Strategic Toolkit for Assessing Risks

A comprehensive toolkit for all-hazards
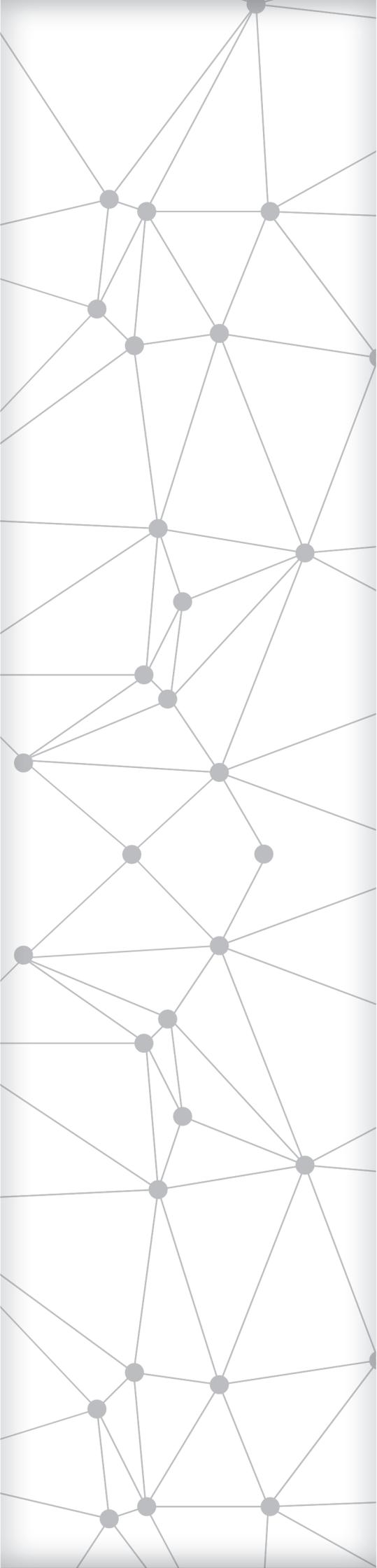health emergency risk assessment

World Health Organization

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Abbreviations

BCP	Business Continuity Plan
EDRM	Emergency and disaster risk management
GDP	Gross domestic product
Health EDRM	Health emergency and disaster risk management
IASC	Inter-Agency Standing Committee
ICT	Information and communications technology
IHR	International health regulations (2005), 3rd edition
ISO	International Organization for Standardization
IT	Information technology
JEE	Joint External Evaluation
NHEROP	National Health Emergency Response Operations Plan
ProMED	Program for Monitoring Emerging Diseases
PHSM	Public health and social measures
R&D	Research and development
RCCE	Risk Communications and Community Engagement
SPAR	State Party Self-Assessment Annual Reporting
SMART	Specific, measurable, achievable, realistic and timely
STAR	Strategic tool for assessing risks
WASH	Water, sanitation and hygiene
WHO	World Health Organization

Executive summary

Most countries are likely to experience a large-scale emergency approximately, and many will face seasonal returns of hazards, including cyclones, flooding, and disease outbreaks. Although countries may seek to address all risks in a timely and efficient manner, using risk-based approaches can help to optimize resource utilization and allow them to prioritize actions to be ready to respond to potential emergencies.

The public health risks associated with emergencies and disasters stem from the interaction of biological, technological, societal and/or natural hazards, with communities. When risks related to emergencies and disasters are not effectively managed, they may result in significant short- and long-term consequences at the individual, community, city, national and global levels.

Potential consequences of emergencies and disasters may include:

- Health consequences for the population, including increased illness and injury, negative effects on mental health and psychosocial wellbeing, worsening of underlying medical conditions, excess mortality, etc.
- Forced displacements of affected populations, including internally displaced persons and refugees.
- Damage to overall infrastructure, including living and working premises, strategic industrial and public infrastructure and health facilities, reducing access to and disrupting preventive and curative health and other services.
- Economic losses, impacting livelihoods and further reducing access to health and other services.
- Frustration, social tension and potential violence or unrest.
- Ecosystem degradation and biodiversity loss, resulting in disruption of the environment with various health consequences.

In order to adopt a risk-based approach to managing health emergencies and mitigating risk, countries first need to identify hazards and assess their level of risk within the country. The results from a risk assessment allows proper planning and prioritization of efforts to better prevent, mitigate, detect early, prepare for, be operationally ready for, respond to, and recover from a health emergency or disaster.

The Strategic Tool for Assessing Risks (STAR) offers a comprehensive, easy-to-use toolkit and approach to enable national and subnational governments to rapidly conduct a strategic and evidence-based assessment of public health risks for planning and prioritization of health emergency preparedness and disaster risk management activities.

The STAR approach, which involves six key steps, uses a participatory approach and consolidation of existing evidence to describe the risks in the country including:

1. Identify country hazard(s) and describe the most likely scenario to require activation of national response
2. Assess the likelihood of the risk occurring
3. Estimate the impact of the risk to the country

4. Determine the estimated level of risk

5. Draft key recommendations and priority actions based on the risk ranking

6. Integrate recommendations into the national and subnational action planning process

The expected outputs from a STAR workshop is a country risk profile, which includes:

- A risk matrix (ranking risks visually on a 5x5 matrix, describing likelihood and impact of the hazard)
- A risk summary (describing health consequences, scale of the hazard and identified population at risk, frequency of occurrence, likelihood to occur, seasonality, severity, vulnerability, coping capacity, potential impact, and confidence level in data available for each hazard)
- Overall workshop report that consolidates the risk matrix, risk summary, as well as initial short-term prioritized action planning.

Using the results of the strategic risk assessment, countries will be able to apply evidence to inform country planning, prioritize key actions for rapid scale-up of capabilities for high risks, and rationalize and make effective use of limited resources for strengthening health emergency and disaster risk management capacities in the context of competing priorities.

1. Introduction

1.1 Context

The scale and complexity of health and humanitarian emergencies continues to expand. Between 2011 and 2016, WHO reported over 1000 epidemics across 168 countries. By the end of 2016, 128.6 million people globally required aid, of which 65.3 million had been forcibly displaced from their homes. Both figures represent the largest on record. Around 80% of health and humanitarian situations are due to violent conflict, often in the context of chronic underdevelopment and state fragility *(1)*. Moreover, more than 200 million people annually are impacted by natural and technological disasters, requiring a rapid and targeted response.

In order to minimize the health risks and consequences of all types of emergencies and disasters, countries and communities are recommended to adopt a risk-based approach to emergency management *(2)*. To do this effectively, it is critical to identify, map and describe risks within a given area in order to inform the priority actions that will drive national and subnational planning for emergency preparedness and response. This includes strengthening the necessary coping capacities and reducing the exposure and population vulnerability to hazards. The identification of vulnerable groups, such as refugees, internally displaced persons, migrants and prisoners, are crucial elements of strategic risk assessments that help prioritize targeted actions to address needs, enhance equity and promote inclusiveness in the distribution of resources in order to reduce the short and long-term consequences of risks for the most affected populations.

Aligned with the International Health Regulations (IHR 2005) Monitoring and Evaluation Framework *(3)*, which calls for countries to develop a country risk profile, STAR consists of a comprehensive toolkit that enables national, subnational, and local authorities to rapidly conduct a strategic and evidence-based assessment of public health risks in order to inform emergency preparedness and response planning and prioritize key emergency preparedness actions. While the STAR process does not replace other more rigorous methods of predicting risk within the country, such as those involving advanced mathematical modelling; it does provide an easily adaptable all-hazards approach that enables the consolidation of available evidence and exchange of national and subnational emergency management experience among multisectoral experts.

This guidance describes the principles and methodology of STAR to enhance its adaptation and use at the national or subnational levels. The tool emphasizes qualitative analysis and participatory approach to risk assessment. As such, implementation of STAR is facilitated through a workshop, which allows multi-sectorial stakeholders to engage and build on available scientific evidence, expertise and experience to methodologically describe and rank risks as well as to recommend appropriate actions to prevent, prepare for, respond to and recover from emergencies and disasters. The tool has been validated through 64 pilot workshops and a global consultation hosted by the WHO Region of the Americas in November 2019. A simplified STAR data toolkit developed automatically generates the relevant risk information once data is inputted into appropriate sections by the workshop participants.

1.2 Rationale and purpose

The purpose of STAR is to support countries (at both the national and subnational level), cities and local communities to assess the public health risks associated with identified hazards, prioritize actions planning in order to be ready for likely risks with emergency potential and support the scale-up of preparedness and the readiness to respond.

Empowered with a risk profile that includes description of risks (affected geographical areas, potential impact, population vulnerability and coping capacities), national and subnational authorities can strengthen their health sector and systems' emergency preparedness and response planning and anticipate threats and potential emergencies before they occur. The early days of an emergency response largely represent a test of a country's preparedness actions and plans at both local and national levels. Therefore, risk-informed scale-up of preparedness actions would result in increased readiness to address an imminent threat and minimize the start-up time and costs of emergency response mechanisms to drive a more effective emergency response. Such a risk-informed approach to emergency and disaster preparedness and response planning would culminate in reduced effects of potential emergencies, including preventing excess mortality and morbidity.

1.3 Key principles of STAR

The STAR has been developed based on the following principles:

- **All-hazards approach:** As different types of hazards are associated with similar risks to health, and many emergencies and disaster risk management (EDRM) functions are similar across hazards (e.g., planning, logistics, risk communications), it is neither efficient nor cost-effective to develop separate, stand-alone capacities or response mechanisms for each individual hazard. Health emergency management policies, strategies and related programmes should therefore be designed to address common issues with common capacities, supplemented by risk-specific capacities *(4)*.

- **Whole-of-society approach:** STAR recognizes and promotes the participation and coordination of relevant stakeholders in health and other sectors at all levels of society. These key stakeholders are information-rich and contribute to effective risk assessment, having been identified to play crucial roles in the development and management of emergency preparedness and response actions.

- **Health system approach:** STAR captures the risks from any hazards at all levels of the health system in a given country (primary, secondary and tertiary levels). STAR can also be implemented at all levels of the health system to take into account the risks at the community, municipality, city, other subnational and national levels.

- **Risk-informed evidence compilation:** The tool uses primary or secondary data available in the country derived from research, assessments, surveillance, evaluations of previous emergencies, International Health Regulations (IHR 2005) monitoring, inclusive of the IHR State Party Self-Assessment Annual Reporting Tool (SPAR), meteorological profile description, and any other relevant data.

- **Transparency:** The data and information applied in the STAR should have the agreement of all stakeholders, including government authorities and partners, to build trust, enhance the acceptability of findings and drive their commitment to the implementation of actions and recommendations of the risk assessment.

1.4 Target audience

The risk assessment methodology is relevant to a wide range of stakeholders across relevant sector involved in emergency and disaster response management. The key stakeholders include various levels of government, ministries and other public institutions, intergovernmental organizations, the private sector, faith-based organizations, civil society, the media, academic and research institutions and voluntary associations (Table 1). While the STAR is focused primarily on health emergencies, this guidance is also relevant for non-health authorities that would mobilize in the event of a biological, societal, technological, natural, human-induced, or environmental emergency. Additional stakeholders may be considered depending on the contexts and settings:

- health planners primarily, but not only, in ministries of health, who will typically be involved in developing national health emergency response operations plans (NHEROPs) and be responsible for helping translate those plans into action if and when emergencies occur;
- personnel from other sectors such as water and sanitation, housing, transportation, information and communication, who will be expected to contribute their experience and knowledge to the development and implementation of NHEROPs.

Table 1: Key stakeholders of strategic risk assessments

Type	Description
Government	National government authorities and leadership, such as the office of the President or Prime Minister, Ministries of Health or Interior, other relevant agencies and ministries that manage emergency response or disasters as well as humanitarian situations within the country.
Decision/policy	Decision/policy level authorities involved in health emergency or disaster management policy and programme development at all levels and sectors.
Technical	Experts from sectors such as human health, animal health, disaster management, environment, infection prevention and control, water, sanitation and hygiene (WASH), climate and weather services, defence, food safety, urban planning, radiation, chemical, migration, transport, shelter and housing, emergency operations and coordination, humanitarians, protective services, gender, disability, vulnerable groups.
Academia and research institutions	Relevant research arms of institutions, universities and institutes of higher learning and training involved with and engaged in health EDRM as well as student associations.
National Public Health Institutions	Science-based governmental organizations and subject-matter experts
Private sector	Private sector (privately owned water, telecommunications, technology, managers of hazardous facilities, etc.), industry associations, transportation.
Humanitarian and development partners	Technical partners, donors and non-governmental organizations (NGOs) involved in health emergency management

Type	Description
Professional bodies	Relevant professional associations, such as a hospital union, occupational health, medical and para-medical unions (such as nurses, midwives, hygienists), relevant multi-sectoral committees and associations, and other relevant professional bodies.
Other civil society	Community leaders and actors as well as representatives, community-based organizations, interest groups, youth activists in relevant fields, and associations of vulnerable groups (indigenous groups, migrants, older populations, etc.).

1.5 Geographical scope

STAR is a flexible tool that can be applied at the national and subnational level, including cities and communities, to help describe risks and support the development of the risk profiles within a specific geographical area. Before conducting a STAR workshop, the workshop organizers should determine and define the geographical scope to better tailor subsequent preparation steps to the relevant stakeholders. Based on the determined geographic scope, the potential outputs of a STAR workshop are presented in Table 2.

Table 2: Geographical scope and potential STAR workshop outputs

Geographical Scope	Potential Outputs
National	Description of country risk profile at a national level with hazards that merit a national-level response.
Subnational/city	Subnational/city risk profile that includes a more in-depth and detailed description of risks facing a given city or subnational geographic area that may merit a response.[1]
Local/Community-level	Localized and contextualized risks described, including a description of how risks may affect certain vulnerable groups community-level coping capacities.

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[1] The relationship and interactions amongst national and subnational authorities as well as local authorities may also be discussed, especially if the country operates a federal governance system.

1.6 Timing: when should a strategic risk assessment be conducted?

A strategic risk assessment can be conducted at all stages of the emergency preparedness and response cycle, including during an ongoing emergency. An updated country risk profile resulting from the STAR can provide evidence for prevention, preparedness planning and scale-up of early actions, readiness, response, and recovery and building better for the future. Health emergency managers may also prioritize actions across all phases of emergency management, including allocation of resources and dialogue with partners during an ongoing emergency response to prevent and/or mitigate concurrent emergency risks, and adapt contingency plans based on a risk-informed approach.

A strategic risk assessment can be conducted at all stages of the emergency response cycle, including during an emergency.

However, a country risk profiling exercise would ideally be carried out prior to any major emergency in order to better support decision-makers and emergency planners. When a strategic risk assessment is implemented before an emergency occurs, emergency planners and disaster risk managers can improve preparedness and take advanced readiness actions that are both risk-informed and based on the country's collective experience. A full list of applications of STAR results at each phase of emergency response are presented in Table 3.

1.7 Frequency of STAR implementation

Subject to the availability of resources, the appropriate national and sub-national authorities should apply STAR every 2-3 years to update their risk profile, develop action points and recommendations to prevent, respond to and recover from risks and monitor the implementation of recommendations from previous STAR workshop, alongside their integration into the national or subnational action planning process. Specifically, it is important to review and update STAR results during the following circumstances:

- Given significant changes in any of the parameters used in the STAR methodology (likelihood, severity, vulnerability, coping capacity), or other external attributes with the potential to impact health risk, such as climate change
- Following any emergency response
- Following a sudden forced displacement of a population, including internally displaced persons and refugees; and
- During a pandemic.

Table 3: Applications of STAR results during phases of emergency response

Emergency phase	Applications of STAR results	Outcomes
Prevention	• Provide evidence to risk reduction or elimination programmes (immunization, vector control, water, sanitation and hygiene (WASH), and risk prevention campaign, etc.) • Provide gap analysis and evidence to ongoing programs related to zoonotic diseases and One-Health coordination • Provide consolidated information to risk communication and community engagement and health promotion stakeholders and link to existing two-way communication pathways for stakeholders	Risk-informed advocacy and financial prioritization Integrated actions in national plans for sustainable implementation
Preparedness planning and readiness	• Inform preparedness planning to address relevant hazards (e.g. contingency plan, emergency response plan, disaster management plan, business continuity plan) • Provide information to inform country early warnings/early actions • Provide gap analysis to inform risk-informed scale-up of health workforce capacity building, strategic stockpiling, and coordination • Allocate resources to priority preparedness and readiness interventions	
Health emergency response	• Provide evidence to drive early response strategy, including infodemic management as well as risk communication and community engagement strategies. • Anticipate potential concurrent emergencies and inform management of additional risks	
Risk management during ongoing emergency response	• Adapt emergency response actions to take into account seasonal risks • Use risk-based approach to prevent and prepare for potential concurrent emergencies • Prioritize adaptation of contingency plans of high risks • Review health surge capacity to manage ongoing risks during concurrent emergency response-phase.	
Recovery and building better for the future	• Provide evidence to the recovery plans and priority actions • Provide information to link the recovery phase to the country's longer-term preparedness and development agenda such as the national action plan for health security (NAPHS)	

1.8 Adapting the STAR methodology

STAR is flexible and suitable for adaptation to various contexts and settings to address emergency and disaster risks. While STAR has primarily focused on assessing risks at the national level, there is an increasing need to identify and address specific needs at the community, city or state level. Such a subnational level need could be identified during a national STAR workshop or similar exercises and may involve dealing with imminent or ongoing emergencies, promoting the Healthy and Resilient Cities initiative, and exploring the risks around a vulnerable population, such as refugees, children, people with disability etc. Even at the national level, STAR could be adapted to generate the evidence base for strengthening emergency and disaster risk reduction capability. For example, STAR was adjusted to explore infectious hazards and climate-related risks in Bangladesh and Sweden, respectively.

For further information on how to adapt the STAR methodology to various situations, see Annex 1.

1.9 Alignment with existing tools

The STAR outputs may be used in complement to other existing tools. These tools may include the following:

- Vulnerability analysis (which may be used to provide further details on the capacity indicators)
- Rapid risk assessment of acute public health events
- Post-disaster needs assessment.

2. The STAR methodology

STAR is designed to support national and subnational governments, cities and communities to conduct a strategic risk assessment using a qualitative, participatory and discussion-based approach. Through the inclusive and transparent participation of key stakeholders in a STAR workshop, an emergency risk profile is developed based on a review of existing evidence and the collective experience of participants.

A strategic risk assessment uses a step-by-step process to describe risks within a specified geographic area to develop an emergency risk profile. Through a discussion-based consensus-building process that references existing data and emergency response experience, multisectoral experts come together identify hazards that may warrant a national response effort, the likelihood of each hazard to occur, and the hazard's potential impact (Figure 1).

These key steps in the risk assessment include:

- **Step 1:** Identify hazards and describe the scenario most likely to require the activation of a coordinated response
- **Step 2:** Evaluate likelihood
- **Step 3:** Estimate the impact
- **Step 4:** Determine the risk level
- **Step 5:** Finalize recommendations and workshop report
- **Step 6:** Integrate recommendations and priority actions into national or subnational action plans for sustainable capacity building (after the workshop).

Facilitators and participants are advised to use the STAR data tool, which consists of a user-friendly data entry component and an automated risk calculation matrix, to record the results of each step of the strategic risk assessment and support the ranking of hazards through the risk matrix.

> **Note**
>
> As STAR is a qualitative-based tool, it is important to facilitate informed discussions amongst workshop participants and generate consensus amongst the larger group. Facilitators should probe to gain deeper understanding of the issues raised during the discussions.
>
> Facilitators may choose to divide the workshop participants into smaller sub-working groups to generate the outputs required for each STAR step in order to foster discussion.

Figure 1. Summary of strategic risk assessment using STAR

STEP 1:
Identification of hazards that are most likely to require the activation of a coordinated response

- Hazard
- Health consequences
- Scale
- Exposure

STEP 2:
Evaluation of the likelihood

- Frequency
- Seasonality
- Likelihood

STEP 3:
Determination of the impact

- Severity
- Vulnerability
- Coping capacity

STEP 4:
Determination of the risk level

Determination of the confidence level in information informing inputs

STEP 5:
Finalization of the risk profile

Determination of next steps (key actions and recommendations) based on country risk profile

STEP 6:
Integrating key actions and recommendations into appropriate national / subnational plan(s)

2.1 Step 1: Identify hazards and describe the most likely scenario that requires the activation of a coordinated response:

In Step 1, participants should list relevant hazards that would most likely require the activation of a coordinated response as well as describe each hazard's potential negative health consequences. In addition, during this step, participants will also estimate the scale and level of exposure of the population based on the most likely scenario to require a coordinated response. The critical support steps in achieving this are described below.

Step 1a: Identify hazards

The first step of conducting a strategic risk assessment is to identify the hazards that are relevant to be assessed. To do this, workshop participants should prioritize their selection based on the most likely scenario to trigger the activation of a national-level coordinated response.

To identify hazards for the strategic risk assessment, participants can refer to:

- hazards identified in previous formal or informal risk assessments and reference information from surveillance reports, capacity assessment reports and official databases.
- hazards from neighbouring countries or geographic areas with potential cross-border risk.
- previous responses to emergencies drawing on the collective experience of multi-sectoral experts
- WHO Classification of Hazards (see Annex 2), which provides a comprehensive overview of biological, hydro-meteorological, extra-terrestrial, technological, societal and environmental hazards.

It is important to note that not all hazards listed will be relevant for a specific country context. For example, a country with no volcanoes should not select 'volcanic eruption' as a hazard as this is not very likely to occur given the context of that country. Participants may also give special consideration to typical periods with high population movement, such as period of increased tourism or designated mass gatherings, particularly during the description of seasonal hazards.

In view of potential time constraints, participants may choose to include only a manageable number of hazards in the risk assessment, prioritizing hazards that may result in a scenario warranting a coordinated response.

> **Note**
>
> If the country or region has held a strategic risk assessment exercise in the past, the list of hazards identified during that previous exercise should be used as a starting point for the STAR workshop and reviewed as part of an updated list of hazards related to the country context.

Step 1b: Identify possible negative health consequences

For the purposes of the STAR exercise, negative health consequences are defined as downstream effects that result from a hazard, which cause or contribute to ill health. In describing negative health consequences, STAR participants may include physical, psychological, social, economic and environmental consequences that would impair the health of a population at risk and/or impact the health system.

During this step, it is recommended that workshop participants consider how these consequences may intersect with social risk factors (gender, socioeconomic status, disability, etc.) or act as multiplying factors for the most vulnerable populations that may be affected by the hazard.

Participants may also decide to describe the health consequences of each hazard in the short, medium and/or long term.

Example of the description of health consequences for a hazard	
Hazard	Flooding
Immediate consequences	drowning, injuries, animal bites, snake bites, trauma, etc.
Secondary consequences	waterborne disease, vector borne disease, disrupted health services in at-risk health facilities (including damage to health facilities in flood-prone areas), food insecurity, etc.

> **Note**
>
> It is critical that all health consequences are contextualized to the relevant likely scenario in the country. Participants should also consider potential disruption to essential health services as a negative consequence as relevant to the hazard and scenario.

Step 1c: Describe the scale and map the hazard

In the STAR methodology, the next step for conducting a strategic risk assessment is to describe the scale and magnitude of the hazards identified based on the most likely scenario to require the activation of a national response in relation to each hazard. In this step, participants should identify and describe both (i) the geographical area(s), including at the community-level, and (ii) the population setting(s) (i.e. rural, urban, concentrated/closed, dispersed/open, IDP or refugee camp settings) that are likely to be directly affected in the event of that scenario.

Step 1d: Assess and describe the exposure to the hazard

In the STAR methodology, assessing the exposure consists of estimating the number of people likely to be exposed to the hazard and its health consequences. This population is described as the **"population at risk"**.

- For geological, hydrometeorological, societal or technological hazards, workshop participants should estimate the number of people living in a high-risk geographical area(s)
- For communicable diseases, workshop participants should estimate the number of exposed people who could become infected because they are susceptible to the pathogen (i.e. people not immunized, people living in crowded housing, etc).

> ➤ The final output of Step 1 is a list of hazards relevant to be assessed in the given context. For each hazard listed, there should be a description of the **most likely scenario** to require the activation of a coordinated response, indicating possible negative health consequences as well as the extent and level of exposure.

2.2 Step 2: Evaluate likelihood

Once a list of hazards has been prepared and the most likely scenarios to require the activation of a coordinated response have been described, participants should begin Step 2, which is to evaluate the likelihood of the hazard occurring. This step is based on data and information available in the setting (evidence-based approach).

During this step, workshop participants can refer to the data and information compiled before the start of the workshop (see Box 1), their own knowledge networks, and historical data to determine the likelihood of a hazard to occur.

By taking into account the historical information related to the hazard, the recent trends in the previously identified geographical setting, the frequency and the seasonality of each hazard will define the likelihood of the hazard occurring in the next 12 months at the scale defined in Step 1.

Box 1. Relevant information and data to be gathered in advance of a STAR workshop

To support the evaluation of likelihood, relevant information and data to be gathered in advance of a STAR workshop may include:

Data from surveillance and early warning systems	Additional information and reports that are recommended if available:
- notifiable diseases - sentinel surveillance - disease registry - syndromic surveillance - risk monitoring system - health resources availability monitoring system - disease modelling - laboratory surveillance and capacity evaluations - community-based surveillance (social networks, newspapers, etc.) - death registries - verbal autopsy reports. **Data from other sectors** - health data coming from other sectors (for example airlines, food safety, animal health, environment) - population and movement mapping - humanitarian or internally displaced persons reporting - weather patterns, flood mapping, geological surveys - vulnerable population mapping or relevant data information from civil society organizations. **Open-source data compilation databases and available analysis** - Global Health Observatory data *(4)* - international data sharing platforms (e.g. Global Public Health Intelligence Network, ProMED *(5)* etc.) - INFORM index for risk management *(6)* - DesInventar *(7)* - data-driven model for forecasting - spatial atlases - meta-databases.	- relevant maps of the country (printed or virtual) - population surveys (nutritional, vaccination coverage, retrospective mortality) - contingency plans - multi-hazard emergency response plans - pandemic influenza and other disease specific plans (i.e. Ebola, measles, cholera, etc.) - vulnerability assessment and mapping report - country capacity assessments report - other risk assessment reports - intra and after-action review reports - simulation exercise reports - policies relevant to health workforce and emergency response - laboratory capacity assessments - State Party Annual Reporting (SPAR) - Joint External Evaluation (JEE) Tool report - anthropological or community dynamic analysis, including behavioural insights and social listening studies - Inter-Agency Steering Committee (IASC) Multisectoral initial rapid assessment (MIRA) *(8)* - IASC Early Warning, Early Action Reports.

Step 2a: Define the frequency of the hazard

In the STAR methodology, the frequency of a hazard refers to the number of times a scenario that would require the activation of a coordinated response would occur within a specified time interval *(9)*. Workshop participants should define the frequency of the hazard considering the most likely scenario (see Table 4).

Table 4: Description of the hazard frequency categories

Frequency	Description
Perennial	Regular or seasonal events during the year
Recurrent	Events occurring every 1–2 years
Frequent	Events occurring every 2–5 years
Rare	Events occurring every 5–10 years
Random	Unpredictable events for which the frequency cannot be determined

Step 2b: Define the seasonality of the hazard

By mapping the seasonality of hazards, national and subnational authorities are better able to plan, prioritize and implement timely and appropriate actions to mitigate risk, scale-up readiness capabilities, and be ready to respond.

Defining the seasonality of each hazard involves identifying the months of the year during which the hazard is most likely to occur. Based on a consensus approach, workshop participants should define the seasonality of the hazard on a green-red colour scale, with 'red' indicating the point in time when the hazard is most likely to occur. For example, Figure 2 shows an identified hazard that may occur every year between March and July with a peak likelihood in May.

Figure 2. STAR emergency and disaster risk calendar, country X

Lowest ☐ Moderate ☐ High ☐ Peak
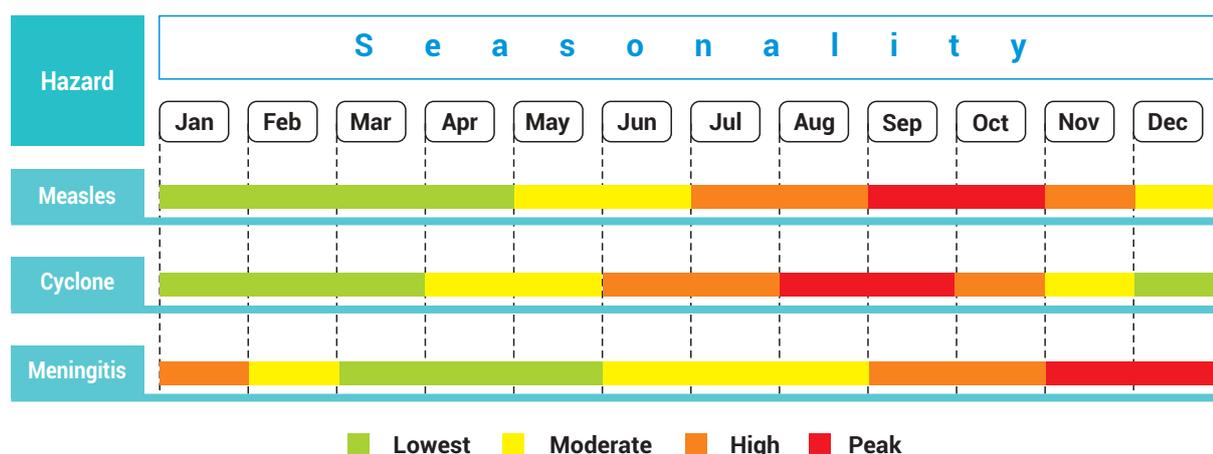
> **Note**
>
> Some hazards may not have a clear seasonal association and should not be included in the seasonality mapping (i.e. earthquakes). However, workshop participants are encouraged to describe the seasonality of hazards when possible.
>
> When determining seasonality of hazards identified, it is important for multisectoral experts to consider any effects that population movement and seasonal tourism may have.

Step 2c: Determine the likelihood of a hazard

Once frequency and seasonality have been defined, the resulting outputs can be used to determine the likelihood of a hazard. During this step, workshop participants estimate the probability of the hazard occurring in the setting in the next 12 months at the scale defined in Step 1. As in previous steps, workshop participants should draw on all available hazard-specific data and expert opinion to allow them to classify the likelihood of each identified hazard based on a sliding scale from almost certain to very unlikely (see Table 5).

Table 5: Overview of likelihood assessment categories in the STAR approach *(10)*

Level	Description
Almost certain	The scenario developed in Step 1 is likely to occur in the next 12 months in most circumstances (e.g., probability of 95% or more).
Very likely	The scenario developed in Step 1 is likely to occur in the next 12 months in most circumstances (e.g., a probability of between 70% and 94%).
Likely	The scenario developed in Step 1 could occur in the next 12 months some of the time (e.g., a probability of between 30% and 69%).
Unlikely	The scenario developed in Step 1 could occur in the next 12 months some of the time (e.g., a probability of between 5% and 29%).
Very unlikely	The scenario developed in Step 1 could occur in the next 12 months under exceptional circumstances (e.g., a probability of less than 5%).

> **Note**
>
> In order to most accurately assess and describe the frequency, seasonality and likelihood of an identified hazard, STAR workshop participants require the best data and information available, including data from surveillance and early warnings, events records, data-driven models for forecasting, spatial atlases, meta-databases, weather forecasting, etc. Data and information should be made available in advance of the STAR workshop.
>
> If relevant data is missing during the workshop, facilitators are recommended to support country experts to bring relevant experience in order to allow participants to agree on the evaluation of the parameters needed to determine the likelihood of each identified hazard.

> ➤ The output of step 2 is a determined level of likelihood for each hazard listed based on the most likely scenario to require the activation of a coordinated response.

2.3 Step 3: Estimate hazard impact

The third step in a strategic risk assessment using the STAR methodology is to calculate the impact of each hazard, based on the most likely scenario to require the activation of a coordinated response. Three points of consideration – severity, vulnerability, and coping capacity – are assessed separately, and the results then used to calculate an estimated impact of the hazard.

Step 3a: Assessment of severity

When conducting the severity assessment for biological hazards, the following information is required:

- Transmission potential (mode of transmission or basic reproduction number [R0])
- level of negative consequences on population (morbidity, forced displacement of a population and mortality, population movement restrictions)
- Disruption to essential health and other services (excess mortality and morbidity, risk of outbreaks, immunization service disruption leading to decrease in vaccination coverage, malnutrition, psychological health)
- Effect on health workforce (risk to health workers).

When conducting the severity assessment for geological, hydrometeorological, technological and societal hazards, the following information is required:

- level of negative consequences on population (morbidity, forced displacement of a population and mortality, mental stress, population movement restriction)

- consequences to the country health workforce
- disruption to essential health and other services.

> **Note**
>
> Under the International Health Regulations (IHR 2005), the level of negative consequences on population is determined by considering: (i) whether the number of cases and/or deaths for this event is large for the given time/place/population; (ii) if the event has a high potential public health impact; and (iii) whether external assistance is required *(11)*.
>
> It is up to the experts in the workshop to define how long "prolonged" disruption of services will be — this could be agreed at 1–3 months or more, depending on the context of the setting.

In the STAR methodology, severity assessment is based on the two assessment algorithms shown in Figure 3 (biological hazards) and Figure 4 (geological, hydrometeorological, societal and technological hazards) below. Participant discussion under this step may be relevant to capture and record within the workshop report.

Figure 3. Algorithm for assessment of the level of severity (biological hazards)
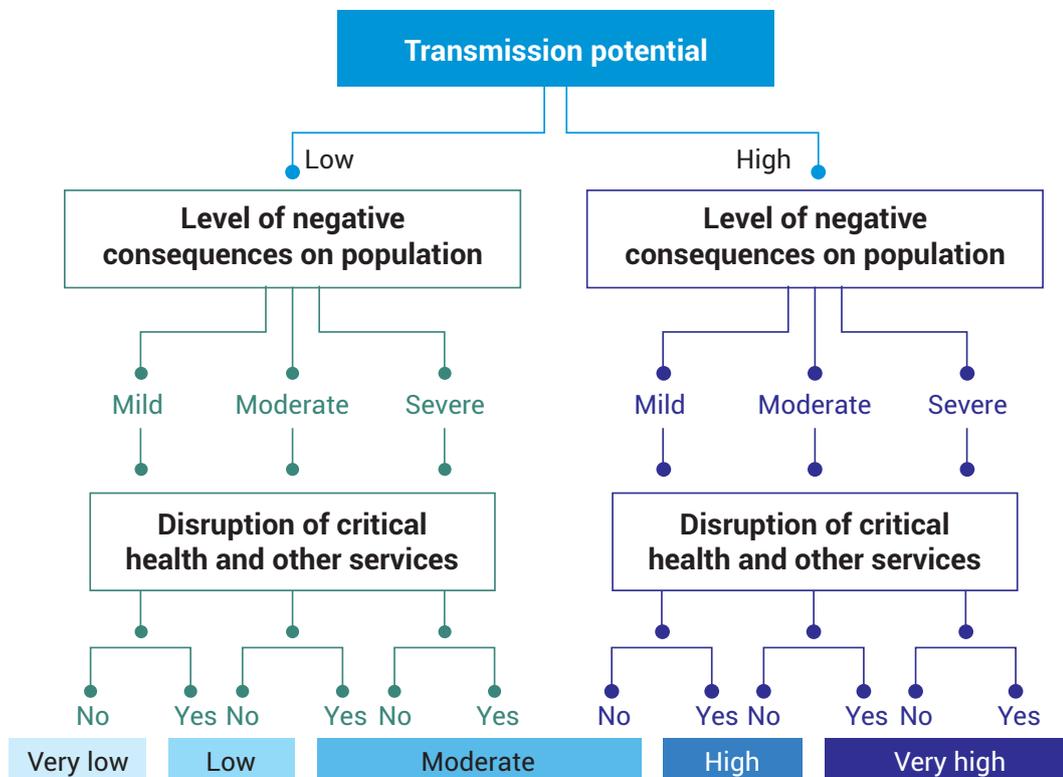
Figure 4. Algorithm for assessment of the level of severity (geological, hydrometeorological, societal and technological hazards)
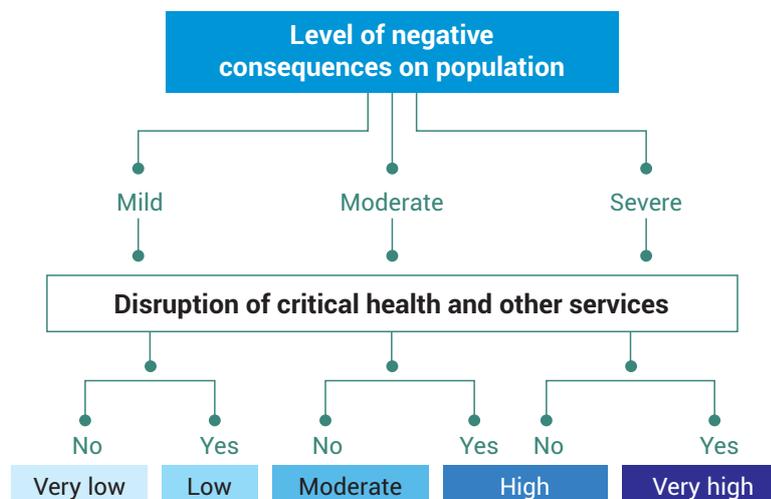
Step 3b: Assessment of vulnerability

Vulnerability refers to the characteristics and circumstances of an individual, community, system or asset that make it susceptible to the damaging effects of a hazard. When assessing vulnerability as it relates to a particular hazard, the following factors should be considered in relation to the population:

- **Health status of the populations at risk** (gender, age, chronic conditions, malnourishment, immunity, etc.)
- **Social determinants of health** (literacy, unemployment, access to housing, income status)
- **Presence of vulnerable groups** (migrants, homeless, displaced populations, older adults, etc.) in affected areas
- **Environmental factors** (unsafe drinking-water, sanitation and waste management, food insecurity, environment pollution, proximity of mosquito vector breeding sites, proximity of industrial establishments with major risks, overcrowding, community and political unrest, etc.).

Table 6 shows the level of vulnerability by category. To allow for consistent scoring across all hazards identified, the levels of vulnerability are defined by the experts in the workshop.

> **Note**
>
> Vulnerability analysis may be conducted at the national, subnational, city and community level dependent on the context. Subpopulations should be considered in relation to each hazard during this analysis step. Countries may have specific tools to assess vulnerabilities of the population in-depth; these should be referenced during this working session as relevant.

Table 6: Level of vulnerability by category

Score	Level of vulnerability	Description
5	Very high	Will be defined during the workshop.
4	High	
3	Moderate	
2	Low	
1	Very low	

Note

To allow for consistent scoring across all hazards identified, it is left to the multisectoral experts in the workshop to define the levels of vulnerability. This determination should be documented in the workshop and included in the workshop report.

Step 3c: Assessment of hazard-specific coping capacity

Coping capacity measures how people, organizations, and systems use available skills and resources to manage adverse conditions, risks or disasters as related to the identified hazard. In the STAR methodology, workshop participants should not only consider the availability of the requisite capacities but also determine how functional the identified coping capacity is in relation to each identified hazard.

To help describe coping capacity for each hazard, participants may consider the following coping capacity framework *(12)*:

Governance

- National policies, strategies, legislation, regulatory systems that integrate emergency preparedness, readiness and response
- Existing plans for emergency preparedness, response and recovery
- Multisectoral coordination mechanisms inclusive of health
- Research development and regulatory legislation that inform and accelerate emergency preparedness and response, inclusive of vaccine development, therapeutics and biomedical equipment
- Existing regulations and legislation related to new and unknown pathogens *(4)*

Health sector

- Existing surveillance and early warning systems, laboratory networks, information and knowledge management, including detection, identification, analysis and dissemination of information at the given scale

- Functional capacity of health facilities to manage expected caseloads in potentially affected areas
- Supply chain functionality including the level of access to diagnostics and essential health products during emergencies
- Functionality of basic and safe health and emergency services
- Key human resources, inclusive of training and competency development and occupational health and safety for the health workforce
- Surge capacity of the health workforce to flexibly support scale-up of readiness or emergency response efforts

Non-health sector
- Existing surveillance and early warning systems for hydro-meteorological, societal and environmental hazards
- Functional capacity to capture and share non-health data, such as population movement, animal surveillance data, flight and weather patterns, with the health sector to support decision-making
- Human resources, inclusive of training and competency development relevant to emergency preparedness, response and recovery

Community capacities
- Knowledge, attitude and practices of vulnerable populations about the hazard and prevention and control measures
- Existing mechanisms for risk communications, community engagement and infodemic management

Resources
- Financial resources for emergency preparedness and contingency funding for response
- Mechanisms for logistics, storage and essential supplies for emergency deployment
- Other needed resources and multisectoral structures for supporting vulnerable populations and groups during emergencies

After discussing the current level of coping capacity for each hazard within the country, the level of coping capacity should be assessed for each identified hazard and ranked using the criteria in Table 7.

Table 7: Overview of estimating country coping capacity levels

Score	Level of coping capacity	Description
1	Very high	All coping capacities required for the specific hazard are functional and sustainable, and the country is supporting one or more other countries in their implementation.
2	High	All coping capacities required for the hazard are available but have never been stressed under real conditions (response) or tested during simulation exercise.
3	Moderate	Some coping capacities required for the hazard are available, but functionality and sustainability have not been ensured, such as through inclusion in the operational plan of the national health sector plan with a secure funding source.
4	Low	Core coping capacities required for the hazard (human, material, strategic and financial) are in the developmental stage. Implementation has started with some attributes achieved and others commenced.
5	Very low	Core coping capacities required for the hazard (human, material, strategic and financial) are mostly or completely not available.

Note

For this step, the coping capacity is scaled in reverse order: the higher the country's coping capacity is assessed, the lower the resulting score.

Step 3d: Determining the impact score

The model will determine the impact automatically using the aggregation of the scores assigned for severity, vulnerability and coping capacity. The tool calculates the impact score automatically using the following formula:

$$\text{impact score} = \frac{\textbf{(severity+vulnerability+coping capacity)}}{3}$$

Based on the results of this calculation, STAR automatically assigns an impact score from 1 (negligible) to 5 (critical). [2] The impact scoring criteria are highlighted in Table 8.

---

[2] Note: the result of the calculation is rounded up or down to the nearest higher or lower unit (e.g. the rounded value of 3.66 is 4 and the rounded value of 2.33 is 2).

Table 8: Impact scoring criteria in the STAR methodology

Score	Impact score
1	Negligible
2	Minor
3	Moderate
4	Severe
5	Critical

> ➤ The output of Step 3 is an impact score level for each hazard listed, based on the most likely scenario to require the activation of a coordinated response.

2.4 Step 4: Determine the risk level and ranking

To finalize their determination of the level of risk, workshop participants undertake two additional measures: determining the confidence level of the risk assessment based on available data and information; and reviewing and discussing the ranking of hazards using the automated risk matrix.

Step 4a: Determining the confidence level

Uncertainty about the quality of data and information exists in many settings. However, uncertainty in data should not prevent decision-making for emergency planning. As part of the risk assessment, it is important to describe the level of confidence in the available data and information. Determining the confidence level helps to identify where more data and information will be needed and can prompt further follow-up to the workshop.

To determine the confidence level of the risk description, workshop participants should discuss and decide which of the three levels of confidence in the information available are most applicable per each hazard (see Table 9).

Table 9: Description of the level of confidence

Level of Data/ information Confidence	Description
Good	high quality evidence, multiple reliable sources, verified, expert opinion concurs, experience of previous similar incidents.
Satisfactory	adequate quality evidence, reliable source(s), assumptions made by analogy, agreement between experts
Unsatisfactory	little and poor-quality evidence, uncertainty and conflicting views exist between experts, no experience with previous similar incidents

Step 4b. Risk ranking using the risk matrix

The model will determine the level of risk carried by each hazard automatically using the following scale: 'Very Low', 'Low', 'Moderate', 'High', and 'Very High'. The risk matrix will be automatically populated within the tool based on the inputs from the workshop discussions from Steps 1-4. The automatically generated risk matrix provides a visual and simple overview of the results of the strategic risk assessment.

The risk matrix plots the impact and likelihood of risk on an illustrative graph, showing priority risks to inform preparedness and risk reduction activities (see Figure 5).

Figure 5. Risk matrix

Impact					
Critical					
Severe					
Moderate					
Minor					
Negligible					
	Very unlikely	**Unlikely**	**Likely**	**Very Likely**	**Almost certain**

Likelihood

Step 4c: Review and finalize the national or subnational emergency risk profile

The emergency risk profile brings together the description of hazards and risk level information identified by all participants. The emergency risk profile includes the likelihood, severity, vulnerability, coping capacity, and description of the potential impact of the hazard within the given geographic context.

The emergency risk profile includes:

- Display of risk ranking of hazards with frequency, likelihood, impact, severity vulnerability and coping capacity
- Visualization of the 5x5 risk matrix table, showing impact and likelihood based on the information available
- Description of qualitative information on the description of identified hazards as included in the workshop report

As described above, an automated risk matrix table will be generated under the strategic risk assessment tool based on the participant feedback regarding the impact and likelihood of each identified hazard (Figure 6).

Figure 6. Sample country emergency risk matrix table

Impact		Very unlikely	Unlikely	Likely	Very Likely	Almost certain
	Critical					**COVID-19**
	Severe		**Zika**	**Flooding, Landslides, Cholera**	**Cyclone, Measles**	**Meningitis**
	Moderate					
	Minor					
	Negligible					

Likelihood

> ➤ The output of Step 4 is a determined level of risk for each hazard listed based on the most likely scenario to require the activation of a coordinated response.

2.5 Step 5: Finalize recommendations and workshop report

This step of the strategic assessment should seek to answer the question "What's next?" With the risk matrix, including description of risk, and seasonal calendar now completed, participants should now focus on mapping how this will be applied into action. During this stage, participants should draft key next steps, based on the risk assessment.

Step 5a: Draft recommendations and next steps

The drafting of priority recommendations and actions based on the described risks is a crucial step in a strategic risk assessment using the STAR methodology. Workshop participants should reference the outputs of the risk matrix and the seasonal calendar in order to recommend risk-informed follow-up actions to scale-up preparedness and readiness.

These priority actions may either refer to general all-hazards preparedness steps or be hazard-specific. In drafting the priority actions, it is recommended that participants set expectations that are "SMART" (specific, measurable, achievable, realistic and timely). Priority actions should evolve from the risk assessment process with validation both by workshop participants and by other relevant stakeholders outside the workshop as appropriate to the context.

To help participants draft priority actions, a reference planning matrix is included as part of the STAR toolkit. For each priority action drafted, the responsible ministries or organizations should also be identified. Reflecting the whole-of-society approach, it is expected that the actions described will be the responsibility of multiple stakeholders, including various programmes in the health sector and other sectors, ministries including planning and finance, disaster risk management organizations, businesses, local governments, academia, the media, civil society, community actors and the international community. Ownership of and accountability for implementation of the identified priority actions is enabled by the active participation of the responsible organizations in the risk assessment process; this underscores the importance of selecting, involving and building effective relationships between all relevant stakeholders.

In drafting the next step for each priority action, it is suggested that an estimated budget be included, with input from the planning and finance ministry. The budgets could be determined later (when a reasonable budget estimation during the STAR workshop has not been feasible) or ratified during the integration of action points into a national or subnational plan. A sample framework for priority action planning, which could be used to guide the drafting of priority actions or adapted in accordance with the workshop participants' preferences, is shown in Table 10.

Table 10: Sample priority action planning

Hazard	Priority Action	Responsible	Additional Stakeholders	Geographic (national, subnational)	Justification/ Purpose	Budget Required	Deadline
	Update measles contingency plan	MOH – Person Z, L, K	Women's Association; Health Worker Association Emergency Organization NGO A, B, C Ministry of Foreign Affairs	National	Previous contingency plan was drafted 5 years ago; different geographic areas at risk	$US 9000	March YYYY
	Conduct refresher training and follow-up district surveillance team to improve early detection	MoH – Person X	NGO Z International Federation of Red Cross and Red Crescent Societies (IFRC) District Health Authorities	District S District Y	Disruption of routine immunization; concern of potential outbreak	$US 2000	August YYYY
Measles	Send 10 collection kits to health facilities for measles	MoH – Person Z WHO – Person F	District Health Authorities	District S District Y	See above	$US 1500	September YYYY
	Update risk communication planning for measles contingency plan	MoH- Person S	Civil Society Organization(s) Youth Association Social Influencer Ambassadors		Need updates to Risk Communications and Community Engagement (RCCE) approach to incorporate social media and social listening strategy to address measles risk	$US 1000	October YYYY

Step 5b: Complete and finalize the report on STAR results

By the end of a STAR workshop, participants should expect to have a draft description of the risks within the agreed upon geographical area or setting. This risk mapping is based on evidence compiled prior to the workshop, the collective experience of participants, as well as the agreements among participants.

Note for facilitators:

During this session, it is advised that facilitators review with participants the agreement set by all workshop participants on Day 1 of the workshop regarding the expectations as to how the STAR results will be applied. This will better inform the drafting of the priority actions and next steps.

If there is an issue of time management during the workshop, it is recommended that workshop participants focus on priority actions and next steps for very high and high-level risks. Recommendations can then be refined later during the post-workshop finalization process. However, each priority action should have an accompanying focal point and/or designated organization/government agency.

While the STAR workshop outputs represent a significant amount of work and effort, it is critical that the workshop report is finalized with validation of workshop results from specified national or subnational authorities. In some settings, STAR workshop participants may consider forming a steering committee or small group to guide the process of finalizing the STAR workshop results and finalize the report findings for validation by the appropriate authorities.

Step 5c: Finalize and validate recommendations and next steps

Although the STAR workshop participants will have drafted and agreed upon the recommendations and next steps in the final step of the strategic risk assessment, further discussion and country validation of actions are likely to be necessary. The validation step involves endorsement of the workshop report, including priority actions and recommendations, by all stakeholders officially designated to approve the workshop findings, as well as those designated to authorize or manage the implementation of the risk assessment recommendations in the setting. As the STAR workshop process covers many topics over a short period of time, the steering committee or other relevant body may decide to include further details (additional supporting documentation, vulnerability analysis, and relevant data) to the overall report.

After the STAR workshop, the resulting workshop report is finalized by the relevant authority in the country or region, in liaison with the STAR facilitation team. This strategic risk assessment report should then be shared with multisectoral stakeholders and partners.

Finalization and validation of the strategic risk assessment report should be completed as soon as possible. The validation process should be clear and transparent to all STAR workshop participants. The authorities may then decide to disseminate the results of the strategic risk assessment to a larger group of stakeholders.

➤ The output of Step 5 is a workshop report containing the setting's emergency risk profile and listed recommendations to address the most likely scenario to require activation of a coordinated response.

2.6 Step 6: Integrate recommendations into a national or subnational action planning process

The STAR workshop report supports decision-makers to prioritize and plan readiness activities to fast-track the strengthening of national or subnational capabilities, including mitigation, prevention, detection, response and recovery capacity. In addition, the workshop conclusions help countries to mobilize and allocate funds to address the priority hazards given limited resources and competing priorities. As such, the strategic risk assessment recommendations should be formally integrated into the relevant national emergency response plan, such as the NAPHS, national health emergency response operations plans to emergencies and disasters from all-hazards, One Health strategic plan, emergency and disaster risk management policies etc., in order to provide a sustainable platform for implementation of the recommendations.

Workshop organizers should consider the following approaches:

- Identifying the appropriate national action planning process
- Engaging the relevant multi-sectorial stakeholders
- Advocacy to gain political commitment and support.

➤ The output of **Step 6** is a list of workshop recommendations addressing the most likely scenarios to require the activation of a coordinated response.

Step 6a: Integrating into national and subnational planning

Once the workshop report has been verified and approved by various stakeholders, authorities should create advocacy platforms, such as workshops and one-on-one meetings, to facilitate the integration of workshop recommendations into national and subnational planning. The advocacy should seek the approval and commitment of relevant decision makers to the integration process. As such, authorities should identify the relevant planning process, the process for their integration, as well as the timelines and resources needed for the integration process.

The list of scenarios in which STAR results have been applied should not be considered to be exhaustive (see Box 2); further applications should be tailored to the country context of the STAR and the scope previously agreed upon among stakeholders:

- To support risk-informed planning such as national emergency response plans, disaster management plans, NAPHS and contingency plans
- To inform health emergency and disaster risk management strategies in-country
- To prioritize key actions for scaling-up country readiness to respond to identified risks that are both highly likely and with potential to highly impact the population in a timely manner
- To inform risk-based resource allocation and financing mechanisms in-country
- To prioritize actions for community interventions based on workshop discussions
- To identify gaps in current assessments or data available to inform future research and assessment priorities based on priority risks.

Box 2. Applications of STAR workshop results

Risk-informed strategic and operational planning

- Make risk-informed updates to NAPHS or national health emergency response operations planning for multi-hazards or national disaster risk management planning.
- Update or develop contingency plan, strategic preparedness and response plan for outbreaks, humanitarian response plan.
- Update or develop Business Continuity Plan (BCP) based on finalized risk profile.
- Develop socioeconomic strategies for risk reduction.

Further assessment and continued situational analysis	Development or revision of policy or legislation
- Conduct further assessment of country capacity and readiness to respond to the identified risks. - Increase monitoring or surveillance detection of certain identified risks based on risk analysis. - Conduct health facility preparedness and readiness for response assessment.	- Adaptation of occupational health and safety policy for health workers based on risk profile. - Adjustment of legislation and regulations of vaccines and therapeutics.
Risk management and scale-up of operational readiness	**Continue coordination with relevant stakeholders**
- Conduct a simulation exercise to test current state of readiness and identify gaps that need to be closed for the identified risk and coping capacities. - Develop and/or update communication products to support risk communication and build risk-specific awareness at the subnational and community-level. - Engage with subnational (or municipality) authorities to discuss next steps for readiness and coordination. - Engage surge capacity mechanisms (human, supplies, finance) to be ready to respond to very-high and high-level risks. - Inform health workforce strengthening and risk-informed occupational health planning needs.	- Share results of STAR workshop with a wider group of stakeholders (such as more local and subnational stakeholders and those that work with identified vulnerable populations) to better inform next steps. - Agree to plan reporting back to stakeholders relevant to the risk to on implementation of priority actions. - Cross-reference the developed country risk profile to any upcoming IHR After-Action Reviews or Intra-Action Reviews.

3. Preparing for and conducting a STAR workshop

There are several critical steps for facilitators to follow in order to prepare for and conduct a STAR workshop. This section, which is aimed toward facilitators and organizers of STAR workshops, describes the key steps for preparing and conducting a STAR workshop. These steps are discussed under three headings – before, during and after the workshop.

3.1 Before the workshop: preparation

3.1.1 Securing agreement to conduct a strategic risk assessment

Before launching the STAR planning process, it is recommended that agreement be secured from high-level leadership within the relevant national and sub-national authorities to hold the workshop to conduct a strategic risk assessment. As STAR workshop results are validated by the authorities, it is crucial that the national and subnational authorities involved in leading disaster risk management and health emergency response both understand the STAR workshop process and agree on the date and organization of the risk assessment. As part of the agreement process, it is recommended to also confirm the desired purpose of the STAR to better inform and tailor workshop sessions.

3.1.2 Planning the workshop

Once there is agreement to conduct a STAR workshop with a confirmed date, it is recommended to begin the planning process.

As with any workshop, the success of a STAR workshop is heavily dependent on the preparatory steps taken. The key steps in planning and preparing a STAR workshop are described below. Although not an exhaustive list, these key steps are likely to apply to most contexts and settings. However, they should be adapted as needed.

The key steps in preparing a STAR workshop are to:

- Form a STAR workshop preparation team
- Identify STAR workshop facilitators
- Select and confirm STAR workshop participants
- Gather relevant data and information for review, and
- Prepare the workshop materials.

3.1.3 Form a STAR workshop preparation team

When preparing a STAR workshop, the recommended first step is to form the STAR workshop preparation team. The preparation team is expected to comprise three to five people with suitable credentials and availability to support the preparation needed to put the workshop together. Collectively, the workshop preparation team should be familiar with general workshop preparation, the country context, health emergency and disaster risk management (Health EDRM) and risk assessments.

3.1.4 Identify STAR workshop facilitators

The first task of the STAR workshop preparation team is to identify the workshop facilitators. The STAR workshop facilitators play a critical role in supporting the preparation and facilitation of the strategic risk assessment workshop. To better support group work activities, the facilitation team should comprise at least two to three people, including a team lead who is very familiar with the methodology or has previously facilitated a STAR workshop. Box 3 shows the profile of STAR facilitators; a sample terms of reference (TOR) for STAR facilitators can be found in Annex 3.

Box 3. STAR facilitators profile

- Public health or clinical background
- Facilitation skills and effective communication skills
- Experience in emergency management
- Relevant language skills (at least one facilitator to speak preferred local language, all to speak working language).

3.1.5 Select STAR workshop participants

The selection of well-informed and diverse participants is critical for the development of the country disaster risk profile and in order to ensure wide acceptance of the workshop results. Workshop organizers should determine the appropriate number of experts appropriate to the country context that can engage in consensus-building sessions. On average, STAR workshops include 25-30 experts involved in health EDRM in the country. Experts should come from all relevant sectors (all-hazards approach) and all relevant levels of the health system, including primary, secondary and tertiary levels (health systems approach). The STAR workshop participant profile is shown in Box 4; a sample terms of reference for STAR workshop participants can be found in Annex 4.

Box 4. STAR workshop participant profile

STAR workshop participant profile

- authorities and subject-matter experts from all relevant sectors (human health, animal health, environment, climate and weather services, security, education, radiation, chemical, migration, transport, tourism, etc.)
- representatives from government departments, nongovernmental organizations, private sector, academia, etc.
- persons involved in all relevant health EDRM functions (leadership and coordination, strategic and operational planning, early warning and surveillance, prevention and control, points of entry, emergency medical team, risk communication and community engagement, emergency operations centre, supply chain management, crisis communications, etc.) and
- persons who have previous experience in risk assessment (desirable).

3.1.6 Identify and gather relevant existing data and information

Prior to the workshop, it is critical to compile relevant data and information in order to better inform the description of risks and development of the country emergency risk profile. In the weeks leading up to the workshop, the facilitators and workshop participants should identify and gather relevant data and information and share these with the STAR workshop preparation team. Following this compilation exercise, the gathered data and information should be made available to workshop participants for easy reference. If possible, this information can be shared with participants prior to the opening of the workshop. A non-exhaustive list of the kinds of information and data that should be gathered in advance of a STAR workshop is shown in Box 5.

Box 5. Relevant information and data to be gathered in advance of a STAR workshop

Relevant information and data to be gathered in advance of a STAR workshop may include the following.

Data from surveillance and early warning systems:	Additional information and reports that are recommended if available:
• notifiable diseases • sentinel surveillance • disease registry • syndromic surveillance • risk monitoring system • health resources availability monitoring system • disease modelling • health data coming from other sectors (e.g. airlines, food safety, animal health, environment) • laboratory surveillance and capacity evaluations, and • community-based surveillance (social networks, newspapers, etc.).	• relevant maps of the country (printed or virtual) • population surveys (nutrition, vaccination coverage, retrospective mortality) • contingency plans • multi-hazard emergency response plans • pandemic influenza and other disease specific plans (i.e. Ebola, measles, cholera, etc.) • vulnerability assessment and mapping report • country capacity assessments report • other risk assessment reports • intra and after-action review reports • simulation exercise reports • policies relevant to health workforce and emergency response • laboratory capacity assessments • State Party Annual Reporting (SPAR) • Joint External Evaluation (JEE) Tool report • anthropological or community dynamic analysis • Inter-Agency Steering Committee (IASC) Multisector initial rapid assessment (MIRA) *(13)* • IASC Early Warning, Early Action Reports.
Data from non-health sectors:	
• population and movement mapping • humanitarian or internally displaced persons reporting • weather patterns, flood mapping, geological surveys • vulnerable population mapping or relevant data information from civil society organizations.	
Open-source data compilation databases and available analysis:	
• Global Health Observatory data *(4)* • international data sharing platforms (e.g. Global Public Health Intelligence Network, ProMED *(13)*, etc.) • INFORM index for risk management *(6)* • DesInventar[3] • data-driven model for forecasting • spatial atlases, and • meta-databases.	

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[3] DesInventar is a conceptual and methodological tool for the generation of National Disaster Inventories and the construction of databases of damage, losses and in general the effects of disasters *(7)*

3.1.7 Prepare workshop materials

The STAR workshop preparation team should prepare all materials relating to the STAR workshop, including logistics, stationery, equipment and supplies as for any other workshop.

Prior to the workshop, the preparation team should:

- share a list of participants and facilitators
- compile the data and information collected
- draft and share workshop agenda
- complete logistic tasks related to workshop preparation, and
- develop a preliminary list of hazards identified through data and information provided by national authorities.

In the event of periods of reduced movement or public health and social measures, preparation of workshop materials, inclusive of information and communication technical equipment, will be critical.

3.1.8 Decide workshop duration and agenda

The duration of the STAR workshop may vary depending both on the country context and on the level of preparation in advance of the workshop to facilitate informed discussion. A STAR workshop can last from three to six days (6-8 hours daily), with many STAR workshops lasting approximately four to five days. However, strategic risk assessment workshops can be tailored to any setting and specific contextual parameters.

To help workshop preparation and facilitation teams to draft the STAR workshop agenda, a sample template is provided in **Annex 5: STAR workshop agenda template**. The workshop duration and type of sessions (group work vs plenary) suggested in the agenda can be adapted as needed based on the country/region context and organizational requirements. The preparation and facilitation teams may also add or adjust workshop sessions as required. For example, additional sessions could include a review of previous STAR workshop results with participants, a short session to consolidate all data sources gathered, additional discussion sessions, etc. A sample workshop preparation checklist is shared in **Annex 6: STAR Workshop implementation Checklist.**

3.2 During: conducting the workshop

The following guide has been prepared as an easy-to-use reference for country facilitators to support facilitation of the STAR workshop (Annex 7). As the STAR methodology is flexible, facilitators may choose to adjust suggested workshop sessions based on the country context, time constraints, or other specific needs.

As with any workshop, the facilitation and management of group dynamics is critical to its success, and so to the success of the strategic risk assessment. In order to promote participation, inclusion and equity, the group of facilitators should consider the country context, preferred working languages, and overall working dynamics when planning the working sessions.

It is critical that all workshop participants are given the opportunity to contribute to the development of the risk assessment. When planning working sessions, facilitators may also wish to consider making use of information and communication technology (ICT) tools, as these can aid the discussions and some participants may be more comfortable expressing their point of view in small discussion groups, anonymously, in rapid opinion polls using open-source software, or in the form of written feedback.

During the STAR workshop sessions, the note-taking template enables participants to initially capture relevant data before they are transferred to the STAR data tool or incorporated into the STAR workshop report (Annex 8). It supports the finalization of the STAR workshop report by providing evidence to rationalize or justify the risk ranking and corresponding action points for risk mitigation and prevention. The completed template could be attached as annexes to the final STAR workshop report. The note-taking template should be printed out for participants use during the working group sessions. During the assignment of roles in a working group, participants may nominate a note-taker to document the discussions using the printed note-taking template provided to the group.

> **Note for facilitators:**
>
> As the STAR methodology is heavily discussion-based, it is recommended that the designated workshop space be arranged in such a way to foster discussions amongst participants. It is important to ensure small group discussions and exchanges amongst participants during working sessions rather than a formalized and hierarchical structure as much as possible.
>
> During the ongoing COVID-19 pandemic, in-person meetings are likely to be restricted and so adaptations for virtual discussions may be necessary. Early testing of equipment and communication tools is recommended to ensure troubleshooting of potential issues prior to the workshop.

3.2.1 Content of technical sessions

The three expected outputs of the strategic risk assessment are the risk matrix, the emergency and disaster risk calendar and recommendations of next steps. These outputs are developed over the main technical sessions of the STAR workshop, which cover:

- an introduction to the concepts of risk and risk assessment
- an overview of strategic risk assessment using the STAR methodology
- a presentation and overview of the country context
- strategic risk assessment working sessions to describe the country risks.

a. Introduction to the concepts of risk and risk assessment

It is suggested that the facilitators begin a STAR workshop with an opening session that introduces participants to the concept of risk, describes the concept of risk assessment and introduces participants to emergency risk management. The place of risk assessment in the risk management cycle should also be explained.

b. Key terms for strategic risk assessment

During the process of developing the country risk profile and completing the risk matrix, participants will be asked to make use of emergency risk management terms such as hazard, risk, and risk assessment. To ensure workshop participants from varying backgrounds have a common understanding, it is recommended that workshop facilitators define and discuss relevant terms, such as those listed in Table 11

Table 11. Key terms for Strategic Risk Assessment

Key Term	Definition
Hazard	A process, phenomenon or human activity that may cause loss of life, injury or other health impacts, property damage, social and economic disruption or environmental degradation. Note: This may include the latent property or the inherent capability of an agent or substance which makes it capable of causing adverse effects to people or the environment under conditions of exposure *(14,15)*.
Risk	The potential loss of life, injury, or destroyed or damaged assets which could occur to a system, society or a community in a specific period of time, determined probabilistically as a function of hazard, exposure, vulnerability and capacity *(6)*.
Risk Assessment	The process of determining risks to be prioritized for risk management, by the combination of risk identification, risk analysis, and evaluation of the level of risk against predetermined standards, targets, risks or other criteria. Risk assessments include a review of the technical characteristics of hazards, analysis of exposures and vulnerability and evaluation of the effectiveness or prevailing coping capacities in respect of likely risk scenarios *(16)*.

Key Term	Definition
	The identification of environmental health hazards, their adverse effects, target populations and conditions of exposure. A combination of hazard identification, dose-response assessment, exposure assessment and risk characterization *(7)*.
	A three-part process of: (i) identifying, recognizing and describing risks; (ii) analysing identified risks to understand the nature, sources and causes to estimate the level of risk; and (iii) evaluating each level of risk to determine whether or not it is tolerable or acceptable.

c. Provide an overview of strategic risk assessment

The second session of the STAR workshop is an introduction to the process of conducting a strategic risk assessment, in order to:

- introduce STAR to the participants
- provide an overview of strategic risk assessment using the STAR methodology
- present the objectives and expected outcomes of the workshop
- explain the key concepts used throughout the workshop
- present the key principles and set the tone of the workshop, and
- confirm expectations and how STAR results will be applied.

Note for facilitators:

On Day 1 of a STAR workshop, workshop organizers and facilitators may present the initial draft expectations of how the STAR workshop results are to be applied, for validation by all workshop participants. The initial draft expectations as to the applications of results may then be adjusted following a short feedback session with workshop participants.

It is recommended that participants refer back to these expectations set on Day 1 throughout the working sessions of the workshop, in order to ensure that discussions and the overall strategic risk assessment are well-aligned.

d. Present the country context

It is strongly encouraged to include a session on the country context and dynamics for all participants on the first day of the STAR workshop in order to better orient discussions. The overview of the country context should include general background information on the country, the country health profile, the health emergency and disaster context – including the most recent experience of managing an emergency response – as well as a summary of general health emergency and disaster coping capacities.

> **Note**
>
> It is recommended that the relevant national authorities organize the country context overview for all workshop participants in order to orient the group prior to the risk assessment working sessions.
>
> If the geographic context for the STAR workshop is set for the subnational level, then this session should be tailored to the subnational area context.

Table 12: Suggested topics for the session on country context

General Category	Subtopics
Introduction to general country profile (or relevant geographic area)	• Government and political structure, including health emergency management structure(s) • Geographic, demography, education • Population movement, mass gathering, tourism, food safety, sanitation, agriculture, industry, ecology, religious practices, weather, security situation overview • Vulnerable populations

Country health profile	• Health workforce
	  ▴ Clinical staff (doctors, clinical officers, nurses, nursing assistants, pharmacists, medical therapists, midwives, mental health professionals)
	  ▴ Community health workers, laboratory technologists, dentists, paramedics, traditional medicine practitioners, psychosocial support personnel, etc.
	  ▴ Outbreak investigators, researchers, epidemiologists
	  ▴ First responders and volunteers (ambulance/ paramedics, search and rescue services, Emergency Medical Teams, Rapid Response Teams, Red Cross/Red Crescent)
	  ▴ Occupational health and safety policies and legislation

General Category	Subtopics
	• Health care facilities ▴ Geographic coverage, services, accessibility (finance, geographic) ▴ Accessibility to care for poor and vulnerable populations (such as women and children, minorities, refugees, migrants, ageing communities, etc.) • Health-seeking behaviours (social, cultural, and economic factors) • Health financing structure within the country (budgeting allocated to health, payment model, insurance or health coverage) • Existing multisectoral coordination mechanisms for health emergencies or health action at national, subnational or local levels
Health emergency and disaster context	• Description of recent experiences from health emergency or disaster response • Evaluations of response (i.e. After-Action Review, Intra-Action Reviews, or other relevant evaluation reports) • Surveillance and early warning systems
Baseline information on health emergency and disaster coping capacity	• Governance (national, subnational) and decision-making structures, including legislation and financing • Capacities (including existing disaster risk management systems, public health emergency operations centres, existing community coping strategies and resilience programs, structures and services for supporting vulnerable populations during emergencies) • Surge capacity (human, finance, materials/equipment) • Resources available.

3.3 After the workshop: follow up

After the workshop, participants should be encouraged to complete an evaluation form to assess their satisfaction with the workshop (Annex 9). Relevant post-workshop considerations are discussed further.

3.3.1 Data usage and sharing of STAR workshop results

The usage of and access to the workshop results will be determined by the setting that completes the STAR exercise. Countries will be invited to share their resulting country emergency risk profile with other stakeholders and publicly through WHO platforms through a data usage and sharing agreement. The data sharing platform could be in form of an emergency and disaster risk calendar (Annex 10). However, depending on the context, countries may instead opt to not share the STAR outputs publicly or to share an abridged emergency risk profile. .

3.3.2 Conclusions and next steps: determining future actions

After the STAR workshop, the resulting report should be finalized by the relevant authority in the country or region in liaison with the STAR facilitation team. This strategic risk assessment report should then be shared with all sectors, partners and donors involved in health emergencies and disaster risk management.

This resulting STAR report (see Annex 11: Sample narrative report template for STAR workshop) supports decisionmakers to prioritize and plan readiness activities to fast-track the strengthening of health emergencies and disasters risk management capacities, including mitigation, prevention, detection, response and recovery capacity. Lastly, the STAR workshop results help countries to mobilize and allocate funds to address the priority hazards considering limited resources and competing priorities.

Note

Additional information that may be referenced to support conducting a strategic risk assessment is outlined in Annex 12

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Annex 1:

Adapting STAR to specific contexts or requirements: case studies

Studies

The case studies below are examples of adaptations of the strategic risk assessment methodology based on country needs and specific contexts; these may be referenced in advance of planning a STAR workshop.

Case study A: conducting a virtual workshop during the COVID-19 pandemic (Uganda)

During the COVID-19 pandemic, it has become increasingly challenging to conduct in-person workshops with public health and social measures (PHSM) in place. To support the development of a country risk profile and map risks within a specific context, the STAR workshop can be adapted to be hosted virtually. In December 2020, due to PHSM, Uganda successfully conducted a virtual STAR workshop to update its country risk profile to inform multi-sectorial emergency response planning.

To achieve this, STAR facilitators held multiple pre-meetings prior to the workshop, including two virtual online training/drills. Because the workshop was held virtually, facilitators also had to manage online processes in addition to regular facilitation expectations.

In planning a virtual STAR workshop, some key considerations based on lessons learned include:

- Provide strong internet connectivity and adequate information technology (IT) support to manage workshop sessions, including break-out rooms for group discussions/activities and subsequent merging of rooms for plenary sessions.
- Reserve adequate time ahead of the workshop to train facilitators and ensure all are familiar with online processes and tools.
- Consider the time zones of all stakeholders to identify the most feasible time of day to conduct the STAR workshop, especially for those involving international participants, facilitators or organizers.

As participants are more likely experience fatigue and lose focus with prolonged screen time, the agenda may need to be adjusted. It is suggested to limit the workshop agenda to 3-4 hours/day to enhance stakeholder's engagement and commitment to the virtual meetings. The entire duration of the workshop may therefore be extended to 5-6 days to compensate for the shortened daily schedule.

Case study B: adapting STAR for a focused strategic risk assessment of infectious hazards (Bangladesh)

The STAR tool was conceptually designed to apply an all-hazards methodology. However, because the tool is flexible, it can be adjusted to focus on a subset of hazards based on country priorities. Accordingly, STAR was successfully adapted in the context of COVID-19 to conduct a strategic risk assessment of infectious hazards in Bangladesh.

The virtual risk assessment, which was conducted in May 2021, allowed multi-sectorial experts to have more detailed discussions on prioritized infectious risk in order to generate the requisite preventive and mitigating measures. Some methodological adaptations incorporated during the Bangladesh STAR workshop involved the epidemiological characterization of hazards using the following indicator areas: type of pathogen, type of reservoir, basic reproduction number, case-fatality rate (CFR), diagnostic and surveillance requirements and mode of transmission.

In order to adapt the STAR tool for infectious hazards, it is advised to consider the following:

- In advance of the workshop, review and consolidate available data for infectious hazards that will be relevant for ranking infectious hazards, including basic reproduction number (R0) case fatality rates (CFR), mapping of hazard-relevant surveillance systems, and mode(s) of transmission.
- Ensure any modified STAR presentations and tools are tested for their functionality and simplicity (ease of use by workshop participants and facilitators).

Case study C: implementation of STAR at the subnational level (Republic of Moldova)

While the strategic risk assessment tool has to date mostly been applied to the country-level, its methodology can also be applied at the subnational or local/city level. Much like the country-level implementation of STAR, the adapted version would also develop a risk profile at the subnational or local level, including risk-informed key actions for scaling up preparedness. However, in these adapted versions, participants may also describe further information on how multi-level coping capacities interact (that is, capacities at national, subnational and local levels).

In September 2019, an adapted STAR was conducted in 10 regions of the Republic of Moldova. The main objective of the assessment was to identify priority risks to guide risk-informed programming that will catalyse action to prevent, prepare for, and reduce the level of risk associated with a particular hazard and its consequences on health.

The subnational STAR methodology was designed to:

- engage multisectoral stakeholders around a risk assessment developed for health sector planning;
- provide a systematic, transparent and evidence-based approach to identify and classify priority hazards by level of risk.

The recommendations from a subnational STAR can inform both national and subnational planning priorities.

Case study D: adapting STAR for a climate change-focus (Sweden)

As countries increasingly face emergency and disaster risk from climate-related hazards, STAR provides a simplified and standardized approach for the assessment of climate-related risk. In the aftermath of the 2018 heat wave, the Swedish government, with support from the WHO European Regional Office, conducted a STAR workshop to define their climate-related risk profile in order to inform preparedness and response planning.

Experts modified the STAR methodology ahead of the workshop in order to reflect the effect of climate change on health hazards, with emphasis on the goal of reducing morbidity and mortality from climate-related risks. The report of the risk assessment was reviewed and validated by expert groups and official stakeholders for risk profiling and action planning.

In order to adapt the STAR tool for climate-related risk, it is important to consider the following:

- Ensure the tool is modified to match the objectives of the risk assessment
- Ensure to test the functionality and simplicity of the tool for ease of use by facilitators and participants
- Involve multi-sectorial stakeholders involved in managing climate-related emergency and disaster risk, as well as other actors and advocates for climate change.

WHO classification of hazards

Generic Groups[1]	1. Natural						2. Human-Induced[2,3]		3. Environmental
Groups		1.2 Hydro-Meteorological					2.1 Technological	2.2 Societal	3.1 Environmental Degradation[17]
Subgroups	1.1 Geophysical[4]	1.2.1 Hydrological[4]	1.2.2 Meteorological[4]	1.2.3 Climatological[4]	1.3 Biological[5]	1.4 Extraterrestrial[4]			
Main Types / **- Subtypes** / **[Sub-Subtypes]**	Earthquake - ground-shaking Tsunami Mass movement (geophysical trigger): - landslides - rock fall - subsidence Liquefaction Volcanic activity: - ash fall - lahar - pyroclastic flow - lava flow	Flood: - riverine flood - flash flood - coastal flood - ice jam flood Mass movement (hydro-meteorological trigger): - landslide - avalanche (snow) - mudflow - debris flow Wave action - rogue wave - seich	Storm: - extratropical storm - tropical cyclone [cyclonic wind, cyclonic rain, cyclone (storm surge] - convective storm [tornado, wind, rain, winter storm, blizzard, derecho, lightning, thunderstorm, hail, sand/dust storm] Extreme tempreature: - heatwave - coldwave - severe winter condition [g.g. snow/ice, frost/ freeze, dzud][6] Fog	Drought Wild fire - land fire [e.g. brush, bush, pasture] - forest fire Glacial lake out-burst (flood)	Airborne diseases Water borne diseases Vector-borne diseases Foodborne outbreaks[7] Insect infestation:[4] - grasshopper - locust Animal diseases plant diseases Aeroallergens Antimicrobial resistant micro-organisms Animal-human contact - venomous animals [snakes, spiders]	Impact - airburst - meteorite Space weather: - energetic particles - geomagnetic storms - shockwave	Industrial hazarda:[8] - chemical spill - gas leak - ration [radiological, nuclear] Structural collapse: - building collapse[8,9] - dam/bridge failures Occupational hazards - mining Transportation[8,11] - air, road, rail, water, space Explosions Fire8 Air pollution:[9] - haze[10] Infrastructure disraption: - power outage[11] - water supply - solid waste, waste water - telecommunication Cybersecurity Hazardous materials in air, soil, water:[12,13] - biological, chemical, ratiological Food contamination[7]	Act of violence Armed conflicts:[14] - international - non-international Civil unrest Stempede Terrorism:[8,11] - chemical, biological, radiological, nuclear, and explosives[15,16] Financial crises: - hyper-inflation - currency crisis	Erosion Deforestation Salinization Sea level rise Desertification Wetland loss / degradation Clacier retreat/ melting Sand encroachment

Annex 3:

Terms of reference for STAR workshop facilitators

Facilitators contribute to the STAR implementation by:

- gathering relevant existing data and information
- reviewing the STAR workshop agenda
- preparing the workshop material, including developing presentation materials and designing activities to maximize participation
- supporting adaptation of the STAR workshop to certain scope (i.e. subnational or local context)
- facilitating the workshop
- helping to draft the STAR outputs and
- supporting the country to draft next steps and follow-up actions. .

Successful facilitation of the STAR workshop requires the facilitators to:

- establish ground rules with the participants at the beginning of the workshop
- facilitate the discussions without biasing or orienting the group decisions,
- active listening, and
- ensure engagement of all participants, and keep the whole group focused on outputs.

Annex 4:

Terms of reference for STAR workshop participants

Participants are expected to contribute to STAR implementation by:

- compiling and sharing all relevant existing data and information
- drafting and presenting the country context
- actively participating in the discussions during the STAR workshop
- assessing the workshop using the STAR workshop assessment form
- sharing the results and making recommendations, and
- participating in follow up activities.

Annex 5:

STAR workshop agenda template

Note: this is a template – sessions, workshop duration and type of sessions (group work vs plenary) suggested in the agenda can be adapted based on the country/region context and organizational requirements.

STAR workshop agenda

[Country], from [date] to [date], Place

Day 1: [date]

Time	Activity	Responsible
08:30–09:00	Registration	
09:00–10:00	Opening ceremony: • Welcome and opening remarks • Confirm Objectives of the workshop and expected outputs • Group photo	
10:00–10:30	Health break	
10:30–10:45	Introduction of participants	
10:45–11:45	Introduction to the STAR Workshop • Introduction to concept of risk • Defining key terms and concepts as related to STAR	
11:45–13:00	Steps to conducting strategic risk assessment	
13:00–14:00	Lunch break	
14:00–15:00	Presentation of the country context, inclusive country health emergency management system (national, subnational, local)	
15:00–15:30	Health break	
15:30–16:30	Assignment of participants to working groups Identify key roles in working groups	

Day 2: [date]

Time	Activity	Responsible
08:30−09:30	Overview of strategic risk assessment using the STAR methodology	
09:30−10:30	**Step 1a:** Identification of country hazards *(plenary session)*	
10:30−11:00	Health break	
11:00-12:00	**Step 1a** (continued): Finalization and agreement on the list of hazards *(plenary session)*	
12:00−13:00	Following the formation of STAR small working groups and assignment of hazards, group work launches: **Step 1b:** Describe the most likely scenario that would require national-level health emergency response *(Small group work)* • Mapping exposure and extent of identified hazards ⁃ Geographic area(s) likely to be affected ⁃ Population settings (type)	
13:00−14:00	Lunch break	
14:00−14:30	Continued work on Step 1b (small group)	
14:30−15:30	**Step 1b:** Group work shared in plenary for confirmation from the larger group	
15:30−16:00	Health break	
16:00−16:15	**Overview of Step 1c:** Defining the identification of health consequences of hazards (immediate and secondary) based on the most likely scenario	
16:15−17:15	**Step 1c:** Group work of Presentation of the group work results and agreement on list of health consequences based on most likely scenario	

Day 3: [date]

Time	Activity	Responsible
08:30–08:45	Recap of Day 2 Work Achieved and Present Day 3 schedule	
08:45–09:00	Facilitators introduce the concept of frequency, seasonality and likelihood in the STAR methodology	
09:00–10:30	Group work: assessment of: • frequency, • seasonality and • determining the likelihood for each hazard	
10:30–11:00	Health break	
11:00–12:45	Plenary: presentation of the results of group works and reach agreement on the frequency, seasonality and likelihood	
12:45–13:00	Presentation of the concept of severity in the STAR methodology	
13:00–14:00	Lunch break	
14:00–15:30	Group work: identification, discussion and agreement on the level severity for each hazard	
15:30–16:00	Health break	
16:00–17:00	Plenary: identification, discussion and agreement on severity for each hazard	

Day 4: [date]

Time	Activity	Responsible
08:30–08:45	Recap of Day 3 work achieved and Day 4 schedule	
08:45–09:45	Review of health emergency management system and coordination (national, subnational and local) and existing systems	
09:45–10:45	Presentation of the concept of vulnerability and coping capacity in the STAR methodology	
10:45–11:00	Group work: identification, discussion and agreement on • vulnerability and • coping capacity available for each hazard	
11:00–11:30	Health break	
11:30–13:00	Plenary: presentation of the results of group work and agreement on vulnerability and coping capacities	
13:00–14:00	Lunch break	
14:00–15:00	Plenary: review the results of the risk assessment	
15:00–15:30	Health break	
15:30–16:00	Determination of the confidence level for each risk	
16:00-17:00	Presentation of the strategic risk assessment results • list of ranked hazards • 5x5 risk matrix level of risk for each hazard • Seasonal calendar of risks and Emergency and Disaster Risk Calendar	

Day 5: [date]

Time	Activity	Responsible
08:30–08:45	Review of STAR Results	
08:45–11:00	Plenary or small group work • Draft key actions and recommendations for each risk Note if there is not enough time, concentrate main drafting of key actions on the (high/very high risks)	
11:00–11:30	Health break	
11:30–12:30	Plenary session: • Review and confirm the key actions for high and very-high risks • Validation of roadmap to finalization of strategic risk assessment report	
12:30–13:00	Closure session	

Annex 6:

STAR workshop implementation checklist

Pre-Workshop Actions	
❑	Obtain high-level agreement and support from country authorities in charge of health emergency and disaster risk management
❑	Agree on a STAR workshop date with the country authorities in charge of health emergency and disaster risk management
❑	Form a workshop preparation team
❑	Identify the STAR workshop facilitators
❑	Select the STAR workshop participants
❑	Designate a senior workshop participant from the government to present the country context
❑	Select and book the STAR workshop venue
❑	Ensure that participant logistics (hotel booking, transport, catering, etc.) are arranged
❑	Collect relevant data and information on health emergency and disaster risk management in the country
❑	Prepare the slide decks for presenting the country context
❑	Draft and circulate the workshop agenda
❑	Prepare the workshop material, equipment, and supplies (see the suggested list below)
❑	Share the workshop agenda with all participants

Annex 7:

Facilitator notes

Below is a compilation of lessons learned from facilitators that can be used as reference by facilitation teams. This annex will complement any facilitator briefing/training session and provides an easy-to-use guide for facilitators, including probing questions and reminders.

Facilitators Notes
Coordinating the Facilitators
• It is strongly advised that all facilitators should participate in a brief **daily pre-workshop** meeting to review each day's activities and resolve all issues and concerns with tools and materials. Participating in a **daily debrief** would facilitate the review and update of group tasks and ensure all data had been captured in relevant toolkits • Facilitators should refer to the image in the STAR steps presentation to demonstrate how to complete the STAR data sheet during group activity. All examples in the presentations could be adapted to local contexts to improve the understanding of concepts
General facilitation advice to build consensus within a workshop
As STAR is a qualitative-based tool, it is important to facilitate informed discussions amongst workshop participants and generate consensus amongst the larger group. To boost engagement of workshop participants, facilitators are kindly encouraged to: • Ensure the participation of all stakeholders in workshop sessions and discussions through multiple approaches (small groups, plenary sessions, dedicated online workspace, instant polls, etc.) • Divide the participants into separate groups **with distribution of technical expertise** and background within the working groups • Adapt workshop materials and group work to the local context • Link all steps of the strategic risk assessment to the agreed upon purpose of the workshop (i.e. how STAR results will be applied) • Prepare interactive materials and facilitate small group interactions (note-facilitators may print and share all useful materials with participants ahead of the workshop sessions, especially in settings with low internet connectivity. • Ensure that all workshop results are duly captured in the related tools and main ideas/points are well documented to support the STAR workshop report and action planning

Key Sessions and facilitation advice	

Identifying Hazards	During this session, participants will identify hazards to be included in the risk assessment. If a list of hazards was compiled prior to the workshop, participants will review the draft hazards list and add/validate the list. **This session serves as the kick-off of the exercise. As the hazard list influences all other sessions, it is strongly advised that enough time is taken to develop and validate this list.**
	
	 Facilitators are encouraged to:
	 • Review any prior STAR results before the workshop, which may be used as a 'starting point' for hazard identification
	 • Encourage participants to focus on hazards **with likely scenarios** that will result in the **activation of a national or subnational response**
	 • Limit the number of hazards to be assessed to a reasonable number given time parameters of the workshop to ensure that in-depth analysis of hazards within the subsequent steps is possible
	 • Reference and make available the I**nternational Classification of Hazards** or a similar list of hazards to support workshop participants to finalize the country hazard list
	 • Utilize **probing questions** as needed to facilitate discussion amongst participants:
	   ‣ *Has this hazard recently been experienced in the country? Within the last five years?*
	   ‣ *Would this hazard likely result in an activation of a national/subnational response mechanism?*
	   ‣ *Are there emergency risks that could potentially spill over from neighboring countries?*

Key Sessions and facilitation advice	
Overview of health consequences, scale and exposure	During these sessions, participants will describe possible health consequences, the scale, and level of exposure of the population to each identified hazard. Facilitators are encouraged to: • Advise participants to reflect on previous/historical health emergencies throughout the sessions as applicable • Ensure that participants describe geographic areas that are likely to be affected by hazard (including whether areas are urban, peri-urban and/or rural) • Reference population figures as relevant to describe the population that would likely be affected • Support discourse amongst the participants to describe populations that are more susceptible and likely to be exposed to each hazard (this may include but not limited to: age groups, sex, migrants, ethnic group, populations with lower vaccination coverage, etc.)
Frequency, seasonality, and likelihood to occur	During these sessions, Participants will describe the frequency, seasonality of each hazard during the year (including determining if there is no seasonality) and evaluate the likelihood for the hazard to occur. Facilitators are encouraged to: • Consolidate historical records of previous emergencies, including outbreaks for easy reference for participants • Review and include any predictive models available as related to the identified hazard(s) • Remind participants to consider seasonal weather patterns • Not map the seasonality if the hazard is considered 'random' by participants (i.e. no time of year associated) • Consider immunity levels of populations (including subpopulations, vulnerable groups) when facilitating discussions, including if any changes to immunity considering any potential disruption to routine immunization, population movement, or any other relevant factor

Key Sessions and facilitation advice	
Severity and vulnerability	During these sessions, participants will describe the severity (i.e., the level of negative consequences on the population and the disruptive effects of the hazard) and evaluate the vulnerability of the population to the hazard. Facilitators are encouraged to: • Ensure that all workshop participants have a common understanding of essential health services within the country/ setting • Have the algorithms for assessing the level of severity available for easy reference by the participants • Refer to previous mapping of vulnerable populations or previous assessments of social determinants • Reference any relevant surveys (i.e. bottleneck analysis, social listening and behavioral references)
Coping capacity	During this session, participants will assess the level of coping capacity for each hazard, including determining their functionality and sustainability. Facilitators are encouraged to: • Ensure that participants consider multiple components of coping capacities during the discussion including governance and leadership, health sector (public/private), community capacities, subnational and local mechanisms, and available resources (surge capacity, funding for emergencies) • Ensure that there is enough time remaining in the overall workshop for this session • Encourage notetaking during the discussion to support the development of key actions and next steps

Key Sessions and facilitation advice	
Action points and recommendations	During this session, participants will identify and agree upon key activities/interventions and measures to address specific risks. Facilitators are encouraged to: • Confirm that this session/step is appropriate for the workshop participants with the workshop organizers prior to the workshop • Ensure that there is enough time remaining in the overall workshop for this session • Clarify any recommendations or key actions that are not clear to all participants • Confirm the validation process and/or endorsement of the key recommendations and actions identified during this session

Writing a STAR workshop report

The STAR workshop report should bring together the notes and results that have been achieved during the sessions. In order to have a successful workshop report,

Facilitators are encouraged to:
• Review with workshop organizers prior to the workshop on how to ensure there are rapporteur(s) to capture key outputs and discussions
• Work with the responsible authorities to set clear timelines and ensure accountability for developing and validating the workshop results
• Inform participants that a STAR workshop is considered not yet complete until the report is finalized and shared with the relevant stakeholders

Annex 8:

STAR workshop note taking template

Hazard Consequences and Scale   **Date: _____**

Negative health consequences may include physical, psychological, social, economic, and environmental consequences that would impair the health of a population at risk and/or impact the health system

Scale refers to the geographic area(s) likely to be directly affected in the scenario, including specific communities (as relevant); short description of population settings (i.e. rural, urban, concentrated/closed, dispersed/open, IDP or refugee camp settings) and population size

Hazard name	Health consequences	Consequences	Scale
1.	Immediate consequences:		
	Medium/long term consequences:		
2.	Immediate consequences:		
	Medium/long term consequences:		
3.	Immediate consequences:		
	Medium/long term consequences:		
4.	Immediate consequences:		
	Medium/long term consequences		

Assessing exposure and vulnerability   **Date: _____**

Exposure assessment is to estimate the number of people likely to be exposed to the hazard and its health consequences.

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

Hazard	Group	Description of exposure (assessing susceptibility or immunity level of population)	Description of Vulnerability
1.	General population:		
	Specific groups:		
2.	General population:		
	Specific groups:		
3.	General population:		
	Specific groups:		
4.	General population:		
	Specific groups:		

Coping capacity

Coping capacity measures how people, organizations, and systems use available skills and resources to manage adverse conditions, risks or disasters as related to the identified hazard

Hazard	Governance, Coordination, Emergency Financing, Planning *(i.e. tested contingency plan, in-country financing mechanisms, regulatory mechanism for therapeutics and vaccines, functional emergency operations centre etc)*	Health System Coping Capacity *(i.e. Health Workforce, Case Management and Training, Surveillance Systems, Laboratory Capacity, Emergency Medical Teams etc)*	Community Coping Mechanisms *(i.e. local initiatives, community engagement, community rescue missions etc)*
1.			
2.			

Key actions and next steps

Date: _____

Key actions are prioritized activities or interventions identified and agreed upon (validated) by participants/stakeholders to address specific risks

Hazard name	Priority action	Responsible	Additional Stakeholders	Geographic national, subnational	Justification/ purpose	Budget	Deadline
1.							

Annex 9:

Sample workshop evaluation form

SECTION A: Demographics (Please mark X in the appropriate boxes)

[COUNTRY: _____   DATE _____

1. **What is the type of STAR Workshop?**

    National: a) All-hazards   ☐   **Subnational:**   a) All-hazards   ☐

                      b) Specific-focus ☐   b) Specific-focus ☐

2. **Gender:**   Male ☐   Female ☐

3. **What is your age group?**

<20 years	
20-39 years	
40-49 years	
50-59 years	
60-69 years	
≥70 years	
Do not wish to disclose	

4. **Affiliation/Type of Organization:**

Healthcare professional (Physician, nurse etc…)	
Public health professional (Epidemiologist, Biostatistician etc)	
Security/military personnel	
Agriculture/animal health personnel	
Food and water safety personnel	
Finance expert/personnel	
Partners	
Others (specify):	

Section B: STAR workshop methodology and organization (Please mark X in the appropriate boxes)

5.   Identify the 3 main applications of this STAR workshop results

1	Determine national or subnational risk profile to facilitate health sector planning	
2	Provide evidence to risk reduction or elimination programmes (immunization, vector control, etc.)	
3	To inform the development of health emergencies and disasters risk management programmes	
4	Adapt emergency response actions to take into account seasonal risks	
5	Use risk-based approach to prevent and prepare for potential concurrent emergencies	
6	Inform preparedness planning to address relevant hazards (e.g. emergency response plan, business continuity plan)	
7	Provide information to inform country early warnings/early actions	
8	Allocate resources to priority preparedness and readiness interventions	
9	Provide evidence for risk-informed scale-up of capacity building, strategic stockpiling, and coordination	

6.   To what extent was the following STAR workshop sessions useful for assessing risks in your country/region?   (1= Not useful to 5 = Very useful)

	1	2	3	4	5
Identifying priority hazards for risk assessment					
Defining health consequences of hazards					
Defining extent, scale and magnitude of hazards					
Assessing exposure					
Assessing frequency, seasonality and likelihood					
Assessing vulnerability					
Estimating coping capacity					
Determining risk level					
Drafting action points and next steps					

7.   Rate these technical aspects of the STAR workshop   (1-Poor to 5-Excellent)

	1	2	3	4	5
The extent to which different stakeholders were involved in the workshop					
The usefulness of multisectoral involvement in the workshop					
Fair consideration of all views and ideas during the workshop					
Alignment of group work with the objectives of the workshop					
Time allocated for the discussions					
The clarity of session presentations					
Overall coordination of the workshop sessions					

8. **How would you rate the following facilitation role?** (1= Disagree to 5= Strongly agree)

	1	2	3	4	5
Presented and explained the STAR steps and concepts clearly					
Had Knowledge of the STAR methodology and the concepts of the discussions					
Encouraged discussions and got everyone involved					
Other, specify:					

9. **Overall, how would you rate the organization of the workshop?** (1-Poor to 5-Excellent)

	1	2	3	4	5
Safety and comfort of the workshop environment (if applicable)					
Availability of workshop materials, equipment, transportation, refreshment and other logistics					
Timely dissemination of information regarding workshop schedules, transportation and housing					
Adherence to workshop schedules without undue interruptions					
Internet connectivity and virtual support (if applicable)					
Other? Please specify:					

10. **What are three 3 challenges you faced during the workshop**

1
2
3

11. **Are there any comments or suggestions you would like to share with us?**

Thank you for completing this survey

Annex 10:

Emergency and disaster risk calendar

The emergency and disaster risk calendar (EDRC) consolidates the results of the STAR workshop and provides an interactive data visualization of STAR data for stakeholders. The calendar, powered by R-statistical software, provides an overview and description of identified priority risks, inclusive of the risk matrix.

While the STAR results can provide the initial inputs to the EDRC, the calendar should be maintained as a 'living' calendar. As a 'living' tool for country use, the Disaster Risk Calendar should be maintained and updated by the country as understanding of the identified hazard, its impact on the designated geographic areas, the likelihood of occurring and the country's capacity to respond evolve over time.

The EDRC provides a systematic and transparent process to support countries in:

- Month by month overview of country risks
- Immediate (1-month), short-term (3 months) and medium-term (6 months) outlook of very high and high risks.

Sample country emergency risk profile, as of October 2021

Timing of the very high and high risk hazards
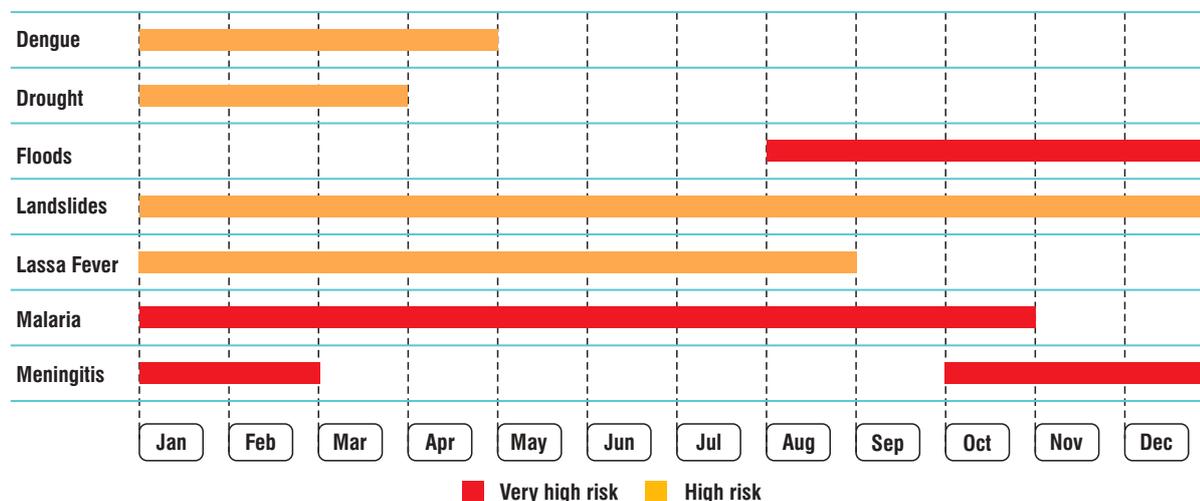
Note

For example, if a country is experiencing a climate event (i.e. La Nina, El Nino), then the previously discussed meteorological-related hazards may need to be adjusted within the calendar depending on the country context.

A country may decide to revise the 'living' emergency and disaster risk calendar based on the available modelling and information.

Annex 11:

Sample narrative report template for STAR workshop

**Strategic public health risk assessment for
health emergency planning in-country**

Technical report – [Insert country name], [Insert date]

Risk assessment method: Strategic tool for assessing risk (STAR)

Country: [INSERT COUNTRY NAME]

Date conducted: [INSERT DATE]

Date for next assessment: [INSERT DATE]

Facilitator/author: [INSERT NAME(S)]

Participants (organizations): [INSERT NAME(S)]

Methodology: Strategic toolkit for assessing risk (STAR) methodology

Acknowledgements

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Abbreviations

Introduction to the STAR workshop

Section 2: Objectives of the workshop
1.   General objective
2.   Specific objectives

Section 3: Methodology of the STAR workshop

Section 4: Conducting the STAR workshop in country X

Section 5: Results of the STAR workshop
1.   Risk summary
2.   Risk Matrix
3.   Disaster Risk Calendar
4.   Country Risk Profile

Section 6: Recommendations
1.   General recommendations
2.   Specific recommendations

Section 7: Conclusions and next steps
1.   Conclusion
2.   Next steps

Section 8: Annexes
1.   Detailed methodology
2.   Summary of the public health risk assessment using the STAR methodology
3.   Insert final risk register from the STAR Tool
4.   List of participants
5.   Agenda of the workshop

Annex 12:

Sources for strategic risk assessment

1. Report of the open-ended intergovernmental expert working group on indicators and terminology relating to disaster risk reduction. Note by the Secretary-General. New York (NY): United Nations ; 2016 (A/71/644; https://www.unisdr.org/we/ inform/terminology, accessed 18 February 2019).

2. OCHA Annual Report 2017. Geneva: United Nations Office for the Coordination of Humanitarian Affairs; 2017 (https://www. unocha.org/sites/unocha/files/2017%20annual%20report. pdf, accessed 18 February 2019).

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16. Treaty on the non-proliferation of nuclear weapons [website]. New York, NY: United Nations Office for Disarmament Affairs; 2012 (http://www.un.org/disarmament/WMD/ Nuclear/NPT.shtml, accessed 18 February 2019).

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World Health
Organization