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## Structuring an emergency response plan for crisis management stakeholders

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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## European foreword

This CEN Workshop Agreement (CWA 18018:2023) has been developed in accordance with CEN-CENELEC Guide 29 “CEN/CENELEC Workshop Agreements – A rapid prototyping to standardization” and with the relevant provision of European Committee for Standardization (CEN)/European Committee for Electrotechnical Standardization (CENELEC) Internal Regulations – Part 2. It was approved by a Workshop of representatives of interested parties on 2023-06-23, the constitution of which was supported by CEN following the public call for participation made on 2021-12-17. However, this CEN Workshop Agreement does not necessarily reflect the views of all stakeholders that might have an interest in its subject matter.

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## Introduction

Across all types of emergencies, efficient response primarily relates to the organization, communication and coordination of resources and responsibilities for dealing with operational aspects across all phases of crisis management (prevention, preparedness, response, mitigation, and recovery). The aim is to prevent and reduce the harmful effects of all hazards, including natural disasters.

Emergency planning aims to minimise the effects of emergencies by improving the response of emergency organizations involved. The development of emergency plans is a dynamic and recurrent process through which plans are constantly reviewed and, if necessary, updated, for encompassing all latest data applicable to the field of operations of a crisis management stakeholder.

Each European Union (EU) country has its own processes and procedures for crisis management and disaster response. In the case of cross border crises, this diversity in processes/procedures may cause confusion or conflict among first responders and civil protection agencies introducing a large overhead in terms of interoperability. Acknowledging the issue on a European level, the European Commission (EC) has introduced specific provisions (see Emergency Response Coordination Centre - ERCC<sup>1</sup>) for enhancing coordination among members states supporting interoperability from a logistical perspective. This interoperability overhead is experienced even on a national scale whereby the emergency response plans and operational procedures of the responsible (national) public safety agencies, usually, are not following harmonised principles.

Diversity in response planning approaches followed by different crisis management stakeholders both on a national level or across EU, increases the complexity overhead when it comes to, among others, exchanging operational information for optimising coordination and interoperability. Developing a homogenous structure of the emergency response plans and standardised procedures as well as creating interfaces across the EU is thus essential for facilitating cross-border and multi-agency collaboration, thereby helping to protect assets and save lives.

In this context, there is limited standardisation activity available across the existing global standards repository referring to the definition of homogenous structured emergency response plans by public safety agencies as crisis management stakeholders. Only a few directives and guidelines exist, highlighting the importance of the response planning process, the sharing of the related information among the agencies and the development of the respective strategies.

Provided the above, a homogenous structure of response plan documents, significantly enhances interoperability and efficiency in case of multistakeholder intervention (both on a national and international scale).

This CEN Workshop Agreement (CWA) has been elaborated as part of the EU-funded research project STRATEGY (<https://strategy-project.eu/>), which received funding from the European Union's HORIZON 2020 research and innovation programme under grant agreement (GA) N° 883520. More specifically, upon investigation of the standardisation universe across its thematic streams of research and prioritisation of the identified gaps against the operational perspective of end-users, STRATEGY underlined the need and supported the drafting of this CWA.

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<sup>1</sup> <https://erccportal.jrc.ec.europa.eu/>

## 1 Scope

This document proposes a harmonized approach for crisis management stakeholders with a main focus on public safety agencies, to elaborate emergency response plans based on a homogenous core structure to be further adapted to specific hazard types as per relevant guidelines also provided as part of the CWA.

This deliverable intends to propose uniform practices for elaborating emergency response plans, to emergency management agencies and other civil protection practitioners within the field of disaster and emergency management, including non-governmental agencies active in the sector. Each of the aforementioned categories of potential end-users may wish to consider the proposed structure of the response plan template in the context of elaborating a new response plan and/or adapting an existing response plan relative to a specific hazard type.

Based on that, this CWA proposes to first responders a generic template along with methodological guidelines for elaborating a response plan in a coherent manner for all types of hazards falling in their scope of operations.

A core backbone structure of such a document is provided in Annex A, normative, along with guidelines regarding its adjustment and practical application to the characteristics of different types of hazards.

The applicability of the overall approach specifically to Chemical, biological, radiological, nuclear and explosive (CBRNe) incidents and waste disposal plants emergencies, is showcased (for indicative purposes) in two examples detailed in Annexes B & C, informative.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 31000:2018 *Risk management — Guidelines*

ISO 22361:2022 *Security and resilience — Crisis management — Guidelines*

## 3 Terms and definitions

For the purpose of this document, the following terms, definitions and abbreviations apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <http://www.iso.org/obp/>

— IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### **crisis**

abnormal or extraordinary event or situation that threatens an organization or community and requires a strategic, adaptive and timely response in order to preserve its viability and integrity

[SOURCE: ISO 22361:2022, 3.2 modified — Notes to entry have been deleted]

### 3.2

#### **crisis management**

coordinated activities to lead, direct and control an organization with regard to crisis

Note 1 to entry: It is a holistic management process, that identifies potential impacts threatening an organization and provides a framework for building resilience, with the capability for an effective response that safeguards the interests of the organization's key interested parties, reputation, brand and value creating activities, as well as effectively restoring operational capabilities

[SOURCE: ISO 22361:2022, 3.3 modified – Note 1 to entry has been added.]

### **3.3 emergency**

sudden, urgent, usually unexpected occurrence or event requiring immediate action

Note 1 to entry: An emergency is usually a disruption or condition that can often be anticipated or prepared for, but seldom exactly foreseen.

[SOURCE: ISO 22300:2021, 3.1.87]

### **3.4 emergency response**

the effort to quickly identify an emergency, minimize its effects, and mitigate the cause to reduce the risk of future incidents

### **3.5 interoperability**

the ability of diverse systems and organisations to work together

[SOURCE: ISO 22300:2021, 3.1.136]

### **3.6 response**

actions taken during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected

[SOURCE: UN Office for DRR–Terminology: <https://www.undrr.org/terminology/response>]

### **3.7 first responders**

Emergency Services Practitioners and trained individuals (from local communities and/or citizen groups and/or civic society at large) who are immediately responding to scenes of emergency, disaster and/or crisis, with the pertinent and necessary culture/ behaviour, training, skills, procedures and equipment to tackle the said emergency, disaster and/or crisis.

Note 1 to entry: Including, but not limited to, fire departments, rescue squads, emergency medical personnel, law enforcement personnel, and in some instances military personnel where the personnel are trained.

### **3.8 response plan**

documented collection of procedures and information that is developed, compiled and maintained in preparedness for use in an incident

Note 1 to entry: This document assigns/describes responsibility to organizations and individuals for carrying out specific actions at projected times and places in an emergency that exceeds the capability or routine responsibility of any one agency, e.g. the fire department. Additionally, it sets forth lines of authority and organizational relationships, and shows how all actions will be coordinated also identifying personnel, equipment, facilities, supplies, and other resources available for use during response and recovery operations

[SOURCE: ISO 22300:2021, 3.1.208 modified - Note 1 to entry has been added.]

### 3.9

#### **Memorandum of Understanding**

(MoU)

type of agreement between two (bilateral) or more (multilateral) parties, expressing a convergence of will between the parties, indicating an intended common line of action.

### 3.10

#### **command level**

individual level of command designed to establish a clear hierarchical framework and operational clarity for the command of major incidents or disasters

Note 1 to entry: A gold–silver–bronze command level structure is considered as the command hierarchy used for major operations by emergency services.

Note 2 to entry: The gold–silver–bronze command levels may also be considered as strategic–operational–tactical, as considered by many European stakeholders.

### 3.11

#### **safety**

freedom from risk which is not tolerable

Note 1 to entry: Usually, safety is the state of being free from natural or other non-intentional dangers or threats.

[SOURCE: ISO/IEC Guide 51:2014, 3.14 modified - Note 1 to entry has been added.]

### 3.12

#### **security**

state of being free from danger or threat where procedures are followed or after taking appropriate measures

Note 1 to entry: Usually, security is the state of being free from intentional (human induced) dangers or threats.

[SOURCE: EN ISO 22300:2021, 3.1.239 modified - Note 1 to entry has been added.]

## **4 Emergency Response Plan**

### **4.1 Overview**

#### **4.1.1 Considered operational application**

This document targets the establishment of a generic definition of a response planning approach applicable to a crisis management stakeholder at a national level while considering the organisational regional and local arrangements for managing response. In this respect the considered range of stakeholders includes (in a non-exclusive manner) all nationally appointed bodies for ensuring a certain level of safety/security across citizens. Indicatively, the stakeholders include:

- Law Enforcement Agencies
- Emergency Medical Services
- Fire Services
- Civil Protection Organizations
- Emergency Agriculture, Animal, and Environmental Agencies

The provisions of the proposed response plan structure are aimed at providing a generic template for organisation types such as the ones listed above towards their adaptation/translation to the national/operational particularities applicable for each case. The aim is to establish a homogeneous



response planning perspective for enhancing interoperability in case where efficient response relies on the intervention of multiple stakeholders (possibly also in a multinational context).

#### 4.1.2 Operational objectives/benefits of coherent planning

Interoperability is a critical success factor in any situation requiring the coordination of multiple stakeholders in order to achieve a common objective. In this respect efficient crisis management, especially in the civil protection domain, where fault tolerance may impact human lives, property and critical infrastructure, largely relies on the timely/coordinated interaction (i.e. exchange of information) of the aforementioned stakeholders to prepare, respond and mitigate a crisis.

Establishing a coherent approach in response planning is envisaged to facilitate the coordination in multi-stakeholder crises in numerous ways, including:

- Optimal coordination among co-responsible stakeholders in a crisis
- Minimization of administrative overhead across all levels of command
- Improvement of operational information availability and exchange
- Enhancement of interoperability both on a technical/procedural level
- Optimal resource allocation/management crisis situations
- Sharing of common operational information and picture
- Optimization of training outcomes in a multistakeholder – multinational/cross border context
- Improvement of capacity for post-operation analytics for planning revision purposes.

It should be considered that homogenous response planning entails operational benefits that correspond to all phases of crisis management (namely preparedness, response, recovery and mitigation), and in this context the list provided above is by no means exhaustive and aims to provide some preliminary dimensions for further analysis.

#### 4.1.3 Current state/limitations

On a European level, identifying the significance of collaborative response and interoperability for addressing civil protection crises, the EC has proceeded to initiatives on the provision of assistance consisting of governmental aid that is delivered in preparation for or immediate aftermath of a disaster in Europe and worldwide<sup>2</sup>. In this respect, the EC has established mechanisms for facilitating/enhancing the coordinated response to (among others) human-induced disasters and natural hazards at European level. This helps avoiding duplication of relief efforts ensuring also that assistance is tailored to the needs of those affected<sup>3</sup>. The above highlights the high priority being given on a European level to the efficiency of response on an international/multinational level.

Despite the significant achievements from a disaster response perspective, the planning phase of managing crises in the civil protection domain continues to present significant opportunities for further improvement. This is particularly evident on a national scale where the significant diversity among available planning practices, between the national stakeholders in crisis management, largely contributes to the interoperability overhead explain in the introduction.

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<sup>2</sup>[https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/resceu\\_en](https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/resceu_en),

<sup>3</sup>[https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/emergency-response-coordination-centre-ercc\\_en](https://civil-protection-humanitarian-aid.ec.europa.eu/what/civil-protection/emergency-response-coordination-centre-ercc_en)

## 4.2 Key considerations

### 4.2.1 Existing planning approaches

During the process of developing an emergency response plan, one of the following approaches will have to be taken into consideration [6].

**Scenario-based planning:** By generating scenarios for risks or threats, scenario-based planning enables planners to assess the effects of the scenarios and choose the best course of action. This method is frequently used by planners to create planning hypotheses, primarily for annexes to a base plan that are hazard- or threat-specific.

**Functional planning:** Functional planning, also known as function-based planning, identifies the common tasks that an organization should complete in the event of an emergency as well as the agencies in charge of carrying them out.

**Capability-based planning:** The capability-based approach develops the plan of the organization based on its capabilities for the actions that will be carried out during an emergency. In this case, the training, organizations, plans, leadership, management, personnel, equipment and facilities are examined and considered in combinations, in order to be checked if the required response to an emergency function can be performed. This approach can be a combination of the scenario-based and functional planning.

**Hybrid-based planning:** The hybrid is a mix of the previous approaches, and is the most preferred one, as it encompasses into the planning the functions that must be performed by the organization during an emergency, the various capabilities of the organization and also it includes plans according to various types of hazards and threats. The requirements of a scenario are transformed to goals and objectives, roles, responsibilities with specific functions and the various steps of the action plan.

### 4.2.2 Emergency planning process

Emergency planning process is a set of complex and analytical, organizational actions executed throughout various phases of the emergency management cycle (preparedness, prevention, mitigation, response, and recovery). Elaborating plans that specify actions for minimizing the impact of disasters against specific threats is deemed necessary for optimizing the response outcome. Preparation, in turn, encompasses a variety of actions such as recruitment, procurement of equipment, development of an emergency response plan, training and exercises, logistic support etc.

Public emergency response organizations are responsible for ensuring that all necessary and appropriate actions are taken in order to protect people and their properties from any threat or hazard. This protection can be ensured by preventing threats and hazards or by effectively responding during their onset.

Prevention encompasses actions that reduce risk mainly from anthropogenic intervention. In this respect, planning can also help mitigate secondary/cascading or opportunistic incidents that may occur after the primary incident. Incorporating prevention methods into a comprehensive planning process also helps an emergency response organization to identify information or intelligence requirements that support the overall planning process.

Protection reduces or eliminates the impact of a threat to people, property, and the environment. Protection planning safeguards citizens and their freedoms, critical infrastructure, property, and the economy from human made and natural disasters, or other emergencies. It includes actions or measures taken to cover or shield assets from exposure, injury or destruction. Protective actions may occur before, during, or after an incident and prevent, minimize, or contain the impact of an incident.

Response refers to the steps taken directly after an incident aiming at preserving life, providing for basic human requirements, minimizing property damage, and lessen the impact on critical infrastructure as

well as the environment. Response actions taken after an event reduce its physical, psychological, social, and economic effects. Provided the above, response planning enables fast and methodical incident evaluation to guarantee a swiftly scalable, flexible response.

Although the development of an emergency response plan is part of the preparedness phase, its availability is extremely important because it includes ordered and coded actions and duties, of organizational and functional perspective, aiming to prevent undesired situations, protect people and reassure that the emergency response organization will respond effectively.

Since emergencies will likely occur, planning is necessary. In this respect an emergency response plan assigns responsibility to organizations and individuals for carrying out specific actions that exceed routine responsibility, sets forth lines of authority and organizational relationships and shows how all actions will be coordinated. Therefore, the existence of an effective plan is crucial because an ineffective emergency response plan or even the lack of a plan could lead to severe impact such as multiple casualties. An urgent need for rapid decisions, shortage of time, and lack of resources and trained personnel can lead to chaos during an emergency. In this type of situational conditions, an effective emergency response plan highlights/identifies personnel, equipment, facilities, supplies, and other resources available within an organization. It also supports interoperability between different emergency response organizations that will cooperate and work together during an emergency.

In this context, emergency planning has to encapsulate the answer to the following basic questions:

- How likely an emergency situation is to occur (either an accident, a human-made action or a natural disaster)?
- What means are available to prevent the situation?
- How can we maximize the effectiveness of the organizations' emergency response?

Based on the above, the planning process can be initiated. In cases where the planning process is used consistently during the preparedness phase, its activation/use during operations eventually becomes automated. The optimal condition would be to constitute the planning process a routine across all phases of emergency management.

The planning process should be flexible to allow emergency response organizations to adapt it to the varying characteristics of its mission. The expected considerations for the coherent development of the emergency response plan are briefly listed below.

- **Form a planning team.** Experience and lessons learned indicate that operational planning is optimally performed by a team. Using a team or group approach facilitates organizations to define the role to be assumed during an operation. Case studies and research support this concept by pointing out that the common thread found in successful operations, is that participating organizations have understood and accepted their roles (that is complementary to others). In addition, members of the planning team should be able to understand and accept the roles of other departments and agencies. One goal of using a planning team is to build and expand relationships that help enhance creativity and innovation in planning during an incident. This approach helps establish a planning routine, so that processes followed before an incident occurs are the same as those used during and following an incident.
- **Understand the situation.** The planning team should start by conducting research and analysis on the organization's threats and hazards. If risks are problems and operational plans are the solution, then hazard and threat identification and analysis are key steps in the planning process. Threat assessments prepared for or by agencies may provide information on potential "soft targets" and threats within the organization. The risk assessment is the basis for the emergency response plan development. The assessment helps a planning team decide what hazards or threats merit special attention, what actions must be planned for, and what resources are likely to be needed.

Emergency planners need to review the assessment findings and analyze the quantity and types of resources (including personnel) needed during different types of incidents. Hazard and threat analysis requires that the planning team knows risks that have occurred or could occur within the organization's spectrum of operational mandate. The process should begin with a list of the risks that concern planners, developed from research conducted earlier in the planning process.

- **Determine operational goal and objectives.** Considering the specific set of characteristics regarding a particular hazard or threat, the planning team outlines an incident's development from the perspective of prevention and protection efforts, from the point of initial warning (if applicable) to its impact on the organization (as identified through analysis) and its relative consequences (e.g., damaged/collapsed buildings, loss of critical services or infrastructure, death, injury, displacement). This is approached through the elaboration of realistic scenarios, encompassing a clear description/ clarification of the relevant operational goals and objectives and created on the basis of relevant risk data. Planners may thus consider the incidents that have the greatest impact (worst-case), those that are most likely to occur, or an incident constructed from the impacts of a variety of risks. During this process of building an incident scenario, the planning team identifies the requirements that determine actions and resources necessary for achieving the aforementioned goals.
- **Develop the emergency response plan.** This step is a process of generating, comparing, and selecting possible solutions for achieving the goals and objectives identified in the previous step. Planners consider the requirements, goals, and objectives to develop several response alternatives.

When developing courses of actions, response planners depict how an operation unfolds by building a portrait of an incident's actions, decision points, and participant activities. This process helps planners identify tasks that occur immediately at incident initiation, tasks that are more mid-incident focused, and tasks that affect long-term operations. Courses of action address the what/who/when/why, how and how much for each solution.

Once the courses of action are selected, the planning team identifies the resources needed to accomplish tasks. After the planning team identifies all requirements, matching available resources to requirements is the subsequent step. By tracking obligations and assignments, the planning team determines resource shortfalls and develops a list of needs. The capability estimate process is critical to this effort as it facilitates planners decide if pursuing a particular course of action is realistic and viable.

Further to the above, planners can use capability estimates for both future and current operational planning. At a minimum, planners should prepare separate capability estimates for personnel, administration and finance, logistics, communications, equipment, and facilities. Each capability estimate compares the courses of action being considered for a particular operation. They make recommendations as to which course of action best supports the operation.

Among the outcomes from the definition of a course of action is a "list" of the information and intelligence needs for each of the response participants. Emergency planners should identify the information and intelligence they will need along with the respective deadline(s) for receiving it to drive decisions and trigger critical actions. When developing courses of action, the process should be periodically set to a standstill status so the planning team can identify progress made toward the end-state (including goals and objectives met and new needs or demands), identify "single point failures" (i.e., tasks that, if not completed, would cause the operation to fall apart), check for omissions or gaps, check for inconsistencies in organizational relationships and check for mismatches between the organization's plan and plans from other organizations with which they are interacting.

- **Prepare, review, and approval of plan.** During the step-in discussion, the planning team creates a rough draft of the core plan, as well as any necessary functional annexes, hazard-specific annexes,

or other plan components. The planning team circulates the final draft once completed to get feedback from the entities that are responsible for applying it.

Planners should check the written plan for its conformity to applicable regulatory requirements and potential national or international standards and for its usefulness in practice. Then the plan goes through a review cycle. Reviews of plans allow other agencies with emergency responsibilities to suggest improvements to the plan on the basis of their accumulated experience. *A “peer review” process for plans is a useful tool for examining whether plans contain all of the necessary elements. For plans dealing with adaptive threats (e.g., terrorism), examining plans “through the eyes of the adversary” can lead to significant improvements and a higher probability of success. This process is known as “red-teaming.”* [6]

After reviewing the plan, the planner should present it to the organization's hierarchy to get it officially promulgated. The plan must be approved by the senior official(s) through a formal promulgation documentation procedure in order to receive the broadest support feasible. Ensuring the management support needed for plan changes and modifications is crucial.

Following the senior official's approval, the planner must make arrangements for the plan's distribution and keep a list of individuals and groups to whom the plan was sent [6]. A copy of the plan may need to be posted on the organization's website for transparency purposes, unless the plan has been classified.

- **Implement and maintain the plan.** All agencies' personnel should receive training so they have the knowledge, skills, and abilities required to carry out the duties outlined in the plan after the plan has been communicated to the involved agencies. To determine whether the goals, aims, decisions, actions, and timing specified in the plan resulted in a successful response, evaluation of plans often combines training exercises with actual incidents. Through the sharing of best practices and knowledge, planners can learn from the mistakes and best practices of other emergency groups. [6]

The final step that closes the loop in the planning process is the maintenance of the plan. It focuses on adding the information gained by exercising the plan and starting the planning cycle over again. Planning is a continuous process that does not stop when the plan is published. Plans should evolve as lessons are learned, new information and insights are obtained, and priorities are updated. Planning teams should establish a process for reviewing and revising the plan. Planners should consider reviewing and updating the plan after a major incident, changes in operational resources, a formal update of planning guidance or standards, a change in the hierarchy of the organization, major exercises, changes of the legal framework etc.

### 4.2.3 Prerequisites for emergency response planning

The clarification of the operational mandate of each crisis management stakeholder as well as the existing organisational mechanism for coping with the respective operational demands, is perceived as a necessary prerequisite for efficiently proceeding to the elaboration of an emergency response plan. In this respect the identification of the hazard (type) and its classification/categorization (4.2.3.1) along with the corresponding command structure (4.2.3.2) that will assume the response is considered as being of key importance.

#### 4.2.3.1 Classification of incidents

The classification of incidents across crisis management stakeholders, especially considering the European ecosystem, is highly diverse. In this context, for maximizing the efficiency of the response, a pre-existing classification of incidents associated to specific measures/actions, relevant to each stakeholder is considered being essential for outlining the applicability of the considered response plan. Examples of incidents as classified by different stakeholders' types are shown in Annex D, informative.

#### 4.2.3.2 Command structure

The incidents and their classification present a certain degree of diversity as per different stakeholders. Responding to each of these incidents is linked to specific command structures that are in line to the applicable Standard Operating Procedures (SOPs) of each stakeholder. According to the common practice, experience and the doctrines adapted during mission deployment, three distinct levels of command are identified as being applicable: Strategic, Operational and Tactical [20]. Those command levels respectively correspond to the Gold, Silver, Bronze notation.

- **Strategic command level (Gold)**

The top level of command is responsible for the overall control of mission objectives against the strategic objectives of the organization. Commanders at these levels have an overall control of their organization's resources located at the incident on a national scale.

- **Operational command Level (Silver)**

The middle command level is defined as operational level, in which missions are coordinated, by deploying the managing resources, assets or forces during a response operation towards achieving the strategic goals.

- **Tactical command level (Bronze)**

Teams & Officers responsible for the on-site action are acting in pre-specified, scheduled and precise manner according to the provisions of the respective SOPs as well as the applicable response planning.

The above-mentioned three levels of command, according to the specific provisions and SOPs applicable for each crisis management stakeholder, may be further analyzed in specific roles according, among others, to the considered incident type.

#### 4.2.3.3 Emergency response phases

All phases of emergency crisis management<sup>4</sup> fall in scope of this document. However, the ones that are directly related to the elaboration of a response plan, and hence a homogenous structure would be most beneficial, would be the following.

**Preparedness** Preparedness is a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective actions, to increase a community's ability to respond when a disaster occurs. This phase includes developing plans for what to do, where to go, or who to call for help before an event occurs; actions that will improve efficiency dealing with an emergency. In addition, typical preparedness measures include developing mutual aid agreements and memorandums of understanding, training for both response personnel and concerned citizens, conducting disaster exercises to reinforce training and test capabilities, and presenting all-hazards education campaigns.

**Response** This phase includes actions taken to save lives and prevent further damage during an emergency situation. Response is concerned with activating plans that dictate the actions to take place during an emergency. Response actions start off with notifying emergency management stakeholders of the crisis and

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<sup>4</sup> Guide for All-Hazard Emergency Operations Planning - Federal Emergency Management Agency (FEMA) – Sept 1996 <https://www.fema.gov/pdf/plan/slg101.pdf>

may indicatively include (among others) warning/evacuating and sheltering the population if possible, keeping the population informed, rescuing individuals and providing medical treatment, maintaining the rule of law, assessing damage, addressing mitigation issues that arise from response activities, and even requesting support from external stakeholders.

**Recovery** Recovery is the effort to restore infrastructure and the social and economic life of a community to normal, but it should incorporate mitigation as a goal. For the short term, recovery may mean bringing necessary lifeline systems (e.g., power, communication, water and sewage, transportation) up to an acceptable level while providing for basic human needs (e.g., food, clothing, and shelter) and ensuring that the societal needs of individuals and the community are met (e.g., maintain the rule of law, provide crisis counselling, demonstrate that people do care and that help is becoming available).

#### 4.2.4 Categories of plans

Plans may be categorized depending on the geographical, sectoral, contextual area of implementation and levels of management.

##### Per command structure

Considering 4.2.3.2, the distinct tiers of planning in each organization may be:

- a) plans addressed to the strategic/managerial level;
- b) plans developed for the operational level setting the framework for the tactical planning;
- c) tactical plans for operational deployment.

Comprehensive and integrated planning requires exchange of information among all levels, as plans provide input to each other and are interdependent.

- **Strategic plans** describe at high level and in long-term how an organization meets its role and mandate in emergency response. These plans are driven by existing policies and set investment and planning priorities.
- **Operational plans** consist of the description of roles, responsibilities and actions of the departments, agencies and different management levels of an emergency organization. They mainly focus on the broad physical, spatial and time-related dimensions of an operation, as well on roles and responsibilities of all involved stakeholders. They tend to be more complex and comprehensive than tactical plans, while less details are included.
- **Tactical plans** are the more detailed plans that an organization develops and employs. They focus on personnel, equipment and resources that are involved, are based on operational plans and identify requirements for exercise and training.

##### Per hazard

Although the existence of an all-hazards emergency plan is not excluded, emergency organizations may have different plans for different hazards and threats, natural, technological man-made, intentional or accidental, especially for the most common ones to which the country is exposed due to the peculiarities that type of event is associated with.

**Natural hazards** are events caused by natural forces, they primarily affect the natural environment and may lead or lead not to damage to the built environment, critical disruption of the social activities and eventual casualties.

**Man-made threats** are intentional or accidental hazards caused by human intent, negligence or error and may lead to more or less impact to the built environment, to services provided, to the cyber world and most importantly to human life.

**Technological hazards** are events caused by an accident or by other man-made or natural hazard and may pose unique hazard to the public and the environment.

In case there are no different plans available, the existing plans, at different operational and geographical level, should have explicit distinction of the organizations' role and responsibilities for the main hazards and threats.

### **Per geographical area**

Each level of government (national, regional, local) has its own plans, and this also stands for the emergency organizations for their different levels of administration.

**National plans** for crisis management, per hazard or generic, describe the role and responsibilities of multiple organizations and stakeholders, their mandate during prevention, response and recovery activities. Each organization may also have national plans, usually per hazard, in which the capabilities and responsibilities of different management levels are detailed. These plans may include description of the role and liabilities of the strategic, operational and tactical level. They also outline the alerting mechanism at national level as well as towards the lower administrative levels and specify the assistance provided to the latter and under which circumstances. In the national plans it is recognized that all incidents initiate at local level and the higher administrative level is activated when the local resources and capabilities are overwhelmed and/or when an incident geographically affects more than one area.

**Regional and local plans** describe in further details the role and responsibilities of the organization, its departments and roles in charge at the regional or local level, across the different activities (from alerting to communication, emergency response or citizen protection) that are involved in prevention, response and recovery. These plans include higher level of details and instructions. They are compatible with the concept of operations (CONOPS), delineated roles and operational structure of the organization at national level as well as the organization's SOPs.

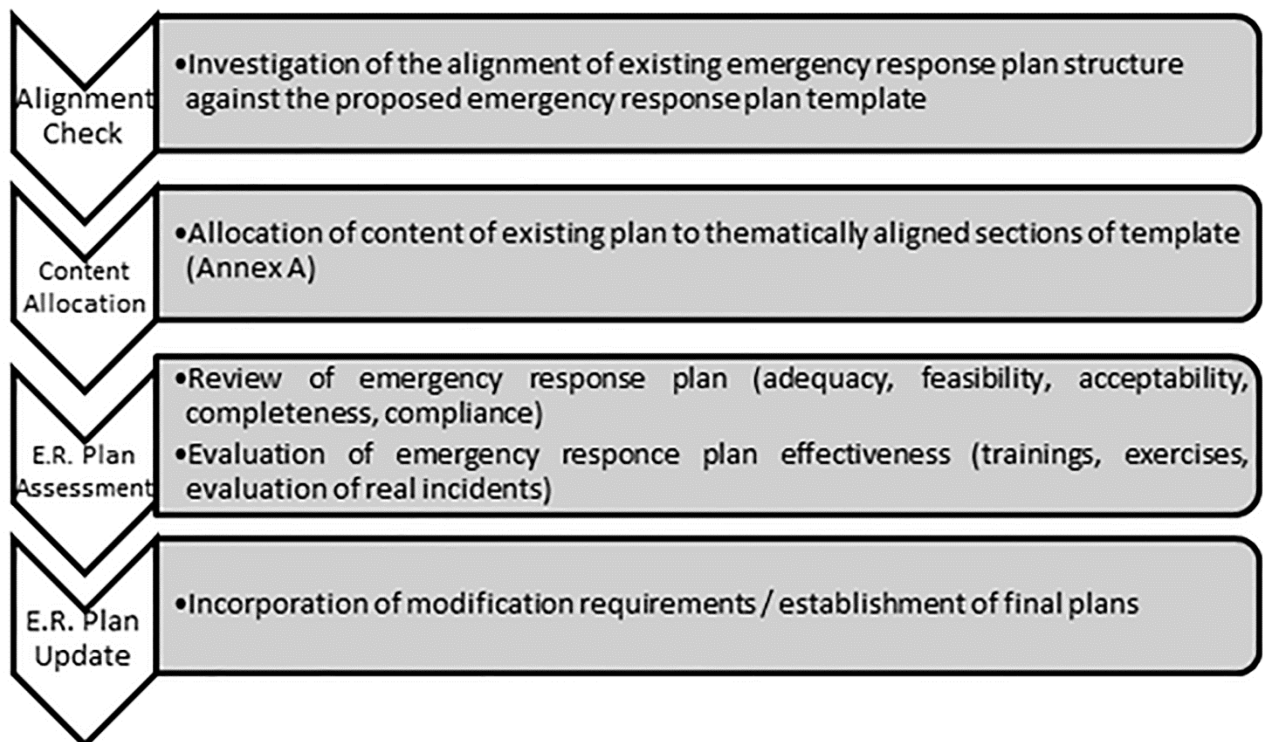
## **4.3 Structure and content of Response Plan**

A Response Plan Template is presented in Annex A, normative.

## **4.4 Guidelines for adapting the template to hazard types**

For adapting the core emergency response plan structure (see Annex A) to individual hazard types, by crisis management stakeholders in line with their operational mandate(s), some methodological steps are to be followed. The aim is to hereby facilitate the elaboration of hazard-specific emergency response plans with content guidelines that target the particularities of the considered hazard (indicatively listed in Annexes B and C). The proposed process for emergency response planning (see 4.2.2) foresees the following methodology to be undertaken by the response planning team of each organization. See *Figure 1*.





NOTE: E.R. = Emergency Response

**Figure 1 – Steps for elaborating hazard-specific E.R. plans by crisis management stakeholders considering the template (Annex A) and pre-existing operational documentation**

More specifically, for each of the aforementioned methodological steps, crisis management stakeholders should proceed to:

### 1. Alignment check

During this first step, the planning team (see 4.2.2) investigates the content structure of exiting emergency response plans and compares structure with template of Annex A. The aim of this exercise is to identify and map the hazard specific information (available in pre-existing planning processes) to the structure of the template in discussion. In case of absence of existing planning documentation, stakeholders are encouraged to consider any informative documentation that outlines their operational mandate (including the respective operating procedures) in order to establish a basis for further elaboration.

### 2. Content allocation

Crisis management stakeholders are encouraged to assess the existing material identified as part of Step 1, and incorporate it in the template as per the respective thematical mapping, taking care that hazard-specific information to be possibly considered as additional subsections. The outcome of this step will be a first draft of a response plan.

### 3. Emergency Response Plan assessment

A process for reviewing and revising (if necessary) the draft emergency response plan elaborated as part of the previous step, should be followed. The use of specific checklists/benchmarks to ensure all planning elements are addressed is strongly recommended. During the evaluation process of the ERP, information from exercises, self-assessments, audits, lessons learned or post – disaster analyses, that may indicate potential deficiencies, should be exploited. The outcome of the aforementioned activities will include a list of specific recommendation for remedial actions.

#### **4. Emergency Response Plan update**

This final step is focusing on incorporating the improvements identified as part of the previous step(s) into a finalized version of the response plan, to be considered for operational exploitation.

According to [6], When using a planning template as the one presented in Annex A, planners should consider whether:

- The resulting plan represents the hazard and threat situation (the underlying facts and assumptions) falling under their scope of operations;
- The threat, hazard and risk assessments match the demographics, infrastructure inventory and probability of hazard occurrence within the scope of operation of the stakeholder in consideration;
- The template broadly identifies the resources needed to address the problems generated by an emergency or disaster;
- Using the template stifles creativity and flexibility, constraining the development of strategies and tactics needed to solve disaster problems; and
- Using the template encourages planning in a vacuum, by enabling a single individual to write the plan.

## Annex A (normative)

### Emergency Response Plan Template

Focussing on the benefits stemming from the homogenous structure of a response plan document adopted among co-responsible crisis management agencies/stakeholders of a national (and/or regional) scale, the Emergency Response Plan Template is taking into consideration the current practises among European stakeholders. The template aims to provide a harmonised approach for the exchange of operational information in order to optimise the efficiency of the response in a hazard-specific crisis and consists of 10 main chapters. The content for each chapter is described and analyzed and, in certain cases, is additionally divided in subsections, formulating a generic base to be further adapted to the operational scope of each stakeholder or per each hazard type (see Annexes B and C).

#### Cover page

*The cover page should encompass information that characterise the response plan as a document.*

- a) Document title,
- b) Identification number,
- c) Date of issue and
- d) Version information.

#### Table of Contents

*The table of contents should be a logically ordered and clearly identified layout of the major sections and subsections of the plan that will make finding information within the plan easier.*

### A.1 Introduction

*A structured introduction should have the following elements.*

#### A.1.1 Current legal and regulatory framework

*The existing legal and regulatory framework on which the current plan is based, is enlisted (laws, presidential decrees, ministerial decisions, state legal counsel opinion, judicial decisions, etc.), together with Memorandums of Understanding (MoUs) with co-responsible stakeholders and Service Level Agreements (SLAs) that govern the achievement of the envisaged operational objectives.*

#### A.1.2 Approval and implementation

*The section introduces the plan, outlines its applicability level related to all previous response plans (if any). It officially announces/declares the emergency operations plan and briefly describes the process of developing and publishing the plan. It provides details both the authority and the responsibility to the emergency response organization to perform its tasks. It should encompass the responsibilities with regards to preparing and maintaining the plan in consideration (including the provision of relevant guidelines) and commit to carrying out the necessary training, exercises, updating needed to support the plan. It has to be signed/dated by the senior official(s) of the organisation.*

#### A.1.3 Classification level

*Defines the classification level of the document (according to Commission Decision (EU, Euratom) 2015/444 of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p.53.)*

#### **A.1.4 Record of changes**

*Each update or change to the plan should be tracked. In this respect, the record of changes, usually in table format, shall contain, at a minimum, a change number, the date of the change, the responsible entity that made the change, and the short description of the change. Minor changes (e.g., contact details) do not need to be mentioned/included in the record of changes.*

#### **A.1.5 Record of distribution**

*Distribution/sharing of the document is foreseen and refers to two levels of stakeholders. The ones that must act (agencies of the same organization that has published the plan) and other involved services (they should be aware of the plan for interoperability reasons). The record of distribution, usually in table format, indicates the organizations/agencies receiving the plan, as delivered.*

#### **A.1.6 Terminology/Glossary**

*Defines the basic terms in use throughout the document (it is advisable to follow an EU Directive or European/International Standard(s), national legal framework...)*

#### **A.1.7 Abbreviations**

*Usually, a table that explains the abbreviations met throughout the document.*

#### **A.1.8 Review and update**

*This section includes a delegation of authority for specific modifications that can be made to the plan and by whom they can be made without the senior official's signature.*

### **A.2 Scope and environment**

#### **A.2.1 Policy, scope and objectives**

##### **A.2.1.1 Policy – strategic directions**

*In this section, it is described how the emergency organization aims to meet its responsibilities in the long-term. Senior officials are responsible to define and establish planning priorities that will be introduced in the plan. Determining the organization's mandate and its strategic priorities sets the foundation for the plan and allows the strategic level to affirm the organization's commitment for adopting the current plan.*

##### **A.2.1.2 Scope**

*The plan should explicitly state the scope of emergency and disaster response and the geographic area/s to which the plan applies. It describes the way the response organization accomplishes its mission or set of objectives in order to reach a desired end-state. In this respect, it includes a clear methodology to realize the goals and objectives to execute the plan. In addition, the section should additionally include a listing of indicative hazards/threats.*

##### **A.2.1.3 Specific objectives**

*Objectives are specified and identifiable actions/activities that should be carried out when responding to an emergency. In this part of the plan a list of specific objectives pursued is included (e.g., efficient and timely emergency response, coordination and interoperability between emergency services, etc.)*

## **A.2.2 Environment and prerequisites**

### **A.2.2.1 Prerequisites**

*This clause shall primarily focus on the prerequisites that need to be guaranteed in order for the plan to be applicable (e.g., long-life training, specialized equipment etc.).*

### **A.2.2.2 Hazard and threat identification**

*Hazards/threats to which the emergency organization is expected to respond are to be summarized, e.g., in a table format. In this respect, this section can take into consideration among others information available from past events that may be used for regular updates as per the applicable process foreseen for the document.*

### **A.2.2.3 Incidents classification**

*A list of incidents that specifies the hazards and threats identified in Clause 2.2.2 is included, together with a categorization according to the estimated impact. This categorization may be adapted to the needs of the organization (e.g., minor incidents, serious incidents, critical incidents/crises)<sup>5</sup>.*

### **A.2.2.4 Risk assessment**

*Risk assessment is the overall process of risk identification, risk analysis and risk evaluation (see ISO 31000:2018). The risk assessment process of each threat/risk should be documented so as the organization determines its capabilities and limits to prepare for and respond to the defined threats and hazards.*

### **A.2.2.5 Assets exposed**

*This section explains what is endangered in case the above identified hazards and threats are realised (what if scenario). Indicatively it can contain information such as:*

- *Population distribution and locations / expected impact on population, including any concentrated populations of individuals with disabilities, others with access and functional needs, or non-native speaking individuals, as well as unaccompanied minors*
- *Geographic areas likely to be affected by particular threats/hazards*
- *Soft targets (publicly accessible places, open areas etc.)*
- *Critical infrastructures / entities (Including facilities and services)*
- *Animal population (species and their specificities, domestic or wild, farmed or companion animals, etc.)*
- *Production systems (crop or animal production systems and their characteristics and vulnerabilities)*

### **A.2.2.6 Resource management**

*This section shall encompass a description of the resources available as well as their management principle(s) for optimising the response to specific hazard types. In this respect, this paragraph shall need to be parameterised so as to reflect in each case, the operational status for all stakeholder/hazard type combinations in consideration.*

## **A.3 Plan implementation**

### **A.3.1 Command structure**

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<sup>5</sup> An analytical chart along with the detailed description of the categorised incidents should be included as Annex(es) to the response plan.

*The section provides details on existing command structures (e.g., Strategic, operational, tactical – local, regional, national), the respective position of the person in charge is recognized as well as the responsible command function (e.g. scene commander, incident commander etc. – command instruments/roles may vary as per stakeholder/stakeholder type). Also, for each incident class (e.g., minor, serious, critical) the respective command instrument is appointed.*

### **A.3.2 Preparedness - Readiness levels – proposed actions**

*Specific readiness levels should be pre-defined. For each level, a pool of proposed actions and measures aiming to prevent an incident occurrence or to minimize its potential impact, is included for selected incidents. The incidents for which actions and measures are enlisted are selected based on the classification identification, the organization's mission and the possibility to anticipate preventive measures. The procedure to define which readiness level the response organization is at, so that proposed measures be activated, should be clearly explained.*

### **A.3.3 Response - proposed actions**

*The response mechanism for each of the three command levels is specified. This includes different SOPs<sup>6</sup> for different roles/responsibilities (as per section 3.1) that are activated in an incident response (e.g., duties of the dispatcher, first responders, etc.) taking into consideration the provisions of sections 2.2.3 as well as 2.2.6.*

## **A.4 Command, control, communication and coordination**

### **A.4.1 Emergency response phases**

*Distinct emergency response phases are identified, starting from preparedness (e.g. readiness, increase readiness), covering response area (e.g. First and main response), ending at recovery. These phases might be different for each emergency response organization. The respective phases shall be mapped to the distinct command structure as identified in section 3.1.*

### **A.4.2 Operational priorities per phase**

*Operational priorities and objectives to be achieved in each of the phases are given. These priorities define the actions of the tactical level & the operational control of the response assets/resources thus achieving coordination.*

### **A.4.3 Risk communication**

*This section shall describe the communication approach and target audiences related to the risks associated to each hazard type individually. In this respect this section shall be adapted so as to reflect the communication provisions relative to (among others) a) the target group(s), b) applicable media options, c) key messages, prior to the onset of a crisis (i.e. preparedness phase).*

### **A.4.4 Crisis communications**

*This section presents a communications plan between different stakeholders (including emergency services and the public) starting from the initial notification (procedures for common situational awareness) and covering the duration of the emergency. This section shall encompass the specific means (channels) and type of information to be exchanged. It does not describe communications hardware or specific procedures found in departmental SOPs. Planners should identify and summarize separate interoperable communications plans. This section may be expanded as an annex and is usually supplemented by communications SOPs.*

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<sup>6</sup> These should be included as Annexes to the response plan.

## **A.5 Intelligence/Information management**

*This section describes the internal process of the organization to handle critical or essential information/intelligence. Information Collection, Analysis, and Dissemination is described. The development of an information/intelligence system includes the formation of groups (i.e. Joint Intelligence team, tactical teams) and instruments (i.e. liaisons or consultants), that have specific roles and responsibilities. This section may be expanded as an annex.*

## **A.6 Administrative, budgeting and logistics topics**

*Administrative support, as being a crucial part of operations (particularly of prolonged duration), is analytically described. A separate special plan is developed to cover administrative, budgeting and logistic support of the operations, in order to cover basic needs such as transport, board and lodging, means and equipment, physical and mental health support.*

## **A.7 Liaisons network – interoperability**

*This section includes the creation and maintenance of a liaisons network on a central, prefectural and local level, so that the immediate communication and response can be achieved during emergencies.*

## **A.8 International cooperation - assistance**

*This section describes the international cooperation function of the organization and the process to ask for, accept or provide international assistance to another country in case this is necessary. International assistance can be offered on different levels (intelligence, operational or administrative), and it should be described accordingly. This section may be expanded as an annex.*

## **A.9 Training and exercises**

*The required long life training activities to support and maintain the plan are described in this section. Also, an exercise program is described, involving all levels of command that should be constantly trained.*

## **A.10 Evaluation**

*This section describes the evaluation process after the organizations' involvement in a critical incident/crisis, aiming to improve the response mechanism and not to evaluate persons that have been involved.*

## **Annex B** **(informative)**

### **Emergency Response Planning for CBRNe incidents**

#### **B.1 Operational context**

CBRNe incidents cover a wide variety of incidents and events that can impact daily life and create complex situations that require a well-organized response that could last even for years. CBRNe stands for Chemical, Biological, Radiological, Nuclear, and high yield Explosives hazards and threats. These can be either natural hazards and accidents or man-made events that consequently lead to really complex situations such as a natural hazard that affects a nuclear factory or a deliberate or terrorist action.

An indicative classification of main incidents could indicatively consider to biological incidents, technological hazards, hazardous materials (HazMat) events, lethal chemical agents / munitions, radiological hazard and nuclear incidents. However, incident classification in CBRNe could differ between countries as per preferred operational practices.

The following example of emergency response plan is an indicative example and builds on the normative Annex A of this document. It aims to demonstrate how a generic emergency response plan template should be modified and adapted in order to be hazard-specific or organization-specific in various levels of command.

In general, each organization that makes use of this CWA to build its own emergency response plan should make its own adaptations according to its own specificities. The goal is to create a common schema of an emergency response plan that can be understood by other emergency response services or other experts in the same or different field, thus enhancing the common understanding and the efficiency of the response.

#### **B.2 Elaborating a Response Plan using Template of Annex A**

Provided the operational context (see B.1), an adaptation of the contents of the response plan template proposed in Annex A, to the case of a CBRNe incident, is presented below. In order to avoid the repetition of commonly applicable content from Annex A, the following sections show only those sub-clauses that incorporate CBRNe specific guidelines. *Additional text specific to CBRNe incident is shown in blue italics.*

### **1 Introduction**

#### **1.6 Terminology / Glossary**

*Defines the basic terms in use throughout the document (it is advisable to follow an EU directive or a standard ISO, CEN, national legal framework...)*

*For the case of CBRNe, this section should encompass the necessary definition related to the CBRNe domain (it is recommended to use the ones defined in EN17173 'European CBRNE glossary'). In this respect a list of indicative topics could be such as:*

- CBRNE hazard source – definitions related to the CBRNe agents, weapons or materials (e.g. neurotoxic agents, radioactive source, pathogen)*
- Locations - definitions related to specific areas related to the management of CBRNe incidents (e.g. hot zone, outer safety perimeter, support zone)*
- Operations – definitions related to specific operations related to the management of CBRNe incidents (e.g. reconnaissance, decontamination, disinfection)*



- *Scientific concepts – definitions of scientific concepts used in the management and communication regarding CBRNe incidents (e.g. radionuclide, lethal dose, virulence)*

## 2 Scope and environment

### 2.1 Policy, scope and objectives

#### 2.1.2 Scope

*The plan should explicitly state the scope of emergency and disaster response and the geographic area/s to which the plan applies. It describes the way the response organization accomplishes its mission or set of objectives in order to reach a desired end-state. In this respect, it includes a clear methodology to realize the goals and objectives to execute the plan. In addition, the section should additionally include a listing of indicative hazards/threats. A CBRNe-oriented response plan should provide a brief introduction - overview of the challenge to be faced. As such an indicative listing of topics/subtopics that would be analysed could include:*

- *Introduction to CBRN threats*
- *Weapons of mass destruction*
- *Biological weapons and warfare agents*
- *Nuclear weapons and radiological agents*
- *Radiological weapons*
- *Chemical weapons – chemical warfare agents*
- *Toxic industrial materials*

#### 2.1.3 Specific Objectives

*Objectives are specific and identifiable actions/activities that should be carried out when respond to an emergency. In this part of the plan a list of specific objectives pursued is included (e.g. efficient and timely emergency response, coordination and interoperability between emergency services, etc.). In the context of a CBRNe response plan, the objective/goals for each task/mission critical should be set. These may include:*

- *Prediction and early warning*
- *Reconnaissance*
- *Detection, identification and Monitoring*
- *Decontamination*
- *Medical treatment of exposed victims*
- *Protection of environment (natural, capital livestock)*
- *Protection of cultural heritage*
- *Communications*

### 2.2 Environment and prerequisites

#### 2.2.4 Risk assessment

*Risk assessment is the overall process of risk identification, risk analysis and risk evaluation (see ISO 31000:2018). The risk assessment process of each threat/risk should be documented so as the organization determines its capabilities and limits in order to prepare for and respond to the defined threats and hazards. A response plan CBRNe-oriented should consider all specificities related to the CBRNe environment,*

*including all relative assumptions, prerequisites and parameters that affects the relevant planning. Moreover, the section should include instructions/guidelines for the implementation of additional plans.*

### **3 Plan implementation**

#### **3.1 Command structure**

*The section provides details on existing command structures (e.g., Strategic, operational, tactical – local, regional, national), the respective position of the person in charge is recognized as well as the responsible command function (e.g., scene commander, incident commander etc. – command instruments/roles may vary as per stakeholder/stakeholder type). Also, for each incident class (e.g., minor, serious, critical) the respective command instrument is appointed. *The deployment of the foreseen command structure and also details on the foreseen activities and objectives, should be provided.**

#### **3.3 Response - proposed actions**

*The response mechanism for each of the three command levels is specified. This includes different SOPs<sup>7</sup> for different roles/responsibilities (as per section 3.1) that are activated in an incident response (e.g., duties of the dispatcher, first responders, etc.) taking into consideration the provisions of sections 2.2.3 as well as 2.2.6.*

*In the context of a hypothetical collaborative plan (whereby multiple agencies are involved in the response) this section would include the roles and competencies for each of the involved agencies/stakeholders, that indicatively may include:*

- a) Civil Protection agencies,*
- b) Police,*
- c) Fire Service,*
- d) Cost Guard,*
- e) Heath Services,*
- f) Armed Forces.*
- e) Other responsible governmental agencies (e.g, agriculture/livestock, and environmental agencies)*

*Further to the above, in the context of a CBRNe response, it would be here that protective zone setting & actions to be implemented would be detailed. More specifically, a thorough analysis of the following indicative items should be considered.*

- *Hot zone*
  - *General description*
  - *Special Characteristics of the Hot Zone*
  - *Response Entities - Teams*
- *Warm Zone*
  - *General description*
  - *Special Characteristics of the Warm Zone*
  - *Response Entities - Teams*
- *Cold Zone*
  - *General description*
  - *Special Characteristics of the Cold Zone*
  - *Response Entities - Teams*
- *Free Zone*

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<sup>7</sup> These should be included as annexes to the response plan in consideration.

## 4 Command, control, communication and coordination

### 4.1.1 Emergency response phases

*Distinct emergency response phases are identified, starting from preparedness (e.g., readiness, increase readiness), covering response area (e.g., First and main response), ending at recovery. These phases might be different for each emergency response organization. The respective phases shall be mapped to the distinct command structure as identified in section 3.1. In the context of a CBRNe incident, these phases may be indicatively distinguished in:*

- *Normal Readiness Phase*
- *Increased Readiness Phase (Imminent Threat)*
- *Response Phase (Mobilization – Plan Activation)*
- *Escalation Phase*
- *De-Escalation Phase*

### 4.3 Risk communication

This section shall describe the communication approach and target audiences related to the risks associated to each hazard type individually. In this respect this section shall be adapted so as to reflect the communication provisions relative to (among others) a) the target group(s) *including the public*, b) applicable media options, c) key messages, prior to the onset of a crisis (i.e. preparedness phase).

## 9 Training and exercises

*The required long life training activities to support and maintain the plan are described in this section. Also, an exercise program is described, involving all levels of command that should be constantly trained. For the case of a CBRNe environment, training activities foreseen and described should cover the general/special requirements of all entities engaged in the response. For the case of a collaborative response among multiple stakeholders, the aforementioned training requirements should be clearly described for each stakeholder individually.*

## Annex C (informative)

### Emergency Response Planning for waste disposal plants emergencies

#### C.1 Operational Context

Waste management activities are not only a potential source of chronic risks (atmospheric pollution, olfactory or noise nuisances, etc.), they may also raise the risk of accidents. Waste handling/treatment activities are increasingly prone to accidents when compared to the increased risks faced during collection, sorting, transfer, etc. Fire appears to be the most frequent hazard, given the combustible and sometimes flammable nature of waste being handled [22]

As identified by [23] *Fires in waste sites are frequently challenging to face, require a lot of resources for a long time, and can have detrimental consequences on neighbouring communities, the environment, firefighters' safety, and public health. Long-term or short-term effects could include:*

- *Public health impacts on responders and communities (requiring the need to evacuate or shelter-in-place the population to protect them)*
- *Environmental impacts*
- *Pollution of surface and groundwater*
- *Traffic restrictions*
- *Mobilisation of fire and rescue services as well as other agency resources*
- *Large-scale financial losses and disruption.*

Therefore, it becomes apparent that the emergency response to waste plant incidents has to be considered in a multi-stakeholder context. As highlighted above, waste disposal plants emergencies, primarily focussing on the phenomenon of waste fires', has evolved to a phenomenon of European and worldwide dimensions. As an indicative example, in Italy, waste fires and their impact on population due to their toxic smoke have been a major concern since 2000, when a specific area of Campania region in Italy (the so-said "Land of fires" <https://efface.eu/case-study-consequences-buried-and-burnt-waste-campania-italy>) experienced the impact of a clear link between illegal waste and organised crime, leading up to a formal declaration of emergency by the Government. In 2018 it was clear that the phenomenon extended to all the National territory counting up to 250 fires in 11 months (116 in unauthorised locations, 77 in treatment plants, 32 in waste disposal areas and 25 in municipal recycling centres and similar).

Provided the above, the Parliamentary Commission responsible for illegal activities connected to the waste cycle and related environmental offenses, approved a specific article of a National Law, requiring all Prefectures to prepare specific "External" Emergency plans for Waste disposal plants incidents (each plant manager has to prepare an "Internal" Emergency plan for emergencies whose impact remain confined within the plant borders, while the Prefect has to prepare an "External" Emergency plan at provincial level, for emergencies whose impact exceeds the plants' borders). On 27 August 2021 the Law went in force, when the foreseen guidelines were issued by decree (D.P.C.M.) providing the unique opportunity to prepare such emergency plans directly in digital format, so that avoiding the burden of transforming paper-based plans to digital.

#### C.2 Elaborating a Response Plan using Template of Annex A

Provided the operational context (see C.1), an adaptation of the contents of the response plan template proposed in Annex A, to the case of waste disposal plant emergencies, is presented below. In order to avoid the repetition of commonly applicable content from Annex A, the following sections show only those sub-clauses that incorporate hazard-specific guidelines. [Additional text specific to waste disposal plant incident is shown in blue italics.](#)

# 1 Introduction

*A structured introduction should have the following elements. For the case of a waste disposal plant emergency response plan, this section and subsequent subsections should among others encompass normative references as well as the general information on the waste storage and treatment plants and infrastructure falling in scope of operations.*

## 1.1 Current legal and regulatory framework

*The existing legal and regulatory framework / normative references -on which the current plan is based, is enlisted (laws, presidential decrees, ministerial decisions, state legal counsel opinion, judicial decisions, etc.), together with Memorandums of Understanding (MoUs) with co-responsible stakeholders and Service Level Agreements (SLAs) that govern the achievement of the envisaged operational objectives.*

## 1.2 Approval and implementation

*The section introduces the plan, outlines its applicability level related to all previous response plans (if any). It officially announces/declares the emergency operations plan and briefly describes the process of developing and publishing the plan. It provides details both the authority and the responsibility to the emergency response organization to perform its tasks. It should encompass the responsibilities with regards to preparing and maintaining the plan in consideration (including the provision of relevant guidelines) and commit to carrying out the necessary training, exercises, updating needed to support the plan. It has to be signed/dated by the senior official(s) of the organisation. *Provided the specificities of waste disposal plant emergencies, in addition to the general guidelines (provided in Annex A and above), specific attention should be given to the cross-organisational nature of the response usually required in such emergencies. In this context, all stakeholders should respectively be consulted and engaged in the elaboration/implementation/approval process, including also the local governmental entities where waste storage and treatment facilities are located.**

## 1.3 Classification level

*Defines the classification level of the document (according to Commission Decision (EU, Euratom) 2015/444 of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p.53.) *Provided the above, for the case of waste disposal plant emergencies, no specifically applicable classification levels are identified.**

## 1.4 Record of changes

*Each update or change to the plan should be tracked. In this respect, the record of changes, usually in table format, shall contain, at a minimum, a change number, the date of the change, the responsible entity that made the change, and the short description of the change. Minor changes (e.g., contact details) do not need to be mentioned/included in the record of changes. *In addition, for the case of digitised emergency plans, which greatly facilitate interoperability among responders to waste disposal plant emergencies, the different versions of the respective documents along with the protocol numbers (as provided by the issuing organization for document identification purposes) should be monitored by an IT infrastructure/platform that will be used to access the plan. In this respect, the active version/or the version “in force” shall be clearly indicated.**

## 1.5 Record of distribution

*Distribution/sharing of the document is foreseen and refers to two levels of stakeholders. The ones that must act (agencies of the same organization that has published the plan) and other involved services (they should be aware of the plan for interoperability reasons). The record of distribution, usually in table format, indicates the organizations/agencies receiving the plan, as delivered. *For cases of digital version of plans, the plan document should be accessed either in pdf or other popular document file formats as per a pre-set**

*access rights scheme, set by the elaborating authority (responsible for drafting the plan) and approved among all co-responsible stakeholders, if not clearly identified by the applicable regulation.*

## **2 Scope and environment**

### **2.1 Policy, scope and objectives**

#### **2.1.2 Scope**

*The plan should explicitly state the scope of emergency and disaster response and the geographic area/s to which the plan applies. It describes the way the response organization accomplishes its mission or set of objectives in order to reach a desired end-state. In this respect, it includes a clear methodology to realize the goals and objectives to execute the plan. In addition, the section should additionally include a listing of indicative hazards/threats.*

*Taking into consideration the list of hazards being focussed to those of a waste disposal plant as well as the multi-stakeholder environment and nature of operations when responding to such crises, the plan document should be challenged to be concise and modular, in order to serve as an adequate tool for emergency management without imposing additional interoperability overheads. Contents may be organized according to a logical schema that includes a general part, in which a clear and universal operational model is defined in case of accidents that affect the waste storage and treatment facilities, and a more specific part, consisting of territorial specifications and a concise description of the risk being faced on a local level, both substantiated by technical information referring to individual plant(s).*

*Among other things, technical data should contain all fundamental elements relevant to the specific characteristics of the plant, the hazardous substances potentially involved in the event (identification, quantity and potential hazards of the waste managed), the activities carried out in the plant (e.g., stocking, chemical or mechanical transformation, etc.), the safety and security measures adopted for the plant, as well as the vulnerabilities of the territory in which the plant is located (framing of the plant's localization area).*

*Provided the above, the aforementioned general part, could encompass information regarding the criteria adopted for identifying the operational mandate and responsibilities of each stakeholder in a complete collaborative response mechanism whereas the specific part – could aim at clarifying, in schematic form (among other things), the type of storage site, its characteristics, the elements of the territory that can potentially impact the incidents, operational resources for emergency management, population alert systems.*

#### **2.1.3 Specific objectives**

*Objectives are specific and identifiable actions/activities that should be carried out when respond to an emergency. In this part of the plan a list of specific objectives pursued is included (e.g., efficient and timely emergency response, coordination and interoperability between emergency services, etc.). More specifically for the case of waste disposal plant emergencies and their specific nature, indicative objectives of this kind could include:*

- the control and mitigation of the effects produced by accidents of the type of waste in consideration.*
- the implementation of the necessary measures to protect people, the environment and property from the consequences of accidents;*
- prior information / training provision to the population and to the competent local authorities about the procedures established to ensure public safety;*
- the "restoration and de-pollution of the environment".*



## 2.2 Environment and prerequisites

### 2.2.4 Risk assessment

*Risk assessment is the overall process of risk identification, risk analysis and risk evaluation (see ISO 31000:2018). The risk assessment process of each threat/risk should be documented so as the organization determines its capabilities and limits in order to prepare for and respond to the defined threats and hazards. In waste storage/treatment plants, the nature of the risk, the effects of the crisis - as approached through a series of accident scenarios - and the consequent actions to be taken depend on the type of waste and the activities that take place within the plant itself. In this respect a response plan, for addressing such multi-stakeholder situations, aims to define an intervention mechanism for all the Authorities / Administrations / Bodies / Associations involved at the territorial level. In light of the accidents that have occurred in waste storage and treatment plants, the events that may lead to possible situations of risk or danger can be identified as follows:*

- *fires;*
- *explosions;*
- *fires due to plant failures with possible consequent biogas leaks;*
- *dispersion of dangerous substances with repercussions on the external environment (groundwater pollution; neighbouring lands, etc.).*

*Provided the above, it is proposed for a planner to consider the fire as a reference scenario for the risk assessment of a waste disposal/treatment plant, in direct analogy to the complexity and variability of the characteristics of the waste - entailing different hazards. In relation to the reference scenario, the following definitions could be considered by a planner (these will have to be in line with the provisions of section 1.6 Terminology/Glossary of the template provided in Annex A.).*

- *The "distance of attention" (which is applied as a buffer to the plant boundary define the "impact area") defines the scope for the prior identification of territorial vulnerabilities (e.g., schools, hospitals, waterways, major communication routes, environmental receptors, farms, crops etc.).*
- *The "effective distance" in which the protection measures are to be adopted, - to be defined according to the development of the event scenario.*
- *The "rescue area" (or red zone) would refer to the area in which only the personnel of the responsible stakeholder(s) (e.g., Fire Brigade) operate with suitable personal protective equipment and is defined by the Commander/Technical Director of Response on the basis of the assessment of the accident scenario.*
- *The "support zone" located at a safe distance, outside, and not far from the rescue area, for allowing better management of the rescue operations and the general organization of the response. In this area the Advanced Command Post, resources amassing area, entrance and exit corridors of the emergency vehicles, the triage area, the Advanced Medical Post are located.*

## 3 Plan implementation

### 3.3 Response - proposed actions

*The response mechanism for each of the three command levels is specified. This includes different SOPs<sup>8</sup> for different roles/responsibilities (as per section 3.1) that are activated in an incident response (e.g., duties of the dispatcher, first responders, etc.) taking into consideration the provisions of sections 2.2.3 as well as 2.2.6.*

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<sup>8</sup> These should be included as annexes to the response plan in consideration.

*For waste disposal/treatment plants emergencies, for which response largely requires the engagement of multiple stakeholders, the response plan is usually activated upon the onset of a hazardous event, a non-exhaustive list of actions linked to the local/regional level of command operational plans is:*

- *Provision of urgent technical assistance*
- *Provision of emergency health aid*
- *Verification of the area safety*
- *Verification and monitoring of environmental Impact*
- *Assessment and interruption of supplying of electricity/Gas/Water*
- *Delimitation of the area intended for rescue activities*
- *Implementation of access control to the impacted area*
- *Establishment of perimeter and management of incoming and outgoing traffic of operational vehicles*
- *Ensuring public order.*

## **4 Command, control, communication and coordination**

### **4.1 Emergency response phases**

*Distinct emergency response phases are identified, starting from preparedness (e.g. readiness, increase readiness), covering response area (e.g. First and main response), ending at recovery. These phases might be different for each emergency response organization. The respective phases shall be mapped to the distinct command structure as identified in section 3.1.*

*Relevant to a response explicitly for waste disposal plant emergencies [24], specific response phases linked to respective alert levels, may be considered, such as:*

- *PRE-ALARM*
- *ALARM – EMERGENCY*
- *END OF ALARM (ALL CLEAR).*

*The aforementioned division into phases [24], aims at allowing all stakeholders (e.g., Fire Brigade, Health Service, Local Governments/Municipal Administration., etc.) to deploy progressively and only as the crisis evolves – optimising the mobilisation of resources.*

*The activation of the ALARM/EMERGENCY phase should be made by the responsible commanding role/entity following the evaluation of the evolution of the event, taking (among others) into account the following elements:*

- *the type of waste affected by the accident;*
- *the area, expressed in square meters, affected by the event;*
- *the location of the plant in relation to its proximity to other plants at risk of fire or to sensitive targets (such as residential areas, schools, hospitals, etc.);*
- *weather conditions / the direction and intensity of the wind.*

*On the basis of the foreseeable consequences of the accident scenarios (refer to Risk assessment in section 2.2.4 above), it is possible to define the corresponding alert procedures and the consequent intervention and rescue actions that must be carried out by each of the subjects involved.*

*For the purposes of a plan for waste disposal plant crises, a table linking a) the aforementioned alert levels / response phases b) the considered incident types/class (from a scenario perspective) and subsequently c)*



plan activation options, should be set up, for facilitating the response process. An indicative example is provided below for consideration.

<b>ALERT LEVEL</b>	<b>SCENARIO</b>	<b>ACTIVATIONS</b>
<b>PRE-ALARM</b>	<i>incidents of limited extent: referable to incidents characterized by toxic and/or energy releases having a limited impact, confined within the plant area</i>	<p><i>These circumstances relate to all those incidents which, due to the visibility or loudness of their effects (fire, explosion, fumes, releases or spills of dangerous substances), are perceived by the exposed population and require the intervention of first responders. As such, during this phase, fire brigade as well as other co-responsible stakeholders identified in the plan are mobilised. As per the applicable framework, it may be the case that the operational picture will also have to be shared with the supervising regional/local government of the affected city.</i></p> <p><i>Upon such information, the supervising authority (i.e. regional government, depending on the extent of the event) should activate, if necessary/or sets on high alert, the rescue mechanism, and warns all stakeholders to be ready to respond in case of accident.</i></p> <p><i>This level may also entail the need to activate safety procedures (traffic management and public order) and also to inform the population in line with the provisions of section 2.2.</i></p>
<b>ALARM / EMERGENCY</b>	<i>major incidents: events referable to incidents characterized by toxic and/or energy releases having a potential impact outside the plant area</i>	<p><i>During this phase there is the mobilization of all stakeholders that are foreseen to respond to the crisis.</i></p>
<b>END OF ALARM</b>		<p><i>This phase focuses on the safety of the population and the environment, following which the return to normal conditions is expected. Here the supervising entity (i.e. regional/local government – Prefecture/Mayor) depending on the size of the event, in direct consultation with the co-responsible response stakeholders, declares the termination of the alarm.</i></p> <p><i>This phase does not correspond to the absolute return to normality, but only to the elimination of any threat of new significant effects linked to the accident. Reaching the all-clear status, the alarm is terminated and the actions for the return to normality (situation prior to the accident) begin, allowing the population, if evacuated, to return home.</i></p> <p><i>Total restoration and de-pollution of the environment is a phase perceived as being subsequent to the implementation of the plan, and is considered to be managed through procedures usually regulated by the applicable legislative framework.</i></p>

## 4.2 Operational priorities per phase

*Operational priorities and objectives to be achieved in each of the phases are given. These priorities define the actions of the tactical level & the operational control of the response assets/resources thus achieving coordination.*

*For crises specifically relevant to waste disposal/treatment plants response plans, the following indicative examples of such operational priorities along with a set of respective actions could be considered. It should be taken into account that it may be the case that operational priorities such as the ones listed below could entail the engagement of multiple stakeholders (as apparent in waste disposal crises).*

*Provision of technical rescue:*

- *identification of rescue area*
- *identifying advanced command post location*
- *rescue people and safeguard structures, plants, animals and assets.*

*Provision of health aid and mass evacuation:*

- *identifying advanced medical post location*
- *implement coordinated mass evacuation*
- *establish a safe mechanism for transporting incident victims to hospitals*
- *ensure the availability of the necessary health system infrastructure*

*Establishment of safety perimeter and management of traffic for facilitating response*

- *identification of the emergency traffic and the nodes where to route or block traffic*
- *select routes for rescue vehicles*
- *identify routes for an eventual mass evacuation*
- *indicate alternative routes for standard traffic*

*Ensuring environment safety:*

- *control/monitoring of environmental parameters during the emergency*
- *management of the disposal of eventual wastes during and after the emergency (including waste generated by the response activities, e.g., contaminated extinguishing water),*
- *provision of support to response activities for environmental protection purposes,*
- *identification of experts and systems in place to support handling of animals / handling of affected domestic and wild animals including potential evacuation, treatment on-site or transport for treatment to nearest appropriate veterinary facility etc.*

## 4.4 Crisis communications

*This section presents a communications plan between different stakeholders (including emergency services and the public) starting from the initial notification (procedures for common situational awareness) and covering the duration of the emergency. This section shall encompass the specific means (channels) and type of information to be exchanged. It does not describe communications hardware or specific procedures found in departmental SOPs. Planners should identify and summarize separate interoperable communications plans. This section may be expanded as an annex and is usually supplemented by communications SOPs.*

*For waste disposal plant emergencies, upon activation of the plan, the stakeholder leading the response (considering the aforementioned multi-stakeholder context) or any other specifically assigned entity, should be engaged in the implementation of a series of crisis communication activities that among others may include:*

- *Issuing informative and alerting messages to the population resident within the impacted area(s), with the aim to actuate preventive and protective measures to be adopted during the emergency duration and up to reaching an “All clear” status; Examples could include:*
  - *close any exit or opening to the outside;*

- do not use appliances that can form sparks;
  - deactivate the electrical system;
  - stop the gas supply;
  - stop any ventilation system;
  - wait for further instructions from the civil protection authorities;
- Ensuring the widest dissemination of the information messages, leveraging on all the available local media (including press, news websites, radio, television, institutional websites, social media), and/or nation-wide media (for disasters of certain scale) through:
    - frequent press releases, reporting updates on the event evolution;
    - specific press conferences to be convened, in accordance to the severity of the event, to disseminate official information and updates on the event evolution, leveraging on the cooperation of co-responsible stakeholders (e.g. Fire service, Police forces, of Health Emergency Services, Environmental Authorities etc.).

## 9 Training and exercises

The required long life training activities to support and maintain the plan are described in this section. Also, an exercise program is described, involving all levels of command that should be constantly trained.

For waste disposal plant emergencies, the effectiveness/efficiency of the plan shall be tested in synergy with all the co-responsible actors in the specific response mechanism, through a series of exercises aiming to regularly re-validate and guarantee its constant validity.

## 10 Evaluation

This section describes the evaluation process after the organizations' involvement in a critical incident/crisis, aiming to improve the response mechanism and not to evaluate persons that have been involved.

An indicative list of additional aspects to be considered for the evaluation/update of a response plan of waste disposal plants, could be the following.

<i>Modification/issue/delete of plant records</i>	<i>In case of modification/change of ownership, revocation of authorisation, or modification of the environmental and safety measures applied, the plant manager shall relay the relevant information to the supervising planning authority for being considered in the context of the viability of the plan.</i>
<i>Update of sensitive data</i>	<i>Managers of waste plants and planning authorities will have to share updated records in case of variation of sensitive data subject to frequent change (on call phone numbers, addresses, contact persons, substances, vulnerabilities, etc.).</i>
<i>Update of the plan</i>	<i>Pursuant to the provisions of the relevant regulatory framework, updates of the plan may have to be re-issued at appropriate intervals considering significant changes that may have been apparent throughout the assumed period. (i.e. changes within the plants which impact to the risk index and to the rescue services, technical improvements and new knowledge on the measures to adopt in case of incident or to prevent it).</i>
<i>Tests and exercises</i>	<i>As noted in section 9 above, in synergy with all the stakeholders of the response mechanism engaged in the plan of consideration, it will be worthwhile to allow for testing the plan to assess the organization and validity of the Plan itself, and ensure its continuous validity.</i>

## **Annex D** (informative)

### **Indicative incident types per stakeholder category**

#### **D.1 Law enforcement agencies**

The classification below attempts an indicative listing of some primary categories of incidents along with a few indicative examples. This is approached from the point of view of a Law Enforcement Agency (e.g. Police).

- **Common/Minor Incidents**

- Robberies
- Alarms
- Thefts, burglaries
- Small scale damage of foreign property
- Small scale arsons
- Corporeal injuries, insults, small scale skirmishes/riots
- Small scale riots in sports or other events
- Phone pranks – undetermined threats
- Traffic accidents with damage of property or minor corporeal injuries
- Individual smuggling of persons in the country
- Extortions - frauds

- **Major Incidents**

- **High Priority**

- Firearm attacks, letter-bombs, bombings with explosive and incendiary low power devices (conventional forms of criminal acts and specific crimes of violence/terror).
- Abductions of persons (Kidnappings – hostages)
- Homicides
- Armed robberies in combination with hostage taking or robbery after murder
- Riots, skirmishes, large-scale prisoners' escape
- Multi-casualty traffic accident
- Aviation/marine/railway accidents
- Arsons and forest fires
- Adverse weather conditions/natural disasters
- Large scale geological disasters

- **Medium priority**

- Improvised explosive/incendiary devices (gas bombs, Molotov cocktails, etc.).
- Arsons of vehicles
- Skirmishes between native and foreign citizens and between gang members.

- Fortifications, building occupation
- Riots in sports and other events
- Assemblies – gatherings with incidents of violence
- Protests and riots with incidents of violence
- Suicide attempts
- Traffic accidents with serious injuries
- Urban fires (in facilities, houses, parks, open spaces, landfills etc.) stemming from natural or man-made causes
- **Critical Incidents/Crisis**
  - Terrorism
  - Mass riots (domino) in detention facilities leading to injuries, widespread destruction and to the risk of escape
  - Joint escape of dangerous prisoners from detention canthers
  - Prolonged and organized illegal mass entry of persons in the country, for a long period of time, in combination with the incitement of serious incidents in their places of residence
  - Generalized social unrest (arsons of buildings, widespread incidents at local or regional level, occurrence of multiple illegal actions)
  - Catastrophic natural phenomena (strong earthquakes, forest fires affecting populated areas with extensive human, material and environmental loss)
  - Large scale technological accidents with extensive human, material and environmental loss
  - Pandemics (mass human casualties)

Provided the above, it shall be taken in consideration that responding to any such types of incidents, will require the activation of a specific command structure – as discussed in 4.2.3.2 above and also applies for D.2 and D.3 below.

## D.2 Emergency Medical Services (EMS)

The following list provides some commonly used classifications of types of incidents. It shall be considered that this list is not exhaustive and other classifications may be and are used as appropriate by relevant stakeholders in the EMS domain and / or agriculture, animal and environmental agencies. An example of incident classification from the EMS domain, is the one used by NHS [21], presenting a high degree of alignment to the one listed below.

- **Business continuity events** - any internal [e.g. labour action] or external action that puts at risk the organizations normal operation - **including** fire, breakdown of utilities, significant equipment failure, hospital acquired infections, violent crime
- **Natural events**
  - Events that include all geophysical, meteorological, climate and biological events including earthquakes, volcanic activity, landslides, drought, wildfires, storms, flooding and disease/pest outbreaks/epidemics.
- **Manmade events**
  - **Deliberate (e.g. physical or cyber-attacks)**
    - **Mass casualty** – events with numerous casualties where the incident response must be augmented with extraordinary measures
    - **Chemical, biological, radiological, nuclear and explosives (CBRNE)** – CBRNE terrorism is the actual or threatened dispersal of CBRN material (either on their

- own or in combination with each other or with explosives), with deliberate criminal, malicious or murderous intent for financial, terrorist or other purposes
- **Cyber-attacks** – attacks on systems to cause disruption and reputational and financial damage. Attacks may be on infrastructure or data confidentiality
- **Accidental**
  - **Hazardous materials (HAZMAT)** – accidental incident involving hazardous materials
  - **Transport Accidents** - a serious transport accident, explosion, or series of smaller incidents
  - **Chemical, biological, radiological, nuclear and explosives (CBRNE)** – a serious accident involving a significant chemical, biologic, radiologic, or nuclear (and explosive) release developing and needing preparatory action

### D.3 Fire Services

- **Common Incidents**
  - Small Urban Fires
  - Provision of Assistance
  - Interventions concerning trapped persons in elevators
  - Fires in Agricultural Lands/Grassland Lands/Reeds - Swamps/Crop Residues/Garbage Sites
  - False alarms
- **Severe**
  - Medium-sized urban fires
  - Medium-sized Forest Fires
  - Traffic accidents with trapped persons
  - Rescues (rescue persons from inaccessible - remote places, search for disoriented or trapped people)
- **Critical**
  - Large-Scale Technological Incidents – SEVESO facilities
  - Major Natural Disasters
    - Earthquakes (causing casualties – search and rescue operations in collapsed buildings)
    - Major Forest Fires
    - Major Floods – Flash Floods
    - Heavy Snowfalls
  - Large-scale urban fires (fires in tall buildings, etc.)
  - Large-scale rescue operations (Fire on vessels, plane crashes, etc.)
  - Accidents involving CBRN agents

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