management actions and activities at different stages (before – during – after), and linking local and national priorities to risk reduction priorities
Linking to the Strategic Objective	Objective 2: Raising awareness of disaster risk reduction and opportunities through information sharing, strategic partnerships, education and training (priority 4). Objective 5: Integrate disaster risk reduction and crisis management concepts with relevant national strategies, policies and priorities, such as climate change, water, agriculture, and sustainable development plans and programs (priority 2&3).
Implementation Timeframe	April 2023 – October 2024
Implementing Agency	Public Security Directorate PSD (Civil Defense)
Supporting Agencies	National Center for Security and Crises Management (NCSCM), Government Institutions
Budget and Sources	200,000 United States dollars – Relevant International Organizations and Donors, Ministry of Planning and International Cooperation (MoPIC)
Performance Indicator	A group of professionals with common knowledge
Linking to Sendai Framework Priorities	Priority 1: Understanding disaster risks Priority 3: Investing in disaster risk reduction for resilience Priority 4: Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction

Activity Title (Project) 5: Disaster Risk Reduction and Crises Management Concepts Integration with National Strategies, Policies, and Priorities Program	
Activity Description	Reviewing national strategies, policies, and priorities related to disaster risk reduction and crisis management, such as climate change, water, agriculture, and sustainable development plans and programs, with a view to integrating DRR and crisis management concepts with those strategies and policies. This is done with a view to harmonizing and consolidating national efforts with risk reduction, methods, and crisis management processes at various stages (before – during – after). In addition, promoting the mainstreaming and inclusion of disaster risk assessment and mapping in the development and implementation of land use policy, including urban planning, as well as in rural development planning and management
Linking to the Strategic Objective	Objective 2: Raising awareness of disaster risk reduction techniques and opportunities through information sharing, strategic partnerships, education and training. Objective 3: Promoting and supporting scientific research on disaster and crisis risk reduction and assessment, forecasting and strengthening linkages between science, policies and management.
Implementation Timeframe	March 2023 – June 2024
Implementing Agency	National Center for Security and Crises Management (NCSCM)
Supporting Agencies	Ministry of Planning and International Cooperation (MoPIC), Ministry of Environment(MoE), Ministry of Water and Irrigation (MWI), Ministry of Agriculture (MoA), and Ministry of Local Administration (MoLA).
Budget and Sources	100,000 United States dollars – Relevant international organizations and donors, and Ministry of Planning and International Cooperation (MoPIC)
Performance Indicator	A set of recommendations that can be incorporated into national strategies and policies when reviewed
Linking to Sendai Framework Priorities	Priority 3: Investing in disaster risk reduction for resilience Priority 4: Enhancing disaster preparedness for effective response, and to “Building Back Better” in recovery, rehabilitation and reconstruction

Activity Title (Project) 6: Detailed Resilience Assessment Using the United Nations Office for Disaster Risk Reduction (UNISDR) Resilience Measurement Tool – 10 essentials	
Activity Description	Assisting central and local governments in monitoring and reviewing the progress and challenges faced in implementing the Sendai Framework for Disaster Risk Reduction (2015-2030), and assessing their resilience. The tool "Disaster Resilience Scorecard" has been designed based on ten essentials covering the topics of governance, financial capacity, the multiple dimensions of disaster planning and preparedness, disaster response and post-event recovery.
Linking to the Strategic Objective	Objective 1: Improving the legal and institutional basis for disaster risk reduction Objective 2: Raising awareness of disaster risk reduction techniques and opportunities through information sharing, strategic partnerships, education and training. Objective 3: Promoting and supporting scientific research on disaster and crisis risk reduction and assessment, forecasting and strengthening linkages between science, policies and management.
Implementation Timeframe	February 2023 – October 2023
Implementing Agency	National Center for Security and Crises Management (NCSCM)
Supporting Agencies	All members of the strategy modernization project team
Budget and Sources	100,000 United States dollars – Relevant International Organizations and Donors, Ministry of Planning and International Cooperation (MoPIC)
Performance Indicator	Assessing the resilience of the country and its governorates, and developing a gap-filling action plan
Linking to Sendai Framework Priorities	Priority 1: Understanding disaster risks Priority 2: Enhancing disaster risk governance to manage disaster risk Priority 3: Investing in disaster risk reduction for resilience Priority 4: Enhancing disaster preparedness for effective response and "Build Back Better" in recovery, rehabilitation and reconstruction

Links between the Strategy's activities and Sendai Framework's priorities and global targets and the Agenda for Sustainable Development

The 2030 Agenda for Sustainable Development

- SDG1: No poverty
- SDG2: Zero hunger
- SDG3: Good health and well-being
- SDG4: Quality education
- SDG5: Gender equality
- SDG6: Clean water and sanitation
- SDG7: Affordable and clan energy
- SDG8: Decent work and economic growth
- SDG9: Industry, innovation and infrastructure
- SDG10: Reduced inequalities
- SDG11: Sustainable cities and communities
- SDG12: Responsible consumption and production
- SDG13: Climate action
- SDG14: Life below water
- SDG15: Life on land
- SDG16: Peace, justice and strong institutions
- SDG17: Partnerships for the goals

Global targets for Sendai Framework for Disaster Risk Reduction

Global targets

A **Disaster mortality**
Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared with 2005-2015.

B **Disaster affected people**
Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared with 2005-2015.

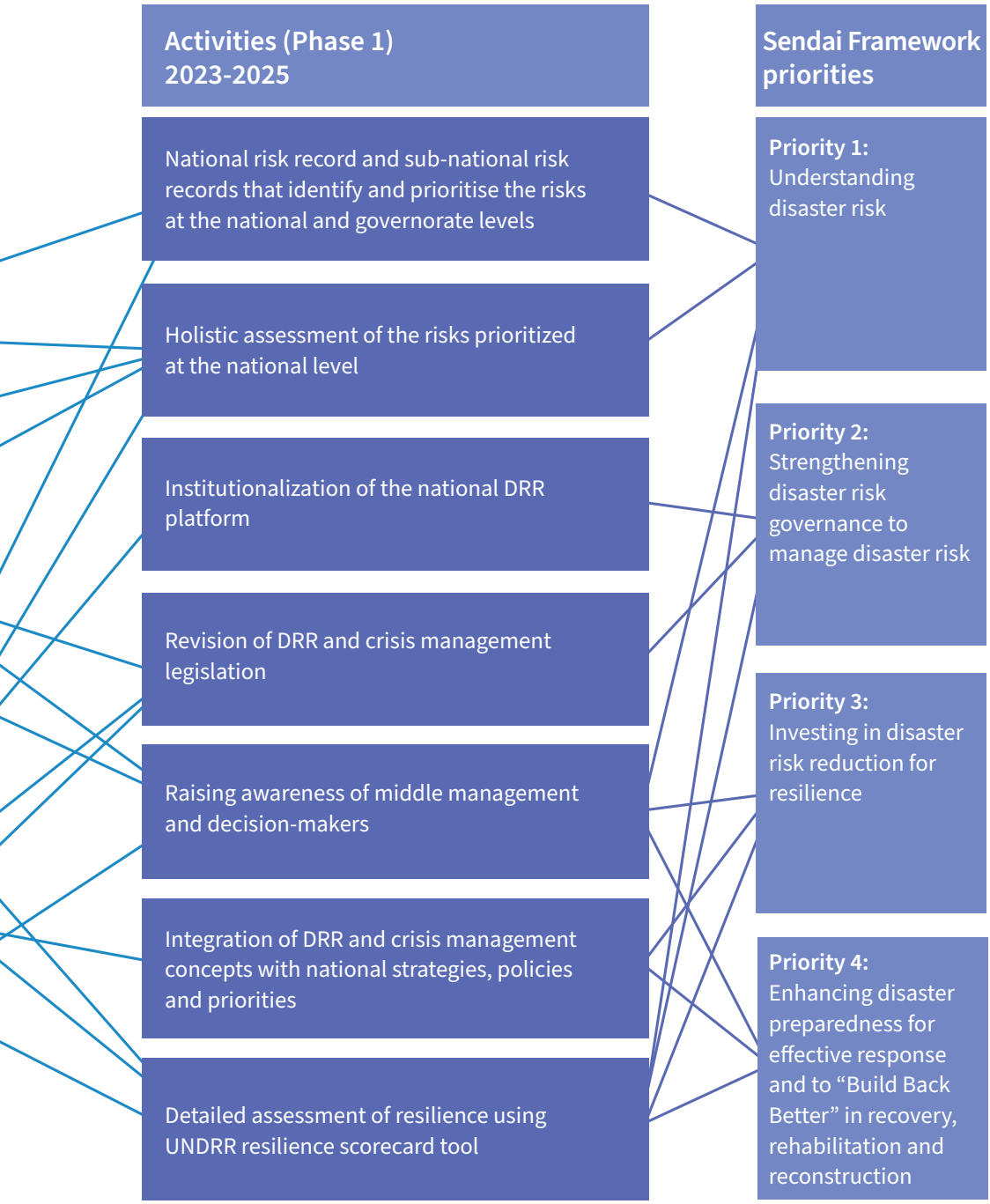
C **Disaster economic losses**
Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.

D **Infrastructure damage**
Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.

E **National Strategy**
Substantially increase the number of countries with national and local disaster risk reduction strategies by 2030.

F **International cooperation**
Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030.

G **Information about disaster risk**
Substantially increase the availability of and access to multi hazard early warning systems and disaster risk information and assessments to the people by 2030.


Activities (Phase 1) 2023-2025
National risk record and sub-national risk records that identify and prioritise the risks at the national and governorate levels
Holistic assessment of the risks prioritized at the national level
Institutionalization of the national DRR platform
Revision of DRR and crisis management legislation
Raising awareness of middle management and decision-makers
Integration of DRR and crisis management concepts with national strategies, policies and priorities
Detailed assessment of resilience using UNDRR resilience scorecard tool
Sendai Framework priorities
Priority 1: Understanding disaster risk
Priority 2: Strengthening disaster risk governance to manage disaster risk
Priority 3: Investing in disaster risk reduction for resilience
Priority 4: Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction

Progress in the Implementation and Monitoring of the Strategy

- This is the second edition of the National Strategy for Disaster Risk Reduction in Jordan, which was developed based on a three-year action plan (2023-2025).
- This strategy will be assessed and updated annually, and will be comprehensively reviewed by the end of 2025.
- Effective reporting, monitoring and evaluation is critical to the successful implementation of this strategy.
- A standard form will be filled by all ministries and stakeholders to measure implementation progress, and to correct the implementation trajectory (providing information on progress in DRR activities).

Implementation Duties

The response plans issued by the National Center for Security and Crises Management include duties that have been approved based on consultative and participatory work with state institutions in different sectors; they include refugee response plans, energy, strikes, social violence, terrorist acts, epidemiological diseases, environmental pollution, and earthquakes.

National Platform for Disaster Risk Reduction

Foreword

DRR National Platforms are an expression of the interest of various stakeholders, at the national and local levels, in the field of disaster risk reduction. DRR National Platforms have been recommended and established in a number of UN General Assembly resolutions. It is one of the objectives of the Sendai Framework for DRR.

The establishment of the National Center for Security and Crises Management in 2005 came as a royal vision of ownership to create a state of interaction and response to the strategic environment. This is from an institutional perspective based on the principle of coordination, to unite national efforts – national institutions across all sectors - in forecasting and responding to crises. This is achieved through participatory consultation work and the integration of disaster and crisis risk reduction into development policy and planning, which are also in-line with the implementation of international frameworks in general, and the Sendai Framework for DRR in particular. In this regard, delegated institutional representatives have been accredited by their organizations to build and formulate the previous edition of this strategy, and subsequently participate in its update to bring the second edition into line with the latest developments.

Strategic Objective

Sustaining coordination and strengthening multi-stakeholder collaboration to sustain DRR activities, through a consultative and participatory process, as well as through integrating disaster and crisis risk reduction into development policies and planning, in-line with the implementation of international frameworks.

Responsibilities and Duties Expected from the Establishment of a National Platform for Disaster Risk Reduction

- Directing national efforts in DRR, as well as providing a national information and database.
- Developing the country's risk register.
- Coordinating all national efforts to reduce disasters and crises.
- Monitoring the implementation of national DRR strategies and policies, and the responsibility of updating them.
- Identifying risks at the national level (natural, technological, man-made, existing risks, emerging risks), and their prioritization.
- Making recommendations for legislation updates, in-line with DRR.
- Coordinating with all national agencies to build and sustain capacity for DRR.
- Mobilizing support and finance for the implementation of DRR activities.
- Supporting DRR awareness activities at the national and local levels.
- Providing the required consultations to decision makers.
- Ensuring that strategic and operational plans for DRR (and developing mechanisms to ensure follow-up, monitoring, and evaluation) are developed and sustained, to protect lives and property from disaster risk.

In 2015, the Royal Decree was issued with the approval of the National Center for Security and Crises Management bylaw, No. (20), and became effective as of April 1, 2015. It includes the responsibilities and duties - mentioned above - expected from the establishment of national platforms for DRR.

Monitoring

The National Center for Security and Crises Management functions as an incubator and is responsible for activating an executive secretariat by establishing a working group that monitors coordination with all relevant stakeholders– different state sectors and international organizations – to hold periodic and emergency meetings, and to continue facilitating communication and coordination, to monitor implementation.

ANNEXES

Annex No. 1:

Summary of Terminology Used in this Strategy

Annex No. 2:

Detailed Description of Risks and Exposure Vulnerability in Jordan

Annex No. 3:

National Level Duties

Annex No. 1:

Summary of Terminology Used in this Strategy – as Defined by the United Nations International Strategy for Disaster Reduction (UNISDR, 2009)

Acceptable Risk: The level of potential losses that a society or community considers acceptable given existing social, economic, political, cultural, technical and environmental conditions.

Adaptation: The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Capacity: The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.

Capacity Development: The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.

Climate Change: The Inter-Governmental Panel on Climate Change (IPCC) defines climate change as: "a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural 07 internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use". The possibility of adding the definition of climate change according to UNFCCC: The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

Contingency Planning: A management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.

Coping Capacity: The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

Disaster: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

Disaster Risk: The potential disaster losses, in lives, health status, livelihoods, assets and services, which 10 could occur to a particular community or a society over some specified future time period.

Disaster Risk Management: The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.

Disaster Risk Reduction: The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to 11 hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.

Disaster Risk Reduction Plan: A document prepared by an authority, sector, organization or enterprise that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.

Disaster Risk Reduction Strategy: A document prepared by an authority, sector, or institution that sets out the specific goals and targets for Disaster Risk Reduction, in addition to the relevant actions to achieve these objectives.

Early Warning System: The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss. This definition contains a set of factors necessary to effectively respond to alerts. The human-centered early warning system contains the following four elements; knowledge of risks, monitoring, forecasting and analysis of hazards, dissemination and publication of alerts and alarms, and provision of necessary local capacity to respond to alerts. The term “end-to-end warning system” is also used to emphasize that warning systems should extend throughout all steps, from hazard detection to community response.

Emergency Management: The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.

Exposure: People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.

Hazard(s): A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

Mitigation: The lessening or limitation of the adverse impacts of hazards and related disasters.

National Platform for Disaster Risk Reduction: A generic term for national mechanisms for coordination and policy guidance on Disaster Risk Reduction that are multi-sectoral and inter-disciplinary in nature, with public, private and civil society participation, involving all concerned entities within a country.

Natural Hazards: The natural process or phenomenon that may cause loss of life, injury, or other health impacts, loss of livelihoods and services, social and economic disruption or environmental damage.

Preparedness: The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.

Prevention: The outright avoidance of adverse impacts of hazards and related disasters.

Public Awareness: The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually 23 and collectively to reduce exposure and vulnerability to hazards.

Recovery: The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.

Resilience: The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Response: The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.

Risk(s): The combination of the probability of an event happening and its negative consequences.

Risk Management: The systematic approach and practice of managing uncertainty to minimize potential harm and loss.

Risk Transfer: The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.

Sustainable Development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Vulnerability: The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

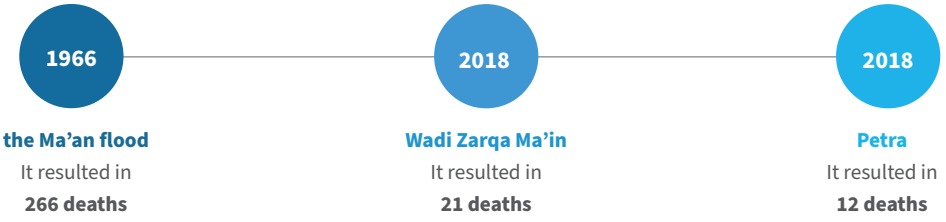
Annex No. 2:

Detailed Description of Risks and Exposure Vulnerability in Jordan

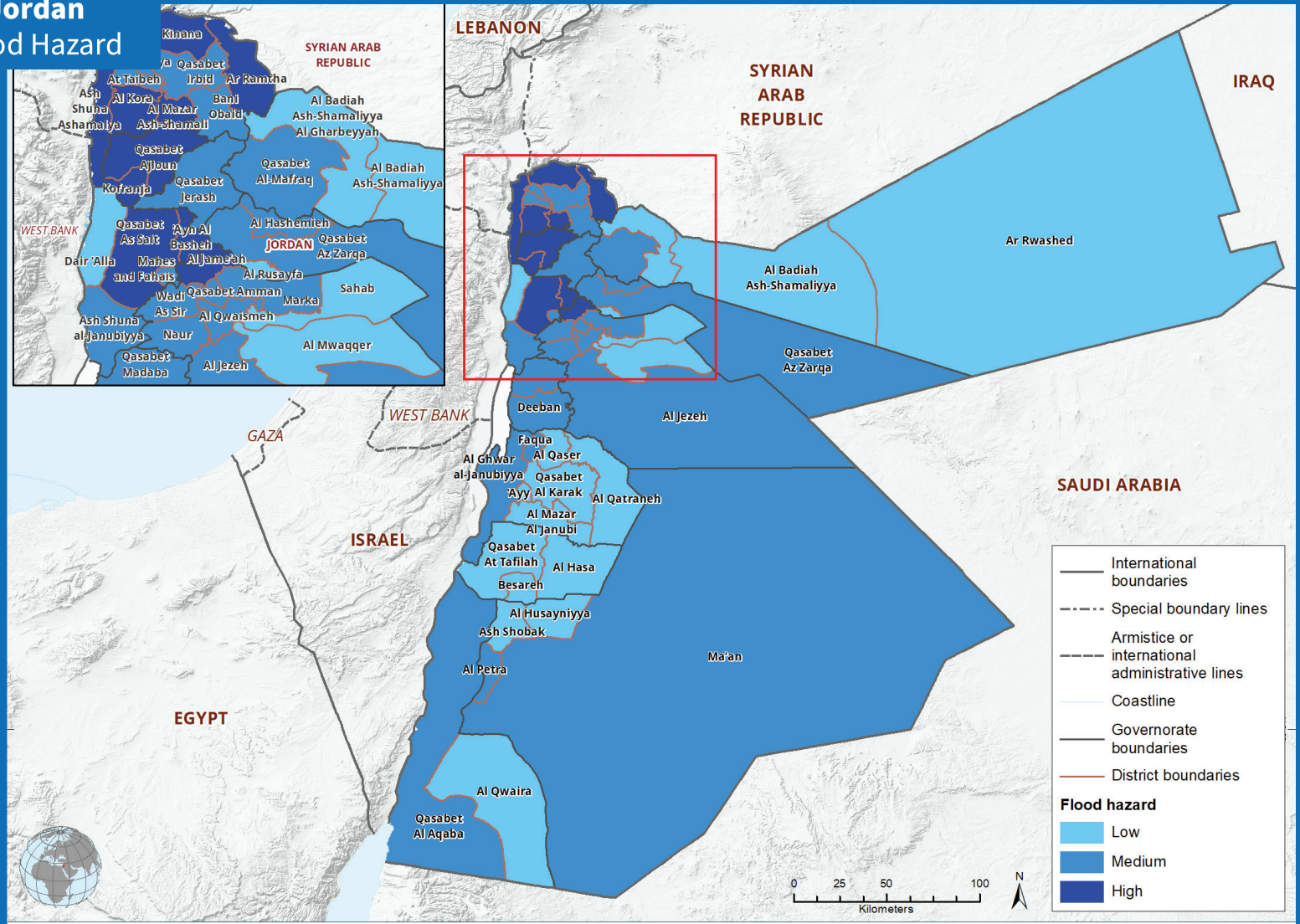
Flash Floods Hazard:

Flash floods are among the most common natural hazards in Jordan, in terms of human and economic losses, where the Ma'an flood (in 1966) is considered among the greatest disasters happening in Jordan in recent history. It resulted in 266 deaths, as well as considerable material damage. During past years, several flash floods have been documented in Jordan, which have resulted in multiple casualties, in addition to considerable material damage in several locations, such as Zarqa Ma'in, Petra, Central Amman, Mafraq governorate, among others.

The flash flood that took place on October 25, 2018, is considered one of the greatest disasters to have happened in Jordan since the Ma'an flood in 1966. Only 22 minutes of rain caused deadly floods that killed 21 people, including 16 students, in Wadi Zarqa Ma'in, in the Dead Sea region. Two weeks following the disaster, on November 10, 2018, another flash flood hit several areas, including the tourist area of Petra, killing 12 people, forcing thousands of tourists to leave the area. Recent studies show that flash floods hazard in Jordan is one of the most likely hazards that extend to large areas in Jordan's populated areas. For example, in 2017, the World Food Program (WFP, 2017) produced a map that distributes flash floods risk in Jordan (figure 1), showing that this risk is moderate to high in most of the populated areas in Jordan.



Jordan
Flood Hazard



SAVING LIVES
CHANGING LIVES

World Food Programme

Date Created: **29 Jul 2019** - Contact: **hq.gis@wfp.org**
Website: **www.wfp.org** - Prepared by: **HQ OSE GIS**
Map Reference: JOR_ICA_FloodHazard_A4L_20190722_b

Data sources: Boundaries: UNMap, OCHA - Flood: WMS Anlysis of rainfall data from MOWI (Ministry of Water and Irrigation)

Fig. 1 Flood Hazard Map for Jordan, Source: UN World Food Programme (WFP), June 2019

The Jordan Agricultural Research Center also produced a map showing the severity of potential floods in Jordan (Figure 2), the findings of which are consistent with previous studies. According to the map, the intensity of flood risk was classified into the following four categories:

1. Low Risk:

In this category, **water runoff is relatively low and at low speed**, indicating low water inrush due to rainfall.

2. Medium Risk:

In this category, **water runoff is relatively rapid, while the flow of water due to rainfall is not high**. In the event of a flood, its intensity is moderately severe. These floods may affect areas adjacent to wadis and waterways, and have limited and non-serious impacts, which necessitates caution and strictly required vigilance within the boundaries of wadis and waterways.

3. High Risk:

In this category, **water runoff is very rapid, and water flow from rainfall is high**. In this case, any flooding is extremely hazardous, and the extent of its impacts goes beyond the boundaries of wadis and waterways. Such floods may cause material damage, and require caution and vigilance within specific areas around wadis and waterways.

4. Extremely High Risk:

In this category, w**ater runoff is very rapid and water flow is very high**. In this case, the resulting floods are extremely serious and cause material damage. The impacts of these floods extend to areas surrounding wadis and waterways, and require caution and vigilance in surrounding and adjacent areas.

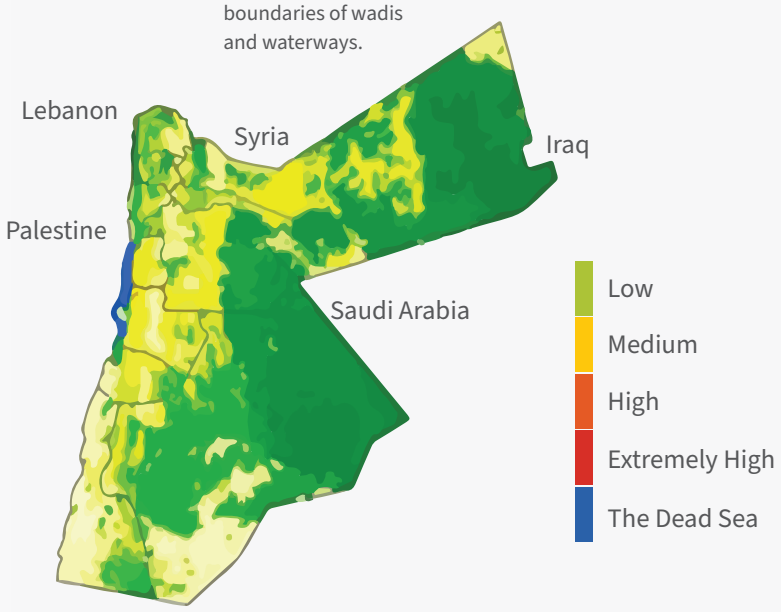


Fig. 2 The Severity of Potential Floods in Jordan. Source: National Agricultural Research Center (NARC, 2019)

Seismic Hazard:

Earthquakes are among the most devastating hazards that can cause great loss of life and property, due to their extended impact on large areas, and their direct impact on people, property, and all life systems.

The Jordanian Transform Fault, (which extends from the Gulf of Aqaba in the south to Northern Syria on the Turkish border, consisting of key parts, including the Gulf of Aqaba, Wadi Araba, and Jordan Valley) is the main source of earthquakes in Jordan (Figure 3). Based on historical information and the tectonic nature of the fault, seismic activity in Jordan can be described as moderate (it can have an effect over long periods of time, when compared to other regions of the world).

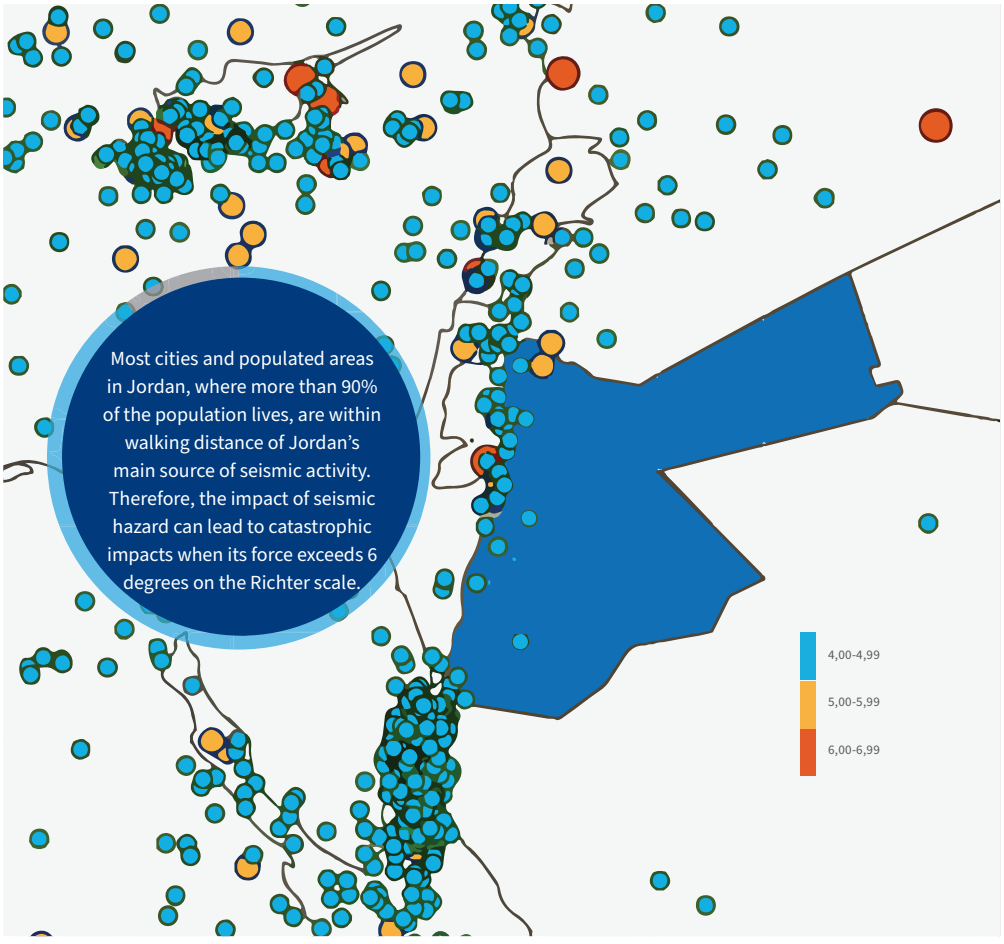


Fig. 3: Seismic distribution along Jordan Transformation Fault during the period 1900-2005.
(Source: Jordan Seismological Observatory, 2007)

Nablus Earthquake 1927:

The region has been hit (throughout documented history – approximately 2000 years ago) by a series of devastating earthquakes (an estimate of 20 devastating earthquakes) that have left behind significant human and material losses, the earliest of which was the 1927 earthquake. The Nablus earthquake, which occurred on July 11, 1927, was the last devastating earthquake to hit Jordan and Palestine, with a magnitude of 6.25 on the Richter scale. Its epicenter was subsequently located near Damia Bridge in Jordan Valley (on the Jordanian Transform Fault), 25 km east of Nablus, where its destructive effects spread along areas located both in the middle of Palestine and Jordan, and to the west and east of the Jordan River. Around 325 victims were left behind by the earthquake (with injuries and casualties concentrated in Nablus and As-Salt regions), see figure 4. Furthermore, the earthquake that hit on November 22, 1995, centered 90 km south of Aqaba city, also caused great terror throughout Jordan, particularly in the southern regions. Although no fatalities were reported for this earthquake, panic and confusion generated more attention to preparedness and reduction of seismic risk.

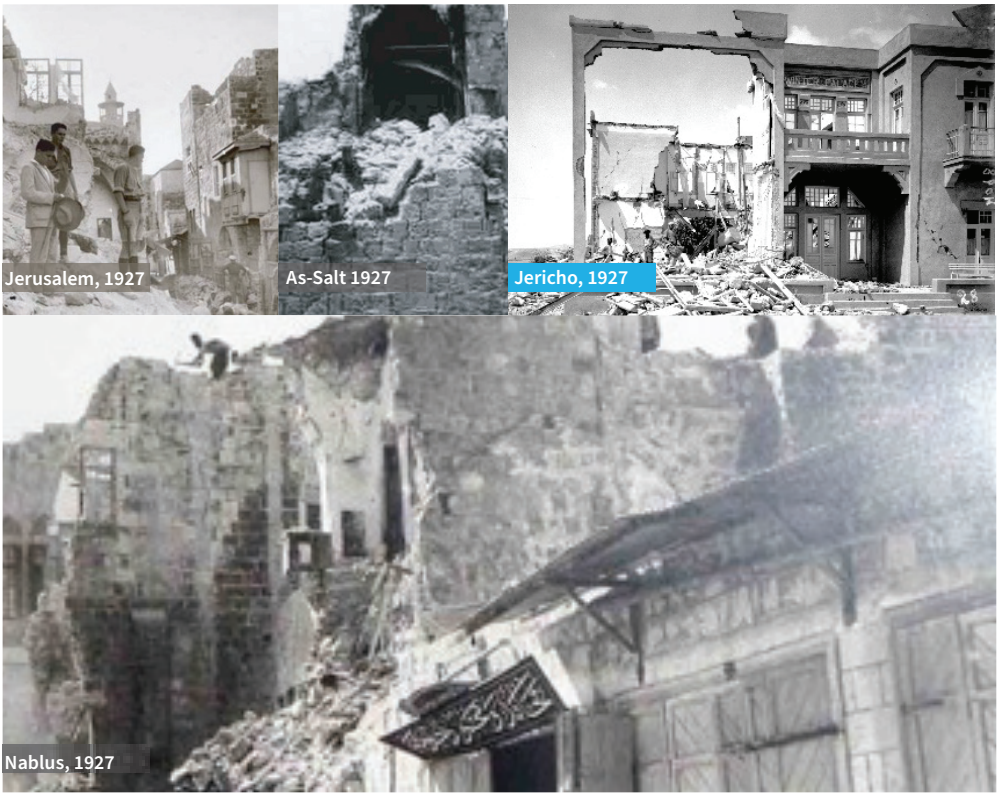


Fig. 4: Selected picture for the destruction caused by the 1927 earthquake

The earthquake that took place on February 11, 2004 was one of the largest earthquakes to have happened in the past decades, which occurred at the Dead Sea Basin at a depth of 21 km, with a magnitude of approximately 5 on the Richter scale. Although the devastating effects were minimal, the state of fright – especially among citizens - was severe, see figure 5.

Amman, 2004 | Amman, 2004 | Aqaba, 1995 | Nuweibaa – Egypt, 1995

Figure 5: Selected picture for the damage caused by the earthquakes of 1995 & 2004 ▲

Drought Hazard:

Jordan is one of the countries with considerable water scarcity, which is considered one of the biggest obstacles to the economic and development progress in Jordan. This situation has been exacerbated by the population increase that has doubled during the past two decades due to population growth and forced migrations from neighboring countries to Jordan, in addition to the problems of shared water and climate change affecting water supply in Jordan. The problem is compounded by increased waves of drought resulting from low rainfall, and its variation in place and time.

In the past two decades, the Kingdom has experienced a reduction and variability in rainfall that has contributed to exacerbating the pressure on available water resources, their distribution and affordability by the government and citizens. In addition, prioritizing the use of freshwater for domestic purposes played a role. Studies and forecasts have shown that the severity of drought will increase in the future, with the possibility of drought being predicted to happen once every three to four years.

Jordan's renewable water resources are limited and insufficient to meet demand. There is growing evidence of the increasingly excessive use of many surface water and groundwater sources. The safe annual groundwater extraction should reach an approximately 418.5 million cubic meters, while actual water extraction has reached more than 600 million cubic meters in 2016. This has resulted in low water quality and the depletion of many wells.

Drought Phenomenon

Drought is defined as the conditions and situations resulting from water shortages caused by reduced rainfall over a period. Drought includes different types of meteorological, agricultural, and hydrological droughts, which have negative impacts on the economy and the society. Data from the Meteorological Department and from global and local studies indicate negative changes in temperature and rainfall in Jordan, and a potential increase in the incidence and severity of drought. Records for the period 1938–2017 indicate obvious climate changes in the Kingdom, as shown in figure-6.

A series of studies indicate that the Jordan River Basin region will experience an increase in drought severity in the period 2031-2060, compared to the period 1961–1990. It is projected that the severity and frequency of droughts is going to increase, and that moderate droughts are going to decline as a result of their transformation to severe droughts.

The per capita

sustainable water per year has declined from about 500 cubic meters in 1975 to 140 cubic meters in 2010, and less than 100 cubic meters in 2017; a figure well below the global poverty line, estimated at 1000 cubic meters per person per year, for all uses.

Successive drought waves have occurred at least three times over the past 40 years, and the incidence is expected to increase every 20–25 years, with a moderate drought wave expected every 3 to 4 years, and a severe or extreme drought wave once every 6-7 years. With increased droughts and negative climate change in Jordan, water availability is projected to decline by (15 – 20) %.

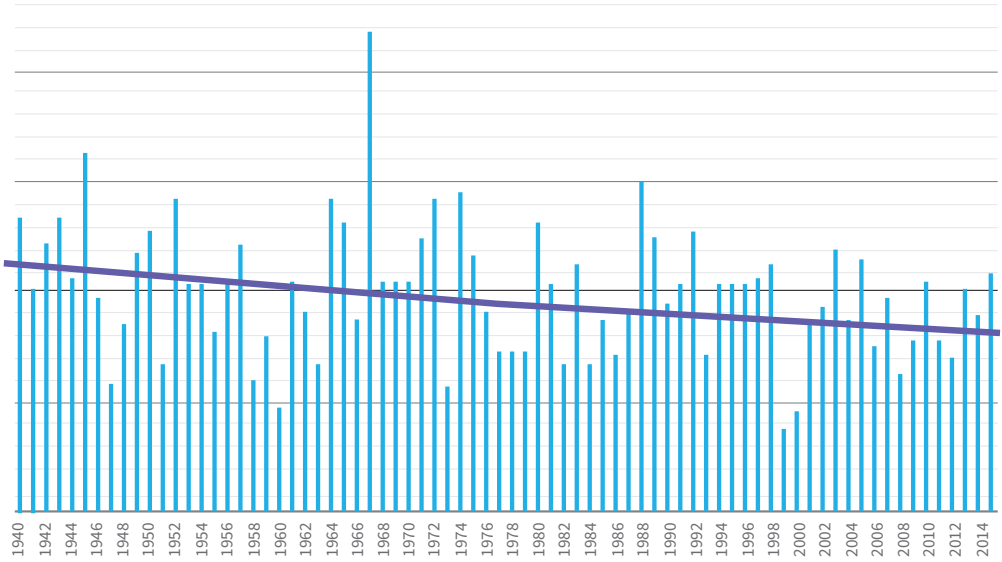


Figure 6: Pattern of rainfall decrease in Jordan during the period: 1938 - 2017

The effects of the drought will not be limited to the water sector, but will extend to the agricultural sector. This will manifest in reduced crop yields due to the low rainfall and maldistribution of rainfall water. In addition, it will affect the health sector, where it will directly and indirectly affect public health. In this aspect, the known impacts area result of water shortage, or the use of low quality water sources, or water that lacks sterilization and disinfection, which may adversely affect the health services provided to the population.

Droughts in previous periods have resulted in many negative impacts on the water sector, including several springs drying up and the decreased drainage of most of the others, as well as low groundwater table at a rate of approximately 1 meter/year in the past 30 years. Among the negative impacts of these droughts is also the reduction in basic surface water drainage and inside valleys bordering the Jordan Valley, and the reduction in water storage rates in dams to lower than half the normal rate, in the last 20 years.

Water–Energy–Food Security:

Water–Energy–Food Security are closely linked in Jordan, as Jordan is a country with high energy consumption, suffering from water scarcity, and lack of food resources (crop and livestock production). Climate change also contributes strongly to making Jordan highly economically and environmentally vulnerable.

The scarcity of local energy resources, reliance on imported energy sources, continued increase in demand, high volatility in oil prices and securing energy supply and demand, as well as concerns about future energy supply are among the most prominent challenges to Jordan's energy security. These challenges are at the top of the government's political agenda, and it seeks to improve energy security and reduce its exposure to external supply shocks. It is also implementing actions in-line with the objectives of improving its fiscal, macroeconomic situation, and Jordan's sound and sustainable growth.

The government is currently implementing a set of actions and projects that will address these challenges, such as: Discussions with neighboring countries to secure reliable supplies, agreement with Egyptian authorities to secure contracted gas supply from Egypt, better utilization of national energy resources (for example, oil shale and natural gas from Risha field), promotion and support of renewable energy programs, increased storage capacity for oil and strategic petroleum products in the country to secure strategic storage, rehabilitation of appropriate infrastructure and liberalization of the oil sector in the domestic market, among other actions.

Concerning Jordan's water security, Jordan is one of the poorest country in terms of per capita water resources. In the past few years, conflict between MENA countries, high population growth, and development needs have increased water demand and overutilization of available and limited natural resources. Consequently, water supply has become a major problem that needs to be addressed within a sustainable approach, and is therefore achieved through a range of institutions that collaborate to achieve the comprehensive vision of the water sector.

Jordan is one of the poorest country in terms of per capita water resources.

The National Water Strategy 2016-2025 was built on previous strategic documents and aligned with the UN Sustainable Development Goals adopted in 2015. It aims to equip the water sector to better prepare for future challenges, by ensuring the sustainability of water resources and enhancing integrated water resources management and planning. The strategy also responds to fundamental changes in the regional geopolitical situation, the ongoing risks and threats to Jordan's renewable water resources, a growing population, and an expanding economy that depends on water, energy, and is highly vulnerable.

The concept of food security is anchored on ensuring material and economic access to adequate, safe and nutritious food for all people and at all times, in a way that meets their nutritional needs and suits their different food preferences, while supporting an active and healthy life.

Although food security in Jordan relies heavily on domestic agricultural production, the concept of food security is much broader than agricultural production or even food provision; it is a multidimensional and multi-institutional sector. In addition, it requires a lot of collaboration and coordination between different institutions and stakeholders to work together on closely related topics, such as food, consumption, food access, governance, stability, sustainability, and other topics.

It is worth mentioning that the government's attention and encouragement to the agricultural sector (concerning resources and priorities) has enabled Jordan to achieve high levels of food sufficiency in vegetables, fruits, eggs, milk, olive oil, poultry. The agricultural sector has contributed significantly to GDP support (about 5.6% according to the Central Bank of Jordan Annual Report 2019).

Food security in Jordan has become a national burden, due to increased factors directly affecting it; for example: The impact of climate change, urbanization, increases and fluctuations in global prices, in addition to the quite considerable impact of Syrian crises in Jordan over the past 10 years. The recent COVID-19 pandemic has also increased the negative impact, in terms of its contribution to increasing poverty and unemployment in a multi-crisis economy. Accordingly, Jordan has been alerted to the need for a National Food Security Strategy (expected to be endorsed by the end of the year 2022).

Food security is closely linked to the environment and climate change because it affects them and vice versa, particularly in Jordan; which is characterized by fragile and weak ecosystems and food systems, especially as a high proportion of food producers live in areas dependent on scarce and volatile rainfall.

Locust Hazard:

Desert locusts are among the most dangerous pests that threaten human agricultural production, food, and means of living. Locusts may be among the oldest insects to have been registered as lethal and dangerous, due to their ability to breed under different environmental and climate conditions in very vast areas. Given the ability of desert locusts to fly long distances and rapidly migrate from one place to another, locusts are considered an international plague that cannot be controlled by a single country or even a group of countries without international cooperation.

Managing the locust hazard in Jordan requires close cooperation and high coordination with neighboring countries that are considered the corridor for locust swarms that can threaten crops, trees, and vegetation in general. The Ministry of Agriculture follows up and monitors this hazard, particularly when appropriate environmental and climatic conditions exist in source countries.

Jordan is a country developed in the field of locust pest control, through the presence of previously prepared plans, professionally trained technical and field teams, as well as the availability of material resources from advanced professional and technical equipment, pesticides and supplies. The Jordanian Armed Forces and Public Security Directorate (PSD) also contribute to locust swarm monitoring and field support to the control teams, and the Royal Jordanian Air Force is actively contributing to the efforts of the control teams, through the use of specialized aircrafts with appropriate pesticide spraying capabilities.

The Locust threat is one of the most significant threats to the agricultural sector and other related sectors, due to its direct impact on the environment and food security, increased poverty and unemployment, among other impacts. According to the Food and Agriculture Organization, an adult locust can eat its body weight in plants every day, and even a small swarm can consume enough food for 35,000 people in just 24 hours.

The Jordan Meteorological Department also contributes by providing information on temperature, wind direction and speed to monitor the movement of locust swarms, and future projections of such data and information.

The Ministry of Agriculture continuously exchanges information on plagues with neighboring countries (to act as an early warning system) and coordinates control efforts with them, to ensure effective response and containment when they spread.

Cyber Hazard:

The word "**Cyber**" is a literal translation of the word "**Cybernetics**", which had been used in the past to describe how machines and organisms communicate and control each other.

Cyberspace is defined as

"an environment consisting of the interaction of people, data, information, information systems, and programs on information networks, communications systems, and associated infrastructure."

Cybersecurity is therefore defined as "protecting cyberspace from unauthorized access or misuse, including intentional or accidental attack, failure to follow security procedures, or being tricked into doing actions that lead to the aforementioned."

In Jordan, a Cyber Security Law was passed in 2019 to protect the Kingdom from cyber threats, and to build a national cybersecurity capacity that ensures confronting threats to information systems and infrastructure. It also aims to control and monitor national cyberspace, and to document cybersecurity incidents, in addition to finding a reference point to apply and implement public policies emerging from the National Cyber Security Strategy to coordinate national efforts. The National Cyber Security Center bylaw was issued and established in 2020 under the Cyber Security Law No. (16) of 2019.

Based on the findings of the Global Cybersecurity Index (GCI), established by the International Telecommunication Union in July 2021, Jordan ranked 71st globally and 10th in the Arab world on the GCI index for the year 2020. This global report monitors the levels of improvement in the cybersecurity environment and awareness of the importance of cybersecurity in 193 countries around the world. According to the data in the report, Jordan has advanced three rankings globally compared to its 2028 ranking, when it ranked 74th globally. However, the report showed Jordan dropping two places at the Arab level, as the Kingdom ranked as the 8th Arab country in the 2018 edition of the report.

The Difference between Information Security and Cybersecurity

Information security includes the protection of digital and non-digital information, and the protection of all related information, such as computer and network protection, as well as data archiving rooms and the protection of real data files (paper and not just digital). However, cybersecurity is only concerned with protecting digital data and related data. Information security is therefore more general and comprehensive than cybersecurity in data archiving.

While some believe that cybersecurity includes some things that do not fall under information security, such as protecting infrastructure, like water and electricity networks currently operated through computers, as well as military missiles, medical equipment, and modern

cars, especially autonomous cars, which have become more dependent on the internet and networks, in addition to the protection of devices that operate using the internet, which

includes, for example, digital surveillance cameras and some smart home appliances. If a house has a smart, mobile-controlled oven, caring about protecting the user's cooking information is less important than protecting the oven from being used by hackers to burn down the house.

Refugee Crises:

Undoubtedly, Jordan's geographical location plays an ongoing important role in shaping the country's political, economic, and social life. Due to its proximity to three crisis-stricken countries (Palestine, Syria, Iraq), and its proximity to other unstable countries in the region, Jordan has been permanently affected by the repercussions of the situations in these countries. This is especially because Jordan is a relatively small and resource-constrained country, closely associated with neighboring countries, particularly in terms of the economy, trade, and even social affinity, and intermarriage ties between Jordanians and populations of neighboring countries.

Jordan is a safe haven for large numbers of refugees from the region and beyond. Despite its limited natural and financial resources, refugees are being treated generously, thanks to the solidarity and support provided by Jordan and the international community. The number of officially registered refugees in Jordan is estimated to be approximately 3 million (registered with UNRWA and UNHCR), in addition to 600,000 unregistered Syrians residing in Jordan. These large numbers of refugees have increased the pressure on limited water resources, increased food imports, unevenly impacted the livelihoods of host communities, and severely affected the infrastructure and associated sectors.

Recent reports indicate that the number of Syrian refugees living in the Jordanian territory has exceeded 1.5 million, according to the Thompson Reuters News Foundation, which accounts for nearly twenty percent of Jordan's population.

The King of the Hashemite Kingdom of Jordan has addressed the magnitude and gravity of this situation in a speech directed to the European donor countries about the ongoing dialogues on the Syrian refugee crisis in Europe.

The momentum of assistance and grants through UN organizations and international donors has declined significantly in the past few years to critical levels, and if this decline continues, the results will be catastrophic, not only on food and water security, but also on social and national security. Jordan bears far more than its capacity on behalf of the international community and is in urgent need of support to maintain the level of services provided to refugees.

Attention should be paid to the direct and indirect cost of the Syrian refugee crises, as described by the Ministry of Planning and International Cooperation in Jordan. Among the direct costs are what falls under humanitarian and relief assistance provided in the refugee camps as well as field hospitals, medical, therapeutic and other food assistance. Indirect costs include development plans that the state seeks to implement either directly in the refugee areas, or in general, to develop service facilities so that they are capable of bearing the load of the crisis, including water and electricity projects, sewage networks, and other facilities and services.

It should also be noted that refugee response plans should ensure transition from the emergency phase of dealing with refugees, to the recovery phase from the great effects of refugee crises on the Jordanian arena, and then the transition to the stage of ensuring long-term sustainable development and achieving resilience. This should be done in a manner that does not hinder the country's local development processes and plans in all fields and at all levels.

Weather-related hazards

(blizzards, heavy rains, heat waves, and extreme temperatures)

Jordan is characterized by dry to semi-dry climatic conditions with annual rainfall of less than 50 mm in most regions (exceptions in the northwest and western highlands). Weather-related hazards have increasingly affected Jordan in recent times, such as extreme temperatures and storms, and even associated hazards, such as droughts, floods, and landslides. These hazards are increasing in frequency and intensity due to climate change. For example, floods have had serious repercussions in recent years, with lives lost and several square kilometers of agricultural land destroyed in addition to severe damage to infrastructure. Drift and landslides problems have also occurred. Climate change affects different sectors including agriculture, biodiversity, urban systems, society, water, and health sectors, where adaptation options are needed to mitigate its impacts.

The statistics of weather events over the past decade (according to the Meteorological Department) show that Jordan has been exposed to many of these events, which have caused significant human and material losses, hereinafter a summary of these events:

YEAR	The highest temperature recorded during the year			The lowest temperature recorded during the year			Variance
	Region	Date	The highest (°)	Region	Date	The lowest (°)	
2011	Al-Ruwaished Station	July 31	46.5	Al Shobak Station	29 November	-9.0	55.5
2012	Ghor Al-Safi Station	August 1	46.4	Al Shobak Station	16 January	-9.0	55.4
2013	Southern Azraq Station	September 31	41.5	Al Shobak Station	December 15	-16.0	57.5
2014	Al Aqaba Station	June 28	46.6	Al Shobak Station	10 February	-8.0	54.6
2015	Deir Alla Station	August 2	47.5	Al Shobak Station	19 January	-9.8	57.3
2016	Al Aqaba Station	June 5	46.2	Al Shobak Station	29 January	-10.0	56.2
2017	Ghor Al-Safi Station	July 4	47.0	Al Shobak Station	18 February	-10.6	57.6
2018	Ghor Al-Safi Station	July 25	49.3	Al Shobak Station	13 January	-5.7	55.0
2019	Deir Alla Station	May 25	45.5	Al Shobak Station	11 January	-7.0	52.5

YEAR	Forming frost (highest number of days in which frost formed)		Dust storms (horizontal visibility is less than 1km)	
	Region	No of days	Region	No of days
2011	Al Shobak Station	64	Al Ruwaished Meteorological Station	12
2012	Queen Alia International Airport (QAIA)	30	Al Ruwaished Meteorological Station	6
2013	Al Shobak and Al Qatranah Meteorological Stations	26	Al Ruwaished Meteorological Station	8
2014	Al Shobak Station	35	Al Safawi Meteorological Station	5
2015	Al Qatranah Meteorological Station	53	Southern Azraq Meteorological Station	21
2016	Al Shobak Station	44	Al Safawi Meteorological Station	4
2017	Al Shobak Station	53	-	-
2018	Al Shobak Station	50	Southern Azraq Meteorological Station	6
2019	Al Qatranah Meteorological Station	63	Southern Azraq Meteorological Station	5

Rainfall (highest daily rainfall)							
Year	(mm)	Region	Date	Year	(mm)	Region	Date
2011	61.9	Salt Station	January 30	2016	84.0	Salt Station	December1
2012	70.9	Al-Rabba Station	February 1	2017	52.0	Al-Rabba Station	January 27
2013	151.0	Sweileh Station	January 7	2018	82.8	Salt Station	December6
2014	65.5	Salt Station	February 10	2019	108.5	Ras Munif Station	December27
2015	83.5	Ras Munif Station	February 19	2020	80.0	Salt Station	March 13

Greatest Depth (cm) of snow						
Year	**Depth**	**Region**	**Depth**	**Region**	**Depth**	**Region**
2013	85	Sweileh	80	Jordan University	80	Ras Munif
2015	75	Ajloun	40	Salt	40	Sweileh
2016	15	Ras Munif	15	Al-Rabba		

Heat waves that have hit Jordan over the last 10 years (20 heat waves)			
Year	**Date**	**Highest Temperature**	**Region**
2012	June 14-18	45.2	Southern Azraq Meteorological Station: June 16, 9.7°C above the average rate
	July 17-19	46.2	Al-Safawi Station: July 19, 9.7°C above the average rate
	September 27-October 2	40.2	Southern Azraq Meteorological Station: September 28, 6.9°C above the average rate
2013	May 1-5	40.6	Al-Baqoura station: May 1, 9.5°C above the average rate.
	September 12–14	41.5	Southern Azraq Meteorological Station: September 13, 6.9°C above the average rate.
2014	June 27-30	46.0	Deir Alla Station: June 26, 7.5°C above the average rate.

Heat waves that have hit Jordan over the last 10 years (20 heat waves)			
Year	**Date**	**Highest Temperature**	**Region**
2015	May 15-20	45.0	Deir Alla and Ghor Al-Safi Meteorological Stations: May 19, 9.9°C above the average rate in Deir Alla, and 9.1°C above the average rate at the Ghor Al-Safi Meteorological Station
	August 1-4	47.5	Deir Alla Station: August 2, 8.0°C above the average rate
	August 16-18	46.4	Deir Alla Station: August 17, 7.0°C above the average rate
	September 7–12	44.1	Deir Alla Station: September 9, 6.9°C above the average rate
2016	May 14-16	46.0	Al Aqaba Station: May 15, 11.1°C above the average rate.
	June 23-25	43.8	Al Aqaba Station: June 25, 4.9°C above the average rate.
2017	July 1-4	47.0	Ghor Al-Safi Station: July 4
	September 8–14	43.3	Azraq Station: September 9
2019	May 22-25	45.5	Deir Alla Station: May 25
	May 29-31	45.0	Al-Baqura and Deir Alla stations: May 30
2020	May 14-21	44.0	Al Aqaba Station: May 17-18
	July 26-30	47.0	Azraq Station: July 27
	August 29-31	47.5	Deir Alla Station: August 30
	September 3–10	50.1	Deir Alla Station: September 4, the highest temperature in Jordan's climate record.

The vulnerability to these risks has also become greater than in the past, due to the weak exposed infrastructure, the unplanned urban growth not taking into account these risks, the spread of informal housing, expansion, all these affecting not only Jordan, but also all the regions of the world.

Biological hazards:

Biological hazards are defined by the United Nations (UN General Assembly A/71/644) as hazards of organic origin or carried by biological vectors, including pathogenic micro-organisms, toxins and bio tropics. Examples include germs, viruses, or parasites, as well as wildlife, insects, poisonous plants, and mosquitoes transmitting pathogens. Biological hazards are also identified through infection or toxicity, or other characteristics of pathogens such as response to treatment, incubation period, death rate among the infected cases, and the ability of the pathogen to transfer.

The Sendai Framework for DRR strengthened the scope of disaster risk management by extending beyond natural hazards to include biological hazards such as epidemics and pandemics. The Sendai Framework also strongly focuses on the need to build resilient health systems by integrating disaster risk management into health care delivery at all levels, and in particular, "to enhance collaboration between health authorities and other relevant stakeholders to strengthen the state's capacity to manage disaster risks for health."

Prevention and preparedness for biological hazards:

With the clear impact that disasters from biological hazards can have on society and almost all sectors of the economy, it is appropriate to visualize and include them not only in disaster risk reduction planning but also in comprehensive and sectoral development planning. Therefore, rather than just preparing for biological hazards response and recovery, each sector should examine its functions from a disaster risk management perspective where it identifies key vulnerabilities, the exposure of its infrastructure and

supply chains to risks, and works to prevent, mitigate, and manage risks, and build overall resilience. To achieve this, the following key topics can be considered:

Understanding the nonlinear transition of biological hazards from one stage to another:

Biological hazards, particularly epidemics, often do not follow a linear path from response to recovery and tend to re-occur as subsequent waves that can have a completely different effect than their predecessors. This should be reflected in sectoral planning and response strategies, not only to support early and better recovery, but also to use the first wave of occurrence (even in the case of emerging risks) as a potential early warning of subsequent waves. In this way, efforts can be made to prevent, mitigate, and prepare for future waves in advance.

Institutionalizing and aligning database management:

Depending on the intrinsic nature of biological hazards, they tend to have different impacts on different populations (e.g. elderly, pregnant women, people with a common disease, etc.). Accurate and reliable baseline data including geospatial and multi-temporal data, data on exposure, vulnerability and capacity, data on health, social and economic indicators of the population before the disaster which are essential to eliminate conditions that lead to biological hazards in the first place.

Making the most of early warning systems and early detection of biological hazards:

Emerging biological hazards that lead to disasters often strike states abruptly, even when detected in another part of the world, there is a tendency not to recognize the risk of transmission within geographic boundaries. This often becomes a missed opportunity for early warning and transmission prevention. The National DRR Platform plays a distinctive role in this area by enhancing collaboration with regional and global forums to exchange proactive information. Similarly, detection in a local area should serve as an early warning at the national level and trigger emergency standard operating procedures (SOPs) in the rest of the Kingdom.

Dynamic, unified emergency operating procedures for multi-sectoral and cross-sectoral intervention:

Biological hazards differ from other hazards in that some may take a long time and can therefore directly and indirectly affect almost all sectors of the economy and society. When managing biological hazards, officials should seek support from relevant sectors, for example, accessing the manufacturing sector to meet the growing demand for production of essential medical supplies and Personal protective equipment (PPE). This calls for a "beyond the health sector" approach of preparedness to ensure rapid response and early recovery. Thus, standard operating procedures for managing biological hazards should be developed in a participatory manner to cover multiple needs and impacts.

Risk-aware sectoral planning and development:

Such planning will help establish vertical and horizontal linkages (within and across sectors, at local and national levels) within the overall framework for disaster risk reduction and sustainable development. Comprehensive, multi-sectoral vulnerability assessments prior to a disaster can assist decision-making at various levels and provide a better view of local conditions and their impacts in a national risk assessment.

Strengthening social infrastructure, social and economic protection:

Strong infrastructure and social services, including those for health, public health, nutrition, education, social and financial protection, etc., play a critical role in reducing impact to vulnerable populations and in ensuring effective management of disasters caused by biological hazards. In the absence of effective and comprehensive social and economic protection, such disasters will only increase existing socio-economic vulnerabilities.

Efficient use of ICT and innovation:

Unknown and uncertain aspects of biological hazards, which make them different from other hazards, can be addressed through innovative use of information and communication technology (ICT), including new and emerging technologies that are appropriate to local needs and challenges. Furthermore, during lockdowns and mobility restrictions, ICT allows remote work for management structures, services, and firms such as remote treatment (for non-emergency patients/patients in remote locations), distance education, remote work, business continuity, etc.

Effective risk communication to prepare communities and mobilize collaboration:

The nature of disasters caused by biological hazards gives the public a much larger role than other disasters. In fact, the key to "breaking the chain of infection" is the active collaboration of the public. This underscores the need for a "whole-of-society" approach to disaster risk reduction. Communication on preventive practices such as wearing masks, safe coughing etiquette, hygiene, proper disposal of PPE and other waste products, collaborating with key service providers, avoiding panic buying, preventing stigmatization of affected or vulnerable persons or professions, etc. It has to be part of everyday life.

Strengthening social infrastructure, social and economic protection:

Biological hazards also differ from other hazards in the limited availability of knowledge products, well-documented sectoral best practices, and lessons learned globally. The production of this knowledge can help management and sector stakeholders plan a more realistic scenario and develop effective strategies.

Biological Risk Assessment:

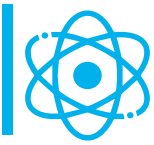
A comprehensive risk assessment for biological hazards forms the basis for effective management of health emergency risks, helps understand risks by supporting risk communication and serves as the backbone for risk-aware decision-making, planning and development. Conducting such an assessment requires a holistic approach to government and society as a whole. The following key considerations should be included while planning to conduct a risk assessment of biological hazards:

Biological risk identification:

This includes analyzing the components of historical and current risks, as well as potential future emerging risks. It is important that risk assessments be comprehensive and cross-sectoral to benefit from.

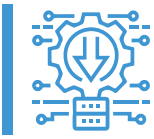
Biological hazards classification for risk assessment:

For the purpose of risk assessment and management, biological hazards can be distinguished into existing or emerging hazards based on our knowledge of them. They can also be identified as emergency and non-emergency biological hazards (all biological hazards can lead to emergencies of varying nature, duration and intensity, based on their ability to cause an epidemic/pandemic). The risk assessment of existing biological hazards, including those likely to lead to an emergency (e.g., diseases such as malaria, cholera, etc.) can be effectively conducted due to adequate knowledge about the causes, nature of transmission, treatment protocols, potential impact, etc. In the case of emerging biological hazards, it may be very difficult to conduct an assessment because of their uncertain, mysterious and unknown nature.



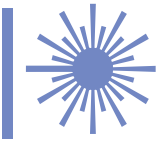
The dynamic nature of risk assessment for emerging biological hazards:

The uncertain, mysterious and unknown nature of emerging biological hazards along with their tendency to re-emerge as ex-post waves (often acting differently from previous ones) make them dynamic events based on different factors that can evolve or spread. This calls for a rapid risk assessment that is inherently dynamic to understand the spatial and temporal dimensions of hazards, their factors, and impacts across sectors and social groups.



Links with integrated surveillance systems to determine the dynamic nature:

Existing integrated surveillance systems can play a critical role in capturing transition pathways - dynamic spatial and temporal diffusion of emerging biological risk, and assisting in rapid and dynamic risk assessment. This integrated system should include not only disease surveillance, but also hospital, laboratory, veterinary, community and external surveillance.



Assessment of direct exposure to biological hazards transmission:

Direct exposure to biological hazards often occurs through its transmission within a geographic area and can be assessed based on factors that influence mobility, and this varies from one hazard to another as different biological hazards follow different means of transmission and affect different sections of society differently (by age group, common diseases, pregnancy, linkages with specific professions, etc.). Various factors such as vulnerability status, amount of infection, and duration of exposure play critical roles in determining populations at risk of transmission.

Assessment of Vulnerability to Biological Hazards:

Assessing the vulnerability of populations, sectors, and systems exposed to biological hazards requires considering the different underlying characteristics that may vary from one biological hazard to another, examples of which are:

- **Related to profession** (e.g., high exposure to infection transmission to specific jobs such as first responders and caregivers)
- **Related to public health** (e.g., nutrition, water and food systems, waste disposal)
- **Related to prevailing socio-economic conditions** (e.g., living conditions, overcrowding, and social perception practices)
- **Related to behavioral aspects** (compliance with regulations/measures, appropriate hygiene practices, and safety precautions)
- **Related to environment** (whether it is appropriate for the growth and transmission of the biological hazard).

Thus, unlike other hazards where vulnerable groups and sectors are often predefined and known (e.g., older persons, persons with disabilities, children, women, marginalized minorities, etc.), the impact of biological hazards on different groups can vary and therefore it may be difficult to identify vulnerable groups in advance.

Assessment of current capacity for rapid response and early recovery:

Existing capabilities, resources and plans, infrastructure, and services necessary to identify, respond to, and manage biological hazards; such as specialized hospitals, diagnostic and testing facilities, treatment capacity, availability of PPE, trained and equipped essential service providers, current protocols, public awareness, and behavioral aspects, etc., should be assessed. A (monetary) assessment of these resources should be conducted to identify gaps and challenges, including those related to the production and supply of basic tools such as PPE, ventilation, etc.

Understanding the interaction between multiple hazard risks through scenario planning and modeling:

Tools such as scenario planning and modeling can be used to understand and assess the potential correlation between the risks of biological hazards and other natural or human-induced hazards. It is recommended to design three potential risk assessment scenarios, a- independent occurrence of a biological hazard disaster, b- natural/man-made disasters resulting in disasters resulting from biological hazard (malaria outbreak following floods), and c- sequential or concurrent occurrence of a biological hazard with natural/man-made disasters.

Understanding the role of collaboration to conduct biological hazard risk assessments:

biological hazard risk assessments are based on the availability of accurate and reliable data, information, knowledge, and expertise across multiple sectors. In addition, data and expertise should be shared across sectors and geographic boundaries.

The following are some recommendations for integrating biological hazards into DRR strategies, as prioritized by the Sendai Framework:

Priority 1: Understanding disaster risks:

Conducting integrated risk assessments:

The assessment should include exposure, vulnerability and capacity analysis as part of an integrated policy approach. A health risk assessment should be an integral part of risk assessment when there is a need for risk-aware public health management. To respond to an epidemic or pandemic, it will be necessary to conduct a risk assessment at an early stage and to plan a scenario with impacts on different sectors. Site-based risk maps should be kept in real time to enhance coordination among different actors. Data sharing and big data analytics are also critical to this step.

Capacity enhancement and knowledge management:

Multidisciplinary collaboration is essential to produce an integrated risk assessment. Higher education and scientific research capacities should be strengthened, and innovative research in multiple disciplines and across disciplines should be encouraged. Furthermore, recording health-related disaster losses in a national disaster loss database is essential. Capacity assessment is required for the response and recovery phases, particularly for worst-case scenarios, which define roles and responsibilities within the coordination mechanism.

Priority 2: Strengthening disaster risk governance to manage disaster risk:

Reviewing regulations, legislations and policies:

Review of disaster risk management regulations or legislations should be considered to enhance the scope to include biological hazards. Relevant policies and plans also need to be allocated.

Promoting science-based governance and decision-making:

Inclusion of a multidisciplinary scientific community in disaster risk reduction national forums to ensure that different perspectives are incorporated into decision-making process.

Priority 3: Investing in disaster risk reduction for resilience to the impact of pandemics and epidemics:

Reviewing regulations, legislations and policies:

Providing Financial Strengthening and Social Protection: Financial strengthening is an important tool not only to promote economic recovery, but through appropriate social protection measures, it can also strengthen social safety nets. Existing tools and methods for registering the most vulnerable should be adapted to be quickly modified and used to identify priority groups for support.

Enhancing Business Resilience:

Maintaining a whole-of-society approach, public-private partnerships and business collaboration are important elements for ensuring continuity of supply chains.

Priority 4: Enhance disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation, and reconstruction:

Robust and integrated early warning systems:

An appropriate early warning system for biological hazards can only be developed when there is a robust public health system, which detects any biological hazards before the outbreak occurs. It is also important that the biological hazard early warning system be integrated into the current natural hazard early warning system.

Provide business continuity planning and coping strategies:

Because epidemics and pandemics are often long-term, proper business continuity planning for the affected core sectors/ministries is critical. These plans should be developed in advance or early in the event.

Impact management versus impact reduction (root cause screening) and resilience:

A risk reduction approach should be at the heart of the response mechanism. Volunteers, civil society organizations, and structures at the decentralized level that directly raise awareness and respond regularly to work under pandemic/epidemic conditions should be trained to ensure their safety and operational continuity.

Priority 1

Understanding disaster risks

Conducting integrated risk assessments: The assessment should include exposure, vulnerability and capacity analysis as part of an integrated policy approach. A health risk assessment should be an integral part of risk assessment when there is a need for risk-aware public health management.

Capacity enhancement and knowledge management: Multidisciplinary collaboration is essential to produce an integrated risk assessment. Higher education and scientific research capacities should be strengthened, and innovative research in multiple disciplines and across disciplines should be encouraged.

Priority 2

Strengthening disaster risk governance to manage disaster risk

Reviewing regulations, legislations and policies: Review of disaster risk management regulations or legislations should be considered to enhance the scope to include biological hazards.

Promoting science-based governance and decision-making: Inclusion of a multidisciplinary scientific community in disaster risk reduction national forums to ensure that different perspectives are incorporated into decision-making process.

Priority 3

Investing in disaster risk reduction for resilience to the impact of pandemics and epidemics

Providing Financial Strengthening and Social Protection: Existing tools and methods for registering the most vulnerable should be adapted to be quickly modified and used to identify priority groups for support.

Enhancing Business Resilience: Maintaining a whole-of-society approach, public-private partnerships and business collaboration are important elements for ensuring continuity of supply chains.

Priority 4

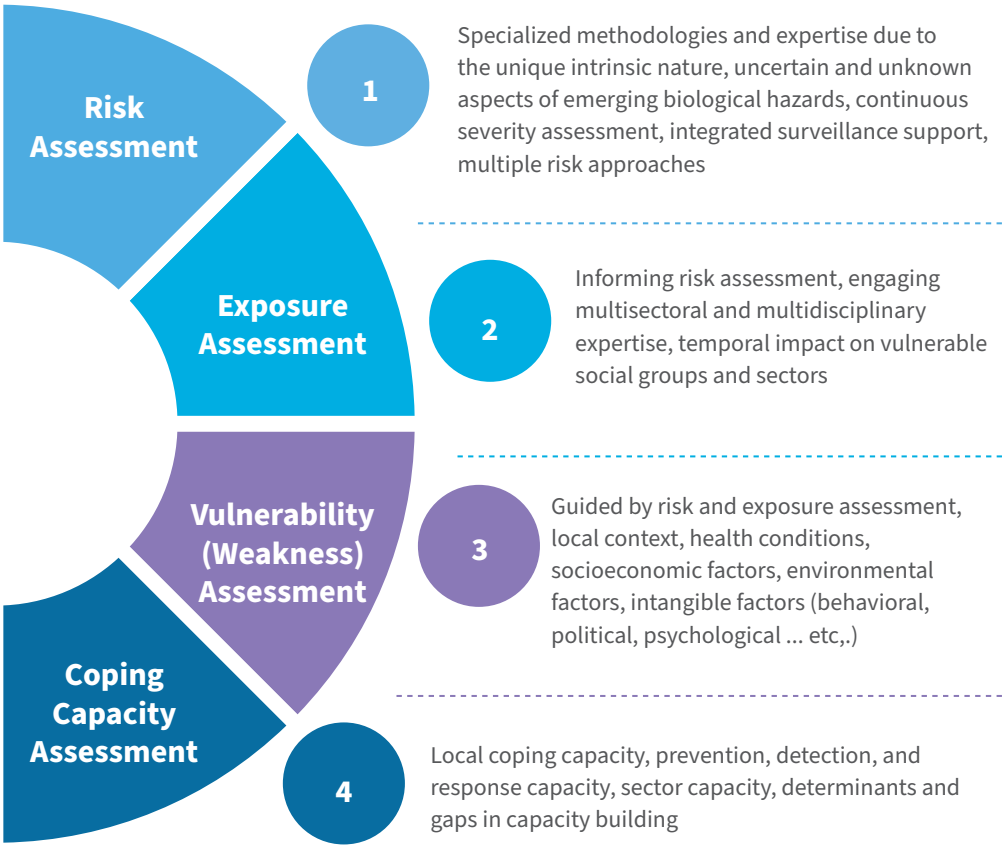
Enhance disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation, and reconstruction

Robust and integrated early warning systems: It is important that the biological hazard early warning system be integrated into the current natural hazard early warning system.

Provide business continuity planning and coping strategies: Because epidemics and pandemics are often long-term, proper business continuity planning for the affected core sectors/ministries is critical.

Impact management versus impact reduction (root cause screening) and resilience: Volunteers, civil society organizations, and structures at the decentralized level that directly raise awareness and respond regularly to work under pandemic/epidemic conditions should be trained to ensure their safety and operational continuity.

The following are some relevant considerations for the four main components of hazards - risks, exposure, vulnerability (weakness), and coping capacity:



National-Level Duties Annex

Duties	Implementing Agency	Supporting Agencies
Reviewing legislation and laws governing disaster and crises risk management and reduction, with a view to identifying duties and powers and prevent overlapping between different institutions	National Center for Security and Crises Management (NCSCM)	Ministry of Interior (MoI) Public Security Directorate (PSD) Legislation and Opinion Bureau
Analyzing and evaluating the institutional framework for disaster and crises risk management and reduction (tasks, duties, structures and potential) and identifying weaknesses and strengths to improve them	National Center for Security and Crises Management (NCSCM) Jordan Armed Forces (Arab Army-JAF) Public Security Directorate (PSD)	Ministry of Planning and International Cooperation (MoPIC) Ministry of Interior (MoI) Ministry of Local Administration(MoLA) Amman Municipality Aqaba Special Economic Zone Authority (ASEZA) Petra Development and Tourism Region Authority (PRA)
Adopting a clear and binding mechanism for coordination and cooperation among components of the national crises and disaster management process, and full cooperation with the National Center for Security and Crises Management, which is the supreme umbrella for coordinating and unifying national efforts dealing with crises and disasters.	National Center for Security and Crises Management (NCSCM) Ministry of Interior (MoI) Public Security Directorate (PSD)	All state institutions

Duties	Implementing Agency	Supporting Agencies
Develop the necessary instructions and foundations to achieve harmony and coordination among institutions at the national and local levels.	National Center for Security and Crises Management (NCSCM)	Ministry of Local Administration (MoLA) Ministry of Interior
Strengthening the principle of decentralization in activities related to the process of managing and reducing the risks of disasters and crises.	Ministry of Local Administration (MoLA) Ministry of Interior (MoI) Aqaba Special Economic Zone Authority (ASEZA) Petra Development and Tourism Region Authority (PRA)	National Center for Security and Crises Management (NCSCM)
Mainstreaming and integrating disaster risk reduction within and across all sectors, reviewing and enhancing the coherence and further development as appropriate of national and local frameworks of laws, regulations and public policies.	National Center for Security and Crises Management (NCSCM) Ministry of Culture (MoC) Ministry of Justice (MoJ) Ministry of Interior (MoI)	All state institutions

Duties	Implementing Agency	Supporting Agencies
Promote the mainstreaming and integration of disaster risk assessment and mapping in the development and implementation of land use policy, including urban planning, as well as in rural development planning and management.	National Center for Security and Crises Management (NCSCM) Ministry of Local Administration (MoLA) Ministry of Public Works and Housing (MPWH) Ministry of Education (MoE) Ministry of Higher Education (MoHE) Ministry of Social Development (MoSD) Amman Municipality Aqaba Special Economic Zone Authority (ASEZA) Petra Development and Tourism Region Authority (PRA) Royal Jordanian Geographical Center (RJGC)	Ministry of Planning and International Cooperation (MoPIC) Department of Land and Survey (DLS)
Promoting citizen education and awareness in disaster risk reduction, building a culture of safety and prevention through campaigns, social media, and community mobilization, taking into account the specific needs of all communities.	National Center for Security and Crises Management (NCSCM) Ministry of Awqaf and Islamic Affairs Ministry of Education (MoE)	Ministry of Social Development (MoSD) Public Security Directorate (PSD)

Duties	Implementing Agency	Supporting Agencies
Establish community centers to promote public awareness and provide materials for the implementation of rescue and relief activities.	Ministry of Interior (MoI) Public Security Directorate (PSD) Ministry of Youth (MoY)	Public Security Directorate (PSD)/ Civil Defense
Spread and consolidate the culture of volunteerism among all segments of the Jordanian society, and develop community training programs on responding to crises and disasters and reducing their risks.	Ministry of Youth (MoY) Ministry of Education (MoE) Ministry of Awqaf and Islamic Affairs	Ministry of Social Development (MoSD)
Collaboration with international bodies in training programs and capacity building on crises and disaster management and reducing their risks.	Ministry of Planning and International Cooperation (MoPIC) Ministry of Foreign Affairs and Expatriates (MoFA) National Center for Security and Crises Management (NCSCM)	National Center for Security and Crises Management (NCSCM) UN Organizations
Invest in, develop, maintain, and strengthen multi-sectoral crises and disasters forecasting and early warning systems.	National Center for Security and Crises Management (NCSCM)	Ministry of Transport (MoT) Meteorological Department Seismic Monitoring Center All state institutions

Duties	Implementing Agency	Supporting Agencies
Promote investments in innovation and technology development in long-term, multi-risk, and solution-oriented research in disaster risk management and reduction to address gaps, obstacles, linkages, social, economic, pedagogical, and environmental challenges.	Ministry of Higher Education and Scientific Research (MoHESR) Ministry of Social Development (MoSD)	National Center for Security and Crises Management (NCSCM) Royal Scientific Society (RSS) Public and Private Universities
Promote and mobilize scientific and technical research on disaster risk reduction through coordination of existing networks and scientific research institutions at all levels. Also, creating effective partnerships between universities, institutes, research centers and decision makers at the national and local levels.	Ministry of Higher Education and Scientific Research (MoHESR) Ministry of Education (MoE) Royal Scientific Society (RSS) National Center for Security and Crises Management (NCSCM)	Public and Private Universities
Promoting scientific research on the patterns, causes and impacts of disasters; dissemination of risk information by optimally using geographic information technology.	Ministry of Higher Education and Scientific Research (MoHESR) Ministry of Education (MoE)	Royal Scientific Society (RSS) Royal Jordanian Geographical Center (RJGC)

Duties	Implementing Agency	Supporting Agencies
Provide guidance on methodologies and standards for risk assessment, disaster risk modeling and data use.	Ministry of Education Ministry of Digital Economy and Entrepreneurship (MoDEE) National Center for Security and Crises Management (NCSCM)	Ministry of Planning and International Cooperation (MoPIC)
Building and enhancing the knowledge of government officials at all levels, civil society, communities, volunteers, as well as the private sector, by sharing experiences, lessons learned, good practices, training and education on disaster risk reduction.	National Center for Security and Crises Management (NCSCM) Ministry of Local Administration (MoLA) Ministry of Social Development (MoSD) Ministry of Youth (MoY) Ministry of Culture (MoC) Amman Municipality Public Security Directorate (PSD)	Royal Scientific Society (RSS) Institute of Public Administration (IPA)
Promote regular disaster preparedness/readiness, response and recovery, including evacuation exercises.	National Center for Security and Crises Management (NCSCM) Public Security Directorate	Ministry of Interior (MoI) Ministry of Local Administration (MoLA)
Review current disaster risk reduction strategies, policies, plans and activities to explore potential interdependence and integration.	National Center for Security and Crises Management (NCSCM)	Ministry of Interior (MoI) Jordan Armed forces (JAF) Public Security Directorate (PSD)
Publishing and promoting the best regional practices, case studies, good examples, and success stories.	National Center for Security and Crises Management (NCSCM)	Ministry of Higher Education and Scientific Research (MoHESR) Royal Scientific Society (RSS)