UNEP

APELL

AWARENESS AND PREPAREDNESS FOR EMERGENCIES AT LOCAL LEVEL

A process for improving community awareness and preparedness for technological hazards and environmental emergencies

UNITED NATIONS ENVIRONMENT PROGRAMME

2ND EDITION – 2015

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Awareness and Preparedness for Emergencies at Local Level (APELL)

A process for improving community awareness and preparedness for technological hazards and environmental emergencies

2nd Edition - 2015

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Foreword

UNEP Executive Director

In 1984, a gas leak in Bhopal, India, led to one of the major industrial disasters of our time, prompting the international community to urge the United Nations Environment Programme (UNEP) to take action to prevent disasters and/or reduce their impact on people's lives, the world's economies and the planet. UNEP responded to this call by establishing the Awareness and Preparedness for Emergencies at Local Level (APELL) programme.

Building on the first version of the APELL Handbook in 1988, this updated edition promotes community awareness to technological hazards and risks, disaster prevention and preparedness. As such it could be a powerful resource for local authorities.

The continued need for such a Handbook is all too clear. Over the past century, the frequency of human-caused disasters has grown exponentially, while climate change has caused the intensity and frequency of natural disasters to increase. Whatever their origin, disasters have severe impacts on the environment, economy and society. In the past 10 years, they have killed around 700,000 people, rendered 23 million homeless, and generated an estimated economic loss of more than USD 1.3 trillion.

Given the devastating impact of disasters at all levels, strengthening local resilience is crucial. Too often, disasters strike at the heart of communities, leaving the poorest populations more vulnerable than ever. Yet with more tools and greater awareness, even the poorest can be better prepared.

As one of its four main priorities, the recently adopted Sendai Framework for Disaster Risk Reduction 2015-2030, is raising the attention of the international community and governments on the need to strengthen disaster preparedness. In Sendai, countries reiterated their commitment to build resilience at all levels, from international to local, for an effective response.

The second edition of APELL's Handbook clearly complements this renewed commitment. Drawing on decades of experience in supporting resilient communities in more than 30 countries, the new edition provides strengthened guidance to three key stakeholder groups -industry, public authorities and community leaders- to engage in a participatory disaster risk reduction process. The Handbook promotes local actions, while also contributing to global commitments.

While much has changed in the past three decades in terms of experience, legal frameworks and opportunities provided by technology, the APELL process continues to fulfil an essential need globally. Its strength lies in its voluntary character, making possible for industry, communities and governments alike to advance preparedness efforts. UNEP hopes this second edition of the APELL Handbook will motivate and empower local leaders to prepare for emergencies more effectively, and help build a more resilient and safer planet.

Achim Steiner
United Nations Under-Secretary-General
& Executive Director, United Nations Environment Programme

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Executive Summary

In the late 1980s, following various industrial accidents that occurred around the world resulting in adverse impacts on the environment and loss of life, the United Nations Environment Programme (UNEP) suggested a series of measures to help governments and communities, particularly in developing countries, minimise the occurrence and harmful effects of technological hazards and environmental emergencies. Often impacts can be reduced if the immediate local level response is effective.

UNEP developed, with the support and involvement of a range of countries' competent national emergency management policy authorities and in cooperation with industry, a Handbook on *Awareness and Preparedness for Emergencies at Local Level (APELL) - A Process for responding to technological accidents (1st ed., 1988)*. The Handbook was designed to assist decision-makers and technical personnel in improving community awareness of facilities or chemical handling operations, such as factories, warehouses, ports, and other installations, along with transportation where the risk of chemical releases is present, and in preparing response plans should unexpected events at these installations endanger life, property or the environment. This is the 2nd edition of that Handbook.

UNEP is aware that in most countries as well as internationally, provisions are made for emergency planning for natural disasters, such as landslides, forest fires and floods, as well as for man-made industrial accidents, such as chemical spills, releases, explosions, and fires. Likewise, many national and international consensus, programmes, and professional standards exist to provide guidance in these fields and new ones are being developed[1]. This Handbook is not intended to replace or interfere with such national or international standards and programmes, but rather to complement them through improved awareness and coordination in the face of risks. The process created by the UNEP APELL Programme[2] is a tool that can assist in achieving the goals of all these standards and programmes.

What is APELL?

APELL is a process designed to identify and create awareness of hazards and risks, to initiate measures for risk reduction, accident prevention and mitigation, and to develop coordinated preparedness among the local industry, authorities and population.

This Handbook recognizes that the focus of the original Handbook on industrial accidents does not adequately address the wider disaster reduction strategies and community involvement in overall disaster preparedness and resilience that are needed today[3]. This new edition of the Handbook, *Awareness and Preparedness for Emergencies at Local Level (APELL) - A process for improving community awareness and preparedness for technological hazards and environmental emergencies*, recognizes that in most communities there is no difference between the people and organisations that engage in preparedness planning for industrial accidents and natural disasters. In addition, industry programmes for responsible and safer management have greatly increased, and the proliferation of information and communication technologies have changed the way in which community members engage in preparedness activities regardless of the risks they face[4].

APELL is a coordinated planning process that has two parallel and complementary objectives: (i) raising awareness, communicating, and educating the community, and (ii) improving emergency preparedness planning, including the development of coordinated and integrated emergency preparedness plans. In many ways, the planning process is as important as the resulting or improved preparedness plans.

An effective planning process will help communities prevent loss of life, damage to health, well-being and livelihoods, minimise property damage, and protect the environment. These same goals apply regardless of the nature of the environmental emergency, whether it is an industrial accident, a natural disaster or a combination of events[5], such as might occur following an earthquake or tsunami disaster or smaller scale events such as lightning storms. The tools and assets available to a community for both preparedness and response are typically not different between these sorts of events, although some industrial accident scenarios may require additional knowledge on chemical hazards and specific emergency response equipment. In a similar way, risk assessment and risk reduction measures may also require different types of tools.

This 2nd edition of the Handbook incorporates the objectives of the 1988 Edition of the Handbook and presents the APELL Process as a practical, focused framework for action adaptable for each community's goals and Vision of Success[6]. UNEP has made significant efforts to raise worldwide awareness of the effectiveness of the APELL Process for improving local awareness and preparedness for technological hazards and environmental emergencies. APELL has been introduced in more than 30 countries. This has resulted in long-lasting local-level partnerships, including some that have been active for more than 20 years, and has led to successful multi-stakeholder emergency preparedness efforts. Specific guidance materials have been prepared for the chemical, mining, and transport sectors, port areas and storage facilities, which have been applied in industrialised communities worldwide[7]. Additional guiding materials with a multi-hazard approach were developed focusing on coastal

communities and coastal tourism destinations. This 2nd edition of the Handbook is based on the experience that has been gathered in the past decades.

This Handbook provides the basic concepts for initiating and managing the APELL Process. These are organised into ten conceptual elements within five phases of activity. The first phase provides advice on involving the right participants and organisations and getting their commitment. The second phase is focused on understanding and improving awareness of hazards and risks in the community. The third phase examines plans and capabilities, and establishes a Vision of Success for the community's efforts to improve local preparedness. The fourth phase involves education, training and other efforts to build local capacity to implement emergency plans. The fifth phase discusses the cycle of continuous improvement. The concepts and tools suggested are flexible, and the mechanics of their operation should be adapted to specific local conditions and requirements.

At the local level there are three very important partners who must be involved if APELL is to succeed:

- **Government authorities**: These may include province, district, city or town officials, either elected or appointed, who are responsible for safety, public health and environmental protection in their area.
- **Industry**: Owners and managers of fixed industrial facilities or hazardous material transportation entities, responsible for safety and accident prevention in their operations.
- **Population and interest groups**: These may include groups involved in environmental protection, health and lay care as well as the media, and religious organisations. It also includes leaders in the educational and business sectors that represent the concerns and views of their constituents in the community.

The User(s) of this Handbook can be anyone in the community, regardless of their past or present role in private or public sectors, that find themselves motivated and capable of organising and influencing other community members to improve community preparedness.

It is likely that some community members will already have addressed some or all of the elements of the APELL Process. This Handbook anticipates that response plans in particular are likely to have been created by industry, government or volunteer agencies. It is the intent of this Handbook to promote a planning process that builds upon whatever preparedness and response programmes, plans and efforts already exist in the community.

At the national level, governments have an important role to provide the cooperative climate and support under which local participants can achieve better preparedness. Through leadership and endorsement, national authorities should foster participation of everyone at the local level and to the extent available, the APELL Process should be incorporated into existing local or national environmental and safety regulatory structures.

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1 Examples include: International Organization for Standardization (ISO) http://www.iso.org; National Fire Protection Association. http://www.nfpa.org/codes-and-standards

2 The APELL Programme is the formal effort by the United Nations Environment Programme and its partners to promote the APELL Process

3 United Nations International Strategy for Disaster Risk Reduction (UNISDR), 2014. Towards a Post-2015 Framework for Disaster Risk Reduction http://www.unisdr.org/files/25129_towardsapost2015frameworkfordisaste.pdf

4 Communication tools such as "social media" allow information sharing along with Internet sources of risk information such as the Global Risk Platform. http://preview.grid.unep.ch

5 These combinations of events are referred to as natural-technologic or "na-tech" events and are discussed later.

6 The process to create the Vision of Success is further explained in *Element 4*, which is described later on in *Chapter 3*.

7 Several case study examples of diverse and successful APELL Programme are found in *Annex 5*.

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Introduction

The purpose of APELL

Every community, and therefore every country, faces a variety of hazards and disaster risks that may result in environmental emergency situations. The potential impacts from these accidents and disasters may vary substantially depending upon the characteristics of the community and its access to preparedness and emergency response resources.

Potential hazards may include:

- **Technological hazards**, resulting from industrial operations, mining or the transport of hazardous substances. Related accidents may involve fire, explosion, toxic gas releases and contamination.
- **Natural hazard events** such as earthquakes, tsunamis, cyclones, floods, landslides, or other disasters, including the potential for extreme weather events that may arise from climate change.

These hazards may be **combined** when industrial facilities are located in communities vulnerable to natural hazards – "na-tech" events.

Since 1986, the United Nations Environment Programme (UNEP) has been leading the Awareness and Preparedness for Emergencies at Local Level (APELL) programme, developed through a multi-stakeholder partnership promoted by UNEP, national governments and the chemical industry, to improve community level emergency preparedness efforts.

Implemented through a local multi-stakeholder approach that counts on a partnership between the local government authorities, the local population and the local industry, APELL has been successfully introduced in over 30 countries worldwide to prepare for industrial accidents in industrialised communities, in transport, in port areas, in mining and tourism destinations subject to risks from multiple or combined hazards.

The APELL Process was created to help save lives and minimise adverse impacts resulting from environmental emergencies at local level. The primary strategic focus of the APELL Process is on improved preparedness achieved through the ten-element conceptual planning process as applied to the community, its particular industries, chemical users, natural hazards, and capabilities. While emergency response is a critical component of the APELL preparedness process, the intent of the APELL Process is to address preparedness as a continuum of activities including accident prevention, emergency response, business and public preparedness, and the ability of the community to recover rapidly from those accidents that occur[8].

The APELL Process aims at creating a cohesive and resilient community in the face of technological or natural hazards through raising awareness and agreement on roles and responsibilities of all community Stakeholders in potential preparedness and response measures. One aspect that distinguishes APELL from other international initiatives is the local focus on hazards and risks (particularly technological ones) as well as on multi-stakeholder participation and cooperation. The process is intended to be owned, implemented and maintained by individual communities and the local actors within those communities.

The scope of APELL

Preparedness for emergencies is not only emergency response. The main objective of an emergency preparedness plan is to protect lives and the environment by reducing the occurrence and the potential impacts of both industrial accidents and natural disasters. This is achieved by first promoting awareness of hazards and risks and then addressing them at the local level with a focus well beyond simply responding after an accident or disaster occurs. In a preparedness plan, accident prevention, disaster risk reduction, mitigation of possible consequences, emergency response and community recovery are all important elements and each of these elements can be improved by the APELL Process.

Preparedness planning efforts should be designed to help a community recover rapidly following an accident or disaster. This characteristic is known as resilience, and the capacity of a community to be resilient is a function of both preparedness and response capabilities.

The conduct of emergency response by governmental authorities, fire brigades and similar groups, is not part of APELL. However, understanding the capabilities of emergency response organisations within the community is relevant and important to preparedness planning[9].

The APELL Process is not a substitute for effective regulation. Government authorities have a fundamental responsibility to establish an adequate regulatory structure for the prevention of industrial accidents and the protection of the environment. They also have the responsibility to establish national-level emergency response capabilities promoting mutual aid and using other

8 It is impossible to create an exhaustive list of industrial accidents that have occurred. *Annex 1* identified just a few of them. The intent of this list of accidents is twofold. First, it shows that some types of accidents are repeated over time, the primary example being ammonium nitrate explosions. Second, it shows that many serious accidents occur with facilities that may not normally be considered as dangerous. Dust explosions are a good example of this type of accident. It is important for communities to think broadly about the hazards and risks they face rather than making early assumptions and potentially miss dangerous situations.

9 Nuclear plants are excluded from this handbook as they are typically subject to highly specialized emergency planning procedures under national regulatory programs.

techniques that will provide resources when the emergency exceeds the capabilities of the community immediately impacted.

This Handbook is not intended to compete with or replace national policies. Instead, this Handbook can be used to promote national policies regarding emergency preparedness, emergency response, accident prevention, and disaster recovery. It can be also used by local communities as a tool to comply with national policies. If relevant national policy does not exist, the APELL process can inform its development and even provide a useful framework that can be promoted. It is flexible enough to be adapted anywhere. It starts with local capabilities and then builds up using the existing strengths of individuals, industry, local governments and other local institutions.

UNEP APELL programme is supportive of a multi-hazard approach and aligned with Disaster Risk Reduction policies (Sendai Framework for Disaster Risk Reduction 2015-2030) and other emergency preparedness guidance. Building on a long experience in addressing industrial accidents, UNEP recognises that the process for preparedness is similar regardless of the hazard. New tools therefore need to take into consideration a multi-hazard risk management approach, such as the one reflected in the Community Risk Profile[10] (CRP) methodology and the APELL Multi-Hazard training kit for local authorities[11]. These tools aim at improving risk communication, raising awareness and building capacity of local authorities to better prepare for both industrial accidents and natural disasters.

Overview of the APELL Process

APELL is a coordinated planning process that has two parallel and complementary objectives:

- Creating a dialogue about hazards, risks, capabilities and plans involving all Stakeholders, leading to consensus on responsibilities and expectations for all community members;
- Allowing a community to increase its resilience (the ability to recover from incidents) and reduce its vulnerability (susceptibility to damaging effects of a hazard) by building local capacity for multi-stakeholder responses and enabling open dialogue, building mutual understanding, and leveraging the existing resources in an effective way[12].

APELL first seeks to increase the awareness of all community members to the local hazards, regardless of the source. Next, community-wide response and preparedness capabilities are assessed and matched to these hazards and related risks in order to identify gaps, whether there are limitations on equipment or resources, or limitations on the scope of current plans. APELL then focuses on how the community addresses these gaps and creates a continuous cycle of improvements. The process of discussion and decision-making on which gaps to fill and how to fill them is the core of achieving the goals of the APELL Process. The APELL Process relies on coordination, cooperation and broad-based involvement by all sectors of a community to build this awareness.

The APELL Process described above is contained in a ten-element conceptual format, grouped into five phases, as illustrated in *Figure 1*. This is discussed more fully below.

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10 UNEP and INERIS, 2008. *Assessing vulnerability of local communities to disasters: An interactive guide and methodology*. http://apell.eecentre.org/CommunityRiskProfile.pdf

11 UNEP, 2010. *APELL Multi-Hazard Training Kit for Local Authorities* http://apell.eecentre.org/APELLMultiHazardTrainingKit.pdf

12 National level governments have an important role to provide the co-operative climate and support under which local participants can achieve better preparedness. Through leadership and endorsement, national authorities should foster participation of everyone at the local level. To the extent feasible, the APELL Process should be incorporated into environmental and safety regulatory programmes.

Phase I: Engaging Stakeholders

1. The APELL Champion[13] identifies the participants and establishes their concerns, roles and resources. Beginning with the APELL Champion, stakeholders are identified and a Coordinating Group[14] created.

Phase II: Understanding Hazards and Risks

2. The Coordinating Group takes actions to understand, evaluate and communicate information on the hazards and risks faced by the community. Whether qualitative or quantitative, this process is intended to create a community-wide understanding of the hazards and risks in the community. This Phase flows seamlessly into the next Phase as creating awareness of hazards and risks will inevitably lead to identifying gaps in capabilities and preparedness plans, and initial steps to improve both.

APELL is a proven process

APELL is a holistic approach, which empowers the local community to build preparedness capacity. This approach is the most relevant to the community as it is based upon awareness of the specific hazards and risks present and uses existing strengths and relationships. Many communities have used the APELL Process to successfully improve community preparedness.

Phase III: Preparedness Planning

3. Under the leadership of the Coordinating Group, the community reviews the existing capabilities available to prepare for the identified risks and identifies gaps that exist between current capabilities and ideal capabilities in its preparedness plans.

4. Under the leadership of the coordinating group, the community establishes its "vision of success" for the desired level of preparedness.

5. The community prioritizes the gaps that exist, makes plans to close those gaps and establishes metrics to measure progress.

6. The Coordinating group reviews existing emergency response plans, along with new or improved emergency preparedness plans, and take actions to integrate them into an overall community preparedness plan. An all-hazards emergency response plan may be developed.

Phase IV: Implementing, disseminating and testing

7. The Coordinating Group obtains endorsement of local, and perhaps higher, government levels which is important to the success of any emergency plan. The ongoing participation of local government officials in the APELL Process makes this step easier to accomplish.

8. Under the leadership of the Coordinating Group, the preparedness plans are implemented including activities related to community education, dissemination of information and training.

9. The Coordinating Group establishes procedures for periodic drills[15], and other programmes to review and update the plans, especially as capabilities improve.

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13 Individuals or organisations concerned with local emergency preparedness and that will to take the necessary steps to initiate the APELL Process are called the "APELL Champion" in this Handbook. This role is discussed in *Chapter 5*.

14 The Coordinating Group acts as a bridge among the various stakeholders and to drive the APELL Process, with a view to developing a single integrated community emergency preparedness plan that builds upon existing plans, existing relationships and existing capabilities. A more extensive description of the Coordinating Group is provided in *Chapter 3*.

15 These may be table-top, full-scale drills or other sorts of exercises to evaluate the plans and training. See *Annex 4*.

Phase V: Maintaining APELL

10. Continuous improvement is accomplished by using the metrics when repeating all or some of these Elements.

The APELL process relies on two main features that have made its implementation successful in numerous communities. First, the most successful APELL programmes spread responsibility among all the Stakeholders in the community, and understand the "community" to be broad and inclusive of all Stakeholders that might have a role in preparedness.

Second, flexibility is a key attribute of APELL. UNEP realizes that the various countries and communities that will use the APELL Process differ in culture, value systems, community infrastructure, response capabilities and resources, and in legal and regulatory requirements. They also differ in the specific hazards and risks, technological or natural, that the communities face. UNEP believes that all communities nevertheless have a common need to cope with whatever technological or natural hazards and related risks they face. This need can be served by the APELL Process.

The APELL Process must be adapted to the community – Flexibility is Key

The Coordinating Group, with the input of the Stakeholders, initially decides how the elements of the preparedness planning process recommended by this Handbook are used and how meaningful outcomes are achieved. This Handbook describes the elements of the APELL Process in concept. It is up to the User(s) to adapt the elements to local conditions.

APELL Process

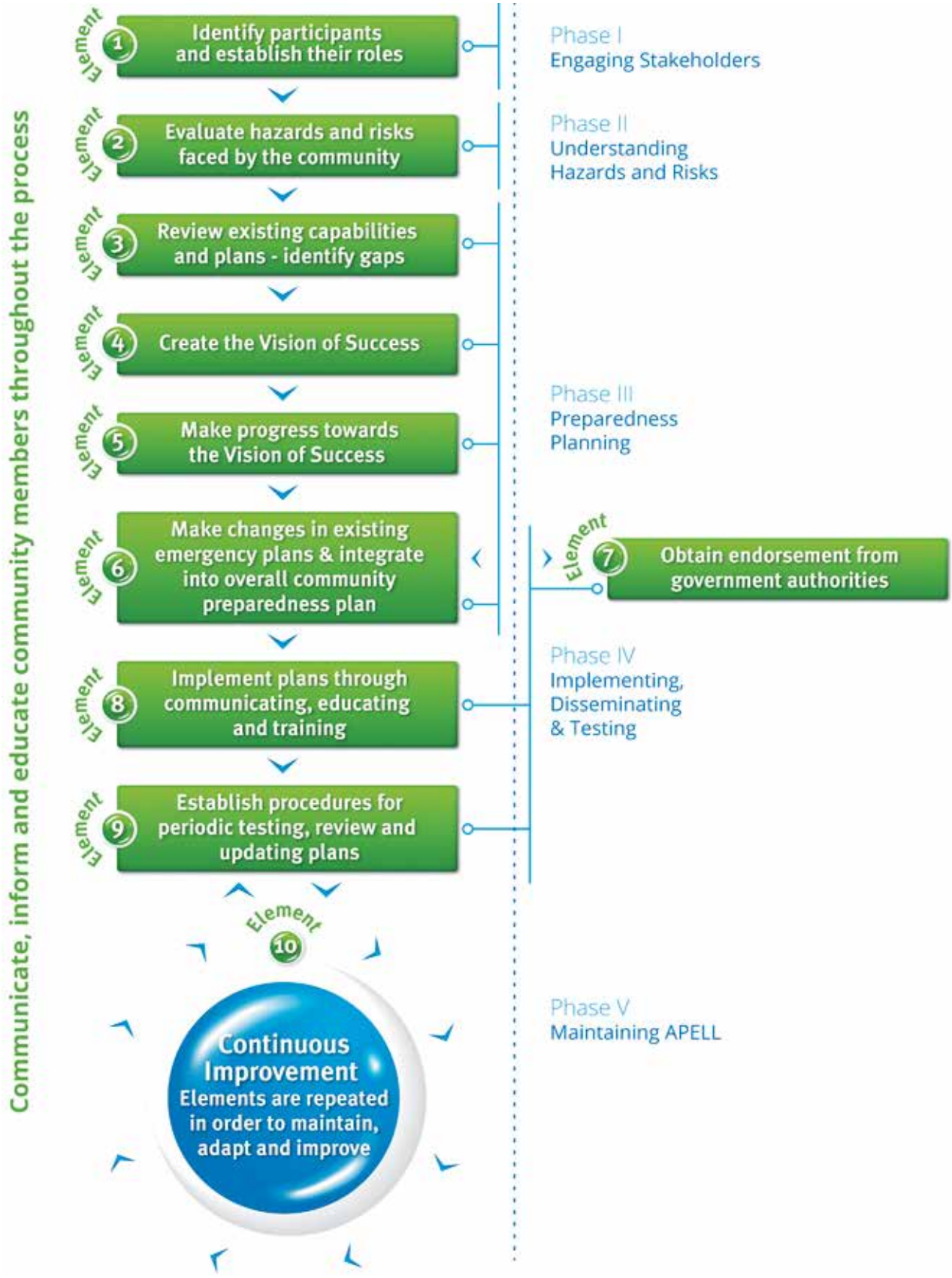

Figure 1: APELL Process

Introducing Key Concepts

The following definitions will be instrumental to ensure a good understanding of the APELL Handbook. A glossary is also available at the end of this Handbook to complement this.

Risk

The combination of the probability of a hazard event and its negative consequences.

Hazard

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

Vulnerability

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

Resilience

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

Preparedness

Preparedness is a continuous cycle of planning, training, exercising, evaluating, and improvement, based on a foundation of risk and hazard awareness, where all community stakeholders understand their responsibilities and roles under the community's preparedness plans.

Preparedness Plan[16]

An emergency preparedness plan is a tool for strategizing activities that are undertaken within the context of emergency preparedness and disaster risk management and are based on sound risk assessment. It includes measures to help at-risk communities safeguard lives and assets by being aware of existing hazards and risks and taking appropriate action prior to a threat of an actual accident or disaster. Together with supporting programmes, it includes means to improve, as necessary, existing plans for responding to accidents and disasters, recovery and reconstruction.

Environmental Emergency

An environmental emergency can occur following a disaster or conflict when human health and livelihoods are threatened and affected on a major scale due to the release of hazardous substances, or because of significant damage to the ecosystem. Examples of such emergencies include oil spills, toxic waste dumping, and groundwater pollution, when the environmental risks are acute and potentially life threatening.

Technological Hazard

A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Examples of technological hazards include industrial pollution, nuclear radiation, toxic wastes, dam failures, transport accidents, factory explosions, fires, and chemical spills. Technological hazards also may arise directly as a result of the impacts of a natural hazard event.

Natural Hazard

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

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16 Adapted from UNISDR, 2010. *A Guide for Implementing the Hyogo Framework for Action by Local Stakeholders* http://www.unisdr.org/files/13101_ImplementingtheHFA.pdf

Using this Handbook

The User(s) of this Handbook can be anyone in the community, regardless of their past or present role in private or public sectors, who is motivated and capable of organising and influencing other community members to improve community preparedness.

The Handbook is a generic document intended to aid these leaders in the community by providing a process for improving their community's preparedness. It sets out objectives and an overall organisational framework that can be flexibly adapted to the local needs. While User(s) may ultimately decide that only certain elements within each phase are relevant to their situation, there is value to understanding each phase and the overall approach.

The Handbook describes the APELL Process, which is composed of a ten-element conceptual process arranged in five phases allowing the User(s) to apply the process more flexibly. These phases are illustrated in the four additional Chapters of the Handbook:

- Chapter 2 – Discusses the process of initiating APELL in a community.
- Chapter 3 – Outlines the APELL Process, its phases and elements.
- Chapter 4 – Discusses the importance of communication throughout the APELL Process.
- Chapter 5 – Discusses national and international support for the APELL Process.

Complementary materials, such as guidance, brochures, case studies and other useful information are regularly produced by UNEP, and are uploaded to the APELL websites[17].

For some elements of the APELL Process, User(s) may find reference to additional tools and methodologies in the Annexes of this Handbook, and may need to consult outside experts. This could be required, for example, when performing detailed risk assessments, or preparing public communication materials.

17 UNEP APELL Web-page: http://www.unep.org/apell/; APELL Platform on the Environmental Emergencies Centre: http://apell.eecentre.org

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Preparing a Foundation for the APELL Process

This Chapter discusses the foundation that needs to exist before the APELL Process implementation activities of *Chapter 3* can be successfully accomplished. Because APELL is a process it is important that readers understand that these conditions are not static and that they will evolve over time.

2.1 Motivations for the APELL Process

The reasons that might bring any Stakeholder in the community to consider the APELL Process as a mechanism to improve community preparedness are highly variable and inevitably dependent on local circumstances.

It is the fundamental desire to improve the community's preparedness for accidents and disasters that may occur that drives the community's Stakeholders to use the APELL Process. In most cases a concern about specific hazards and potential risks, or the actual occurrence of a natural disaster or industrial accident, forms the basis for the initial discussion of the APELL Process.

These events are examples of situations where the APELL process would have value to the community and industrial facilities:

- **Industrial Accidents**: Despite considerable effort on process safety by industry and increased regulatory programmes, accidents still happen. As a result, every community where hazardous materials are located or through which hazardous materials are transported faces some residual risk. It is therefore essential for communities to be aware of the risks and impacts of such accidents and to develop preparedness and contingency plans.
- **Transportation Accidents**: Hazardous materials are routinely moved through areas that did not produce them or use them. As a result, awareness and preparedness in these communities is often lacking. All modes of transportation of hazardous materials, including highways, railroads, waterways and pipelines, experience accidents.
- **Hazard Perception**: Community members will often express concerns regarding the presence of hazardous materials in their community. Even without a previous accident or near-miss, community members may assume that their health and environmental safety is adversely impacted by hazardous materials produced, used or transported in their community. Increased or new industrial or transportation activity will frequently trigger these concerns. Often termed the «right-to-know», the perception of a hidden or ill-defined potential hazard is but one of many ways members of a community may articulate a concern about their lack of awareness and preparedness.
- **Anticipated significant change in community risk**: The APELL Process has value in allowing the community to plan for a significant change in the community's risk profile[18]. These changes may come from a planned new industrial facility or from the closure of an existing facility. Regardless of the change, there are community preparedness aspects to the change that could be addressed using the APELL Process[19]. For new facilities, initial planning is a critical time to evaluate mitigation efforts such as buffer zones, spill retention and fire suppression. In the case of redevelopment of contaminated ground or facility shutdown, the level of clean-up and eliminating or managing pathways of exposure by which contaminants might reach the public, drinking water sources or cause environmental harm can be evaluated and mitigated.
- **Natural Hazards Events**: These are naturally occurring events, such as earthquakes, mud slides, wildfires, flooding or volcanic events, which in turn may impact hazardous

18 The US Chemical Safety Board and others describe this as "management of change". *"In industry, as elsewhere, change often brings progress. But it can also increase risks that, if not properly managed, create conditions that may lead to injuries, property damage or even death."* *http://www.csb.gov/management-of-change/*

19 In the United States some of this sort of planning is done under EPA's Brownfields Area-Wide Planning Programme. *http://www.epa.gov/brownfields/grant_info/AWP-factsheet-July-2012.pdf* and *https://www.epa.gov/sites/production/files/2015-09/documents/awp-factsheet-july-2012_0.pdf*

installations causing industrial accidents. Science has not progressed to the stage where the causes or magnitude of naturally-occurring events are understood, predictable or effectively prevented. Nonetheless, community resilience often benefits from better preparedness for and mitigation of the effects of these events.

- **Industry Safety Initiatives**: Through trade association programmes or by virtue of regulatory requirements, industry may wish to see improved community preparedness.
- **National Disaster Risk Reduction Initiatives**: Often national governments wish to increase community resilience and the speed of recovery from disasters associated with natural hazards. The APELL Process improves resilience by improving preparedness and allowing all community members to participate in preparedness efforts.

2.2 Identification of relevant stakeholders

2.2.1 Overview

The APELL Process can be initiated by any individual or organisation concerned with local emergency preparedness – termed in this Handbook the "APELL Champion".

Often this will be an industry leader acting in response to an initiative from higher corporate officials or trade associations, or a non-governmental community leader reacting to the motivations of their constituency. It is equally likely that a national government ministry, possibly in association with industry, will initiate the process and support local-level efforts. *Annex 5* of this document comprises case studies of APELL implementation, which provide excellent examples of the various ways APELL partnerships are formed.

In order to create a successful APELL Process it is important to recognize that all parties potentially affected by community preparedness plans have a legitimate reason to participate. Every person or entity impacted by preparedness or emergency plans has a stake in the choices to be made to address the capability gaps faced in the community. In other words, everyone in the community has an interest in the process and outcomes.

APELL Champion

Often the APELL Process is initiated by a "Champion". This may be an individual, a public or private group, government entity or industry member that can initially bring community members together regardless of motivation.

The role of the Champion is to gather enough support and interest to form an initial group of Stakeholders. From this initial group of Stakeholders the Coordinating Group is formed and the APELL Process proceeds.

The Champion may be a participant or leader in the Coordinating Group but at minimum should retain the role of sustaining an active, growing and committed group of involved Stakeholders. It is important to understand that the Champion does not "own" the APELL Process. The temptation to control the APELL Process must be resisted in favour of a broadly inclusive, community-based and cooperative process.

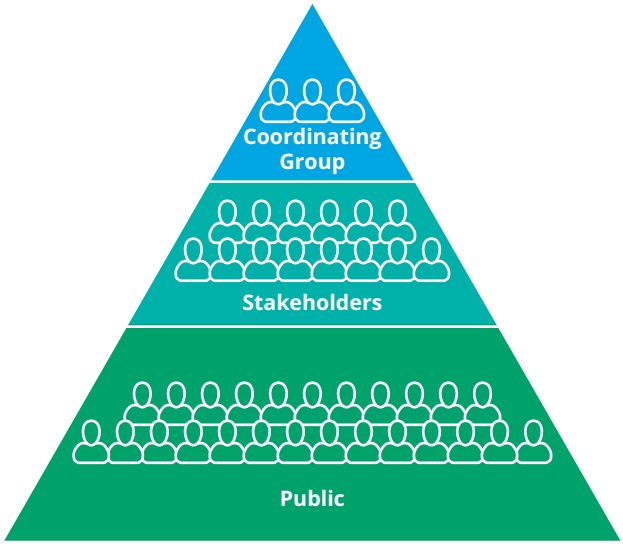

Figure 2: Level of engagement (adapted from: FEMA, 2013. Local Mitigation Planning Handbook).

A significant effort must be made to ensure that all community members with an interest in the outcomes of the APELL Process are included in the group of Stakeholders[20]. The credibility of the APELL Process depends on inclusion of all those impacted by preparedness plans and planning. As momentum for the APELL Process builds this will become easier, but the need to evaluate whether any person or group is outside the APELL Process never ends.

In the Handbook we will refer to:

- The APELL Champion;
- The Coordinating Group, who is responsible for bridging between Stakeholders as part of the APELL Process and whose role and responsibilities will be described in *Chapter 3*;
- The Stakeholders, that comprise broadly speaking the local population, local authorities and local industry represented in the Coordinating Group. The National Governments will have an interest in ensuring that the APELL Process is in line with national priorities and contingency plans, and therefore may be considered as one additional Stakeholder; and
- Public, community at large.

2.2.2 Description of the Stakeholders

Local Population and Interest Groups

Local community leaders[21] serve a critical role in the success of the APELL Process by creating two-way communication within the community. They bring the concerns of the community to the attention of other Stakeholders and provide feedback to the community. By being a part of the APELL Process, they help to provide credibility to the effort and the resulting preparedness plans.

In some countries, community leaders will accept the added responsibility to train the public on the hazards that may exist and on emergency response. These efforts supplement the awareness building efforts of the Coordinating Group, but do not replace those efforts. For example, instructional programmes through places of worship or via school children back to their families may be the only or most effective way to make the public aware of these hazards and preparedness efforts they should undertake.

Community leaders have a special role in building support and enthusiasm for the programme. They can be the initiator of the APELL Process, one of the catalysts, a facilitator, or the worker who builds confidence and enlists participation.

The responsibilities of the community leaders culminate in their own participation in the APELL Process, bringing the knowledge of the community to the process, contributing leadership capabilities, and representing their constituency to the Coordinating Group as it

20 Stakeholders are people or organisations who may be affected by, or perceive themselves to be affected by activities or decisions involving risk, vulnerability or preparedness plans.

21 These may include any of the non-governmental leaders of the community, such as religious leaders, leaders of community service groups (chambers of commerce and industry, etc.), environmental groups or associations, health and lay care groups, leaders in the educational and business communities, members of print and electronic media, members of non-governmental organisation such as citizen's groups working on social or environmental issues independent of government agencies.

works to develop a preparedness plan directed at serving community needs. Community leaders represent the concerns or views of their constituents in the community, and have the responsibility to:

- Communicate with local authorities and industry leaders on issues of importance to their constituency in the community;
- Communicate with their constituency on plans and programmes developed to protect public health and the environment;
- Provide leadership through community-based organisations, religious establishments, schools and other programmes to train the public on the details of the preparedness plan and especially their roles and responsibilities in that plan;
- Help mobilize local support and participation in the APELL Process;
- Be a catalyst in the formation of the Coordinating Group.

The interest groups may include groups involved in environmental protection, health and lay care as well as the media, and religious organisations.

Local Government Authorities

Developing awareness and preparing for emergencies at local level is a basic duty of local authorities. Local authorities play a critical role as they:

- Bear major responsibilities for protecting public and environmental health and safety. Local police and fire departments, for example, often have the lead responsibility for the initial response to accidents involving hazardous materials;
- Mediate and resolve the sometimes competing ideas of different interest groups;
- Have the resources to gather necessary planning data;
- Have the legislative authority to raise funds for equipment and personnel required for emergency response.

Local governments should seek the support from the executive and legislative branches, which is essential to successful emergency planning, and, on the other hand, national government leaders are expected to give adequate authority to those responsible for emergency planning at the local level.

The role of local authorities in the APELL Process is to:

- Raise public awareness and mobilize public support in the APELL Process;
- Establish a climate for the APELL Process to develop;
- Coordinate emergency and other public group participation;
- Train personnel in emergency response skills appropriate to the risks present in the community;
- Acquire and mobilize needed resources[22];
- Endorse and adopt the emergency preparedness plan developed through the APELL Process, implement and communicate it to the public;
- Be a catalyst in the formation of the Coordinating Group;
- Act as an interface with the national government representatives.

22 Resource mobilization often begins with local governments; however, critical resources may be in the possession of the national government and other Stakeholders in the community. When these resources are important to emergency response then often the local government takes the lead in creating mutual aid or other agreements through which these resources may be made available. When necessary for preparedness planning, a variety of mechanisms may be implemented and several of the other Stakeholders may take the lead. Examples are: *http://www.enisa.europa.eu/activities/Resilience-and-CIIP/critical-infrastructure-and-services/mutual-aid-assistance* Canadian/US agreements are summarized at: *http://www.dhs.gov/xlibrary/assets/policy/btb-compendium-of-us-canada-emergency-management-assistance-mechanisms.pdf*

Local Industry

While their obligations may be defined by laws or regulations in different countries, the owners and managers of fixed industrial facilities or hazardous material transportation entities are fully responsible for accident prevention and emergency response procedures for their operations[23]. For fixed facilities, this responsibility includes situations in which an incident beginning in the facility extends outside of the facility boundaries. The facility will best understand the hazards and risks, protective measures and response procedures and this information must be shared both during preparedness planning and during the response to any accident.

The APELL Process relies on the full commitment of plant managers to ensure that they devise, implement and periodically test accident prevention and emergency preparedness plans. In a fully-functioning APELL Process, all facilities in a community must be fully committed to appropriate and up-to-date accident prevention and emergency preparedness procedures.

As the facility manager is usually the most appropriate person for interaction with local authorities and community leaders, the responsibility of the owners of industrial facilities in the APELL Process is to provide the strongest possible support and resources to the plant managers to implement excellent incident prevention and emergency preparedness procedures, and to encourage their facility managers to fully commit themselves to the APELL Process.

The specific responsibilities of facility and transportation entity managers within the APELL Process are to:

- Identify hazards and risks that originate from their operations and put in place appropriate control measures to prevent accidents as well as to mitigate risks should an accident occur;
- Develop on-site emergency response plans and share these with authorities[24];
- Develop outreach programmes[25] to other community members that will create a well-informed community capable of effective participation in emergency preparedness for the types of incidents their operations may cause;
- Establish close and good working relations with the emergency response agencies in the community providing them with any information that might be useful in preparing plans to respond to possible accidents;
- Establish close links with the local community officials and leaders and keep them properly informed about facility safety measures as well as the potential impacts from foreseeable industrial accidents, such as spills or other releases of dangerous chemicals. This will allow the community to anticipate and include evacuation or shelter-in-place programmes in their emergency preparedness plans;
- Be a catalyst in the formation of the Coordinating Group.

National Governments

As a local level process intended to serve the needs of the local community, it is important for government agencies to recognize that every community will be different and may not reflect national or even regional governmental models for emergency preparedness. While some national standards and expectations may apply, ultimately the community should decide which risks to prioritize and how it wants to proceed to address the resulting vulnerabilities and build necessary capabilities through preparedness planning efforts.

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23 In many countries this is written into legislation in the form of a 'general duty clause'.

24 It is typical for industry facilities to enter into mutual aid or similar agreements with local government for cooperation in responding to an accident or disaster. One motivation is often to allow access to specialized resources not routinely maintained by local government.

25 Successful outreach programmes include techniques such as public tours of the facility and frequent drills or exercises that involve any vulnerable locations near the facility.

Governmental agencies and communities should have expectations for the performance of the APELL Process that can be assessed using meaningful metrics. Rather than adopting a uniform model of the APELL Process, government agencies can assist the APELL Process by working with communities to help them establish progress towards their own Vision of Success with useful and meaningful metrics. This is an approach that has been adopted in many places and the methodologies are discussed in the later Chapters[26].

National Governments have the overall responsibility of organising and maintaining an adequate level of preparedness for facing emergencies throughout the country and as such, have a role and responsibilities in the implementation of the APELL Process. These are to:

- Provide guidelines to encourage and support local authorities and industry (in particular through industry associations), to initiate the development of coordinated emergency response plans at the local level in all industrial development areas;
- Disseminate information about the APELL Process and make the Handbook and other relevant publications broadly available;
- Promote and sponsor training seminars on the APELL Process;
- Establish a climate conducive to the implementation of the APELL Process, confirm the political will and provide the resources for success;
- Develop national contingency plans.

It is important for senior Stakeholders from industry, government agencies and community groups involved in APELL to appreciate the policy and management framework within which community emergency preparedness and response takes place. This requires an understanding of the national disaster response framework and the guidance available from various international agencies concerned with safety and emergencies.

These senior Stakeholders also need to support participation by local and facility employees in the APELL Process. This support will include prioritizing participation as part of their expected work, providing resources, and general encouragement.

2.2.3 Other stakeholders

There are two types of Stakeholders that may represent a challenge or an opportunity for the promotion of the APELL Process, depending on the specific circumstances of the community: *Media and Insurance*. Print and electronic media can be very effective partners if they are truly committed to improving community preparedness. If only interested in criticizing the practices of other community members, they will not be useful. Nonetheless, the Coordinating Group must engage the media in order to educate and inform all members of the community.

Insurance companies can also be useful partners if they are prepared to support preparedness efforts and potentially recognize these efforts, along with incident reduction, through mechanisms such as reduced premiums.

26 This approach is followed in the New Zealand under its Civil Defense Emergency Management Act. http://www.civildefence.govt.nz/cdem-sector/cdem-framework/civil-defence-emergency-management-act-2002/

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3

Implementing the APELL Process

3.1 Phase I – Engaging Stakeholders

The key organisational step to make the APELL Process work is the formation of a Coordinating Group representing the various constituencies that have or should have a voice in the community's emergency preparedness efforts. It is not a static body and membership will need to change over time in order to capture all of the skills, abilities and interests of community members.

Coordinating Group

The Coordinating Group makes decisions on how to implement the various elements. Once the Vision of Success[27] is determined, the Coordinating Group manages the activities and programmes designed to achieve the Vision, including metrics for those activities and programmes.

Coordinating Group

The Coordinating Group is the management team that nurtures and implements the APELL Process in the community.

The Coordinating Group has the responsibility of managing the APELL Process for the community it represents and keeping the Group focused on the elements of the APELL Process.

Bridging role of the Coordinating Group

The Coordinating Group also performs a key bridging function between Stakeholders that may have traditionally been antagonists. The relationships between the Stakeholders listed earlier can be complicated by regulatory or legal formalities[28]. At times these formalities can interfere with the cooperation and open communication necessary to improve community preparedness.

In order for these Stakeholders to play their most effective roles within the APELL Process and interact with other Stakeholders, there must be close and direct interaction between the industrial facilities, transportation entities and local governments all overlain by the same sort of close and direct interaction with community leaders (See *Figure 3: The Bridging Role of the Coordinating Group*). The representatives of local governments, industrial facilities and transportation entities need to find the means to build a bridge between local government responsibilities as regulators and the regulatory compliance responsibilities of industrial facilities and transportation entities.

27 The process to create the Vision of Success is further explained in *Element 4*, which is described later on in *Chapter 3*.

28 The relationship between regulated entity and regulator can be contentious, especially in the aftermath of an accident, which can have the effect of preventing open communication and cooperation between these parties.

The bridging role of the coordinating group

- Open lines of communication
- Promote information sharing
- Coordinate emergency preparedness procedures
- Interact with response and planning agencies
- Promote mutual aid and resource sharing
- Promote joint education and training
- Promote joint planning for community preparedness
- Promote partnering arrangements
- Problem solving on issues of resources and training

Industry regulatory compliance responsibilities	Community leader interactions	Local government responsibilities
• Assure safe work practices • Assure personal safety of employees and visitors • Establish safety programmes • Protect lives and property on and off-site • Establish emergency response procedures • Train employees on safe practices, accident prevent and emergency response • Conduct exercises • Coordinate on-site emergency procedures during an incident • Provide necessary information and assistance off-site during an incident • Provide security, safety and technological hazard information to all members of the community	• Create and maintain open lines of communication • Interact with emergency planning leaders in all groups • Create and promote a community-wide understanding of community member responsibilities • Participate in the promotion of education, communication, training and drills	• Provide a safe and prepared community • Assure that all community members have the benefit of emergency services and preparedness planning • Provide emergency response plans and services • Provide incident command to coordinate emergency response services • Conduct training and exercises • Educate the public on their roles and responsibilities in preparedness and during emergencies • Coordinate with national governments on emergency preparedness and emergency response plans

Figure 3: The bridging role of the coordinating group

Characteristic of Group Members

The size of the Coordinating Group is important. It needs to be big enough that key Stakeholders feel their interests are being represented yet small enough so that meetings are not unwieldy. Routine briefing and listening sessions for all Stakeholders can mitigate the need for a larger size. The need for a smaller size can be managed by the creation of sub-groups to handle specific tasks or elements of the APELL Process, including geographic or language differences.

While membership in the Coordinating Group should be broadly inclusive for anyone that is willing to support the APELL Process, the following factors are known to be important.

Members of the Coordinating Group must:

- Have the ability, commitment, authority and resources to participate;
- Have, or be able to obtain, a wide range of expertise relating to the local area, its industrial facilities and transportation systems, the status of community preparedness, and the current emergency response capabilities of the community;
- Be willing to set aside personal or organisational biases during discussions and decision making on how to address the gaps between risks and capabilities as part of creating the community Vision of Success;
- Work cooperatively with one another in pursuing the APELL Process;
- Agree that it is important to create a sustainable programme that is capable of adapting to changes in hazards and risks or capabilities in the community.

It is always possible to create an initial Coordinating Group without everyone that would ideally be included. Often creation of the Coordinating Group is enough of an incentive to get reluctant parties to participate. Regardless, it is always necessary to reassess the membership of the Coordinating Group and add necessary and useful parties over time.

The Coordinating Group has the responsibility for creating, maintaining and improving involvement, communication, and education of persons, groups and entities that have not already become Stakeholders. Critically, the Coordinating Group is responsible for educating itself and other Stakeholders on the principles and topics of the APELL Process.

Selecting a Group Leader

Once the members of the initial Coordinating Group have been identified and have agreed to serve, a leader or co-leaders need to be selected by the Coordinating Group and procedures for developing and managing the APELL Process should be established.

Experience shows that five factors are important in selecting the leader or co-leaders of the Coordinating Group. The leader(s) of the Coordinating Group should be a person that:

- Is respected by other members of the Coordinating Group, other Stakeholders and the community at large;
- Has adequate availability of time and resources;
- Has experience in managing group work relationships;
- Has excellent communication skills;
- Has some degree of experience related to emergency planning, incident prevention, emergency response, and disaster preparedness.

If there is an APELL Champion, it is possible to consider him/her as a Group Leader, but it does not always have to be so.

Element 1 – Identify Participants and Establish their Roles

The intention of this Element is to establish the roles of the participants, as well as formalise the communication and partnership arrangements.

The APELL Champion will assemble a group of Stakeholders and a Coordinating Group will be established. The Coordinating Group represents the key community members of industry, government and non-governmental entities. The Coordinating Group's Composition will change over time as it reassesses the planning efforts.

Desired Outcome

This Element is expected to lead to the establishment of the Coordinating Group and an agreement to pursue the APELL Process

Actions

Follow these suggested actions to complete *Element 1*:

- With the support and guidance of the APELL Champion, establish the initial Coordinating Group and the Group Leader(s);
- Using the knowledge of the Coordinating Group, compile a list of potential participants in emergency preparedness activities;
- Contact the persons and groups described in *Chapter 2* and others identified by the Coordinating Group and expand the list;
- Establish their current roles and responsibilities in the emergency preparedness activities of the community along with the assets and resources they bring to the current emergency plans;
- Clearly define the group of Stakeholders and the process of communication between the Coordinating Group and the Stakeholders.

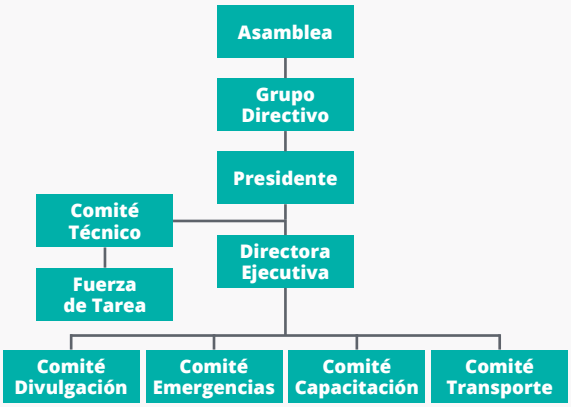
Keys to Success

Success depends on early identification and involvement of potential Stakeholders. The APELL Champion should seek to involve: (a) those that may be impacted by environmental emergencies; (b) those that may have a role in the community's plans; and (c) those that can provide information on hazards and risk mitigation measures. Industry, government and non-governmental

Barranquilla, Colombia: A case study on the adoption of APELL and the creation of a coordinating group[29]

In 1986, in Barranquilla, Colombia, a group of chemical industries initiated a process to deal with situations that could arise in the event of an emergency. For four years, the group was trying to reach out to the community and prepare it to respond in case of emergencies. After these years of work, the group had managed to develop a study of the communities neighbouring industries. However, the initial objectives had not been met.

Then, in 1990, one of the industries, acting as an APELL Champion, presented to the group APELL, which at the time was a new methodology. The group found that this new methodology had the same goals that had been set in Barranquilla four years before, and adopted the APELL Process for implementation, starting in 1991.



Over the years, the group has matured and adapted its structure to steer the APELL Process in alignment with the local priorities. Thus, *Grupo Directivo* (Steering Group), participates in the strategic development and decision making related to the plans proposed by the *Asamblea* (Assembly), consisting of the local Stakeholders and including industry leaders, local authorities and support groups responsible for monitoring and emergency response and of community leaders.

The implementation of the Action Plan is the responsibility of the APELL Process *Directora Ejecutiva* (Executive Director), who also guides the activities of four committees that have different responsibilities (capacity building, transport, dissemination and emergencies), and fosters links with support agencies, government and the community.

29 APELL Barranquilla website: http://apellbarranquilla.org/

groups responsible for health and environmental protection, emergency response, military and civil defence units, existing volunteer organisations, religious leaders, and technical specialists are all good examples.

There is no clear distinction between the process of creating commitment and starting the work of the Coordinating Group. The resources needed are limited and in many cases it may be more appropriate to use the practical work of later Elements to increase participation.

Recommended tools for identifying participants and establishing their roles:

Identifying participants and establishing their roles may benefit from a systematic process. Many tools and various methods and processes have been developed to help engage with Stakeholders, such as[30]:

- *Stakeholder Identification* – a tool for identifying all the people with an interest in a project, or who may be affected by the APELL project.
- *Stakeholder Analysis* – a tool, which, based on the Stakeholder identification, provides a more in-depth look at Stakeholders' interests, how they will be affected and to what degree, and what influence they could have on the APELL Process.
- *Partnership Assessment* – a tool for analysing potential partners, their suitability for partnering and what areas of mutual interest are shared.
- *Stakeholder Maps/Matrix* ¬– a tool for analysing the key Stakeholders in the community in terms of importance, proximity, type of relationship, direction of the relationship and interest in the process.

Formalizing the process of communication between the Coordinating Group and the Stakeholders is a key action of this element and may benefit from the use of tools such as the *Consultation Matrix*, which establishes a comprehensive system for project consultation and communications.

Guidelines for establishing partnering arrangements or partnership agreement are available in the literature and may assist in formalizing the Coordinating Group.

3.2 Phase II – Understanding Hazards and Risks

Understanding hazard, risk and vulnerability is necessary for taking the right decisions related to reduction of risk. This includes understanding the source of the hazard, as well as analysing the possibility of the hazard's negative impact and the likelihood that it takes place. It is almost impossible to make progress until the community identifies the hazards and risks present in the community. This understanding forms the basis of preparedness planning as that effort is focused on reducing vulnerabilities and improving the community's collective perception that risks have been reduced.

Effective emergency preparedness efforts also require a degree of personal responsibility and a commitment to the actions the community expects each community member to take in preparedness and response.

30 All the tools described here can be found in the literature. Ready-to-use templates for these tools have been developed and indicated in *Annex 4*. A selected bibliography presenting the best practices and general methodology is suggested in *Annex 4*.

Typical hazards will include both, technological hazards involving fire, explosion, spill or release of toxic chemicals (liquid or vapour), and contamination of key sources such as drinking water as a result of an accident at a hazardous facility or from transport of dangerous goods, as well as natural hazards. The typical consequences will involve injuries, contaminated fields and other impacts on the nearby environment, and property damage resulting from these events. It is important to keep in mind that natural disasters may be the cause of direct and indirect hazardous material releases.

Information about the potential hazards of facilities or transportation entities that handle hazardous materials only constitutes the first step in educating the community about the risks they face. It is only through an assessment of how these hazards and risks can impact the various members of the community – their "vulnerability" - that the community can be expected to embrace and be active participants in the community's emergency preparedness efforts.

Assessing vulnerability typically involves looking for persons or environmental receptors, such as the sea, rivers, and agricultural fields necessary to the livelihoods of the community that cannot easily avoid being impacted by environmental emergencies. These will include institutions such as nearby schools and hospitals, retirement homes, government buildings, infrastructure such as water treatment plants, and environmentally sensitive areas such as rivers, lakes, and drinking water supplies.

Although it is tempting to focus solely on industry operations, the risks associated with any industrial or commercial operation, or the transportation of dangerous goods likely requires a more systematic assessment. In principle a community evaluates its hazards, risks, vulnerabilities and capabilities through a formal **risk assessment**. Depending upon the community, in some cases simple judgment and common sense may identify the facilities that may present a potential for a major incident from which vulnerability and capability may be directly evaluated. Great caution is required as different community members are likely to have widely divergent views when it comes to these judgments and common sense.

It is also possible to apply a variety of tools for setting thresholds or levels of concern for hazardous materials. Some of these tools are regulatory while others are guidance. All need to be used in the context for which they were designed and none are necessarily definitive for a community assessing hazards, risks and vulnerabilities[31].

In practice, this effort requires a careful analysis of the possible strategies for mitigation, emergency response or preparedness that would be appropriate to address the identified vulnerabilities. The Coordinating Group needs to evaluate the strategies in terms of the complexity, ability of the community to implement and reliability. Factors such as cost, the time necessary to implement and sustainability of the strategy over time must be considered. In consultation with the Stakeholders, the Coordinating Group selects one or a combination of strategies and then can establish what capabilities are necessary for its execution. For each desired capability, the resources required to achieve that capability through the use of community assets, mutual aid, preparedness activities, and mitigation opportunities are considered.

With the capability targets identified through such a systematic process it is possible to overcome obstacles and create the necessary climate for discussion and planning on how to prioritize and fill these gaps (in Phase III) and otherwise ensure that the community can improve its overall preparedness. This systematic approach also supports meaningful and credible communication regarding hazards, risks, vulnerabilities and capabilities to all community members.

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31 See further references in *Annex 4* for references that provide information on the properties of chemicals and the quantities used as planning thresholds in community right-to-know and emergency planning regulatory programmes.

Among the obstacles to the success of APELL are over-confidence («a plan has already been prepared»), apathy («lack of interest or concern»), denial («it can't happen here»), or it's too hard («we cannot afford it» or other lack of resources). As risk, or more properly the perception of risk, is often the motivating factor in deciding to use the APELL Process, frank dialogue between facilities, local authorities and community leaders is necessary. This dialogue must be based on a foundation where the hazards and risks present in the community have been assessed, where vulnerabilities have been identified, and where this information has been communicated to the Stakeholders.

A fenced-in chemical plant, mine, or another industrial operation can look threatening to the community, but much of the perceived threat may disappear when the community understands what the facility uses and manufactures, that it has a good safety plan and safety record, and that an effective emergency plan exists. The opposite is also true of course, with concerns rising when the facility appears less than responsible.

Element 2 – Evaluate Risks

One of the early steps that must be taken by the Coordinating Group is an assessment of existing hazards, and associated risks present in the community. Identifying and assessing risks is a process of measuring the potential for harm resulting from the various hazards the community has identified, the probability of occurrence of each consequence, and then evaluating the vulnerability of people and infrastructures that might be impacted, follows a systematic approach. The outcomes of the Risk Evaluation process will inform the implementation of the Elements to follow. Risk Evaluation may be a complex process depending upon the level of detail desired and the characteristics of the community. Interrelationships between facilities and unintended consequences of otherwise routine activities may be considered. Ultimately this information will be communicated to the community at large, but for the moment it is very important that the Coordinating Group and Stakeholders have a collective and reasonably consistent understanding of these risks as that is needed for the following Elements. Various methodologies and tools exist for evaluating risks; and, often, the process benefits from expert assistance.

Desired Outcome

Through a systematic risk assessment process[32], possibly involving experts as well as the community Stakeholders, the technological and natural hazards are identified and probability of occurrence of eventual disasters and consequences are listed. Vulnerabilities have also been identified. Desired capabilities have been identified and a list of Capability Targets has been established.

Actions

Follow these suggested actions to complete *Element 2*:

- Identify the possible technological hazards, as well as natural hazards, of concern: Based on a combination of experience, forecasting, subject matter expertise, and other available resources, such as facility operator safety or environmental risk assessment reports, identify a list of the hazards of primary concern to the community;
- Estimate consequences from potential industrial accidents and their combination with natural disasters in order to set priorities for preparedness efforts and planning. There are a variety of ways to perform these tasks and outside experts may be useful to the Coordinating Group, including:
  - Initially, using the views and opinions of the Coordinating Group, compile a list of potential hazards which may result in emergency situations in the community.

32 "Systematic" in this context simply means that a similar assessment approach should be applied to all identified hazards.

Consider obvious scenarios such as a fire or a toxic spill at a chemical plant. Also consider the impact of natural disasters on industrial facilities. Include accidents involving transportation activities and any special factors that seem relevant to the Coordinating Group;

- Prepare a list of accident scenarios that could be expected to occur. Focus on those with consequences outside of the particular facility involved.

- Evaluate the vulnerabilities of various community members and infrastructure. A vulnerability assessment helps to identify the capacity of the system and its surroundings to deal with, avoid, neutralize or absorb the effects caused by certain industrial accidents and national disasters;
- Give the Hazards Context: Describe the hazards of concern in terms of the risks they present by showing how they may affect the community. Define the magnitude of these risks, at least in a comparative fashion, as this will help to consolidate opinions on the sort of capabilities desired by the community;
- Establish Capability Targets: Assess each hazard in the context of the vulnerabilities present in the community to develop a list of capabilities desired to address the vulnerabilities through preparedness, mitigation or emergency response.

Keys to Success

The Coordinating Group must broadly consider all the technological and natural hazards faced by the community. The identification of natural hazards will be instrumental to evaluate the impact of natural disasters on industrial facilities. In order to build credibility it is crucial that this process evaluate the mechanism by which the hazard impacts the community, the magnitude of the possible adverse consequence and the probability of occurrence of each consequence.

Broad community participation and opportunity

Bahia Blanca, Argentina: A case study on a risk analysis process by a dedicated sub-group of the Coordinating Group.

In **Bahia Blanca, Argentina**, the policies and methodologies outlined by the Coordinating Group are implemented by three Commissions comprised of professionals and technicians from public institutions, industry and academia, as well as local residents. Amongst these three committees, the Risk Evaluation and Analysis Commission (REAC) is in charge of hazard identification, vulnerability areas definitions and consequence calculations.

From the start of the project, the REAC work was oriented to identify and gather data associated with chemical hazards. At that time, the results, a first Local Risk Analysis, represented the first systematic effort in the country to evaluate the impact of industrial accident.

Major hazards were identified from an inventory study of hazardous materials in the area of study. Since in Argentina there were no laws related to the prevention of major accidents, the criteria presented by the Seveso II Directive (European Union, 1996) were selected as a frame of reference for the study. The identification of a number of potential events was based on the detection of all potential sources of spills or emission for each installation, which can result in different types of emergency situations or scenarios. The concept of "worst case" scenario was employed as suggested by the World Bank (World Bank, 1988. Techniques for assessing industrial hazards: a manual). Through the use of CAMEO[33], a consequences analysis was then carried out where more than 200 scenarios were simulated and the estimated hazard zones were plotted on a map.

This map, result of the risk assessment, was then used as the basis for the development of the Emergency Plan.

33 CAMEO (Computer-Aided Management of Emergency Operations) is further explained in *Annex 4*.

Peru: A case study on the use of Participatory Risk Assessment techniques for evaluating risk[34].

In **Peru**, the information related to the risks faced by the community is compiled and formulated in a participatory manner through *interviews*, *surveys*, workshops and *community walkthroughs*, to produce a Participatory Risk Assessment.

The use of participatory instruments by the practitioners help them work with the community on the key elements of risk management, and identify in a participatory way the hazards and safe zones.

As part of this approach, moderated discussions are used to work with participants on four key concepts for risk reduction: hazard, vulnerability, capacity and risk. Participatory workshops are held to estimate and assess hazards, to locate them within the territory, and identify safe areas for the community. During these workshops, many participatory tools were used, such as the *Planetarium*, where participants identify the main hazards in concentric circles, from most serious to least serious for the community, estimate and assess, in a participatory way, the main hazards identified by the community, or the *Hazards Map*, where the participants identify and locate the hazards in the territory of the community.

This information is then used as the foundational documents by the Civil Defence Committee in formulating the Local Emergency Plan.

for input is important to the credibility of the effort.

Wildly speculative risks should not be included as no community will conceivably be able to respond to everything imaginable. Look to past events in the community and other areas that share industrial or natural settings to establish the list of risks that should reasonably be evaluated.

Recommended tools for understanding risks

Many tools have been developed to support a systematic risk assessment process.

One way to identify the risks that the community faces and how people overcome those risks is the participatory risk assessment[35]. The process includes a hazard assessment, vulnerability assessment and capacity assessment. The use of participatory risk assessment tools is recommended in order to consider people's perception of risk.

As assessing risks requires conducting in-depth studies, a Community Risk Profile (CRP)[36] tool has been developed by UNEP and INERIS to provide communities with a means of making a rough estimate of the various types of risks they are exposed to, supporting the decision making process, especially as to whether or not further assessments are needed.

Regardless of the approach used, the use of Geographic Information Systems (GIS)[37] may greatly facilitate the risk assessment process.

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34 RAPID LA, 2014. *Manual for the Implementation of the TransAPELL Programme for the Transportation of Hazardous Materials in the Mining Sector – The Case of Peru* http://apell.eecentre.org/ManualTransAPELLintheMiningSectorPeru.pdf

35 Further guidance materials on Participatory Risk Assessment is provided in *Annex 4*.

36 References for this tool can be found in *Annex 4*.

37 The CAMEO software suite includes a mapping programme: MARPLOT. MARPLOT's easy-to-use GIS interface allows the user to add objects to a map, as well as view and edit data associated with the objects. It can also be used interactively with programs in the CAMEO suite to display ALOHA threat zone estimates on the map or to link map objects to database records in CAMEOfm.

3.3 Phase III – Preparedness Planning

The APELL Process is designed to improve the emergency preparedness of local communities. It is based on the concept that a well-informed local community can develop effective preparedness plans, coordinating local Stakeholders and establishing responsibilities. Preparedness planning responds to the needs created by the risks and vulnerabilities. It does not only consist of the emergency preparedness and response plans but also of all associated activities such as training and capacity building.

Every community will have gaps between the capabilities shown in existing plans and the capabilities necessary to address the vulnerabilities. It is the community's shared decisions on which gaps to fill and how to fill them that create the Vision of Success[38]. This includes preparedness efforts that the Community and the Coordinating Group consider important for closing the gaps. Questions such as: which gaps can be addressed now; which gaps are seen as critical priorities; and which will take multi-step approaches, all need to be considered along with many others.

Many gaps will be perceived as too difficult because of a lack of resources to improve capabilities or because the magnitude of the hazard is viewed as overwhelming. Progress can still be made by recognizing that small steps can make progress towards filling large gaps.

It is critical to communicate progress achieved, regardless of the size of the project, or its seeming impact on the gaps to be filled. In order to convince that progress is being made, it is important that a project produce some measurable outcomes of progress towards the Vision.

As an example, imagine that a community has determined that their Vision of Success includes well-informed schools that understand and practice shelter-in-place techniques[39]. An initial project could be a training programme for staff members at the school on such techniques. The proposed measurement of whether the training was effective could be a short examination. Follow-on projects could include acquisition of necessary equipment, training of students and periodic exercises. Each of these projects is a step on the path to achieving the Vision of Success and each project should have some measurable outcome allowing the Coordinating Group and Stakeholders to understand whether the project was effective or needs adjustment. This also allows credible communication on achievements to the Community.

One of the greatest challenges faced by the Coordinating Group is to recognize that community awareness of hazards and risks and the use of the APELL Process to develop preparedness programmes for risks is much different than the emergency response planning conducted by government authorities such as fire departments. Response planning deals with the actions taken after the accident occurs by these governmental emergency response authorities. Preparedness planning is about steps taken in advance of the accident which are designed to minimise or eliminate its adverse consequences as experienced by all members of the community.

The overlap between these two types of plans is materialized when the first responders to any incident are the victims of that incident.

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38 The term "Vision of Success" and the process by which it is created is discussed in *Element 4*.

39 "Shelter-in-place" means to take immediate shelter where you are – at home, work, school, or in between. It may also mean "seal the room"; in other words, take steps to prevent outside air from coming in. This approach is only appropriate when evaluated in advance to determine if it is appropriate to community conditions, the hazards present and the parties being told to take the action have the necessary training and supplies.

Element 3 – Review Existing Capabilities and Emergency Plans – Identify Gaps

The capabilities assessment follows the risk assessment and is based upon the specific human health, safety, environmental and property damage impacts predicted from the various hazards present in the community. The capabilities assessment aims at analysing whether the necessary response equipment, numbers of responders, training, personal safety equipment, environmental monitoring capacity, emergency notification procedures and related factors exist at a level necessary to match the hazards. Specific gaps are noted and described in detail.

Existing emergency preparedness and response plans will provide an indication of the capabilities that exist in a community. As a first step the Coordinating Group should review the existing plans in comparison with the risks identified in the previous element. This assessment should then be complemented through inputs from the Stakeholders with additional capabilities that may exist in the community but are not included in current plans. This will produce an evolving list of resources and skills that already exist and additional ones that are needed to build capabilities that match the risks.

These preparedness and response plans may be public or private[40] and will likely include various mutual aid or other supplementary agreements. The purpose of this review is to identify gaps between the capabilities shown in existing plans and the capabilities necessary to address the vulnerabilities identified in the previous Element.

Industry emergency plans should be evaluated keeping in mind eventual accident scenarios originating at the facility as well as technological or natural hazards that could impact the facility.

Again, the degree to which the emergency plans have been communicated outside of the facilities and community and emergency responders are aware of these plans and their appropriate actions is important. Where the emergency responses plan have not been communicated outside of the facilities, this puts emergency responders at particular risk when they respond to an emergency at the facilities.

Substantial community involvement is necessary to evaluate these conditions. The degree of community awareness of the plans that exist and their role in these plans should be evaluated. The capacity of community members to take individual preparedness actions regarding the identified risks should also be evaluated. Involving the community will help determine how these plans contribute to the overall community preparedness. Topics for discussion with the community include interrelationships, responsibilities and communications.

It is important that members of the public are not totally dependent upon government provided emergency services and it is recommended that the analysis of capability gaps incorporate these concepts.

Desired Outcome

Emergency preparedness and Response plans are compared with the capabilities needed to address the Risks identified in *Element 2*; further inputs are obtained from the Stakeholders and a list of gaps in existing capabilities is produced. This list may include equipment, training requirements or core emergency services. This list is then compared with the skills, equipment, training and related information as found in existing emergency plans and in the community at large. These differences are captured as capability gaps in a new list.

40 The Emergency Preparedness and Response Plans that are reviewed include: National Contingency Plans, Community Land Use plans, Fire codes, and similar standards, Regional and Local Emergency Response Plans, Police and Fire Emergency Operation Plans, County and City Emergency Response Plans, Hospital Mass Casualty and Emergency Operations Plans, Industry on-site and off-site Response Plans, Other specialised plans of programmes (e.g., public education on sirens)

Actions

Follow these suggested actions to complete *Element 3*:

- Refer to the list of desired community preparedness capabilities created through the consultation process in *Element 2*;
- Obtain copies of existing emergency plans and review these to identify existing capabilities;
  - If plan review reveals additional participants, revise the list of potential participants generated in *Element 1*, obtain their emergency plans, and seek to involve them in the APELL Process. Include any known private or public mutual aid agreements.
- Contact the potential participants identified in *Element 1* and have these participants review their own plans.
- Evaluate to what degree all members of the community are aware of and able to fulfil their role, if any, in the emergency plans that exist;
- Determine the plans and preparedness activities for which community member capabilities must be enhanced or built so that all members of the community understand their responsibilities and can fully participate in community preparedness. Consider:
  - Risks for which no capabilities exist;
  - Risks for which partial capabilities exist;
  - Risks for which nearly complete capabilities exist.
- Using either the expertise of the Coordinating Group or independent experts, evaluate the plans to determine overall strengths and weaknesses of current capabilities in light of the identified risks and the current status of community preparedness efforts;
- List and describe the gaps between the capabilities and the identified risks.

Keys to Success

Most existing plans will be limited in scope focusing only on specific risks. This Element aims to evaluate where, if at all, the community

India and Thailand: A case study of capabilities assessment[41].

In **India and Thailand**, a capabilities assessment was conducted in three tourism destinations (Kanniyakumari in Tamil Nadu State, India; Patong Municipality of Phuket; and Phi Phi Islands in Krabi, Thailand) by using on-site research with the three main Stakeholder groups involved in local disaster management activities (local authorities, tourism sector and local community organisations), together with in-depth interview with the key players in disaster prevention and mitigation.

A questionnaire based on the Annex 3 of the 1st edition of the APELL handbook was used to help local partners carry out the assessment. The assessment was aimed at determining local capabilities for responding to potential disasters in seven areas: risk identification and assessment, legal authority, organisational structure, early warning systems, communication, resources and emergency planning, and tourism related issues.

Several authorities were involved including district revenue authorities, police officials at the district level and the local level, district health officials, executive officers from the municipalities, fire officials, and business managers for enterprises such as hotels, ferries and shipping services. Volunteer organisations also participated.

Partners in the three locations prepared reports on the assessment of local current disaster management and plans, which provided the necessary baseline information.

41 UNEP, 2008. *Disaster Risk Reduction - A Toolkit for Tourism Destinations. Practical examples from coastal settlements in Asia*. http://apell.eecentre.org/DisasterRiskReductionToolkitTourismDestinationsExamplesAsia.pdf

has planned for all of the risks identified in the earlier Elements in order to recognize that the community needs plans and capabilities for all of the risks it faces.

It is indeed true that many gaps cannot be filled due to cost or other logistical factors. Nonetheless, the Coordinating Group should still identify these gaps in detail, as that will inform the effort necessary in the later Elements. This process is likely to allow the gaps to be broken down into various parts at least some of which may be achievable sooner rather than later.

There may be communities where adequate basic core emergency services such as an organised fire brigade, medical response teams, and structure for coordinated response to any emergency, etc., do not exist[42]. In these instances building these core services may be a project that the Coordinating Group will decide to address. Industry along with local authorities/leaders and other members of the community will need to build these basic core services.

Recommended tools for reviewing existing capabilities and emergency plans – identify gaps

The review of existing capabilities may be enriched with information collected in *Element 2* and through participatory assessments with the use of complementary tools[43] such as:

- *Competencies assessment* – a tool to list required skills, estimate the level of expertise needed for each skills area and assess the current level of skills against the requirements.
- *Resource Mapping* – a tool to have a spatial overview of the community's main features including local capabilities.

Element 4 – Create the Vision of Success

The previous Elements will have identified gaps between the capabilities present in the community and the risks. These gaps will reflect situations ranging from a complete lack of any capability to address an identified risk to minor capability gaps that can be easily addressed.

The Vision of Success is developed by the Coordinating Group and proposed to the community as a statement of the desired level of preparedness that the community wishes to achieve. All community members should be consulted in the development of the vision.

The Vision of Success is broadly **aspirational**. It is not a statement of current reality nor does it solely focus on identified gaps. By creating a Vision of Success, opportunities for improving the community's level of preparedness or response capability outside of the identified gaps will likely be discovered.

The Vision of Success and other actions under this Element then inform the work under all of the later Elements.

Sample Vision of Success[44]

"We live in a well prepared community where responders and the public are aware of the risks in the community, where the capability of the community to respond to these risks has been assessed, plans created to fill gaps in capabilities, and the public is aware of their role in preparedness and response."

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42 This should not be taken as a criticism, but rather a simply statement of reality. In the mining context this has been pointed out given the remote and rural nature of many operations. See ICMM and UNEP, 2005. *Good practices for emergency response in mining* (p.11) http://apell.eecentre.org/GoodPracticeInEmergencyPreparednessAndResponse.pdf

43 All the tools described here can be found in the literature. Ready-to-use templates for these tools have been developed and indicated in *Annex 4*.

44 Adapted from National Association of SARA Title III Program Officials (NASTTPO), 2014. *Measuring Progress in Chemical Safety: A Guide for Local Emergency Planning Committees and Similar Groups*. http://www.nasttpo.com/pdfs/SPI-guidance-LEPC-10-25.pdf

Desired Outcome

An aspirational Vision of Success statement for community preparedness is created.

Actions

Follow these suggested actions to complete *Element 4*:

- Discuss and debate the ideal level of preparedness that should be present in the community;
- The Coordinating Group should list the limitations that impede achieving the vision, including both financial and logistical;
- Articulate and communicate the aspirational statement of the Vision of Success for the ideal preparedness and response conditions for the community.

Keys to Success

This Element forges agreement among the Stakeholders on the preparedness and emergency response conditions that are desired. The Vision of Success is solely in the community's hands.

As this is an aspirational statement, designed to reflect the benefits of emergency preparedness to the community, it is important to establish a vision that is unencumbered by any resource or logistical limitations. The Coordinating Group can then create programmes and activities that seek paths to overcome the limitations thus demonstrating success and progress towards the Vision of Success.

Peru: A case study on the development of a Vision of Success[45].

The experience in the field in **Peru** demonstrated that in order to effectively deal with natural and man-made disasters from a perspective of sustainable development, communities must adopt a vision that allows them to assess, plan and manage risks with the active participation of at-risk communities, by implementing adequate Integrated Risk Reduction processes.

In these situations, where in many cases subsistence is the priority for most of the population, it is difficult to raise the awareness of communities on the importance of being prepared to respond adequately to an emergency or disaster which could occur at some point in the future. In addition, in many cases, emergencies and disasters are perceived of as a divine, remote or unlikely event, or one with limited direct consequences.

In these conditions, the methodology that the RAPID LA team has been developing over the past several years, links integrated risk reduction to the development of the communities, by formulating a common vision that can help to guide the communities on how to incorporate risk reduction into their development plans. The Local Contingency Plan promotes the construction of a new vision of development in the communities that motivates the project formulation and implementation of specific actions linked to the plan.

Following this methodology, the Town of Cobra Negro, Peru, has developed its following 10-year vision:

"A community that is safe from traffic accidents, has access to basic services, and is protected from electrical storms."

45 RAPID LA, 2014. *Manual for the Implementation of the TransAPELL Programme for the Transportation of Hazardous Materials in the Mining Sector – The Case of Peru*. http://apell.eecentre.org/ManualTransAPELLintheMiningSectorPeru.pdf

Recommended tools for creating the Vision of Success

There are various methods for creating a community's Vision of Success. As all community members should be consulted in the development of the Vision of Success, different approaches such as the "Appreciative Inquiry" or "Community Visioning approach"[46] can be followed to benefit from a proven framework.

Some tools such as SWOT analysis (described in the *Supplementary Guidance 2*), which assesses strengths, weaknesses, external opportunities and threats, may be useful to support the creation of the Vision of Success.

Another approach has been used for creating, in a collaborative fashion, a vision of development of the community that is safe and free of risks in Peru, and is described step-by-step in the *Manual for the Implementation of the TransAPELL Programme for the Transportation of Hazardous Materials in the Mining Sector*[47].

Element 5 – Make Progress towards the Vision of Success

Metrics

The **Organisation for Economic Cooperation and Development** has developed guidance on developing Safety Performance Indicators. This Guidance can be useful for Communities wishing to develop metrics that measure and demonstrate progress towards the Vision of Success. The Guidance focuses on the process of establishment of indicators. The choice of the right indicator is important. For example, the number of people trained is less important than whether the training they received was targeted at a gap, and whether or not the success of the training is verified through testing or exercises.

This element builds on the gaps identified in *Element 3* and establishes programmes or activities to close those gaps in a way that achieves the Vision of Success. The previously identified gaps are evaluated in terms of whether or not closing them is necessary or desirable to achieve the Vision of Success. The Coordinating Group rank orders the gaps based upon this evaluation in order to create priorities for the APELL Process.

Once gaps are prioritized, the Coordinating Group, with consultation of the Stakeholders, should begin to develop projects and activities designed to fill the prioritized gaps as feasible. Programmes and activities under the APELL Process may address gaps in an order different from the priorities created, as it may be most feasible to do so. Nonetheless, it is important for the Coordinating Group, Stakeholders and Community to understand these priorities so that their work remains focused.

The idea is to make demonstrable progress towards the Vision of Success. This is a strategic process based upon the skills, resources and combined desires of the community building through the knowledge and information gained in the previous elements and will identify the budget, timeframe and responsible persons for each of the activities. Project outcomes that may include deadlines, measurable goals or related tangible aspects that create a meaningful metric, should be included.

Desired Outcome

An ever-changing list of projects designed to fill gaps in a way that achieves the Vision of Success, with measurable, tangible targets and metrics to demonstrate progress.

46 Guidance on these approaches can be found in *Annex 4*.

47 RAPID LA, 2014. *Manual for the Implementation of the TransAPELL Programme for the Transportation of Hazardous Materials in the Mining Sector – The Case of Peru*. http://apell.eecentre.org/ManualTransAPELLintheMiningSectorPeru.pdf

Actions

Follow these suggested actions to complete *Element 5*:

- Review the Vision of Success;
- Identify actions that are needed to achieve the Vision of Success;
- Consider the capability gaps, as defined in *Element 3*. When analysing capability gaps, give due consideration to community capabilities that must be enhanced or built so that all members of the community understand their responsibilities and can fully participate in community preparedness or emergency plans;
- Prioritize these capability gaps on the basis of the information gained in *Element 2*. For example, prioritisation might be based upon the potential for injury or death, environmental harm, property damage and other factors that were established in *Element 2* or which the Coordinating Group and Stakeholders feel are important for their community to achieve the Vision of Success;
- Identify projects and activities that address the capability gaps and can produce measurable progress towards the Visions of Success;
- Assign projects to Stakeholders and associate a timeframe, and budget for implementation.

Keys to Success

It is important to follow the Vision of Success rather than trying to simply fill gaps based upon some other sense of priorities or the institutional needs or biases of particular Stakeholders. The objective is to make material improvements of community preparedness, so a clear and overarching focus is necessary.

The Coordinating Group needs to look at the resources of the entire community for these projects or actions rather than focusing only on one Stakeholder group. The Coordinating Group also must recognize that projects can and should be conducted in a step-wise fashion.

Recommended tools for making progress towards the Vision of Success.

The prioritisation of the activities can be based on a Cost Benefit Analysis, where the benefits that would result from a preparedness action are compared to the costs of that action. This could be done through a rapid assessment of whether the costs are reasonable compared with the probable benefits (cost estimates do not have to be exact but can be based on experience and judgment) or through a full Cost Benefit Analysis.

As each of the identified projects and activities that address the capability gaps have its corresponding dates or time frame, resource requirements and budget, planning tools may be helpful to develop a more logical and structured list of actions – with all required information – and will later support the monitoring and evaluation of the progress towards the Vision of Success.

A SWOT analysis (described in the *Supplementary Guidance 2* and introduced in *Element 4*) may also be useful for identifying actions to make progress towards the Vision of Success.

Element 6 – Make Changes in Existing Emergency Plans and Integrate into Overall Community Preparedness Plan

Until this point, the Coordinating Group will have identified the emergency preparedness and response plans and the capabilities that exist; and will have considered capabilities that exist outside of current plans. There will be a consensus on what the community wishes to achieve (Vision of Success).

At this stage of the APELL process, the Coordinating Group may undertake several parallel tasks with the goal of creating or updating existing emergency response plans to include all existing resources and capabilities identified earlier, preparing or updating an integrated (all-hazards) emergency response plan, and preparing or updating a community-wide preparedness plan.

- **A Community Emergency Response plan** identifies the actions that community members take in the event of an emergency and how they coordinate their actions;
- **A Community Preparedness plan** anticipates the capabilities necessary for the community emergency plans and establishes the process by which these capabilities are created. In addition this plan establishes the responsibilities for all community members in contributing to these capabilities and in taking preparedness actions to prevent, mitigate, and recover from emergencies.

Emergency response plans deal with actions after the event, while emergency preparedness plans deal with activities prior to the event. Emergency plans may be separated into emergency response and emergency preparedness plans if convenient to the community and the local emergency responders; however, they must be coordinated. At a minimum, the community should modify existing emergency plans of all types to better reflect the roles and responsibilities of all community members.

Depending upon the state of agency-specific existing emergency response plans, it may be appropriate for the Coordinating Group to work with the responsible government agency to update and refine these emergency response plans. For example, if these plans make assumptions on the actions of certain community members, it is very important for those assumptions to accurately reflect the awareness and capabilities of those community members.

The Coordinating Group may or may not decide that it is useful to prepare a written community emergency preparedness plan. Often the emergency preparedness plan will actually be multiple plans focused on specific preparedness efforts developed from the Vision of Success. As an example, there might be a preparedness plan for first aid training to build that capability. The point of such a plan would be to educate and inform members of the public on their roles and responsibilities in preparing for an incident as well as educate and inform on their roles under the community's emergency response plans. Such a plan would also form the basis for exercises and testing on the roles, responsibilities, and capabilities of the participants in the plan.

Often a community facing a wide range of hazards will find that it is useful to prepare an overarching all-hazards emergency response plan that establishes emergency response protocols for all possible events. This should avoid confusion between numerous complex plans, which reflect cooperative arrangements, mutual aid and incident command structure for complicated or large accidents requiring multiple agencies to respond. This overarching plan is part of the broader emergency preparedness plan, which is updated at intervals as projects and activities advancing progress towards the Vision of Success occur.

Desired Outcome

The actions undertaken by the Coordinating Group in this Element are expected to lead to two outcomes:

- The community has a community preparedness plan that is periodically updated as capabilities change and grow through the APELL Process;
- Existing emergency response plans are routinely evaluated through exercises and drills, and revised or updated accordingly. If a community all-hazards emergency response plan is prepared, that must also go through the same process of routine evaluation.

Actions

Follow these suggested actions to complete *Element 6*:

- Obtain existing emergency response plans and review them against existing risks and capabilities. Update plans accordingly and against planning elements adopted by national government or other acceptable standards;
- If desired, prepare a written community emergency preparedness plan that integrates the different specific preparedness efforts in a community;
- Determine whether an integrated all-hazards emergency response plan is desired. If so, prepare a draft of this plan using a format acceptable to the lead government agencies. Often this format is established in guidance or regulation;
- If developed, assure that the integrated community all-hazards preparedness plan is consistent with any regional disaster preparedness plan and any specific chemical release, utility interruption or technological hazard plans;
- Verify that all members of the Coordinating Group agree on the approach in the original emergency response plans and with each change.

Koggala, Sri Lanka: A case study on the preparation of an Integrated Emergency Preparedness Plan[48].

The Vision of the Koggala Industrial Zone in Sri Lanka is to minimise damages of off-site emergencies in the selected area and has a mission to convert said area into a region free of damages generated by disasters and other emergency situations. This Vision is included in the Integrated Emergency Preparedness Plan (IEPP). The plan identifies the major potential man-made and natural emergencies and the people who are primarily susceptible to emergencies, based on information on chemicals, climatic conditions, past major accidents and population.

The IEPP also analyses information on available resources and already adopted procedures to minimise damages during emergencies.

The preparation of the draft IEPP was carried out by the members of the Local Coordinating Group (LCG). Several sub-groups of the LCG were set-up to work on different thematic areas in consultation with the respective agencies. A number of LCG meetings were conducted during the preparation and development of the IEPP. In addition, final Stakeholder consultative meetings were held with the participation and active involvement of the Stakeholders to review the draft IEPP prior to its finalisation.

The Regional Disaster Management Coordinators of Galle, to which the Koggala industrial zone belongs representing the Disaster Management Centre (DMC) of the Ministry of Disaster Management and Human Rights, also participated in the final consultative meetings and gave the DMC's concurrence to incorporate and make use of the IEPP in their future programmes.

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48 Central Environmental Authority (Sri Lanka), Ministry of Environment and Natural Resources (Sri Lanka), UNEP. 2007. *Awareness and Preparedness of Environmental Emergencies at Local Level (APELL). Project in Sri Lanka – Final Report.*

Keys to Success

Successful plans in various communities have demonstrated that it is best for plans to be brief and including key concepts. These plans are then supplemented with appendices where detailed information can be provided. Successful plans typically include information such as specific contact details for key responders, action guides or checklists, resources and capabilities lists for responding agencies, mutual aid commitments, and clear statements regarding who provides information on behalf of all agencies regarding an incident that is underway or which has recently concluded.

Recommended tools for making changes in existing emergency plans and integrate into overall community preparedness plan.

Based on the information collected in the previous elements, the community preparedness plan can be developed following the Community Preparedness Plan template suggested in *Annex 2*, in case the competent authorities have designed no mandatory format.

When modifying the existing emergency plans to better reflect the roles and responsibilities of all community members and if no mandatory format is established in guidance or regulation, the completeness of the emergency plans can be checked against the "Elements of an Emergency Plan" and with the "Evaluation Tool", both presented in *Annex 3*.

ISO Standard 22397:2014, which provides guidelines for establishing partnering arrangements among organisations to manage multiple relationships for events impacting on societal security (*Chapter 5.6* and *Annex A*), may also be of value in resolving issues regarding responsibility during response activities.

Element 7 – Obtain Endorsement from Government Authorities

As government entities in most countries have the responsibility to provide emergency services established by law or regulation, written agreements to any proposed emergency plan changes must be obtained from local and higher levels of government as appropriate. The overall preparedness plan as well as elements such as mutual aid and other sorts of agreements, forms and activity specific plan annexes will need to be approved. Absent these approvals the emergency and preparedness plans are meaningless documents as no entity is committed to use it. A clearly documented endorsement is also critical when communicating with the community members and obtaining their general agreement on both the emergency and preparedness plan.

Bahia Blanca, Argentina: A case study on the involvement of the government in the APELL Process.

In Bahia Blanca, Argentina, local authorities and the private sector recognized the urgency to provide information on preventive and preparedness actions against risks and recognized the APELL process as a valid mechanism to support prevention and preparedness for emergencies in Bahia Blanca. As a consequence of the various accidents, both the municipality and the industries decided to reinforce the APELL process by including a full-time administrator supported by a team of collaborators to follow-up on tasks, coordinate and carry-out committees and community outreach.

Desired Outcome

Written endorsement of both the community emergency response and preparedness plan(s) from the competent governmental level.

Actions

Follow these suggested actions to complete Element 7:

- The Coordinating Group writes the community preparedness and emergency response plans;
- Begin arrangements for written agreements among participants in the emergency response plans where necessary and appropriate. These include but are not limited to topics such as mutual aid, asset request forms, incident reporting protocols and forms, agreements on public communication duties, identification and use of specialized response personnel and equipment;
- Prepare a standard presentation to be made to those officials from whom approval is needed to implement plan. This presentation should emphasize on-going community actions;
- Make presentations, hold meetings and review sessions;
- Obtain signature approvals or other formal adoption of the plan from the competent government level to demonstrate commitment to the plan.

Keys to Success

Close coordination is necessary to achieve the approval anticipated in Element 7. Negotiation and compromise may be critical skills that the Coordinating Group will need to create an all-hazards emergency response plan that can be approved. The gradual approval of elements of the plan or of specific annexes may be easier and more realistic than the global approval in one step.

India: A case study on a two-track approach implementation of APELL[49].

In India, APELL has been implemented in partnership with the National Safety Council of India since 1992. A two-track approach was used whereby endorsement efforts with national and local government proceeded simultaneously. The national level focused on raising national awareness, building national consensus, strengthening safety audit and risk assessment, and developing national guidelines. The local government effort focused on the needs identified in the communities.

One of the lasting outcomes was a new set of rules called «Chemical Accidents (Emergency Planning, Preparedness and Response) Rules», 1996, notified under the Environmental (Protection) Act 1986, to provide legal backing to the formation of APELL-like coordination groups called Local Crisis Groups (LCGs) in all industrial areas having hazardous installations, as well as strengthening their capabilities through training, equipment and networking. Furthermore, the APELL Process has been recommended in the National Disaster Management Guidelines on Chemical (Industrial) Disasters issued by the National Disaster Management Authority in April 2007.

49 National APELL Centre (India). *Indian Experience – Project Implementation* http://apell.eecentre.org/IndianExperienceAPELLProjectImplementation.pdf

3.4 Phase IV – Implementing, Disseminating & Testing

The APELL Process and the engagement effort never ends as invariably more and more people either become aware or are solicited by other Stakeholders or the Coordinating Group. This expanding universe of participants is desired and expected.

As new individuals and groups are added to the process, the Vision of Success will necessarily be reassessed. Successful Coordinating Groups will realize that revisiting the various elements will also help to promote consensus and participation, and stronger preparedness and emergency planning. Continued engagement of all Stakeholders associated with the APELL Process is ensured by communication, education and training targeted to the roles and responsibilities in the implementation of the Community Preparedness Plan. For such efforts, local government direct participation and support to the training efforts is necessary, for example through the involvement of emergency response personnel.

In addition, the ongoing evaluation of preparedness plans, typically using tools like exercises and drills, is routinely used to evaluate whether aspects of the plans require improvement or changes. APELL is a process rather than a programme with an end-point. It must be revised and renewed to maintain momentum.

Therefore ultimate success in the implementation of all elements of the APELL Process requires local government endorsement. For this reason *Element 7* must continue into Phase IV. Implementation, dissemination and testing of the APELL Process requires the participation of government authorities and this cannot be obtained without their endorsement of the plans being implemented.

Element 8 – Implement Community Preparedness Plans through Communicating, Educating and Training Community Members

The result of the planning process is the Community Preparedness Plan (*Element 6*). In some cases it may include only a few small-scale activities, while in other communities, it may take the form of a comprehensive disaster risk management programme or project. The focus of this Element is on implementing the communication, education and training activities reflected in the Community Preparedness Plan.

Effective communication is an important element of the APELL Process[50]. It plays an important role in raising awareness in a community and in training the eventual users of the emergency preparedness plans on specific skills. Various projects that have been set up to achieve the Vision of Success may involve training. This is not necessarily technical skill training, although that may be an important part of a project being conducted under *Element 5*. Instead, it can also entail communication and training on how the plans or projects work.

Communication and training on the Community Preparedness Plans should start from the background of risk, hazard and vulnerability so that the need for preparedness efforts is credible and important.

It is important to remind that communication during an emergency is different from communication that relates to preparedness.

50 *Supplementary Guidance 3* contains useful information regarding communication generally and the use of social media.

Effective communication during an emergency is the role of the government authorities, who are required to provide accurate information to all those concerned. The channels of information flow are defined in the emergency response plan in preparation for any eventual emergency situation, and must be respected during an emergency.

Communication, education, and training target the following Stakeholder groups:

- **Local Population and Interest Groups**: Educating the public on their roles and responsibilities during an emergency, where to turn for additional information, and how and when to evacuate, if necessary, are among the important elements. As part of the preparedness plan, the public should be educated on first aid measures, extra supplies required in an emergency, family communication and reuniting procedures, and specialized skills such as sheltering-in-place. A degree of self-reliance needs to be impressed on the public so that they are not fully dependent on first responders during an emergency. A crucial aspect of this training will be the possible community member role as emergency responder and information that should be provided so that their actions can contribute to the emergency response plans.
- **Local Industry**: The owners and managers of fixed industrial facilities or hazardous material transportation entities must be educated on their responsibility and the community expectation that they will practice appropriate accident prevention and emergency response procedures for their operations. For fixed facilities, this includes participation in the education of the public and government on the risks, protective measures and response procedures appropriate to the hazardous materials and operations in the facility. The APELL Process relies on the full commitment of plant managers to ensure that they devise, implement and periodically test accident prevention and emergency preparedness plans. In a fully functioning APELL Process, all facilities in a community must be fully committed to appropriate and up-to-date accident prevention and emergency preparedness procedures.
- **Local Government Agencies**: It is important to educate government agencies about the all-hazards or emergency response plans, with a focus on how to coordinate with members of the public, industry, multiple agencies and their specific roles during a complex emergency. Any plans for asset sharing and mutual aid should be included as these plans all may have a direct impact on individual responders. All responders, not just commanders or leaders of agencies, should have the key concepts of the plans clearly in mind.

Desired Outcome

Community members will be fully informed about the hazards and risks present in their community, their capabilities and measures to take that enhance resilience, along with the ongoing projects or programmes to fill gaps and achieve the Vision of Success. They will understand their roles and responsibilities in preparedness for emergencies and during any emergencies that occur, as well as their role and responsibilities in the projects and programmes. The plan is being implemented.

Actions

Follow these suggested actions to complete *Element 8*:

- Prepare a standard emergency preparedness brochure for distribution to all residents. This should contain specific information for

Examples of successful communication efforts include:

- One regional planning team included a half-day seminar to educate elected leaders and governmental department heads on their roles, including media relations. Principal spokespersons for industry and all key response agencies were assigned and trained.

- One planning group in the U.S. used this sort of training to implement a project to increase the number of available responders as part of their Vision of Success. They «cross-trained» personnel from various agencies, so that, for example, the environmental resources department was trained by fire fighters in the use of protective clothing and breathing apparatus, while the fire fighters were trained by the environmental and industry experts on airborne contaminant monitoring strategies and practices on containment and diversion diking. The number of extra responders "created" by this project was a measurable outcome showing progress towards their Vision of Success. In the context of this Element, this training served the purpose of creating additional awareness on the cooperation necessary between various departments.

- One community extended the concept to reach other community members by establishing «speaking teams» of public and private officials, who visited public group meetings, schools, and other groups to discuss the general responsibilities of these groups and individuals under the community's preparedness plan and generally how the Coordinating Group was demonstrating progress towards the Vision of Success through use of the APELL programme.

residents within higher hazard zones or those that potentially face unusual situations. This brochure should provide information on risks, hazards and vulnerabilities present in the community as a tool to promote mitigation and preparedness actions by those that are most vulnerable;

- Distribute the brochure by most appropriate means with a wide reach (mail, door-to-door deliveries, etc.);
- Prepare a standard media kit that identifies local government and facility information contacts, provides background on the facilities in the community and the all-hazards plan. The kit should inform the media on where and how to get information during an emergency;
- Conduct a media briefing/training session to present the kit and explain what is expected of the media during an emergency. This will need to be often repeated;
- Give frequent presentations to Stakeholder groups to refresh and educate newly involved people. Updated information should be presented as appropriate. These communication efforts will need to begin with the background of risks, hazards and vulnerabilities the community faces in order to establish a context for the messages. Information on mitigation and preparedness expectations and initiatives should be included;
- Arrange plant tours, attendance at training sessions and participation in exercises;
- Implement other elements of a public education programme as described earlier. Options used by successful Coordinating Groups include:
  - A speaker's bureau for local civic groups, school assemblies, etc.;
  - A hazardous materials advisory committee;
  - Promoting media coverage of exercises and training activities;
  - Presentations to local officials and others.
- Compile a list of agencies or groups participating in the all-hazards or other plans;

Barranquilla, Colombia: A case study on the implementation of the Community Awareness Plan[51].

Through an integrated multiple Stakeholder structure, APELL Barranquilla (Colombia) has managed to successfully develop an innovative variety of activities for risk management, preparedness and awareness at local level.

In order to implement the preparedness plan, the APELL Process in Barranquilla has established a formal communication structure that includes a Dissemination Committee responsible for spreading the APELL Philosophy both internally in participating companies and institutions, and externally, to the community in general. This Dissemination Committee is also responsible for the Community Awareness Programme, which focuses on those neighbourhoods located in the industrial area and around sites chosen for emergency drills. One benefit of this Awareness Programme is that the industry is being perceived by the community not only as an economic entity but also as supportive and caring for their welfare.

Many ways of communication are used. Another important activity that is being developed corresponds to working with educational institutions located in the industrial area of Barranquilla focusing on the development of the School Prevention Plan. The first phase of this activity was the development of a training programme aimed at teachers, which culminated in the release of the Plan and an emergency drill in a school, which was attended by the supporting institutions, the Local Emergency Committee and industry group. Subsequently five more schools were supported in the development of such a plan.

In Barranquilla, community outreach and more particularly the use of social media, YouTube Channel, Facebook Page, Twitter Account, Website[52] and paper brochures[53] are well developed to reach a maximum of community members.

51 http://apellbarranquilla.org

52 YouTube Channel: https://www.youtube.com/channel/UCucYOG297dNlovVWB63JJUQ
Facebook page: https://www.facebook.com/pages/APELL-Barranquilla/212665848872024
Twitter Account: https://twitter.com/APELL_BQ
Website: http://apellbarranquilla.org

53 In particular, APELL Barranquilla an "Apelito brochure": http://issuu.com/madiaz91/docs/cartillapaellpdf/3?e=0

Mt. Merapi – Java, Indonesia: A case study on emergency communications systems

In the community near Mount Merapi (Java) the community created an information system for risk mitigation. Mt. Merapi is a particularly dangerous volcano. An eruption in 2010 killed nearly 400 people and rendered more than 400,000 homeless. In the last twenty years several eruptions have taken many lives and over the last century, over 1,700 have died. While the risk was clear to the local communities, the ability to provide warnings on a rapid enough basis to save lives was lacking even though governmental warning systems were in place.

Following an eruption in 2006, many local communities felt that the warnings coming from mainstream media and government sources were wrong, slow and unhelpful. Instead, they wanted to leverage what people in the area observed and understood about the behaviour of the volcano so that rapid and accurate warnings could be issued directly to the communities at greatest risk.

Responding to this risk and recognizing that social media was well adopted by the young population – almost half are under the age of 25 – JALIN Merapi was created. The system collects information on the behaviour of the volcano from SMS, Facebook and Twitter. The information is validated and then, if found to be reliable, it is broadcast through local radio and other local media.

The radio stations used are quite small and low power. Typically they serve a single village. As such, they are viewed as reliable and authoritative. A warning broadcast by these stations is heeded. In addition, the individual stations rely on a network of volunteers and NGOs that communicate directly to the stations via social media. This allows information in real-time to be broadcast to the local community as the emergency develops and then during rescue and recovery.

- Make presentations to these agencies and groups to explain the plan, their roles and the type of training they should institute and/or receive;
- Make presentations to members of the public regarding their roles and responsibilities;
- Identify who must be trained and prepare a training schedule;
- Develop and implement training sessions where necessary. In cases where local authorities are not equipped to train key people, the Coordinating Group may need to look to industry and other sources to devise and implement this training.

The use of hands-on training for skills such as air monitoring, use of communication and other specialized equipment, traffic control, and medical assistance should be evaluated.

Keys to Success

The success of the APELL Process depends on open and honest communication between and within the Coordinating Group, Stakeholders and others in the community. Communication to and participation of all Stakeholders is a key component of each of the APELL elements, and is critical to building community awareness of the hazards and risks present and an honest appraisal of capabilities. The members of the community have a right to be informed about and to participate at all times in preparedness planning for accidents at facilities with hazardous materials.

The Coordinating Group should have a definite programme for presentations and training on the assumptions, content and use of the preparedness and all-hazards plans, directed to emergency responders and the members of the public on their roles and responsibilities. The same is true for groups that will participate in the various projects the Coordinating Group may undertake.

Recommended tools for implementing Community Preparedness Plans through Communicating, Educating and Training Community Members.

Tools to reach out the community include publications, curricula, modules and presentations, e-learning, performance and the arts, games and competitions, audio and video materials, web resources, social media, and telecommunication.

Additional elements on communication within the APELL Process are further developed in *Chapter 4* and in the *Supplementary Guidance 3*.

Element 9 – Establish Procedures for Periodic Testing, Review and Updating of the Plans

The Coordinating Group is expected to establish procedures for ensuring periodic improvements to their emergency preparedness and response plans. It is important for the community to have a community preparedness plan that is routinely revised and updated as capabilities change and grow through the APELL Process. Existing emergency response plans should also be routinely evaluated through exercises and drills. If a community all-hazards plan is prepared, that must also go through the same process of routine evaluation.

The performance of specific elements of the plans, such as communication or incident command should be tested through focused table top or full-scale field exercises. The scenarios should be specific and robust enough to test activities that are not routinely experienced in the community[54].

Exercises are one successful way to keep the APELL Process active and to keep Stakeholders engaged. It is very important that the exercises be relevant to the community's Vision of Success as established under *Element 4*.

As emergency and preparedness plans are more than conducting a response or demonstrating skills, an exercise must be viewed as an activity designed to produce measurable outcomes based on performance during the exercise. An exercise is only a tool and not an end point in preparedness.

An exercise must challenge the participants as the objective is to find areas that need to be modified, emphasized or otherwise changed to improve in the emergency plan, training or another element of the community's preparedness planning in line with the Vision of Success. Exercise performance should not be expected to be perfect but should be used to learn and improve.

54 See *Supplementary Guidance 3* for information on exercise design. See also the TransAPELL Handbook and the "Hazardville" exercise example: http://transapell.net

China: A case study on an emergency drill in an Industry Park[55]

An APELL process implemented in Zhangjiagang Chemical Industry Park, China, introduced the Industrial Park to joint emergency drills. Previously, only individual chemical companies did drills. The APELL Process implemented a first of its kind joint emergency drill that involved four nearby chemical companies. Concerns that were not disclosed in a single company's emergency drill were found through the joint planning and testing.

Prior to the emergency exercise, a preparatory training workshop took place to present an overview of the exercise's background, objectives, planning, procedures, actors involved, planners and observers, as well as the location of the observation sites.

The emergency exercise at the ZFTZ intended to test the improved ZFTZ's integrated emergency plan, which was reviewed by international experts prior to the exercise. The exercise was designed to assess the capability of government and industry personnel to implement the emergency response plan quickly, orderly and effectively. The emergency exercise also assessed coordination and communication between the different companies and agencies involved.

Prior to conducting the exercise, a thorough exercise plan was developed. A number of preparatory steps had to be completed before, such as notifying neighbouring facilities and businesses, checking the availability of response equipment, and determining who would participate in and observe the exercise. The desired actions to be taken by exercise participants were outlined in a plan, so that the actions undertaken by participants could be evaluated against them. However, the details of the emergency exercise plan were not distributed to its participants, who were required to follow the emergency plans to know how they react to the exercise scenario.

The exercise was then followed by the second part of the workshop, which included reports and presentations by each group and focused on the evaluation and discussion of the gaps identified during the exercise and how to improve the integrated emergency preparedness in the chemical park.

During the exercise, some participants were faced with several challenges, including a lack of information on the chemical that caused the accident, an inability to reach the emergency response centre, an ineffective communication between various actors, and an absence of a common communication channel for different companies and authorities.

All participants agreed on the importance of effective communication between the various actors, including the community, in improving the overall preparedness effort. Measures for improvements were identified and discussed in a very open atmosphere of communication and collaboration, paving the way for the continuity of the integrated preparedness process.

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55 UNEP, 2011. *Promoting Safer Operations and Emergency Preparedness in the Value Chain of the Chemical Sector: Case Study on APELL Implementation in China* http://apell.eecentre.org/APELLCaseStudyChina.pdf

Desired Outcome

Table top exercises or full scale drills are undertaken following an established procedure for periodic testing, meaningfully evaluating the adequacy of plans and/or training and to demonstrate progress towards the Vision of Success.

Actions

Follow these suggested actions to complete *Element 9*:

- Agree on a procedure for periodic testing of the preparedness and response plans and objectives of the testing;
- Designate a committee to prepare an exercise scenario. People that will participate in the exercise should not be members of the committee;
- While not always necessary, it is recommended that the exercise utilize the tools, rooms or other facilities that might be used in an actual emergency provided that the exercise scenario accommodates these;
- Prepare a written scenario which identifies objectives of the drill, components of the plan to be tested, expected participants, sequence of events, and simulated hazard levels;
- Prepare a written safety plan for the exercise so that participants have appropriate safety equipment and do not encounter unknown, hazardous conditions;
- Designate a group of non-participating observers to evaluate the test drill using prepared evaluation checklists;
- Using appropriate local officials, media and other outlets, alert the public and all participants that a test of the plan is scheduled. It is crucial that the public be informed about the exercise and whether it will impact their daily routine. Often members of the public are recruited to fill specific roles during an exercise. If the exercise is intended to test medical response, then members of the public can be used to simulated victims of the incident;
- Conduct the test using the prepared scenario;
- Immediately after the exercise, hold evaluation sessions to collect the impressions of the responders and to discuss the results of the observer's evaluations;
- Assign appropriate parties to further evaluate and correct plans or training deficiencies;
- Set objectives for improvement of the plans.

Keys to Success

As an exercise is being designed, the group responsible for planning should describe the elements of the plans being tested and what outcomes or responder behaviours are anticipated if the plans are used as intended. Differences between actual outcomes or responder behaviour and those anticipated need to be evaluated to determine if the cause is inadequate or unintended aspects of the exercise design, or a failure of the plan or training on the plan. In any event, this evaluation should be used by the Coordinating Group to modify, correct or improve the community's plans.

Recommended tools for establishing procedures for periodic testing, review and updating of the plans.

Further guidance on how to design an exercise is provided in *Supplementary Guidance 3*.

In addition to the evaluation of the plans through exercises, one way to measure the success of APELL is the monitoring and evaluation of the process through the use of participatory monitoring and evaluation tools. These include *Participatory Rural Appraisal*, *Beneficiary Feedback*, *Key Informant Interviews*, *Most Significant Change Technique*, and *Outcome Mapping*.

Supplementary Guidance 4 provides information about how Coordinating Groups can measure their progress and determine if the actions they are taking continue to achieve the desired outcomes.

3.5 Phase V – Maintaining APELL

It is critical for the success of the APELL Process that it not be viewed as something that is ever completed. Activities and programmes designed to make progress towards the Vision of Success will always be refined and improved as they are brought to more and more members of the community. Different members of the community will need to be approached in different ways as activities or programmes are designed. Provided that progress towards a Vision of Success always drives the process, progress towards greater preparedness levels will happen.

As the APELL Process is flexible and adaptable, improvements in preparedness planning to focus on specific community needs, changes in capabilities or newly identified hazards and risks, are expected and desired.

Element 10 – Maintain APELL through Continuous Improvement

The APELL Process is cyclical in nature with action, evaluation, and adjustment phases. In the APELL Process continuous improvement is the process of evaluating the results of each of the Elements, including projects and activities designed to achieve the Vision of Success, and to determine where changes can be made that may improve the outcomes of those Elements. This is not a linear process: the Coordinating Group is expected to return to each of the elements when relevant as information and experience is gained.

All of the various Elements of the APELL Process should be revisited periodically. For example, it takes constant effort to identify Stakeholders and involve them in the Process. Conditions of risk, hazard and vulnerability will change and periodic review is important. As new technologies become available to map and assess risks, hazards and vulnerabilities, they should be evaluated and adopted as appropriate to the community.

Looking to the desired outcomes in each of the Elements, the Coordinating Group should evaluate whether improvements can be made. This is intended to be a continuous process of incremental change rather than major programmatic shifts. While it is possible that a significant change in the risks present in the community or in the community's capabilities could cause the outcomes of several Elements to undergo fairly radical modification, this is not normally expected. Inevitably, it will become apparent to the Coordinating Group that improvements or changes can be made in the way each Element was handled that may produce results that enable more sophisticated preparedness efforts.

This Element is not based solely on evaluation of the outcomes resulting from *Element 9*. As the Coordinating Group revisits each Element it should determine if the stated "desired outcome" was obtained in the context of their community. The way in which each Element was approached during the initial efforts of the Coordinating Group would have been based on less than perfect information and little to no experience. As efforts are made to make progress towards achieving the Vision of Success it is certain that opportunities for improvement will be identified.

In addition to maintaining the APELL Process itself, the plans and other efforts produced by the Process are to be maintained. Evaluation and modification of all materials that are used in or produced by the APELL Process is necessary and anticipated. The APELL Process must be dynamic or the plans generated quickly become stale and irrelevant.

There is literally no end to the activities and projects that can be implemented to achieve the Vision of Success. Each of these has the potential to provide metrics that will identify opportunities for improvement. Besides aiding in the re-evaluation of the Vision of Success periodically, it is important to continue the process of establishing metrics and results from the activities and projects. As community awareness is a critical factor in APELL, simply measuring community awareness of risks, hazards and vulnerabilities along with roles and responsibilities under the preparedness plans is a useful activity. Preparedness understanding will degrade rapidly if not reinforced.

Desired Outcome

Each of the Elements is evaluated to identify improvements as new information becomes available and experience is gained.

Actions

Follow these suggested actions to complete *Element 10*:

- Determine if the desired outcomes have been achieved for each Element. For each of the Elements establish meaningful metrics in terms of relevancy to the community. These are then evaluated to determine whether modification and improvement is appropriate;
- As projects are developed, carefully establish metrics for activities and programmes designed to achieve the Vision of Success;
- Evaluate the information gained from the metrics to determine if progress towards the Vision of Success is being achieved;
- If the information from evaluating metrics suggests that the desired outcome for an Element has not been achieved or could be achieved in a fashion more effective for the community, then make adjustments and repeat;
- Periodically repeat the work that went into all of the Elements looking for opportunities for improvement.

Key to Success

- Recognize that emergency preparedness cannot be static. It must be refreshed on a frequent basis. All plans can be improved;
- Establish meaningful metrics relevant to the Vision of Success.

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Communication throughout the APELL Process

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It is important that the Coordinating Group and industry, local authority or community leaders view it as their responsibility to accurately communicate about hazards, risks and capabilities in the community. This is not a one-time event. Instead it requires relationship building and maintenance through two-way communication.

It is important to understand the audience for any communication effort. The audience may be defined by geographic proximity to the risk or by factors such as language, ethnicity, and religious affiliation. Vulnerability due to age or infirmity, and existing skills or knowledge, such as may be found among workers within a facility, will also define audiences. Different messages and often, different messengers are required to build relationships and communicate with these audiences in a fashion that they will find credible.

Existing community communication systems need to be understood and used when appropriate to the message. These may be religious or civic groups that routinely provide information on a variety of topics to their audiences. Educational institutions and schools may reach an entirely different audience than elected officials, sports associations or clubs. To the extent that the Coordinating Group feels these systems are reliable and trusted, they should be used to communicate hazards and risk.

This will require some degree of education for the messengers used by these systems, as their level of sophistication on technological or natural hazards is uncertain. It is also important to remember that the Coordinating Group may need to provide information and education on emergency preparedness efforts and expectations to these proxy groups before they will be able to effectively communicate to their constituencies.

Industrial facilities are fundamentally responsible for communication to the community regarding the hazards and risks presented by the hazardous materials they make or handle. The message should include information on the benefits of the facility to the community, the number of employees and other related factors. But foremost, the message must reliably and honestly include information on incident prevention programmes, incident history and potential impacts on the community. The Coordinating Group is responsible for finding outside assistance for a facility that is struggling with how to present this information or refuses to do so. If a facility refuses to participate then it is the responsibility of the Coordinating Group to present related information to the best of its ability.

Information on risks presented should accurately depict the impact on the community. If the impact

is primarily physical, such as a fire or an explosion, that must be explained. If the impact is primarily health related, such as inhalation toxicity, it must also be explained. Such a presentation must be linked with recommendations and information on preparedness actions appropriate to the audience involved. This action-oriented information must include the steps members of the community should take to protect themselves. This may mean evacuation or shelter-in-place techniques all of which can only be presented to an audience when properly defined and agreed upon by the Coordinating Group and Stakeholders and when the audience is motivated to heed the advice by virtue of the risk presentation.

When presenting information to any audience it is important to avoid placing people in the role of passive victim or in a combative role against a facility. It is typically true that nobody has voluntarily accepted whatever risk is present. Nonetheless, everyone can pursue actions to better prepare for potential accidents and the Coordinating Group must highlight and seize these opportunities.

The Coordinating Group must speak with a single voice. Whether someone internal to the group or an external expert, only one official source of communication speaks on behalf of the Coordinating Group. Nothing destroys credibility faster than conflicting messages to the public, so the Coordinating Group needs to jointly develop messages about how the APELL Process is planned and implemented to which all members must agree. Fact sheets and other basic information about the community, hazardous materials, local industry and natural hazards are typically a good place to start.

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Expanding Support for the APELL Programme

APELL processes throughout the world have resulted in long-lasting partnerships among industry, local communities and authorities. There are many reasons for this, but most frequently it has been an initiative for continuous engagement of the APELL Champion.

APELL is a non-regulatory process. Nonetheless, national, international and professional standards and in some cases, national regulations, greatly influence the potential success of any local community. The APELL Champion and Coordinating Group may find that reference to these sources helps to build support[56].

At the national level APELL can be institutionalised into national regulations and policies especially when there is demonstrated success. Examples where local success has translated into national policy include India and Barranquilla, Colombia[57].

There is a difference between improved community preparedness as a national concept and the focused implementation activities in a particular community. Implementation will grow gradually and become more and more specific as the APELL Process is driven by local communities and services their needs. Efforts at the national level to dictate outcomes are likely to be counterproductive because they will not address the needs of specific communities and because the people tasked with performing the work necessary to reach these outcomes will not have ownership or commitment to the outcomes.

At the national level, it is important that external partners strategically support the APELL Process. Such strategic partners could include, but are not limited to, entities involved in the manufacture or transport of dangerous goods. In addition to that, there may be government agencies or private businesses with an interest in worker safety or environmental protection. Businesses involved in tourism, education or economic growth often see value in the preparedness planning conducted in the APELL Process. Programmes to implement the APELL Process are fragile at the beginning and can easily lose focus and momentum. A strategic partner is one that works to promote the APELL Process but who does not attempt to dictate the outcomes. Demonstrating success using meaningful metrics is crucial to attract strategic partners.

A legislative framework that supports incident prevention, emergency response, training on accidents involving hazardous materials and community preparedness, is always useful. More important yet is that there is message and programme coordination by the national agencies involved in emergency planning and response, incident prevention and preparedness. This may be accomplished by formal regulation as well as policy and guidance.

Brazil: A case study of APELL as a tool to raise interest on preparedness for industrial accidents.

In Brazil there is no national legislation covering awareness and preparedness for industrial accidents. Nevertheless, a large number of regional or local plans actually exist, voluntarily organised by companies, with the participation of government authorities, but not in a binding way. APELL has increased the interest of local governments to participate in emergency activities because it is seen as a UN programme, politically more appealing than simply joining an industry programme.

A very high level of national agency coordination is critical during all phases of emergency management, including on the ground during emergencies. The national agencies have an obligation to create awareness of and educate local planners and responders on the elements of national emergency plans with particular emphasis on the duties and expectations of

56 For example: SEVESO; US 'Emergency Planning, Community Right-to-Know' Act; India's legislation (*http://envfor.nic.in/divisions/hsmd/hsm96.html*); various Conventions (e.g. ILO) and voluntary or professional guidelines on 'safety' and 'safe operation'; the Flexible Framework for Addressing Chemical Accident Prevention and Preparedness; OECD Safety Performance Indicators.

57 *http://ndma.gov.in/images/guidelines/chemicaldisaster.pdf* p.10 and *National APELL Centre, Indian Experience – Project Implementation* (Phase I); UNEP DTIE's APELL/TransAPELL Programme Worldwide, UNEP, DTIE, NSCI. *http://apellbarranquilla.org/index.php?option=com_content&view=article&id=90&Itemid=102*

the national agencies on the performance and capabilities of local agencies during environmental emergencies.

At the international level UNEP plays a catalytic role to promote the adoption of APELL. The APELL Programme was established in 1986 after a series of industrial accidents with serious adverse impacts on the environment and communities. The first edition of the APELL Handbook was drafted based on the "Community Awareness and Emergency Response" Programme developed by the US Chemical Manufacturers Association. UNEP continues to play a role in:

- Defining APELL, and co-ordinating the programme;
- Disseminating information on APELL;
- Seeking commitment from industry to participate;
- Promoting regional workshops to help local authorities and leaders understand and implement the APELL process;
- Maintaining a regional/international APELL network;
- Supporting the parallel development of policies and programmes on chemical accident prevention and preparedness at national level[58].

In 2011 the APELL Programme celebrated its 25th Anniversary, in Beijing, China. The 3-day event, which brought together 170 participants, was a unique opportunity to collect and share experience among APELL Practitioners. On the basis of this event, a Brochure[59] comprising Case Studies of APELL Implementation was prepared. Some of these Case Studies are available in *Annex 5*.

The APELL Programme network allows sharing of experiences and knowledge on how to achieve more resilient societies whether local risk levels are low or very high.

UNEP has established a Global APELL Platform that includes APELL tools, guidance, case studies, news and events, contact details of APELL Centres and other information relevant for learning more about APELL. The Global APELL Platform is the online window to the APELL Programme. It is structured in a user-friendly format, providing quick links to publications (including translations) and tools for risk assessment and emergency planning. It also contains information on worldwide implementation, latest developments and upcoming events.

Please refer to: *http://apell.eecentre.org*.

The website is established as a sub-site of the Joint UNEP/OCHA Environmental Emergencies Centre. The Environmental Emergencies Centre (EEC) is an online preparedness tool designed to enable an effective response to environmental emergencies. The EEC is a one-stop-shop of information, tools, trainings and guidance to inform a more prepared and effective response to environmental emergencies: the site contains on-line courses *http://www.eecentre.org*.

There is a great deal of international level support for the APELL Process. International agencies and experts working in this field such as UNEP, OCHA, OECD, International Finance Corporation (IFC) as well as experts working in this field and international industry associations such as ICMM and ICCA all produce information that may be valuable. Both national and local groups can benefit from publicly available bulletins and internet sites prepared by these groups to obtain relevant data and to visualise the roles that may be played by industry, trade or interest groups and agencies located outside of the local community.

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58 UNEP Flexible Framework Initiative for Addressing Chemical Accident Prevention and Preparedness (CAPP) provides guidance for governments in a flexible and modular fashion. The two processes (APELL and National CAPP Programmes) are complementary.

59 UNEP, 2013. *Commemorating 25 Years of Awareness and Preparedness for Emergencies at Local Level (APELL): Achievements and Way Forward* *http://apell.eecentre.org/APELL25brochure.pdf* A Video has also been developed and is available on YouTube and on *http://apell.eecentre.org*.

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Annexes

Supplementary Guidance

Glossary

A1 Industrial Accidents

"Examples of Industrial Accidents"

Toxic Release - Seveso, Italy – 1976

The release of dioxins resulted in the exposure of thousands, the deaths of tens of thousands of animals and long-term contamination.

Toxic Release - Bhopal, India - 1984

Gas release resulting in the death of at least 3000 people and 200,000 to 600,000 injuries.

Explosions - Mexico City, Mexico – 1984

Major fire and a series of catastrophic explosions at a LPG Terminal. 650 individuals were killed, more than 6,000 were injured, and the terminal was destroyed.

Spill - Baia Mare, Romania – 2000

A cyanide spill from a mining operation resulted in massive fish kills and the contamination of drinking water supplies for millions of people.

Ammonium Nitrate Explosion - Toulouse, France – 2001

Ammonium nitrate explosion. 31 people died and more than 3,000 injured.

Gas explosion – Lyon, France 2008

Natural gas explosion. Between 500 and 1,000 people were evacuated, including children school's staff and day care nursery. A fire fighter was killed and forty injured.

Explosive dust accident – New Cumberland, West Virginia 2010

Accident at a facility that milled and processed scrap titanium and zirconium metal killed three employees and injured a contractor. The incident is one of nine serious combustible dust incidents investigated by the US Chemical Safety Board since 2003. These explosions and fires caused 36 deaths and 128 injuries.

Chemical accident during maintenance – Horlivka, Ukraine 2013

During the overhaul of plant, a liquid ammonia pipe was damaged and gas ammonia escaped. 23 people underwent medical care, with 22 admitted to two city hospitals. 5 people died from exposure.

Ammonium Nitrate explosion – West, Texas 2013

An ammonium nitrate explosion occurred at the West Fertilizer Company storage and distribution facility. Fifteen people were killed, more than 160 were injured, and more than 150 buildings were damaged or destroyed.

Pipeline leak and fire – Tema, Ghana 2014

Pipeline transporting naphtha leaked and then exploded into a sudden fire killing one and injuring several repair workers and responders.

A2 Elements of a Community Preparedness Plan

Brief description of the community

- Location, population, livelihood, community in relation to other villages (significance of the community)

Community Disaster Situation

- Summary of Disaster History and Risk Assessment Results
- People and other elements at risk in the community
- Reasons for risk

Structure for disaster risk management and key Stakeholders

- Command and control mechanisms along with overall incident command procedures
- Any group that has a role in the management of disasters is a Stakeholder

Objectives and Targets of the Community Preparedness Plan

- Target number of population or families to cover; target percentage decrease in deaths and damages to property.

Strategies and activities for Risk Reduction

- Pre-emergency phase, post-disaster risk reduction activities
- Community Emergency Warning Systems; evacuation sites, routes and procedures for families and animals; evacuation centre management, drills and simulation exercises
- Structural and non-structural measures such as strengthening of houses and river embankments, community health and sanitation, reforestation activities, diversification of livelihood and income sources, sustainable agriculture training, and projects etc.

Implementation plan

- Responsibilities
- Budget and resource needs
- Timeline
- Milestones

Roles and responsibilities

- Persons, committees and organisations to be in-charge of particular functions and activities;
- Relationships of persons, committees and organisations. An organisational structure to implement the plan may be drawn as needed.

Monitoring and evaluation mechanism

Plan update schedule

A3 Elements of an Emergency Response Plan[60]

This list can be used to review existing emergency response plans to determine where work is needed relative to a coordinated response. The Coordinating Group can use this list to review any existing community plan for improvements or as a framework to develop a new integrated community plan where one does not exist. In areas where core elements do not exist or are minimal, the Coordinating Group can use this list in order to set priorities for developing and training core elements as a basic foundation for the APELL Process. Where basic core elements simply do not exist, industry may find it necessary to provide the resources for insuring an appropriate basis for emergency response in the local area.

Review each item and evaluate its status in accordance with the key provided below.

Organisational Responsibilities

- Identify key participants and describe the role of each
- Identify by title the person in charge of emergency response
- Define relationships among key participants including who takes the lead for which actions
- Describe organisations outside the community that could be called upon for additional assistance
- Define the authority/responsibility interfaces between government and industry

Risk Evaluation

- Identify the types and locations of hazards the community can face
- Identify zones of impact and number of people at risk
- Classify severity of impact in accordance with the level of emergency response that will be needed

Notification Procedures and Communication Systems

- Identify 24-hour notification means to first responders, e.g., telephone or in absence of reliable telephone system some other means such as beeper/radio
- Identify 24-hour notification means to officials who can provide direction and control to the response effort and who can authorize evacuation
- In this case, redundancy is the inclusion of extra components that are not strictly necessary to basic functioning but which are crucial in case of failure in other components. The idea is to avoid single points of failure by having alternative equipment, systems or procedures
- Describe the mutually agreed format and content for initial notification messages
- Describe means for emergency responders to call for additional assistance
- Describe the means for notifying the public and identify, by title, the person responsible for notifying the public
- Describe the standard, pre-planned message formats and signals available for notifying the public
- Describe how the Coordinating Group will ensure that the public understands and responds to these signals.

Emergency Equipment and Facilities

- Identify command posts for response group

60 There are numerous sources for lists and examples of emergency response plan elements. This material is based upon the Hazardous Materials Emergency Planning Guide, prepared by the US National Response Team as NRT-1. Many other countries and agencies have excellent materials that should be considered if relevant. Components of an emergency response plan – Appendix 1 of APELL for Mining (checklist). See also annexes of the first edition of this Handbook.

- Describe facilities available including office space, communications, emergency supplies
- List the emergency equipment available at the industrial facilities, police, fire, public works, health and disaster preparedness departments
- Describe the interface with medical facilities including current disaster plans, first aid stations, hospitals, clinics, ambulance services
- Describe hazardous material monitoring equipment available
- List protective equipment (respirators, protective clothing, etc.) available
- List the written agreements that exist for mutual aid, specialized assistance, etc.

Assessment of Capabilities

- Identify who is responsible for determining potential or actual extent of hazard for each type of emergency (natural, chemical, etc.)
- Describe the procedures to be used to assess the extent of hazard
- Describe the capabilities of participants on assessment teams
- Describe the monitoring equipment available to assess the hazard
- Identify experienced personal resources that may be called upon to augment local area resources

Protective Action Procedures

- Identify by title the person who can authorize evacuation or sheltering
- Describe the procedure to be used to determine if protective actions are required
- Identify the group(s) responsible for conducting evacuation including notification, transport, traffic control, access control and verification of evacuation
- Describe the arrangements for special facilities (i.e., schools, nursing homes, handicapped, etc.)
- Describe the arrangements in place for reception centres/shelters for evacuees
- Describe the method for determining when protective actions are no longer needed

Public Education and Information

- Identify by title the principal spokesperson for each key group who will communicate with the media and the public during an emergency
- Describe the method for disseminating information to the media and public during an emergency including points of contact and briefing locations
- Describe the public education and community awareness programme to be conducted periodically in order to ensure that the public fully understands how to respond to an emergency situation

Post-emergency Procedures

- Identify by title the person responsible for determining that the emergency is over and for authorizing re-entry
- Describe methods to ensure that unauthorized entry will not occur
- Describe the method to be used to declare that the emergency is over
- Describe procedures to be used to return to normal including responsibility for clean-up
- Describe methods to continue monitoring an affected area
- Describe the method for investigating and documenting the emergency and evaluating the response

Training and Drills

- Identify the key participants who must be trained, who will train them and how and who will ensure that key participants can respond properly in an emergency
- Identify by title the person in each group responsible for such training
- Describe annual training programmes
- Describe the drill schedule including aspects requiring periodic drills
- Describe the training available to first responders in the use of protective equipment
- Describe how the plan is tested periodically
- Describe frequency and extent of

communications tests

- Describe frequency and extent of public notification tests, and evaluation of its effectiveness
- Describe the frequency and extent of training and update briefings on hazardous materials for first responders

Programme/Plan Maintenance

- Identify by title the person responsible within each group for maintaining an updated plan
- Describe the method for an annual review and revision of the plan
- Describe the method for incorporating lessons learned from drills and tests into the plan.

The Matrix which follows may be used for tracking the analysis of these elements.

Emergency Response Plan Evaluation Matrix

	Regional				Local Governments (Country / City / Town)							Other Plans (Industrial / Institutional)		
Plans Evaluated														
Planning Elements														
Organisational Responsibilities														
Risk Evaluation														
Notification Procedures and Communications Systems														
Core Elements in Place and Emergency Equipment and Facilities Readiness														
Assessment Capabilities														
Protective Action Procedures														
Public Education and Information														
Post-Emergency Procedures														
Training and Drills														
Programme Maintenance														

KEY:

A - Acceptable
B - Minimal work needed
C - Substantial work needed
N - Not applicable

A4 Further Guidance and Information

The User(s) of this Handbook may consider some of the below listed references useful in the implementation of the APELL Process. User(s) of the Handbook is advised that these tools and references may be used in combination or not at all depending upon the local situation and Vision of Success outlined for their particular APELL Process.

References Relevant to Partnership Building

Accountability, 2005. *From Words to Action: The Stakeholders Engagement Manual*. http://www.accountability.org/images/content/2/0/208.pdf - Manual developed with UNEP and Stakeholder Research Associates providing step-by-step practical guidance at every stage of engagement. In particular, the manual provides guidance and templates to develop a Stakeholder Map, Stakeholder Influence Dependency Matrix, and Stakeholder Profile.

Community Places, 2010. *Community Planning Toolkit – Community Engagement*. http://www.communityplanningtoolkit.org/sites/default/files/Engagement.pdf - Section of the toolkit focusing on: providing guidance on the issues that need to be considered when planning and designing community engagement, quality and effective participation in community engagement processes, tools to help plan and implement community engagement processes, and methods and techniques appropriate to the community engagement process.

International Business Leaders Forum (IBLF) and Global Alliance for Improved Nutrition (GAIN), 2003. *The Partnering toolbook*. http://www.commdev.org/userfiles/files/882_file_PartneringToolbook.pdf - Toolbook offering a concise overview of the essential elements that make for effective partnering that helps advance the goal of an organisation. Part 2 is in the form of 'stand-alone' tools to enable practitioners to develop effective partnerships.

International Council on Mining and Metals (ICMM), 2012. *Community Development Toolkit*. http://www.icmm.com/community-development-toolkit - Toolkit providing 20 tools aimed at fostering constructive relationships, building capacity and improving opportunities for the sustainable development of communities. In particular, it provides guidance and templates for the Stakeholder Identification, Stakeholder Analysis, Partnership Assessment, and Consultation Matrix.

International Finance Corporation (IFC), 2007. *Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets*. http://www.ifc.org/HB-StakeholderEngagement - Handbook providing a comprehensive overview of good practice in Stakeholder engagement, with a dedicated focus on Stakeholder groups that are «external» to the core operation of the business, such as affected communities, local government authorities, non-governmental and other civil society organisations, local institutions and other interested or affected parties. In particular, it provides guidance and templates for the Stakeholder Identification and Analysis, and Stakeholder Consultation.

International Organization for Standardization. *ISO 22397:2014, Societal security - Guidelines for establishing partnering arrangements*. Standard assisting organisations to establish partnering arrangements, to manage multiple relationships in responding to accidents impacting on the community, and to agree on the common actions for the prevention, protection, mitigation, and recovery programmes. It incorporates principles and describes the process for planning, developing, implementing and reviewing partnering arrangements through the classic process of Plan, Develop, Implement and Review.

RAPID LA, 2014. *Manual for the Implementation of the TransAPELL Programme for the Transportation of Hazardous Materials in the Mining Sector – The Case of Peru* http://apell.eecentre.org/ManualTransAPELLintheMiningSectorPeru.pdf - Publication analysing the process of implementation of the APELL programme over the past six years in over 50 communities located in the Departments of Ancash, Cajamarca and Lima, Peru, using the methodology developed by the RAPID LA (Risk Awareness and Preparedness In Disasters Latin America) Integrated Local Risk Reduction team. The toolbox 3: Sociogram or Stakeholder Map describes step-by-step the tool that has been used for the Stakeholder analysis which has been carried out in the APELL Projects in Peru.

UNEP, 2009. *Responsible Production – A Framework for Chemical Hazard Management in SMEs*. http://www.unep.org/responsibleproduction - Toolkit aimed at SMEs containing helpful guidance and tools for identifying, understanding and mapping hazards as well as good practice checklists related to accident prevention and preparedness. It provides a continuous improvement approach and guidance on understanding hazards, controlling and prevention exposure to hazardous substances, reducing accident risks, building emergency preparedness, and engaging stakeholders.

References Relevant to Understanding Risks

Asian Disaster Preparedness Centre (ADPC), 2006. *Community-Based Disaster Risk Management for Local Authorities* http://www.unisdr.org/files/3366_3366CBDRMShesh.pdf - Workbook developed to facilitate the capacity building of local government officials on Community-based Disaster Risk Management in South East Asian target countries.

Asian Disaster Preparedness Centre (ADPC), 2010. *Urban Governance and Community Resilience Guide on Risk Assessment in Cities – Risk Assessment in Cities* http://www.adpc.net/igo/category/ID258/doc/2013-mRIt48-ADPC-guidebook02.pdf - Book 2 of a series of guidebooks, designed to raise awareness of the challenges local governments face in reducing disaster risk, providing guidelines in selecting appropriate assessment methodologies to evaluate risks and support decision-making processes.

Emergency Capacity Building Project, 2012. *Participatory disaster risk assessment training pack and assessment tools* http://www.ecbproject.org - Training pack and tool providing guidance and tools for facilitating analysis of vulnerability and capacity by members of communities themselves.

Federal Emergency Management Agency (FEMA), 2013. *Local Mitigation Planning Handbook*. http://www.fema.gov/media-library-data/20130726-1910-25045-9160/fema_local_mitigation_handbook.pdf - Tool for local governments to use in developing or updating a local hazard mitigation plan. In particular, Task 4 describes the critical step of assessing community's existing authorities, policies, programmes, and resources available to accomplish mitigation.

International Federation of Red Cross and Red Crescent Societies (IFRC), 2007. *Vulnerability and Capacity Assessment toolbox* http://www.ifrc.org/Global/Publications/disasters/vca/vca-toolbox-en.pdf - Toolbox providing a detailed explanation on how to undertake the research part of a Vulnerability and Capacity Assessment (VCA). It helps to choose the right tools to suit for VCA and describes when and how to use them and what to do with the information collected.

International Council on Mining and Metals (ICMM), 2012. *Community Development Toolkit*. http://www.icmm.com/community-development-toolkit - Toolkit providing 20 tools aimed at fostering constructive relationships, building capacity and improving opportunities for the sustainable development of communities. In particular, tool 13 focuses on Competencies Assessment.

Joint UNEP/OCHA Environment Unit, 2014. Flash Environmental Assessment Tool (FEAT) Version 2.0 http://www.unocha.org/unep - Tool providing

a methodology to helps to identify locations and communities, where APELL can be applied and provides guidance on how industrial hazard identification can be conducted and integrated into the APELL Process. FEAT assessments can be conducted on the national, regional and local level. A list of various hazards is available in Annex 7 of this tool.

ProVention Consortium, 2007. *Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations* http://www.preventionweb.net/files/1066_toolsformainstreamingDRR.pdf - Series of 14 guidance notes to be used by development organisations in adapting programming and project appraisal and evaluation tools to mainstream disaster risk reduction into their development work in hazard-prone countries. In particular, this guidance note 9 introduces basic approaches to vulnerability and capacity assessment and analysis, explains how it can be integrated into the project planning process and shows how natural hazards and disasters can be factored into it. It focuses on the use of VCA in development projects, but the approach can also be used in disaster reduction and post-disaster recovery.

UNEP, 1992. *Hazard Identification and Evaluation in a Local Community. Technical Report n12*. http://apell.eecentre.org/HazardIdentificationandEvaluation.pdf - Technical report focusing on *Element 2* to provide methods for carrying out hazard identification, evaluation and ranking of risk objects, in relation to potential industrial accidents.

UNEP and INERIS, 2008. *Assessing vulnerability of local communities to disasters: An interactive guide and methodology*. http://apell.eecentre.org/CommunityRiskProfile.pdf - Risk profile tool helping communities make a rough estimate of their exposure to risks (Community Risk Profile Tool).

UNEP, 2008. *Disaster Risk Management for Coastal Tourism destinations responding to climate change*. http://apell.eecentre.org/DisasterRiskManagementforCoastalTourism.pdf - Handbook providing disaster managers, local and municipal and community planners, as well as other Stakeholders in the tourism sector, practical guidance on how to better prepare for disasters in coastal destinations. In particular, Annex A3 provides guidance on vulnerability mapping.

UNEP, 2009. *Responsible Production – A Framework for Chemical Hazard Management in SMEs*. http://www.unep.org/responsibleproduction - Toolkit aimed at SMEs containing helpful guidance and tools for identifying, understanding and mapping hazards as well as good practice checklists related to accident prevention and preparedness.

UNEP, 2010. *APELL Multi-Hazard Training Kit for Local Authorities* http://apell.eecentre.org/APELLMultiHazardTrainingKit.pdf - Training Kit assisting local authorities in increasing preparedness and reducing vulnerability in the face of natural and industrial disasters. Each of its 15 modules provides information on different aspects of accident prevention and emergency preparedness. This publication has been developed as a companion of the Community Risk Profile Tool.

UNEP, 2010. *A Flexible Framework for Addressing Chemical Accident Prevention and Preparedness: A Guidance for Governments* http://www.unep.org/flexibleframework - Modular Guidance explaining the elements of a national chemical accidents programme. The guidance contains material useful for identifying hazards (types of installations and activities) and supplementary guidance materials on risk assessment techniques.

UNEP, the Joint UNEP/OCHA Environment Unit, the United Nations Economic Commission for Europe, Office for Coordination. Online training course: Introduction to Industrial Accidents: prevention, preparedness and response. http://eecentre.org/Online-Learning.aspx - Three-hour module aiming to raise awareness about industrial accidents in order to strengthen the capacity of government, industry and civil society. With an improved understanding of what constitutes an 'industrial accident', participants will be better able to prevent, prepare and respond. Participants will also gain an

understanding of when countries should ask and receive international assistance in preparation for or in response to an industrial accident.

United Nations International Strategy for Disaster Reduction (UNISDR), 2007. *Words Into Action: A Guide for Implementing the Hyogo Framework*. http://www.unisdr.org/files/594_10382.pdf - Guide helping states to assess where they stand in the implementation process and, by building on existing experience and structure, to identify possible gaps and useful next steps to take. In particular, it provides a tool to assess disaster preparedness capacities and mechanisms.

United Nations International Strategy for Disaster Reduction (UNISDR), 2015. Sendai Framework for Disaster Risk Reduction 2015 – 2030 http://www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf

US Environmental Protection Agency (US EPA) and the National Oceanic and Atmospheric Administration (NOAA), 1988. *Computer-Aided Management of Emergency Operations (CAMEO)*. http://www2.epa.gov/cameo - System of software applications used widely to plan for and respond to chemical emergencies. Chemical emergency planners and responders can use CAMEO to access, store, and evaluate information critical for developing emergency plans.

Further Information on Chemical Accidents and Chemical Hazards

European Union Major Accident Reporting System: https://emars.jrc.ec.europa.eu - The Major Accident Reporting System (MARS) is dedicated to collecting data on major industrial accidents involving dangerous substances from the Member States of the European Union.

U.S. Chemical Safety and Hazard Investigation Board: Accident reconstruction videos and root cause investigation reports. http://www.csb.gov - The CSB conducts root cause investigations of chemical accidents at fixed industrial facilities. The agency does not issue fines or citations, but does make recommendations to plants, regulatory agencies such as the Occupational Safety and Health Administration (OSHA) and the Environmental Protection Agency (EPA), industry organisations, and labor groups.

International Chemical Safety Cards: http://www.cdc.gov/niosh/ipcsneng/nengnameA.html

INCHEM: http://www.inchem.org

WISER: http://wiser.nlm.nih.gov

HSDB, TOXLINE and IRIS can be accessed via TOXNET: http://toxnet.nlm.nih.gov

OECD Chemical accident prevention, preparedness and response: http://www.oecd.org/env/ehs/chemical-accidents

European Chemicals Agency (ECHA): http://echa.europa.eu

ECHA information on chemicals: http://echa.europa.eu/en/information-on-chemicals

OECD Risk Management of Chemicals: http://www.oecd.org/chemicalsafety/risk-management

WHO: http://www.who.int/environmental_health_emergencies

References Relevant to Preparedness Planning

Asian Disaster Preparedness Centre (ADPC), 2006. *Community-Based Disaster Risk Management for Local Authorities* http://www.unisdr.org/files/3366_3366CBDRMShesh.pdf - Workbook developed to facilitate the capacity building of local government officials on Community-based Disaster Risk Management in South East Asian target countries.

Asian Disaster Preparedness Centre (ADPC), 2010. *Urban Governance and Community Resilience Guide on Risk Assessment in Cities – Planning for Disaster Risk Reduction* http://www.adpc.net/igo/category/ID257/doc/2013-

mQh6KX-ADPC-guidebook03.pdf - Book 3 of a series of guidebooks, designed to raise awareness of the challenges local governments face in reducing disaster risk, outlining the planning process in managing urban disaster risks, focusing on the process of transforming risk assessments into appropriate, effective and sustainable actions.

Centre for Rural Pennsylvania, 2006. *Planning for the Future: A Handbook on Community Visioning, 3rd ed.*. *http://www.rural.palegislature.us/visioning3.pdf* - Handbook outlining a suggested process, elements of success, and lessons learned for creating a Vision of Success. It also provides sample workshop agendas, announcements, checklists and other materials useful for community visioning exercises.

Federal Emergency Management Agency (FEMA), 2010, *Developing and Maintaining Emergency Operations Plan Comprehensive Preparedness Guide (CPG) 101 Version 2.0 http://www.fema.gov/media-library-data/20130726-1828-25045-0014/cpg_101_comprehensive_preparedness_guide_developing_and_maintaining_emergency_operations_plans_2010.pdf* - Guide providing guidance for developing emergency operations plans. It promotes a common understanding of the fundamentals of risk-informed planning and decision making to help planners examine a hazard or threat and produce integrated, coordinated, and synchronized plans. In particular it describes commonly used criteria to help decision makers determine the effectiveness and efficiency of plans.

Global Development Research Centre, 2000. *Exploring Sustainable Communities: How to Conduct a «Visioning» Exercise*. *http://www.gdrc.org/ngo/vision-dev.html* - Webpage providing useful information on how to conduct a visioning exercise.

RAPID LA, 2014. *Manual for the Implementation of the TransAPELL Programme for the Transportation of Hazardous Materials in the Mining Sector – The Case of Peru http://apell.eecentre.org/ManualTransAPELLintheMiningSectorPeru.pdf* - Publication analysing the process of implementation of the APELL programme over the past six years in over 50 communities located in the Departments of Ancash, Cajamarca and Lima, Peru, using the methodology developed by the RAPID LA (Risk Awareness and Preparedness In Disasters Latin America) Integrated Local Risk Reduction team. The toolbox 6: Vision of development free of risks described step-by-step the tool that has been used for creating, in a collaborative fashion, a vision of development of the community that is safe and free of risks in the APELL Projects in Peru.

Swedish Civil Contingencies Agency (MSB), 2012. *Designing Capacity Development for Disaster Risk Management*. *https://www.msb.se/en/Products/Publications/Publications-from-the-MSB/Designing-Capacity-Development-for-Disaster-Risk-Management* - Book presenting a framework for the design of capacity development projects, which builds on the strengths of the Logical Framework Approach, while tailoring it to suit the specific context of disaster risk management. The utility is however not only the design of capacity development projects, since an appropriate design also facilitates project follow-up, management and evaluation.

United Nations International Strategy for Disaster Reduction (UNISDR), 2010. *A Guide for Implementing the Hyogo Framework for Action by Local Stakeholders http://www.unisdr.org/files/13101_ImplementingtheHFA.pdf* - Guide intended to support local governments reduce losses in cities and ultimately to build community resilience. In particular, it provides useful tools for prioritizing disaster risk reduction and allocates appropriate resources, and strengthen planning and programming for disaster preparedness.

US Environmental Protection Agency (US EPA) *Public Participation Guide: Appreciative Inquiry Process http://www2.epa.gov/international-cooperation/public-participation-guide-appreciative-inquiry-process* - Guide providing a primer in public participation. It is designed with government agencies in mind, to help those who must manage processes where public input is important to decision-making. In particular, it provides useful information to conduct an Appreciative Inquiry Process.

References Relevant to Implementation, Dissemination and Testing

Asian Disaster Preparedness Centre (ADPC), 2006. *Community-Based Disaster Risk Management for Local Authorities* http://www.unisdr.org/files/3366_3366CBDRMShesh.pdf - Workbook developed to facilitate the capacity building of local government officials on Community-based Disaster Risk Management in South East Asian target countries.

Cabinet Office, National security and intelligence, United Kingdom Government, 2014. *Emergency planning and preparedness: exercises and training* https://www.gov.uk/emergency-planning-and-preparedness-exercises-and-training - Guide outlining what is meant by exercising, describing different types of exercise, and outlining the exercising which takes place at all levels of government. It also provides some specific examples of recent exercises.

Federal Emergency Management Agency (FEMA), 2003. *Bringing the Plan to Life: Implementing the Hazard Mitigation Plan* http://www.fema.gov/media-library-data/20130726-1521-20490-9008/fema_386_4.pdf - Fourth guide in the State and Local Mitigation Planning How-To Series. It discusses how to implement the hazard mitigation plan. This Guide leads communities and other entities through the formal adoption of the plan and discusses how to implement, monitor, and evaluate the results of mitigation actions to keep the mitigation plan relevant over time.

GSDRC, 2015. http://www.gsdrc.org/go/topic-guides/measuring-results/participatory-tools-and-approaches - Webpage describing useful tools to use for participatory monitoring and evaluation.

International Federation of Red Cross and Red Crescent Societies (IFRC), 2011. *Public awareness and public education for disaster risk reduction: a guide* http://www.ifrc.org/Global/Publications/disasters/reducing_risks/302200-Public-awareness-DDR-guide-EN.pdf - Guide designed to support the planning for public awareness and public education efforts, to produce increasingly successful and high-impact outcomes. In particular, *Chapter 5* describes the wide range of tools in use to implement participatory learning, informal education and formal school- based efforts approaches, including publications, games and competitions, and social media, and explains the advantages and disadvantages of each.

Organisation for Economic Co-operation and Development (OECD), 2003. *Guiding Principles on Chemical Accident Prevention, Preparedness and Response*. http://www.oecd.org/env/ehs/chemical-accidents/guiding-principles-chemical-accident-prevention-preparedness-and-response.htm - Guiding Principles setting out general Guidance for the safe planning, construction, management, operation and review of safety performance of hazardous installations, and, recognising that such accidents may nonetheless occur, to mitigate adverse effects through effective land-use planning and emergency preparedness and response.

Organisation for Economic Co-operation and Development (OECD), 2008. *Safety Performance Indicators*. http://www.oecd.org/env/ehs/chemical-accidents/guidanceonsafetyperformanceindicators.htm - Guidance helping enterprises, authorities and communities to develop an approach for assessing whether the actions designed to improve safety are meeting their objectives and to help set priorities in this area.

ProVention Consortium, 2007. *Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations* http://www.preventionweb.net/files/1066_toolsformainstreamingDRR.pdf - Tools for Mainstreaming Disaster Risk Reduction is a series of 14 guidance notes for use by development organisations in adapting programming and project appraisal and evaluation tools to mainstream disaster risk reduction into their development work in hazard-prone countries. In particular, guidance note 13 is an introduction to evaluating disaster risk reduction. It sets out the main steps in planning evaluations, collecting and analysing data, and using the results; and it

discusses issues associated with these activities. The note is aimed principally at programme or project managers responsible for designing, supervising and implementing different kinds of disaster risk reduction initiative, either free-standing or within wider development or post-disaster recovery activities. It should also be of use to evaluation teams.

Smith. *General Information for Emergency Drill Planning*. http://www.lwptsa.net/?wpfb_dl=24

Swedish Civil Contingencies Agency (MSB), 2012. *Training Material Development Guide* https://www.msb.se/en/Products/Publications/Publications-from-the-MSB/Training-Material-Development-Guide - Guide designed to document the process and good practice in developing training material, piloting and testing it. The guide is aimed to help the course organiser to plan and conduct the course. The guide includes information on the main steps and stages in sequence of designing a training course all the way to evaluation for feedback into further development.

Swedish Civil Contingencies Agency (MSB), 2011. *Evaluation of Exercises Handbook*. https://www.msb.se/en/Products/Publications/Publications-from-the-MSB/Evaluation-of-Exercises - Handbook describing how a staff and decision exercise oriented towards crisis management may be evaluated. The evaluation will cover both the behaviour of the exercise participants and the impact of the chosen exercise format on outcome.

Swedish Civil Contingencies Agency (MSB), 2012. *Facilitators Guide*. https://www.msb.se/en/Products/Publications/Publications-from-the-MSB/Facilitators-Guide - Guide is designed to help the course organiser to plan and conduct the course. It covers the basics and essentials in good training practice. The guide includes information on how a course is designed, how to organise a course, how to adapt the material, and tips that will help make a course a success.

United Nations International Strategy for Disaster Reduction (UNISDR), 2010. *A Guide for Implementing the Hyogo Framework for Action by Local Stakeholders* http://www.unisdr.org/files/13101_ImplementingtheHFA.pdf - Guide intended to support local governments reduce losses in cities and ultimately to build community resilience. In particular, it provides useful tools for prioritizing disaster risk reduction and allocate appropriate resources, raise awareness of disaster risk reduction and develop education programme on DRR in communities, develop or utilise DRR training for key sectors based on identified priorities, review disaster preparedness capacities and mechanisms and develop a common understanding, and strengthen planning and programming for disaster preparedness.

World Bank, 2009. *Building Resilient Communities: Risk Management and Response to Natural Disasters through Social Funds and Community-Driven Development Operations*. http://siteresources.worldbank.org/INTSF/Resources/Building_Resilient_Communities_Complete.pdf - Toolkit designed to help Task Teams on World Bank social funds and community-driven development operations to identify disaster risk management issues in their programmes and projects and to design and implement appropriate responses.

References Relevant to Risk Communication

Cabinet Office, United Kingdom Government, 2011. *Communicating Risk Guidance*. https://www.gov.uk/government/publications/communicating-risk-guidance - Guidelines bringing together in one place a wealth of experience about risk communication from recent incidents and best practice from a range of eminent and authoritative sources.

Global Facility for Disaster Reduction and Recovery (GFDRR), 2014. *Understanding Risk in an Evolving World - A Policy Note*. https://www.gfdrr.org/RAPolicyNote - Policy note demonstrating the need to continue investment in accurate risk information and suggests recommendations for the future disaster risk assessments.

National Consortium for the Study of Terrorism and Responses to Terrorism, 2012. *Understanding Risk Communication Best*

Practices: A Guide for Emergency Managers and Communicators http://www.start.umd.edu/sites/default/files/files/publications/UnderstandingRiskCommunicationBestPractices.pdf - The goal of this Best Practices report is to translate theoretical findings into practical guidance for those officials who have the daunting responsibility of communicating with relevant publics faced with a homeland security threat. This Guide remains valid for other emergencies.

Organisation for Economic Co-operation and Development (OECD), 2002. *OECD Guidance Document on Risk Communication for Chemical Risk Management* http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=env/jm/mono%282002%2918&doclanguage=en - Guidance document providing practical approaches to risk communication for chemical risk managers, with a particular focus on communication programmes aimed at consumers of chemical products. The document identifies the various stages in the chemical risk management process in which risk communication plays a role; it defines the types of situations faced by chemical risk managers - from dealing with non-controversial to highly controversial issues including approaches in crisis situations; and then it suggests approaches for responding to these situations. Finally, in six annexes, the document provides general guidance for risk communication and discusses related topics and other sources of information.

Ropeik, 2008, *Risk Communication: More than facts and feelings*, IAEA Bulletin 50-1 https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull50-1/50107295860.pdf

Reynolds B, 2002. *'Crisis and emergency risk communication.'* United States Centres for Disease Control and Prevention. http://emergency.cdc.gov/cerc - Website describing the approach to communicating effectively during emergencies. CERC draws from lessons learned during public health emergencies and research in the fields of public health and emergency risk communication. The CERC programme consists of training, resources, and shared learning.

Wendling, C., J. Radisch and S. Jacobzone, 2013. "The Use of Social Media in Risk and Crisis Communication", OECD Working Papers on Public Governance, No. 24, OECD Publishing. http://dx.doi.org/10.1787/5k3v01fskp9s-en - Report highlighting the changing landscape of risk and crisis communications and in particular how social media can be a beneficial tool, but also create challenges for crisis managers. It explores different practices of risk and crisis communications experts related to the use of social media and propose a framework for monitoring the development of practices among countries in the use of social media for risk and crisis communications. The three step process spans passive to dynamic use of social media, and provides governments a self-assessment tool to enable cross country comparison to monitor and track progress in the uptake of effective use of social media by emergency services or crisis managers.

Examples of legislation featuring emergency preparedness

European Union, Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances (SEVESO III) http://ec.europa.eu/environment/seveso/legislation.htm

India, National Disaster Management Guidelines Chemical Disasters (Industrial) http://ndma.gov.in/images/guidelines/chemicaldisaster.pdf

United Kingdom, Civil Contingencies Act 2004 https://www.gov.uk/preparation-and-planning-for-emergencies-responsibilities-of-responder-agencies-and-others

United Nations Economic Commission for Europe (UNECE), Convention on the Transboundary Effects of Industrial Accidents http://www.unece.org/env/teia.html

United States, Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 http://www2.epa.gov/epcra

United States, Standard on Disaster/Emergency Management and Business Continuity Programs NFPA 1600 http://www.nfpa.org/codes-and-standards/document-information-pages?mode=code&code=1600

Sectorial APELL Publications

International Council on Mining and Metals and UNEP, 2005. Good practices for emergency response in mining http://apell.eecentre.org/GoodPracticeInEmergencyPreparednessAndResponse.pdf This publication acts as a companion to UNEP's APELL for Mining, analysing emergency preparedness and response capabilities that are present amongst the members of the International Council on Mining & Metals (ICMM).

UNEP, 1996. APELL for Ports http://apell.eecentre.org/APELLforPortAreas.pdf This handbook sets out a procedure to enable decision-makers and technical personnel to improve community awareness of activities involving hazardous substances in port areas and to improve or create co-ordinated emergency response plans.

UNEP, 2001. APELL for Mining. http://apell.eecentre.org/APELLforMining.pdf The Handbook will be of assistance to mining companies and communities as it adapts the APELL process to the particularities of the mining industry.

UNEP, 2008. TransAPELL Toolkit http://transapell.net

A5 Selected Case Studies

In guiding the implementation of the APELL Process in over thirty countries around the world in the past three decades UNEP has collected experiences that may be helpful for the User(s) of this Handbook. This Annex presents a selection of summarised Case Studies of APELL implementation around the world[61]. UNEP encourages the User(s) of this Handbook to refer to the APELL platform (http://apell.eecentre.org) in order to (a) share further case studies and (b) to obtain information on new case studies.

Case study #1: Industry Leadership on APELL – Barranquilla, Colombia[62]

In 1990, the chemical industry, with the National Association of Industries of Colombia (ANDI) started implementing the APELL methodology in Barranquilla, Colombia. To date, a group of companies, consisting of the most important industrial sectors of the city and its metropolitan area, along with the representatives of the Government and communal leaders support this process.

61 For further information on APELL implementation the User(s) of this Handbook may refer to the following websites where Case Studies are also presented:
UNEP website: http://www.unep.org/APELL
APELL Global Platform: http://apell.eecentre.org

62 Proceso APELL Barranquilla: http://apellbarranquilla.org

APELL Barranquilla, in its 25 years of activities, has implemented a training programme aimed at industry, government and the community; developed pedagogical resources such as the APELL primer, the awareness raising character 'Apelito' and related videos for educating the community; involvement of the various universities; prepared the emergency response plan – SIMET (integrated system for management of technological emergencies); established procedures for conducting emergency drills; and implemented a 24-hour activated communications network.

APELL Barranquilla has been recognised by the Colombian system of prevention and emergency response as being a leader in technological emergency management. The US Government's Office of Assistance for Disasters for Latin America and the Caribbean has also recognised Barranquilla as an institutional linkage in training activities. The APELL Barranquilla group has also provided support to the local authorities to respond to emergencies that occur in the area.

In 1996, the Mamonal Foundation[63] began the APELL Process in the Mamonal Industrial Zone (comprising different companies including refineries, cement manufacturing plants, chemical and petrochemical companies, and port services) in Cartagena de Indias. In 2001, ANDI started leading the process. The occurrence of a maritime emergency in the same year led to the establishment of an emergency plan for the port area based on APELL. Recent APELL activities in Cartagena de Indias include a community training and a project for implementing Emergency Committees (the COMBAS project) and Emergency School Plans (PLEM) in several communities located in the bay of Cartagena de Indias, reaching thousands of people including children, and benefiting local educational institutions. This project involves among others Ecopetrol (the largest company and the principal oil and gas company in Colombia), ANDI, and the Mamonal Foundation. In 1998 the Colombian company Ecopetrol started applying the APELL across the company. Specific scenarios have been developed for many possible emergency situations, and the response plans for each are outlined in Ecopetrol's EPR manual. Various emergency drills are conducted every year, as well as one large-scale APELL exercise.

Case study #2: Government Support to APELL – India

UNEP and the National Safety Council of India (NSCI) started implementing APELL in six high-risk industrial areas in 1992. The first national APELL centre was launched in Mumbai in 2002 (hosted by the NSCI), followed by the establishment of sub-centres in (Tuticorin) Tamil Nadu (2004) and Pune (2006). Further APELL projects were implemented by NSCI in five major Indian States – West Bengal, Maharashtra, Gujarat, Tamil Nadu, and Kerala, between 2002 and 2005, and by the Tuticorin Centre, who partnered in the implementation of a project on APELL for Tourism in Kanniyakumari (Tamil Nadu), between 2006 and 2008[64].

In India the implementation of APELL has been endorsed through legal instruments and guidance:

- The release of a new set of rules called "Chemical Accident (Emergency Planning, Preparedness and Response) Rules" in 1996, notified under the Environmental (Protection) Act of 1986. These rules provide legal backing

63 Mamonal Foundation is a non-profit organisation established in 1975 in Cartagena de Indias, Colombia to advocate on behalf of children and young people from vulnerable communities. In 2001, Mamonal Foundation joined the National Association of Industrialists of Colombia (ANDI) to become its social outreach arm in Cartagena.
The mission of Mamonal Foundation is to work alongside communities and entrepreneurs to promote social and economic development in communities in the Mamonal-Cartagena region, to foster social responsibility. More information at: http://www.fundacionmamonal.org.co (Website in Spanish).

64 UNEP project on "Disaster Reduction through Awareness, Preparedness and Prevention Mechanisms in Coastal Settlements in Asia - Demonstration in Tourism Destinations"

for the formation of APELL-like co-ordination groups called Local Crisis Groups (LCGs) in all industrial areas where hazardous installations are located. As well as for strengthening their capabilities through training, equipment and networking;

- The National Disaster Management Guidelines on Chemical (Industrial) Disasters, issued by the National Disaster Management Authority in 2007 recommends the APELL process.

Case study #3: Linking APELL to Corporate Responsibility and Competitiveness – Thailand

Starting in 1992, the APELL process was first introduced in the Map ta Phut Industrial Estate (Rayong Province, Thailand), which was one of the highest risk industrial areas in the country. This resulted in the APELL Process being integrated into the National Emergency Response Plan of the 8th National Economic and Social Development Plan (1997-2001). In 2004, activities under a Thai-German cooperation Programme for Enterprise Competitiveness were implemented on "Risk Management for Handling of Hazmat by SMEs in the Bangpoo area" with the Department of Industrial Works (DIW), the Industrial Estate Authority of Thailand (IEAT) and the Mahidol University (MU).

This APELL-related project covered the five main topics: (1) conducting a Hazard Identification, Risk Assessment and Risk Profile (RA&RP) in the Bangpoo Industrial Estate and its surroundings; (2) improvement of Safety Measures (ISM) according to the risk profiles by conducting training and advisory consultancy services to participating SMEs; (3) drafting a harmonized Contingency Plan for Bangpoo area (CPBP) adopting the APELL in Rayong province as a model and conducting a multi-stakeholder emergency drill with all parties involved; (4) preparing an Emergency Management Information System (EMIS) by adopting CAMEO programme into Thai language for use by the factories and emergency response authorities; and (5) setting-up Bangpoo Emergency Response Centre (BERC) and signing of an MOU among 6 pioneering companies called "Bangpoo Emergency Mutual Aid Group or BEMAG" aiming at sharing emergency resources and information among the group and involved authorities.

Moreover, in October 2006, UNEP Regional Office for Asia and the Pacific (ROAP) developed a project involving with chemicals sector in order to promote the application of APELL at the site level by demonstrating Corporate Social Responsibility (CSR) through community and Stakeholder engagement in local level, emergency preparedness and safer production as well as the APELL for the value-chain. These activities included a local need for risk assessment and risk management on Safer Production and Emergency Preparedness and Response Systems in the Thai chemical sector.

Case study #4: Community Engagement – Argentina

In 1996, a major APELL implementation project was initiated at a large petrochemical site located in Bahia Blanca (which included Dow, Solvay, Profertil, and TGS industrial sites). As part of the Technological Emergency Response Plan (TERP) of Bahia Blanca various community engagement activities have been implemented throughout the years, including:

- **Emergency drills**:
  - More than 50 training emergency drills in schools, clubs, and community institutions and training in local schools;
  - Table drills and field drills to test the TERP;
  - Risk Assessment Bahia Blanca study including more than 10 drills with the participation of all the local responders, some of them with community participation.

- **Training and Awareness Raising**:
  - The Week of Celebration "10 years of APELL Process in Bahia Blanca";
  - First training course for teachers on "Identification of Risks and Emergency Management at Educational Institutions".
- **Other**:
  - A "passive watch" vigilance system was implemented, covering 24 hours a day, 365 days per year;
  - The signing of a cooperation agreement with the local municipality (APELL Process Río Tercero);
  - A general census of the places of major population in the risk area; and
  - Audits of the response and communication equipment used by institutions and educational establishments.

Case study #5: Multi-stakeholder Cooperation for Improved Emergency Preparedness – China

In China, a number of APELL-related workshops have been conducted since the early 1990's. In 2005, after the chemical incident along the Songhua River, which disrupted drinking water supplies and required the evacuation of 10,000 people, China's government increased its efforts to improve prevention and emergency preparedness for chemical accidents. In early 2008, UNEP and MEP initiated a two-year project in China entitled "Promoting Safer Operations and Emergency Preparedness in the Value Chain of the Chemical Sector". This project was supported the Dow Chemical Company; additional help and expertise was provided by the US EPA, the Yangtze International Chemical Industry Park in the Zhangjiagang Free Trade Zone (ZFTZ), Dow Quimica Argentina, and Tsinghua and Renmin Universities of China.

The project goals included: improving local awareness and preparedness for industrial emergencies, and local authorities' understanding of how to develop and implement community emergency plans with a multi-stakeholder, participatory approach; developing and/or adapting the APELL Process to a demonstration site; and developing training materials to support safer production and emergency preparedness capacity building activities in the chemical industry.

Case study #6: Adapting the APELL Process to the Local Needs – Peru

Two APELL workshops were initially held in Peru in 2003, a High Level Meeting on APELL and a National APELL for Mining Workshop organised with UNDP. Some years later, a consultation meeting with the inter-agency "Technical Group of Chemical Substances" led by the National Environment Council of Peru (CONAM, now the Ministry of Environment of Peru) helped re-start the dialogue on local level emergency preparedness related to the transport of hazardous substances in mining operations. This was in the context of a new Peruvian regulation on the transport of hazardous substances and wastes, and of a new pilot project and APELL training programme launched in 2008 in the Cajamarca region of Northern Peru, bringing together UNEP, CONAM, and other partners.

At the local and regional levels, a working group was formed in Cajamarca in order to establish an APELL Co-ordinating Group and develop an APELL Strategy for the Region. A pilot programme was carried out, including local meetings with the key mining companies operating in Peru and training activities. Based upon the stakeholder engagement and communication aspects common to APELL, TransAPELL, and UNEP's Responsible Production approach, the training programme helped to develop a dialogue between transporters, mining companies, responders/firemen and government representatives.

As a result of the pilot, the Ministry of Environment of Peru developed new guidance

and a regional strategy on TransAPELL for Mining Operations, in close partnership with key national and regional stakeholders in Cajamarca. Furthermore, meetings were held with other relevant stakeholders, such as the National Society of Industries (SNI) and representatives from mining companies, which led to a process to further assess current needs with a view to up-scaling APELL-related initiatives in other regions of Peru.

A closure workshop was held in Cajamarca in 2009, which included a discussion of the new guidance and regional strategy on TransAPELL for Mining Operations developed by the Ministry of Environment of Peru through technical consultations with key national and regional stakeholders.

Other highlights included the presentation of a knowledge platform on TransAPELL and APELL in the Peruvian mining sector. The initiatives of private mining sector based on APELL guidelines have promoted greater involvement of government on potential risk management for mining activities, as well as increased the synergies of government institutions that collect specialised information and improved prevention measures for any emergency.

The APELL Process was implemented in over 50 communities located in the Departments of Ancash, Cajamarca, and Lima, Peru. The experience accumulated by RAPID LA has allowed the organisation to develop its own structure for the efficient implementation of the APELL Programme in the Peruvian reality. Taking the local reality of each community as the starting point, this process has been able to evolve, adapting the APELL approach and developing a successful and replicable methodology. As a result of the projects:

- Participatory Risk Assessments and Emergency Plans were developed or updated in all of the communities;
- Community Brigades and School Brigades were formed and equipped;
- General evacuation and emergency drills were carried out, with the participation of the entire population in all of the communities;
- The Rescue Contest among the Community Brigades was created and held regularly;
- A Road Safety Campaign and environmental campaign were carried out for children;
- The trained community brigades demonstrated effective responses to real emergencies;
- Training was given to Emergency Response Service (Medical Centre and the Police);
- Training was provided to all of the communities in the areas of first aid and fire prevention, as part of first response efforts.

SG1 Understanding Risk

Flash Environment Assessment Tool (FEAT)

The FEAT Handbook is a "first response" tool. The FEAT does not replace in-depth environmental (impact) assessments. The FEAT is intended to assess and address the potential impact caused by chemical accidents. The objective is to either initiate or support emergency preparedness actions (FEAT-P), or to support initial emergency response actions, i.e. actions within 72 hours after occurrence of the accident (FEAT-R).

The FEAT is intended to be used by non-experts involved in chemical accident preparedness and response. Nevertheless, it is recommended to have basic training on the use of FEAT training and obtaining basic knowledge on chemicals and hazard classification. The intended users of FEAT are:

- Emergency Preparedness: FEAT-P is addressed primarily to government authorities, technical institutions, and parties involved in development (or improvement) of chemical accident programmes in order to reduce risks for the community.
- Emergency Response: FEAT-R is addressed primarily to international responders, such as members of United Nations Disaster Assessment and Coordination (UNDAC) and Urban Search and Rescue (USAR) teams, as well as local authorities, environmental parties and disaster management agencies.

The core concept of FEAT is the formula «Impact (I) = function of (hazard, exposure, quantity)».

By combination of these determining factors the user can derive both an 'impact priority' and the 'exposure distance'. This information can then be used to prioritize hazardous substances, facilities and potential impacts on communities and the environment. This knowledge can then be included in the APELL Process and preparedness activities therein.

The FEAT-Preparedness (FEAT- P) section provides understanding of impact due to chemical accidents relevant to the local setting. The FEAT-Response (FEAT-R) section includes instructions for assessing and mitigating consequences of a chemical accident by assessing the situation and selecting and implementing (temporary) interventions. In a first response, emergency responders face the immense tasks of assessing imminent impact on human life and environment with the aim to save lives and livelihoods. The result of FEAT-R is an emergency response plans, including advice for government on appropriate follow-up actions.

FEAT is used to collect information on hazardous operations, address specific hazards and select emergency preparedness actions. The knowledge that is generated through the FEAT Assessment process ultimately provides a means for national stakeholders to reduce risks to an acceptable level and deal with the residual risk through preparedness (and eventual prevention/risk management) measures.

Since the FEAT Handbook is made up of a set of steps to be taken in order to prepare or to respond on chemical accident situations, the FEAT supports the APELL Process at various stages in setting up preparedness and contingency plans for communities.

Through this «easy to apply» methodology, FEAT helps to identify locations and communities, where APELL can be applied and provides guidance on how industrial hazard identification can be conducted and integrated into the APELL Process. FEAT assessments can be conducted on the national, regional and local level.

SG2 Preparedness Planning

"SWOT" - Strengths, Weaknesses, Opportunities, and Threats Analysis Tool

A basic component of good strategic planning is the assessment of the external and internal factors influencing the ability to achieve the Vision of Success. Some methods refer to this as "SWOT" where internal factors are classified as Strengths and Weaknesses, and external factors are considered Opportunities or Threats.

External Factors: Political and Legal Changes, Technological Changes, Demographic Changes, Public Attitudes and Social Changes, Economic Changes, Climate Changes, and Trends and Projections.

Internal Factors: Statutory Authority and Mandates, Human Resources, Capability, Capacity, Organisational Structure and Financial Resources.

The objective of the SWOT is to identify specific issues, trends and forces that can influence the achievement of your Vision of Success. A SWOT analysis can be done independently from, or as part of, any of the Elements of the APELL Process. The development of strategies and action steps should be in direct response to conclusions drawn from the SWOT analysis[65].

Sample SWOT Questions for Stakeholders and the Coordinating Group members.

1. What do you consider to be the main strengths and weaknesses of your current emergency preparedness and response plans and programmes?
2. What trends do you perceive as either opportunities or threats to your current emergency preparedness and response plans and programmes?
3. What do you need or expect from your current emergency preparedness and response plans and programmes?
4. What criteria or metric would you apply to evaluate your current emergency preparedness and response plans and programmes?
5. In your opinion how well are the emergency preparedness and response plans and programmes performing against those criteria? (Excellent, Good, Fair or Poor)
6. Why do you hold this opinion?
7. What would you like your emergency preparedness and response plans or programmes to do more or less of?
8. If resources were available, what additional activities or services do you feel the emergency preparedness and response plans and programmes should provide?

It is important to write out what the SWOT analysis tells you. Complete the table below identifying the strengths, weaknesses, opportunities and threats related to your ability to pursue the APELL Process. Compare the individual team members' assessments of the SWOTs with the results of the brainstorming session and develop a final list including all the SWOTs.

65 Brainstorming is a quick and effective way to identify SWOT information. The point of the analysis is to provide information that will allow you to identify specific issues, trends and forces that can influence the achievement of your Vision of Success. In order to broaden the number of participants it is also useful to ask people that cannot participate in a brainstorming session to answer some sample questions as above.

Strengths	Weaknesses
Existing advantages, capabilities, resources in the community that will be helpful to achieve your Vision of Success.	Existing gaps, vulnerabilities, pressures in the community that can be harmful to achieve your Vision of Success.
Opportunities	**Threats**
External elements that can be helpful to achieve your Vision of Success (for example, national favorable policy).	External elements that can be obstacles to achieve your Vision of Success.

As you prioritize and then evaluate projects and activities to fill capabilities gaps the SWOT analysis can help to establish meaningful projects that will advance progress to achieving the Vision of Success. It does this by allowing the Coordinating Group to use strengths and opportunities while finding ways to avoid or circumvent weaknesses and threats. SWOT analyses should be repeated over time as it is expected that the APELL Process will eliminate some weaknesses and threats while adding to the lists of strengths and opportunities. There is a wealth of literature online regarding the use of SWOT for strategic planning purposes.

SG3 Implementation, Dissemination & Testing

Exercise (Drill) Design[66]

Planners/controllers are the people that plan and direct the exercise. Their first step is to assess the needs and priorities for the exercise. Exercises can take a great deal of time and effort and budget must be created for supplies and expenses. It is important not to waste resources on exercises that are not designed to produce meaningful outcomes and lessons. Is there a particular hazard to be addressed? Are there particular functions or skills to be tested? Does the interaction of various agencies, facilities and public need to be tested? Is it important to evaluate whether improvements made since the last exercise were effective?

The second step is to define the scope of the exercise. What type of emergency will be simulated? What is the duration of that emergency? Are there going to be simulated injuries? Next address logistical matters such as who participates (public, facilities and responders), and what location will be used. Included in this step and throughout is a plan to assess hazards to participants and prevent accidents or injuries.

The third step is to define the broad functions of participants under the requirements of the current planning documents. As examples, questions such as who provides alerts and warnings, who performs medical treatment and evacuation, who establishes and what is the command structure all need to be addressed. At the end of the third step it should be possible for the planning team to prepare a statement of purpose for its efforts in designing the exercise.

66 Online resources on this topic are numerous. Some of this material is summarized from U.S. Federal Emergency Management Agency sources.

This statement should clearly state what aspects of the plan are being tested and how these relate to the Vision of Success. The statement should list who is involved and what will they learn from the exercise. Lastly, the statement should define the outcomes to be measured.

Once the planning group is in agreement on these broad issues, the fourth step is to create the detailed narrative of the exercise. This is the stepwise listing of events for the exercise from the first event to the last. This narrative would typically include the following:

Create the exercise narrative:

- What happens?
- When does it happen?
- Where does it happen?
- Who is called?
- What damage or injuries are reported?
- What performance is expected from the participants?

The exercise participants do not get this narrative in advance. All of the major events, such as the initial report and what it contains, are written in detail. But again, this is for the planning/control team to use in directing the action - participants do not have advance notice. As discussed in the next step, the actions taken by the participants as the exercise develops in a stepwise fashion is what gets evaluated.

In the fifth step, the planning team lists expected actions for each event. Whether and how these actions occur is what we measure. Evaluating and measuring outcomes is a matter of looking at the differences between expected and actual actions.

After the exercise is complete, the key questions are:

- If the desired action does not occur why not?
- What should change in the plan?
- What should change in training?

All the exercise participants, the exercise planners, the APELL Coordinating Group and other Stakeholders are participants in this conversation. There are often competing points of view on these issues arising from differences in perspective on roles and responsibilities within the community. The Coordinating Group plays an important role in working with all members of the community to establish, re-establish or modify these roles and responsibilities if an exercise suggests that should happen.

Reasons to Exercise

The goal in exercise design is to establish a comprehensive exercise programme based on a long-term, carefully constructed plan. In a comprehensive programme, exercises build upon one another to meet specific operational goals. The aim is to provide competence in all emergency functions. There are two main benefits of an exercise programme that arise from exercising, evaluation and acting upon the recommendations:

- Individual training: Exercising enables people to practice their roles and gain experience;
- System improvement: Exercising improves the organisation's system for managing emergencies.

An exercise has value only when it leads to improvement. Through exercises the Coordinating Group and Stakeholders can:

- Test and evaluate plans, policies, and procedures;
- Reveal planning weaknesses;
- Reveal gaps in resources;
- Improve organisational coordination and communications;
- Clarify roles and responsibilities;
- Train personnel in roles and responsibilities;
- Improve individual performance;
- Gain programme recognition and support of government officials and community leaders.

The focus of an exercise should always be on locating and eliminating problems before an actual emergency occurs. An exercise should be complex enough to cause some failures. This sort of stress is the only way to identify situations that need to be corrected before an actual emergency. Corrective actions are an important part of exercise design, evaluation, and follow-up.

What to Exercise

In planning exercises, the emphasis is on functions rather than on any particular types of natural or technological hazard. Preparedness to execute the functions is common to all emergencies. There are a variety of lists of functions. This list is generic and must be adapted to the community's situation and conditions:

- Notification of responders and their initial response;
- Warnings to the public;
- Communications among emergency responders and support units;
- Coordination and control of the emergency response;
- Providing public information on the emergency and direction for action;
- Damage assessment (important for recovery efforts);
- Health and medical response for victims and responders;
- Protection of public safety (topics such as shelters and evacuation);
- Damage to infrastructure (what buildings, bridges, roads and dams are safe);
- Transportation of responders, evacuees and volunteers;
- Resource management through mutual aid or access to national support;
- Continuity of Government.

An exercise programme should identify the applicable functions and emphasize testing the operation of those functions regardless of the type of emergency. Each of the functions listed above has a highly variable and potentially complex set of sub-functions related to it that might be most relevant to your community. As such you might focus your exercise on limited and specific functions such as:

- The management and use of volunteers;
- The logistics of delivering needed resources such as food and water;
- How to coordinate with other organisations to provide mass health and trauma care;
- How the staff of a particular enterprise or government agency responds to an internal emergency.

Where to Start in Designing a Specific Exercise

Decide on how to focus the exercise based upon the answers to these questions:

- What emergency management functions are most in need of rehearsal?
  - What functions have not been exercised recently?
  - Where have difficulties occurred in past exercises or actual emergency events?
- Who (agencies, departments, operational units, personnel) needs to participate in an exercise?
- Pick a scenario based upon the risks and hazards in your community.
  - Depending upon the complexity desired you should pick a scenario where there are potential cascading events (e.g., damage to chemical processing plant, dam failure).
- What secondary effects from those risks and hazards should be included in the scenario?
  - Communication system breakdown;
  - Power outages;
  - Transportation blockages;
  - Mass evacuations/displaced population;

- Overwhelmed medical/mortuary services;
- Cascading impacts such as a hazardous materials release triggered by a natural hazard event.

- What plans and procedures, such as an emergency response plan, contingency plan, operational plan, standard operating procedures (SOPs), will guide your organisation's response to an emergency?

Define the Scope of the Exercise

The scenario can be fanciful[67], provided that aspects of the scenario address specific functions. Defining the scope of an exercise means putting realistic limits on the issues that you identified in the needs assessment. Clearly you can't design an exercise that effectively practices all functions, all hazards, using all agencies, organisations, or departments, in all exercise formats, and employing all resources.

It is important that the scope be clearly and narrowly defined. Many factors influence which areas of concern will be included in an exercise and which will not. Sometimes one decision will influence another (for example, the functions selected will determine who plays in the exercise). Other factors that help define the scope of an exercise include expense, availability of personnel and other resources, skills and experience of the exercise designers, and the anticipated length of the exercise.

The written scope includes five key elements: Type of emergency, location, functions, participants, and exercise type.

- Type of emergency: An exercise is usually limited to one major event, although secondary events might develop as the scenario develops. Hazards may be chosen for several reasons, including:
  - Emergencies that will generate the types of actions that need to be practiced;
  - Highest priority hazards;
  - Hazards that have not been exercised recently;
  - Newly identified problems with plans or capabilities or recently acquired capabilities that are untested.
- Location: Identify the location (a specific address) where the simulated event will occur. For table-top and functional exercises, select a place where the hazard could realistically occur. For a full-scale exercise, traffic problems or safety issues may make it necessary to compromise on an area similar to the ideal location;
- Functions: List the operations that the participants will practice. Be sure that the procedures within a certain function are clear and narrowly defined[68];
- Participants: After the functions have been identified, you can narrow the list of participating organisations and individuals to those that are required to carry out the actions. It is important to establish which representatives from the identified organisations should be involved[69];
- Exercise type: This is an evaluation of which sort of exercise best fits the functions to be tested. Table-top exercises are less expensive and can be focused on specific elements of planning or training. Full-scale exercises are designed to test integration of many portions of the plans and especially skills such as incident command.

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67 Zombie attack scenarios used occasionally in the U.S. to maintain interest http://www.astro.ufl.edu/~jybarra/zombieplan.pdf

68 As an example, to exercise a community's alert warning system, the following actions might be part of a response function that will be evaluated in the exercise: Notify the warning agency; Turn on sirens; Notify fire or police to use loud speakers in area; Notify and use other planned warning systems.

69 For example, in an emergency operations centre, you would typically want policy makers, coordinators, and operations personnel. In an Incident Command Post, you would most likely want personnel who are knowledgeable in field operations and have some on-scene decision-making authority.

Safety

The safety of participants and members of the public is always important in the design and conduct of an exercise especially those involving field activities or volunteer victims. The role of safety officer for the exercise and the design effort must be clearly assigned. Often a formal risk assessment is performed so that mitigating measures are incorporated into the design.

Safety plans including requirements for safety equipment must be prepared. Emergency procedures for treating and evacuating any injured during an exercise must be established in a way that will make it clear to all involved that the injury is not just part of the exercise. Criteria and authority to stop the exercise must also be established. It is also often very useful to have a safety briefing with all participants before the exercise begins.

Prepare a Statement of Purpose for the Exercise

The purpose statement is a broad statement of the exercise goal. It focuses and controls the whole exercise. The purpose statement defines the objectives, clarifies for participants, senior managers and government officials why the exercise is being conducted. It is used in communicating plans to the media, community leaders and the public.

One approach is simply to incorporate the scope decisions (type of emergency, location, functions, organisations, and exercise type) and date into a single sentence.

Compose a Narrative

The narrative is a brief description of the events that have occurred up to the minute the exercise begins. The narrative sets the mood, captures the attention and motivates participants for the exercise and it sets the stage for later action by providing information that the participants will need during the exercise.

A good narrative is usually one to five paragraphs long, very specific, phrased in present tense, and is written in short sentences to lend immediacy and tension. It may develop the situation chronologically and it may emphasize the emergency environment by describing areas that need to be evacuated or unknown conditions for responders.

For an unexpected event such as a hazardous materials-transportation incident the narrative may be shorter. It will also typically provide more detail to the environment of the emergency such as proximity to schools or hospitals, the potential for environmental contamination, or the potential for additional fire or explosion to create tension or an intense feeling among the participants.

Write Major and Detailed Events

An exercise scenario is a play and each play needs a script. In developing a script, the author organises events, large or small, that take place after and as a result of the emergency described in the narrative. Think of these events as problems requiring a realistic action that will meet exercise objectives. In the case of an exercise, the script is for the planners and, much like a play, the participants are the audience and they react as the scenes unfold.

For example:

Major event: A truck crash

Detailed events: Truck is on fire, leaking liquids and the driver is trapped

Each of these is communicated to the exercise participants in turn by an exercise moderator. The method of communication can vary, but should be appropriate to the exercise being conducted. For example, phone or electronic communication to participants in a command centre will be appropriate, but radio communication is more likely for participants in the field.

It is important to link the simulated event to the actions you want people to take within the functions being tested. Whether or not they took the anticipated actions is being evaluated so in fairness to the participants these events must be

detailed enough to trigger the elements of the plan being tested.

The events also provide continuity and flow to the exercise. Without the overall organisation provided by the events, the exercise will dissolve into random actions. It is very important to produce a convincing, unified scenario rather than a series of unrelated, miscellaneous occurrences. This is very necessary for creating an exercise that can be credibly evaluated against the stated objectives. If you do not do this, the exercise outcome will not have credibility to the participants and nothing will be learned.

List Expected Actions

For the exercise to be effective you must be able to list the actions or decisions that you want participants to carry out in order to demonstrate proper understanding and ability to perform the function. This step also is necessary to evaluate whether or not the detailed events will get the participants to think and react in the ways they should under the relevant plans.

Your list of expected actions drives the evaluation of whether the participants responded appropriately in this simulated an emergency. The expected actions should be consistent with stated objectives of the exercise. The actions will typically be of four types:

- Verification: Gather or verify information;
- Consideration: Consider information, discuss among players, negotiate, consult plan;
- Deferral: Defer action to later, put action on priority list;
- Decision: Deploy or deny resources.

Narrative Sample

The Weather Servicer issues news on the formation of a storm off the coast that appears to have hurricane potential. Tropical storm Anne is upgraded to Hurricane Anne and a hurricane watch is issued. Wind velocity and northwest movement over the last day have decreased, but an overnight change in direction calls for an immediate hurricane warning for five coastal counties of the state. Winds of 120 m.p.h. are predicted during the incoming tide, with high water expected to reach 12–15 feet over high tide. Low lying newly developed resort areas and the heavy influx of visiting weekend campers have been advised to evacuate the area. Access bridges to barrier islands are narrow and could become impassable with 15-foot water heights.

Following the hurricane watch, emergency service personnel notified elected officials and agency heads within the watch area. News media were also alerted and encouraged to broadcast the notice. When the warning of landfall within 24 hours was given, the emergency manager placed her staff on alert but did not activate the emergency operations centre. She has asked all appropriate emergency service personnel to meet at 07:30, approximately four hours after the warning was given. On its present course, the hurricane will make landfall at approximately 23:30. Flood stage from rising tides and tidal surge could, however, impact bridges by 16:00. All appropriate staff and emergency personnel are now gathered in the Emergency Operations Center.

Evaluation

At the conclusion of the exercise two types of review are usually valuable.

The first is a group meeting immediately at the conclusion where the moderators and participants each discuss their initial impressions. Problems with the conduct of the exercise, confusion over objectives, events and actions all get aired at this point. If the exercise was properly designed it is likely that there were failures to follow the plans or that weaknesses in capabilities were identified. The participants may well be defensive and even hostile to the exercise organisers if they feel the scenario or expectations were unreasonable.

It is important in the first meeting to reassure all participants that problems with the exercise will be noted and corrected for the next exercise. It is also important to draw out the participants to express their opinions on what aspects of plans or other elements included in the exercise need to be modified, and how. Avoid placing blame, but rather describe the events as a learning opportunity.

The second review is written and comes at some distance from the end of the exercise. It should describe the exercise in detail and then honestly list problems with exercise design as well as the performance of the participants. Situations in which performance met the objectives under the plans should also be noted.

In each case there should be an action item or items describing the things that will be done to address the deficiencies. These will obviously range from improving awareness of the plan elements to training and modification of the plan. It is also important to describe the plans for follow-on exercises to test similar problems or to demonstrate that the corrective actions were successful.

Communication as part of APELL

General Principles

All parties in the APELL Process have a duty to keep the public informed on progress. All parties should ensure the public does not receive conflicting or confusing messages; confusing or contradictory information can undermine the entire cooperative effort. Therefore, all communication on the APELL Process must be carried out in a spirit of co-operation and trust between industry, local authorities/leaders and the local media. In certain areas of the world, the media is radio, television, newspapers and specialist reporting. In other areas, the media may take the form of verbal reports to people in a neighbourhood, loudspeaker trucks, or even messages from teachers to school pupils who in turn can make their parents aware of the contents of the message.

Communication as part of the APELL Process is not about communication during an emergency. That role does not belong to the Coordinating Group, but rather to government officials charged with the management of the response. The task is similar but there is one very important caveat. Presenting accurate information is especially crucial during an emergency.

Community involvement is important throughout the APELL Process and this is achieved through appropriate and meaningful communication. It is important to understand that different target audiences need different sorts of information and different means of disseminating that information. The audience may be defined by geographic proximity to the hazard or by factors such as language, ethnicity, and religious affiliation. Vulnerability due to age, infirmity or disability, and existing skills or knowledge, such as may be found among workers within a facility, will also define audiences.

Different messages and often, different messengers are required to build relationships and communicate with these audiences in a fashion that they will find credible. Specialized information may be directed at vulnerable areas such as schools or hospitals whereas general preparedness information might be communicated broadly across the community. Cultural factors must be considered so that both the appropriate message and the appropriate means of communication are used. Techniques such as door-to-door contact, brochures, radio, posters, and social media may be necessary and appropriate.

The frequency of communication is also important. Frequent communication on risk awareness, protective measures and personal reactions to accidents are important, but people become saturated and tend to ignore messages if repeated too often.

It is important to prepare APELL Process information for dissemination through available and relevant outlets. For example, it can be very useful to disseminate information at all levels of the educational system from grade schools to university. Teachers should be viewed as a key

resource in the APELL Process. It may also be important to prepare APELL Process information for dissemination through religious leaders and through their places of worship.

Media Interactions

Developing good working relationships with media has a positive impact on implementing the APELL Process. This is a basic relationship building process that requires time and effort by facility managers, local authorities, community leaders, and for the Coordinating Group as a whole. Selection of a spokesperson is very important for all participants in the APELL Process. Such a spokesperson must understand each component in the APELL Process and the needs of various media, and must be articulate and able to put complex material into understandable terms. The spokesperson must have the confidence of each participant of the Coordinating Group, so that he or she can speak for the Coordinating Group without the need to confirm every word.

Within the APELL Process plans for media relations should include:

- **Preparation**
  - Start early and recognize the need to educate and involve local media;
  - Decide who will act as spokesperson for the Coordinating Group;
  - Determine what media outlets are viewed as reliable in your community;
  - Find out (if possible) which reporters are most likely to be interested in stories that might involve your activities, e.g. industrial facility, APELL Process in general, emergency preparedness, etc.;
  - Assemble talking points and handouts on the basic facts about the APELL Process and other activities in plain language. Use photos and video to tell the story;
  - Read the local papers and watch local media coverage to understand what they view as important in the community;
  - Track/follow social media on any relevant topic.
- **Actions with the Media**
  - Equip the spokesperson with basic information concerning area industrial operations that involve hazardous materials in a form that can be handed out. This should include available Material Safety Data Sheets (MSDS) when appropriate;
  - Do the same for area natural hazards[70];
  - Equip the spokesperson with basic information on emergency capabilities in the community;
  - Provide actions that members of the public can take to stay informed and protect themselves. Printed materials are useful in this regard;
  - Be as open and forthcoming as possible with the press and try to cooperate with their deadline constraints;
  - Invite media coverage of meetings, exercises and training;
  - Involve media representatives in the Stakeholder group and on the Coordinating Group is possible.
- **Actions with the Public**
  - Use public announcements (radio and television) if available for educational efforts;
  - Place articles in existing community newsletters and other publications where information and educational materials in greater detail can be provided;
  - The Coordinating Group should consider the possibility of publishing specific or summarized portions of any plans prepared as part of the APELL Process.

70 A resource for members of the media can be found at http://www.unisdr.org/files/20108_mediabook.pdf

Social Media

Social media is valuable to the Coordinating Group in preparedness planning. It is as a means of conversing and engaging with the public as a whole community and can support all aspects of preparedness planning and execution of the APELL Process.

Social media platforms and the utilization of media posting sites such as Flickr, YouTube, and Vimeo are used to demonstrate preparedness and response efforts, helping to foster greater transparency of the work done by the Coordinating Group, Stakeholders and emergency management agencies with the public.

Establishing a news feed or using RSS (Really Simple Syndication) allows the Coordinating Group to publish new content on a website, blog, or other news, and syndicate this to subscribers. The feed is a summarized text of the original web page along with metadata, such as date, ownership, title, and description. News feeds make it easier for people to subscribe to your web pages without having to go and visit.

In the scope of APELL, Social Media can be used to:

- To communicate with the broader community on planning and implementation projects and activities such as designing and developing disaster mitigation measures;
- Developing and executing emergency preparedness plans;
- Coordinating or supporting training and exercise events;
- Stimulate participation such as public engagement in personal, private, and public plans;
- Encouraging private responses and volunteer efforts;
- Engage the public in a dialogue and encourage feedback on efforts to keep the public safe and secure and create greater community preparedness;
- Supporting public review and engagement in coordinating public and private efforts to prevent, prepare, mitigate, respond to, and recover from disasters.

At this stage, all participants' communication and engagement creates a shared awareness of the risks, hazards, capabilities and gaps. It produces a common commitment to pursue the same Vision of Success by working together. This level of engagement is characterized by in-depth dialogue and shared effort among participants.

Social media sites can be used to communicate directly with Stakeholders and those not actively involved in the APELL Process rather than through the media. It will help establish connections, both formal and informal before, during, and after the various programmes and activities of the APELL Process occur. Trained volunteers may be helpful for managing social media communication. This is especially valuable when complex events such as full-scale exercises are planned. Social media is a conversation, not just a broadcasting channel. If social media is being embraced as an important tool for the APELL Process, the Coordinating Group needs to be sure it has staff who can monitor social media sites on a steady basis, using an aggregating tool or other regular update, and reply to questions or correct misinformation when they appear.

SG4 Maintaining APELL

Measuring Progress in Chemical Safety: Using the OECD Safety Performance Indicator Approach

Setting goals and measuring progress allows Coordinating Groups to take a step-by-step approach to reducing the likelihood of accidents and improving preparedness and response capabilities in line with the Vision of Success. Depending upon local risks, capacities and conditions there are several goals and metrics that can be applied to the activities of Coordinating Groups. One size does not fit all. The advantage of this programme for Coordinating Groups is the ability to set goals and measure progress in a way that is specifically relevant to the community the Coordinating Group serves.

One approach for measuring progress is provided by the "*Guidance on Developing Safety Performance Indicators related to Chemical Accident Prevention, Preparedness and Response for Public Authorities and Communities*", which was published by the Organization for Economic Development (OECD [2008])[71].

Why Measure Progress?

The Coordinating Group may be evaluated by local government entities, the mayor, the city council, or a similar group, in order to determine an appropriate level of funding as well as whether the work of the Coordinating Group deserves the time and attention of the Stakeholders. Industry may want to know if the chemical information (and often, the financial support) they provide is being used wisely and efficiently. Individual citizens may wonder if your work is effectively protecting them. National government agencies may use indicators of success to support grant funding and other decisions related to Coordinating Groups. And, of course, the Coordinating Group members individually will want to study what the Group is doing to see if they are satisfied with the work and whether the efforts have led to better protection of the community from technological and natural hazard events.

How to Measure Progress

No Vision of Success can be achieved in one or two steps. It is, instead, achieved through a progression of activities designed to achieve milestones along the path to success. To define these steps the Coordinating Group should establish both long-term and short-term goals that it believes would lead to achieving the Vision of Success. These goals should be a product of clear discussion and agreement among the Coordinating Group membership.

Safety Performance Indicators can help understand whether goals are being met, provide insights on which procedures or practices are not operated as intended or are deteriorating over time; and help identify corrective actions that might be needed.

For purposes of the SPI programme goals are often called "outcomes." The key distinction is that "outputs" are the products that the Coordinating Group makes (e.g., emergency plan, evacuation plan). Achieving a goal or outcome requires measuring the results from outputs or activities in a way that is relevant to the goals or outcomes. For the purposes of SPI these results are called targets or metrics. In other words, a goal should be paired with what is going to be measured that tells whether there is progress towards the goal

71 The full guidance may be found at http://www.oecd.org/ehs. There is also a Guidance on Developing Safety Performance Indicators for Industry

and when the goal has been achieved.

The following examples might help clarify the outcome/output distinction and the role of targets.

1. If the community has recently had a chemical release that led to injuries and deaths, the Coordinating Group could establish a goal: no more injuries and deaths from an industrial accident in this community. That is a clear goal; perhaps overly ambitious in the eyes of some people, but one that is understandable and sensible in the context of your community's recent history.
   a. There are a variety of possible metrics/targets: no deaths or injuries this year, no accidental releases this year, and/or a 30% reduction in the number of accidental releases this year.
   b. As for "outputs," the products and/or activities that the Coordinating Group undertakes to meet the metric/target for the goal, it could be a revised emergency plan, exercises to test the emergency plan, training for local responders, outreach materials for local citizens to ensure that they know the appropriate steps to take if there is an accidental release, improved notification systems to ensure that citizens are aware of a release, establishing a continuous dialog with industries in your community on risk reduction and accident prevention, and so forth.
   c. The Coordinating Group then looks at the metrics/targets, including trends and changes over time, to determine if the outputs are productive and useful in achieving the goal.
2. The Coordinating Group might have as a goal that local citizens be aware of the chemical hazards present in the community combined with a goal that will involve increased awareness of personal responsibility and appropriate actions in the event of an accident. The target could be a specific annual increase in the number of people familiar with local chemical hazards. Measuring success could involve some process for interviewing citizens annually or citizen performance in exercises or other tests of emergency plans. "Activities or outputs" to achieve this goal could be public meetings at which chemical hazard information is shared, printed materials with maps showing the location of specific chemicals, video materials for use on television programmes and/or at public meetings.
3. Another possible goal is to have all facilities in the community be in full compliance with environmental protection or worker safety laws. Targets could be an annual increase in the number of facilities that have submitted information or a reduction in the number of facilities found to be in noncompliance during inspections. Activities to accomplish these targets might include an annual campaign focused on a specific industry sector, or a public campaign urging all facilities to submit the required information.
4. A specific preparedness goal might be for all students and teachers in local schools to be familiar with what actions they should take if there is an industrial accident in the community with a possible impact on the school. A possible target could be the number of students/teachers who take the appropriate action during an exercise. As activities the Coordinating Group could conduct training on hazard awareness, shelter in place, develop print and audio/visual materials, and/or prepare signs to post at strategic points.

The Benefits of this Approach

Coordinating Groups face a substantial burden in demonstrating their worth and the worth of the activities they conduct. Coordinating Groups lack a convincing way to demonstrate this worth because of a tendency to "do things" that seem obviously helpful, for example, hold meetings, make TV announcements describing the Coordinating Group, practice implementing an emergency plan, and share information with the public about the dangers of chemicals in their community. But it is not always clear that these apparently good activities actually contribute to reaching some Vision of Success. The various audiences served by Coordinating Groups will have their own vision for the success

of what Coordinating Groups do and that vision may not be the same as what the Coordinating Group would craft for itself. As these examples demonstrate, Coordinating Groups should have a goal-oriented reason when they choose their activities and then, be able to demonstrate that those activities made progress to achieving their goals in a measurable fashion.

Glossary[72]

Acceptable risk: The level of potential losses that a society or community considers acceptable, given existing social, economic, political, cultural, technical and environmental conditions. Traveling by automobile is an acceptable risk even though there is a risk of death or injury.

Accident: An unplanned and unintentional event that usually results in harm, injury, damage, or loss.

Capacity (Capability): The combination of all the strengths, attributes and resources available within a community, society or organisation that can be used to achieve agreed goals. Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management. Capacity also may be described as capability. Capacity assessment is a term for the process by which the capacity of a group is reviewed against desired goals, and the capacity gaps are identified for further action.

Capacity Development: The process by which people, organisations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions. Capacity development is a concept that extends the term of capacity building to encompass all aspects of creating and sustaining capacity growth over time. It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems, and the wider social and cultural enabling environment.

Climate change: The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods".

Communication: The process of imparting information or knowledge to another. It involves a sender of information and a receiver of the information who must be able to understand the information for communication to have occurred.

Communication strategies and tools: The activities used to disseminate information. May include meetings hazards alerts, memos, emails, newsletters, posters, reports, training, suggestion processes, and informal discussions.

Community: A group of people, including governmental entities, public institutions or groups, and private entities, with diverse

72 Transportation specific terms can be found in the Glossary to the *TransAPELL Handbook*. http://www.unep.fr/shared/publications/pdf/2679-TransApellEN.PDF

characteristics but who are nonetheless linked. They are linked by social ties, economic interests and engage in joint activities of daily life in specific geographical locations or settings. They may or may not share common perspectives on political or social issues.

Consequence: The injury, ill health or damage resulting from an event, or sequence of events, which may be expressed quantitatively or qualitatively. There may be a range of possible consequences for a specific event of scenario.

Disaster: A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. Disasters are often described as a result of the combination of: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences.

Emergency: An event that will produce or exacerbate injury to people and/or damage to property unless immediate intervention occurs. A threatening condition that requires urgent action.

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

Emergency response:

a. The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations such as fire brigades, hazmat teams and law enforcement.

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

Emergency Response Plan: Best practice guidelines for reacting to an emergency so that persons at risk and those tasked with protecting them or eliminating the emergency, respond in a prompt, orderly and appropriate way.

Environmental emergency: An environmental emergency can occur following a disaster or conflict when human health and livelihoods are threatened and affected on a major scale due to the release of hazardous substances, or because of significant damage to the ecosystem. Examples of such emergencies include oil spills, toxic waste dumping, and groundwater pollution, when the environmental risks are acute and potentially life threatening.

Event: The point in time when a particular set of circumstances occurs that result in loss of control of a hazard.

Exercise (drill): A process to train for, assess, practice, and improve performance in prevention, protection, response, and recovery capabilities in a risk-free environment.

Hazmat: Hazardous materials.

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

Hazard identification: The process used to identify all possible situations where people may be exposed to injury, illness or disease.

Hazardous chemical: A chemical for which uncontrolled use or exposure is a risk to safety or health. Such chemicals may be described as dangerous goods, poisons, and drugs or hazardous substances.

Incident:

a. An unplanned, undesirable event that may result in injury to people and/or damage to property.

b. An event that has caused or has the potential to cause injury, ill-health or damage.

Injury: Immediate damage to the body caused by exposure to a hazard.

Management of change: Organisational and process change is a time when safety systems become vulnerable. Planning and monitoring processes need to ensure that when implementing change, new hazards are not created and existing control measures are not breached.

Mitigation: The lessening or limitation of the adverse impacts of hazards and related disasters. The adverse impacts of hazards often cannot be prevented fully, but their scale or severity can be substantially lessened by various strategies and actions. Mitigation measures encompass engineering techniques and hazard-resistant construction as well as improved environmental policies and public awareness.

Mutual aid: The concept of "neighbour helping neighbour" where neighbouring governmental authorities will provide resources to assist in emergency response.

Na-Tech: Technological accidents and disasters triggered by natural disasters.

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

Policies and Procedures: Documents that describe an approach and method for undertaking certain activities or processes.

Preparedness: Preparedness is a continuous cycle of planning, training, exercising, and evaluating, focused on achieving improvement in the efforts of all community Stakeholders to understand the accident risks and hazards in their community and to perform their responsibilities to prevent accidents and respond to those accidents that occur.

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

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

Recovery: The support of emergency affected communities and organisations in the reconstruction and restoration of physical infrastructure, the environment and the community, psychological and emotional wellbeing.

Regulations: Rules made under an act to ensure the requirements of each act are met. Regulations are used to establish minimum standards or make explicit the requirements of an act.

Residual risk: The risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained.

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

Risk: The combination of the probability of an event and its negative consequences.

Risk assessment:

a. Judgment as to the likelihood of an agent producing harm to persons under the circumstances of its use.

b. A methodology to determine the nature and extent of risk by analysing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.

Risk management: The systematic approach and practice of managing uncertainty to minimise potential harm and loss. Risk management comprises risk assessment and analysis, and the implementation of strategies and specific actions to control, reduce and transfer risks.

Shelter in place: The use of a structure and its indoor atmosphere to temporarily separate individuals from a hazardous outdoor atmosphere.

Stakeholders: Those people or organisations who may be affected by, or perceive themselves to be affected by activities or decisions involving risk, vulnerability or preparedness plans.

Standards: A collection of data that is referred to as having a level of quality that is regarded as best practice.

Statute law/legislation/Act: Law passed by a national Parliament or Legislature, or lower level of government when authorized.

Technological hazard: A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Examples of technological hazards include industrial pollution, nuclear radiation, toxic wastes, dam failures, transport accidents, factory explosions, fires, and chemical spills. Technological hazards also may arise directly as a result of the impacts of a natural hazard event.

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

About the UNEP Division of Technology, Industry and Economics

Set up in 1975, three years after UNEP was created, the Division of Technology, Industry and Economics (DTIE) provides solutions to policy-makers and helps change the business environment by offering platforms for dialogue and co-operation, innovative policy options, pilot projects and creative market mechanisms.

DTIE plays a leading role in three of the seven UNEP strategic priorities: **climate change, chemicals and waste, resource efficiency**.

DTIE is also actively contributing to the **Green Economy Initiative** launched by UNEP in 2008. This aims to shift national and world economies on to a new path, in which jobs and output growth are driven by increased investment in green sectors, and by a switch of consumers' preferences towards environmentally friendly goods and services.

Moreover, DTIE is responsible for **fulfilling UNEP's mandate as an implementing agency for the Montreal Protocol Multilateral Fund** and plays an executing role for a number of UNEP projects financed by the Global Environment Facility.

The Office of the Director, located in Paris, coordinates activities through:

- **The International Environmental Technology Centre** - IETC (Osaka), which promotes the collection and dissemination of knowledge on Environmentally Sound Technologies with a focus on waste management. The broad objective is to enhance the understanding of converting waste into a resource and thus reduce impacts on human health and the environment (land, water and air).
- **Sustainable Lifestyles, Cities and Industry** (Paris), which delivers support to the shift to sustainable consumption and production patterns as a core contribution to sustainable development.
- **Chemicals** (Geneva), which catalyses global actions to bring about the sound management of chemicals and the improvement of chemical safety worldwide.
- **Energy** (Paris and Nairobi), which fosters energy and transport policies for sustainable development and encourages investment in renewable energy and energy efficiency.
- **OzonAction** (Paris), which supports the phase-out of ozone depleting substances in developing countries and countries with economies in transition to ensure implementation of the Montreal Protocol.
- **Economics and Trade** (Geneva), which helps countries to integrate environmental considerations into economic and trade policies, and works with the finance sector to incorporate sustainable development policies. This branch is also charged with producing green economy reports.

DTIE works with many partners (other UN agencies and programmes, international organizations, governments, non-governmental organizations, business, industry, the media and the public) to raise awareness, improve the transfer of knowledge and information, foster technological cooperation and implement international conventions and agreements.

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Emergencies, caused by natural or technological hazards, can occur everywhere causing harm to people and damage to the environment and property.

Strengthened awareness of hazards present in a community can greatly improve a community's ability to cope with hazards. Enhanced multi-stakeholder community level emergency preparedness capacities are crucial for responding to emergencies and overcoming disasters when they strike.

This second edition of the Handbook on the Awareness and Preparedness for Emergencies at Local Level offers guidance to community leaders and members, industry and local authorities that wish to improve a community's level of hazard awareness and emergency preparedness.

This Handbook provides the basic concepts for initiating and organizing the APELL Process. It offers guidance on involving emergency preparedness participants, identifying and understanding risks, improving awareness and developing preparedness plans. The concepts and tools suggested are flexible, and their implementation should be adapted to specific local conditions and requirements.

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