

Integrated Rescue System Policy Establishment in Enugu State Nigeria

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1. Discuss the history and legislative framework related to integrated rescue system.
2. Assess the basic organizational structure of integrated rescue system with the status of responses to emergency.
3. Analyze basic approaches, methodologies and selected type activities of integrated rescue system.
4. Define and the process, roles and usage of incident command system and integrated communication in context of selected emergency event.
5. Apply the processes defined in type activity card for selected emergency event in context of Nigeria.
6. Recommend governmental activities related to establishment of integrated rescue system in Nigeria.

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ABSTRAKT

V nedávné době ve státě Enugu v Nigérii došlo v naší společnosti k neustálému zvyšování urbanizace, industrializace, rychlého růstu počtu obyvatel, ozbrojeného banditismu a kriminality, což vedlo ke zvýšení nejistoty, průmyslových nehod, dopravních nehod, vypuknutí požáru, přírodních katastrof a dalších mimořádných událostí.

Vzhledem k tomuto neustálému nárůstu vzniká potřeba účinné a koordinované reakce na mimořádné situace. Byl jsem tedy motivován k tomu, abych toto téma zpracoval v důsledku expozice, kterou jsem dostal od jednoho ze svých magisterských předmětů k dalšímu studiu Integrovaného záchranného systému České republiky, který se chystám doporučit a poskytnout průvodce pro legislativní implementaci směřující k potřebě zavedení stejné politiky integrovaného záchranného systému (IRS) ve státě Enugu - Nigérie, která nejen pomůže ke zlepšení reakce na mimořádné situace, ale bude také definovat koordinaci rolí zejména pro základní síly (Hasiči, policie, FRSC) a lékařská pohotovostní služba).

Klíčová slova:

Integrated Rescue System, Emergency/ Disaster, Fire Brigade, the Police, Medical Emergencies (Ambulance), FRSC ,Rescue, Recovery, Incident Command system, Czech Republic, Enugu state, SEMA, NEMA .

ABSTRACT

In the recent times in Enugu State vis-à-vis Nigeria there has been a continued increase in urbanization, industrialization, rapid growth in population, Armed Banditry and Criminality in our society which has led to increased Insecurity, industrial accidents, road traffic accidents, fire outbreak, natural disasters as well other medical emergencies.

In view of all this incessant increase, these bring to the need for effective and coordinated emergency response. I was motivated to take on this thesis topic as a result of the exposition I got from one of my masters subject (State Joint Security) to further study the Integrated Rescue System of the Czech Republic which is in bid to recommend and provide a guide for legislation towards the need for establishing same Integrated Rescue System (IRS) Policy in Enugu State - Nigeria which will not only help for improved emergency response but will to define the coordination of the roles especially for the Basic forces (The Fire Fighters, Police, FRSC and Medical Emergency Service) that participate as first responders in the management and handling of emergency rescue operations in the State.

Keywords:

Integrated Rescue System, Emergency/ Disaster, Fire Brigade, the Police, Medical Emergencies (Ambulance), FRSC ,Rescue, Recovery, Incident Command system, Czech Republic, Enugu state, SEMA, NEMA .

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INTRODUCTION

When considering the ever-increasing development and modernization in our society (Enugu State) which has brought about rapid urbanization, Innovations and Industrialization with its attendant challenges leading to increased emergencies (extraordinary events) and Security issues occasion by this modernization. It has become pertinent for introduction or establishment of an Integrated Rescue System Policy in Enugu state as practiced in the Czech Republic which is a system of coordinated procedures of its component bodies (ie Fire Brigade, Police and Emergency Medical Service – Ambulance) in mitigation and preparing for emergencies and in carrying out rescue operations and clean-up work.

An integrated rescue system is an integral and essential part of government in ensuring the security and safety of lives, health, property and environment of her citizens which is a primary responsibility of every government. IRS is established for solving daily emergencies [1]. And to make this possible legislation is required.

I was motivated to choose this topic “Integrated Rescue Policy Establishment in Enugu State Nigeria” following an expository excursion with our teacher Doc. Ing Ludek Lukas. Department of Security Engineering FAI, UTB to the Regional Operation and Information Center of Fire Rescue Service, The Central Crisis Management Office, Operation and information center of the emergency medical service at Bata Hospital (all in Zlin) as part of my course work and from the knowledge gathered I thought it wise that a system like this will be needful in my home state as a contributions for an improved or a better emergency response and coordination.

The aim of the Master thesis:

- 1) To understudy the Integrated Rescue System of the Czech with regards to crisis / emergency management, its organizational structure, legal frame, task, responsibilities of the component basic bodies.
- 2) Highlight the approaches and principles of its operation and management as well type activities of the Integrated Rescue System (IRS) and its application.
- 3) Apply the process of a selected Activity (here using Traffic road accident) in context of Enugu State – Nigeria.
- 4) Make recommendations to the government relating establishing an Integrated Rescue system in the State.

The master thesis is divided into Theoretical and Analytical (Practical) parts. The theoretical part describes the historical development of the issues, the legislative framework of IRS with emphasis on IRS of the Czech Republic, the organizational structure and description of the basic components

and other bodies their roles and status of response to emergency and the approaches and principles of its operation and management as well type activities of the Integrated Rescue System (IRS) and its application. The practical part deals with analyzing a selected type activity for joint intervention during traffic accident which is one the daily emergencies in the state in order to demonstrate the efficiency and effectiveness of the IRS in solving such emergency. Then Recommend various gains of establishing such a system that will definitely bring an integrated, improved and better coordination for emergency preparedness and response of the basic rescue bodies in the State.

I. THEORY

1 HISTORICAL DEVELOPMENT OF INTEGRATED RESCUE SYSTEM

In this theoretical part of master thesis will be discussed the historical development of coordinated means of managing emergencies and crisis (extraordinary event) situations , legislative and legal framework (with emphasis on understudying the Integrated rescue system of the Czech Republic), the basic organizational structure, approaches, methodologies and selected type activities of the integrated rescue system.

It is worthy to note that the Integrated Rescue System (herein referred as IRS) is synonymous with Czech Republic.

In the field of Emergency management which is about the organization and management of resources and responsibilities for dealing with all aspect humanitarian crisis, and emergencies with the aim to reduce the harmful effects of all hazards including disasters [22] and to achieve this brought need about the Integrated Rescue System (Herein referred as IRS) which is a procedure of coordination amongst the bodies / forces for Preparedness, Response, Prevention and mitigation before, during and after emergencies [1, 2]. Integration therefore, means that individual bodies/ forces (organizations and Agencies) puts together its resources (Human, Material and Equipment) in other to have a purpose driven force and resources for mitigation and elimination of crisis consequences. The integration of these bodies leads to an efficient and effective usage of available or budgeted resources [4]. It follows therefore, that the integrated rescue system is about emergency, Crisis/ Disaster management as well population protection in other to save lives, properties and environment and it is also an integral part of the state security and an essential role of the government. As the United Nations Development Programme (2005) puts that emergency/disaster management is a body of policy, administrative decision and operational activities to prepare for, mitigate, respond to and repair the effects of natural or man-made disaster, by this definition it shows that emergency management has to do with a complete activities that are done in security and natural hazard (or extraordinary) event.

1.1 HISTORICAL TREND OF EMERGENCY MANAGEMENT

As the need to harness and properly coordinated disaster and emergency response have made many nations of the world to seek ways to implement an integrated system that will manage all emergencies and crisis situations considering the benefits that comes from such system, a nation like the United states of America can trace its history of emergency management to the early 18th (1800-1930s) century with the 1803 passage of Congressional Act which provided financial assistance to a New Hampshire town devastated by large scale inferno (fire disaster) marking the first involvement of the federal government in local disaster.

Then came the piecemeal era (1930s – 1940s) which is the start of the Great Depression in 1929 saw the commissioning of the Reconstruction Finance Corporation (RFC) by the President Herbert Hoover, the agency among other responsibility was lend money to banks and institutions in other to stimulate economic activities and to coordinate the dispensing of federal dollars in the wake of a disaster. Hence, RFC can be considered to be the first federal organized disaster response Agency [22].

During the cold war era (1950's) which was a time when civil defense program became the new order due to the situation from risk of potential nuclear war and probable radioactive incidence the most states had a civil defense director (official) mostly retired military personnel who represents them in the government with main role of providing technical assistance in an instance of disaster or emergency situations. Federal support for the civil defense activities where through the Federal Civil Defense Administration (FCDA), then an office of Defense and Mobilization was created under the Department of Defense with primary function for quick mobilization of assets, materials, production and stockpiling of critical material in the event of war or disaster. One of the operations of the FCDA is called Emergency Preparedness. The decades of 1950s – 1970s were with series of both natural disasters in the United States ranging from Hurricane, earthquake, and flooding and with changes and reforms in the emergency management systems and response as well as reorganization of the various agencies that have been saddled with handling disaster and emergency.

The Reorganization Plan Number 3 (3 CFR 1978, 5 U.S Code 903) submitted to the congress on June 19, 1978 by then President Jimmy Carter brought about the new era of an integrated emergency management system. The plan was meant to consolidate emergency preparedness, mitigation and response activities into one federal emergency management organization.

In the year 1979 as a result of event of the Hurricane Agnes and the three mile high nuclear accident, the congress and the president Jimmy Carter through a combination of legislation and executive order established the Federal Emergency Management Agency (FEMA). The new development

transferred all emergency management agencies, departments and organizations and their functions to FEMA

Today under the Homeland Security Department is responsible for coordinating all crisis and disaster rescue operation in the US. However, prior to this time many department and agencies have been created and they manage disasters and emergency in their various capacities as stipulated by regulations.

The Federal Emergency Management Agency – Urban Search and Rescue (FEMA – US&R) have amongst others the responsibilities for planning and coordination of all relevant agencies that participate in search and rescue operation which is done as an integrated system. There has been a new draft of regulation on 23rd April 2018 for this integrated system of rescue by the National Search And Rescue Committee (NSARC) which defines the role each participatory agencies and partners in the SAR operation must play making it mandatory that no agency must work alone in responding to disaster or emergency both at local level. The federal SAR agencies must work with other organization to effectively save lives and properties within limited budget, personnel and training [6].

Similarly country like Russia, during the Cold War, had more strong emphasis on civil protection due to the threat of nuclear attack from the United States. They had much attention to Nuclear- fallout shelters and evacuation procedures due to the immediate crisis and threat of mutual destruction; however as the cold war era suffices Russia started to establish legislation to emergency management, based on this the government realized that effective emergency management required a structured, developed system. Russia in these modern times has integrated additional mitigation and preparedness measures into their programs, hence becoming more pro-active in their strategies and coordination [23] likewise in many other countries across Europe such as Republic of Slovakia and Republic Slovenia have similar IRS relative to that of Czech Republic.

I.1.1 The trend of an organized Emergency and disaster management in the Federal Republic of Nigeria vis-à-vis Enugu State

Can be traced to her pre-independence time in 1906 when the Fire brigade was established. This agency was responsible for saving of lives, properties and provision of humanitarian services during emergencies. The 1960s and 70s after her independence this function was taking over by an ad hoc arrangement domiciled in office of Head of State and state Governors of which disaster response was then considered as a mere security issues. The adverse effect of the drought of 1972/73 on the lives, properties, environment and economy brought about the establishment of the National Emergency Relief Agency (NERA) whose primary function is for administering relief materials to disaster victims [23]. However, to meet with the natural disaster reduction strategies of the United Nations International Decade for Disaster Reduction and to expand the scope of responsibility of

NERA, the federal government in 1990 set an inter –Ministerial body and subsequent in 1993 its status was raised and it became an Agency under the Presidency. In a workshop 1997 for the major stakeholders in emergency/ disaster management in Nigeria organized by the management of NERA where critical issues for efficient disaster management was discussed. Parts of the resolutions during the meeting are;

Expansion of functions, amendment of the decree establishing NERA and change its name to National Emergency Management Agency.

Structuring the new Agency with consideration of appropriate policies and strategies; Search and Rescue Mobilization capacities; Information; Education and preventive strategies; Administrative; Finance and Logistics systems; Relief and Rehabilitation capacities; Research and planning.

The acceptance of these recommendations by the Federal Government led the establishment of the National Emergency management Agency (NEMA) in March 1999 which was established under decree 12 as amended by Act 50 of 1999 to manage disasters in Nigeria. The agency by the law establishing it is to amongst others (a) formulate policy on all activities relating to disaster and emergency management in Nigeria and coordinate the plan and programs for efficient and effect response to disaster. (b) Monitor the state preparedness of all [2]

The Agency is structured to have

National Emergency Management Agency NEMA - at Federal level

State Emergency Management Agency SEMA – at the state level

Local Emergency Management Agency LEMA - at the local government level

This structure gave birth to the Enugu State Emergency Management Agency (ENSEMA) which drives its responsibility from the framework of the NEMA as the agency to coordinate and manage disasters and emergencies in State and had its legislation from Law No 10 of 2010: Enugu State Emergency management law 2008.

In the recent times Since the military decree of August 1991 which gave Enugu its statehood, it has continuously witnessed an increase in population growth, urbanization, industrialization with attendant vices like Road traffic accidents, Fire outbreaks, flood, land slide, armed banditry, industrial accidents, natural disasters, amongst other medical emergencies where the use of combine forces for emergency response were needed for intervention. Some of such instances was in 2012 when a 50 year old bridge collapsed in Abakpa-Nike which took the effort of private construction company to intervene and rescue the trapped victims, in April 2016 Fulani Herdsmen attack at Nimbo town where over 40 persons were killed despite earlier tip off as speculated, Windstorm Disaster of 2018 at Agbaogugu town which took days before relief came to victims affected by the incidence. Fire

Inferno at Amigbo Timber Market Enugu in July 2019 where over 68 shops were burnt amounting to loss several Millions of Naira.

The fact is that in Nigeria , the first responders to emergencies or crisis situations are usually The Police, Fire Service, Federal Road Safety Corp (in some cases provides ambulance) and Medical emergency service (Ambulance) and some commercial medical service companies (EMS).

The major obstacle is that there is no central coordination (integrated rescue system policy) neither a uniform radio network for these first responders (the Nigeria Police, Fire Service, FRSC and Emergency Medical service both at federal and state Level which made it that first to get to crisis scene becomes in charge until the situation is referred to the NEMA, this is also the case in Enugu State leading to more loss of lives, properties and resource as well valuable time. However, the State Emergency Management Agency has been making effort to scale up in managing emergencies which led to the establishment of incident control system and update of emergency toll free number (1-1-7) in 2018. Though, the lack of an integrated system policy which will define and coordinate the role and resources of the basic bodies that participate in emergence rescue operation remains a problem.

As a result of the absent of an effective policy there's always an issue with economic impact, improper documentation and incorrect data about the number of effected persons in emergency / crisis situation which brings about conflicting figure being announced by different bodies that participated in the rescue and clean-up operation.

1.1.2 The Integrated Rescue System in the Czech Republic

The integrated rescue system in the Czech Republic is connected to the Security Council of the Republic which is the advisory body of the Government. The Chairperson is the Minister of Interior. To ensure the fulfillment of its task the council established four permanent working committee of which their responsibilities were assigned by the government in 1998:

- The Defense Planning Committee
- The Civil Emergency Planning committee
- The Foreign Security Policy Co-ordination committee
- The Intelligence Activities Committee

The responsibility of Civil Emergency Preparedness in all Administrative bodies lies with the statutory representatives whose departments operate both in Central and Territorial Administrative Offices. It has its present structure as thus:

- National Level: The Ministry of Interior (MOI) with cooperation of other central bodies including Municipal authorities in the area of Civil protection
- Regional and Local Level: The regional and municipal authorities work in cooperation with the central level
- International Level: The Ministry of Interior is the coordinator of both International and national Civil Protection. They provide its future Policy guidance, direction and process.

The Civil protection plan is controlled by the General Directorate (DG), the Fire Rescue Service (FRS) and the regional FRS. The FRS has a unified approach to all kinds of Emergencies. Operational Organizations and civil protection authorities are all part of the DG FRS and operate as one organization. Other authorities could be involved in accordance to the type of emergencies.

Civil Protection, according to Act No. 239/2000 Coll., described it as the observance of civil protection task which emanates from the additional protocol to the Geneva Convention on Protection of Victims of international armed conflict of 1st August 1949. The tasks are basically: warning, evacuation, sheltering and emergency surviving of people and protection to their lives, health and properties.

The main objective of civil protection (procedures and measure) is to minimize the consequences of emergencies and to protect the lives and health of the inhabitants, property and environment. These procedures and measure acts as part of crisis, emergency or defense planning.

Hence, the Integrated Rescue System, which is a composition of the Fire Rescue Service of the Czech Republic, the Police, and Emergency Medical Service (as basic component) among others, is the fundamental for coordination of organizations and services for their measures and procedures in preparedness to emergencies, rescue and recovery work [3].

Organisational chart

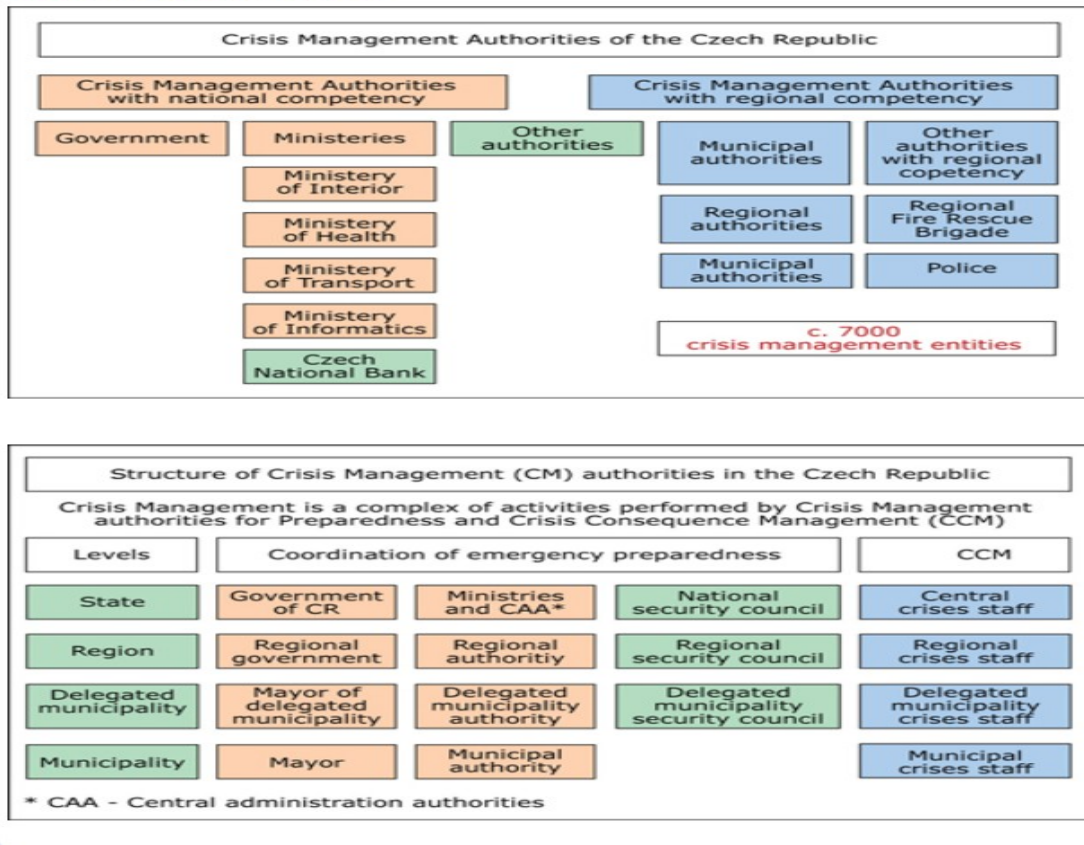


Fig 1: Organizational chart of the Crisis Management structure of the Czech Rep.

Source: [4]

The system was earlier operated where pre-hospital care is provided by Emergency Medical Services EMS. When there is an extraordinary situation the service is immediately supported by its own doctors and nurses and other staff of surrounding hospitals. Means of transport is mobilized including the Air rescue service, the hospital care are managed by regional trauma centers that send medical team to the disaster site, they prepare free bed capacity both at their region and in other regional hospitals including logistics for drugs and medical equipment.

The weak point of the system then was communication. Another part of the system is the mobile surgical team “trauma team”, the team is capable of supporting regional centers with staff and medical equipment, the team can be summoned by the Czech Minister of Health and they included the Directorate of Military and Civil Defense Assets of UN OCHA in Geneva.

The establishment of the Integrated Rescue System including disaster management and specified activities of the three basic components of IRS - Fire Brigade (FRS), the Police (state and municipal), and the medical services was complicated given to condition of economic and insufficient financial resources for necessary investment [7]

The strength of both systems can be compared using the flood disaster of July 1997 and August 2002 which in both cases 30% of the republic was affected. The former was characterized in terms of rescue responses with a problem to lack of preliminary warning and collapse of link – due to the fact that all technical resources were dependent on electricity supply which resulted in failure of communication and acoustic sirens, the problem was revealed in the quality of rescue activities and in the dislocation of rescue teams and technical resources. While flood event of August 2002, with the so-called crisis laws (enforced from year 2000 in the Czech Republic) was better managed because all the rescue services (police, firefighters and EMS) were more prepared due to proper coordination, improved early warning system and communication. (In 1997 flood approximately 26,500 people were evacuated and in year 2002 more than 200,000 people were evacuated. [7])

No society can be said or claim to be immune from the harmful effects of disaster, threats and hazard leading to crisis and emergency situations, however government and society has over the years has continued to find a better and effective ways to prepare for and manage the harmful effect of these emergencies. This chapter showed the historical trends of emergency management in few selected countries and how the trends have evolved leading to what we have today as an integrated system of crisis / emergency management (with more elaboration IRS of the Czech Republic). It is good to note that the Integrated Rescue System (IRS) is synonymous to the Czech Republic.

2. BASIC TERMS AND LEGISLATIVE FRAMEWORK RELATING TO INTEGRATED RESCUE SYSTEM

In order to have a better understanding of how IRS implements its procedures in carrying out their responsibility of emergency management it is important therefore, to define some of the terminologies. (The following definitions were taken from excerpts of documents and articles from FRS and the Ministry of Interior of the Czech Republic)

2.1 Basic Terminology of IRS

An extraordinary event - is a situation or event originating from certain surroundings as a result of a natural disaster, accident, illegal activities, contamination or hazardous chemical leakages, critical infrastructure threat and economic and threat of internal security that is solved by ordinary measures of IRS bodies and organs of the security system in accordance to specified legal norms.

An Emergency - as defined is an extraordinary event caused by human activity, natural influence, or accidents that endangers life, health, property or environment resulting to declaration of a state of danger, emergency, and state of threat or war. The danger or impending danger cannot be deterred and caused damages cannot be eliminated solely through ordinary activity of rescue bodies, public authorities, legal and physical entities. Emergencies are divided into four (4) levels of IRS alarms, which are declared based on the severity of the emergency: Intervention Commander;

1st Level of IRS alarm – if number of injured or affected people is up to 10 persons.

2nd Level of IRS alarm – FRS – the number is from 11 to 100 people

3rd Level of IRS alarm – number of people affected from 101 to 1000 persons

4th Special Level of IRS alarm (FRS) – when affected numbers of persons are above 1000

In a situation where the highest number of alarm level is completed, the Governor of the region takes over proceedings from the intervention commander, but if the emergency goes beyond the borders of the Republic or the region, the Ministry of Interior be in charge for coordination of the rescue and clean-up work.

Emergency Plan - is a special purpose document that presents a summary of measures for implementing a rescue and clean-up work in order to avert or reduce the impact of threats arising from an emergency and to remedy consequences that it caused. This plan consists of two parts: Main and Supplementary part. The supplementary part of the emergency plan according to Decree No. 462/2000., paragraph 15, section 3 contains planning, coordinating, controlling and other documentation for solving of an emergency using the emergency plan by the responsible person or other competent authority.

Emergency Planning - are set of procedures, links and activities carried by ministries and other central administrative authorities, regional and municipal authorities, legal entities, or natural persons who are concerned and engaged in business to plan measures towards carrying out rescues and clean-up work in the event of emergency- focused on always using existing forces and resources.

Contingency Planning / Plan - contingency planning is an integrated group of procedures, methods and measures that are used by relevant bodies and designated subjects in case of prevention, preparation and reflection of activity of emergency situations while

Contingency plan is a set of documents containing the description and analysis of threats and a set of emergency measures and procedures that are processed by executive departments, administrative authorities, and bodies of local government to ensure the readiness for emergency situations resolving within the competence of relative laws (Act No. 240/2000 coll. on Crisis Management and its Amendment). The competent Regional authorities process the regional Emergency Plan and it is ensured by the Regional Fire Rescue Services which is approved by regional Governor prepared by the regional Security Council. The regional emergency plan must contain the responsibilities and activities of the IRS bodies. Part of the regional emergency plan is the risk enumeration and regional emergency security strategy.

Security - a state in which the system is able (have capacity) to withstand known and predictable internal and external threat that may adversely individual elements (entire system) in order to preserve or protect a structure of the system; its reliability, stability and target behavior.

A Crisis state - is a state that is declared by either the government of Czech Republic or Prime Minister CR (state of Emergency), or the Parliament of the Czech Republic (state of threat or of war), or the Governor of the Region or Mayor of “capital city of Prague” Municipality (state of danger) in the case of the threat of crisis occurrence and according to its character and extent.

Crisis Situation - an extraordinary event (catastrophe) that leads to disruption of critical infrastructure or other hazards in which a condition is declared a state of danger, state of emergency, or state of threat to the state.

Critical Infrastructure - these are systems, resources and their parts that are essential for maintaining essential social functions, safety, health, or economic or social conditions of the population of which the disruption or destruction will have severe impact on the functioning of the state.

Crisis Staff - the regional crisis staff and the crisis staff of a municipality with extended powers are the working bodies for solving crisis situation in their region or municipal.

The chairman of the crisis state in the region is the Governor while that of the municipal is the Mayor.

Risk – is the possibility or uncertainty about the effects/ implications of an activity with respect to something that humans value (such as health, safety, property or environment), of focusing on negative, undesirable consequences.

Population protection – is the fulfillment of civil protection tasks, especially warnings, evacuations, emergency survival of the population and other measures to ensure the protection of lives, health and property.

Rescue operation – the activities to reduce or avert the immediate or further impact of risks due to an emergency in relation to threat to life, health, property or environment, and leading the interruption of their causes.

Material assistance (aid) – is the provision of material resources in the implementation of rescue and recovery services, and during exercises at the request of the intervention commander or the regional governor or the mayor of a municipality.

Recovery – it the activities consisting the restoration of the environment, social life and material values; it is basically focused or aimed at rebuilding the community or state after completion of rescue and liquidation works.

2.2 The legislative framework – IRS of the Czech Republic

The legislation about IRS emanates from the provisions of the constitution of the Czech Republic and the Charter of Fundamental Rights and Freedoms, of the constitutional Act on Security of the Czech Republic (Law No. 110/1998 Coll.) the competence of the IRS is provided by the Competency Act (No. 2/1969 Coll.) which is delegated to the Ministry of Interior as the guarantor of Integrated Rescue System in the Czech Republic.

The Law No. 239/2000 Coll., On Integrated Rescue System and its amendment to Certain Acts, as amended. In latter wording is the basic legal frame.

The law No. 239/2000 coll., on the IRS in §2 and law No. 240/2000 Coll., on Crisis Management in §2, determines some of the basic terms [7][8]. These Act defines the Integrated Rescue System (hereinafter referred as IRS), the individual components and their powers, competence and authority of state and territorial self-governing units, rights and obligations of legal and natural persons in preparation for emergencies and in rescue and clean-up work and in protecting of the population before and after time of declaration of crisis states.

The IRS coverage, regulation and implementation were built upon these three laws;

- Act (No. 239/2000 Coll.,) on integrated rescue system
- The law (No. 240/2000 Coll.,) on Crisis Management
- Law (No. 241/2000 Coll.,) on Economic measure for crisis situations these were the backbone upon which the Integrated Rescue System is operated.

It is worthy to note that when Major disaster happens in the Czech Republic, the central Crisis staff at National, Regional or Municipal level is called upon, who in turn gives orders to an on-site commander in accordance to the regulations [3]

Emergency Management Act - the management of emergency in the Czech Republic is based upon the Act No. 240/2000 Coll., on Crisis Management and on amending certain Acts) specifies the activities and competence of State authorities, Territorial self-governing authorities and the rights, obligations of legal and physical entities in the preparation for emergency situation. This Act was amended in 2010 which was necessary in order to incorporate the EU guideline requirements of the EU council for determination and detonation of the EU Critical Infrastructure and the need to increase their security. The condition made to solve the problem of critical infrastructure at National Level.

2.2.1 Other legislation relating to IRS and Its Components

Act No. 133/1985 Coll., on Fire Protection for regulation of conditions regarding to life, health and property against fire and provisions of first aid in cases of natural disasters or in an extraordinary event. It stipulates the scope of responsibilities of fire protection departments and that of fire protection units as other stakeholders [18].

Act No. 238/2000 Coll., on Fire Rescue Services of CR this law defines the basic duties of the FRS of the Czech Republic whose primary duty (mission) is protection of lives, health of inhabitants, environment, animal and property against and other emergencies and crisis situation [10]. The Act is closely interconnected with the concurrently prepared act as the Act on Integrated Rescue System and the Emergency Act [21].

Act No. 273/2008 Coll., on the Police of the CR determines the Police of the CR as a uniformed armed security corps. Whose duties are to serve the public in ensuring the safety of persons and properties and to maintain public order, crime prevention and to carry out duties based on Code of Criminal Procedure and other task according to internal order and security assigned in laws, and with regards to regulations of the European Community or International treaties [13, 21]

Act No. 374/2011 Coll., on Medical Rescue Services describes the activities of the Medical Rescue Services in Provision of professional pre-hospital care. This represents the medical aid provided

to an injured or sick person at the site of incident (accident) and during transportation to medical facility treatment and at handover to the medical facility.

2.3 Documentation of the Integrated Rescue System

In relation to the corporation within the IRS describing the mutual action of the basic and other bodies there is a documentation which is in addition to emergency plan.

Table 1: Integrated Rescue System Documentation

Source: [21]

| Document Type | Description of the Document |
|---|---|
| Model action activities | Describes the processes of IRS components during rescue and clean-up works with regards to the type and character of the extraordinary event. |
| Regional accident plan and external accident plan | Describes the activities and arrangements for performance in a relevant accident so as to reduce its impact |
| Agreement on provision of first aid. | Document ensuring the uniform process for providing first aid within the IRS |
| Document for statistical survey and mutual rescue and liquidation work | Documentation of the IRS component about rescue operation and clean-up works performed at the intervention site. |
| Documentation on mutual schooling, training and education of the IRS components | A recommendation process for the preparation and performance of diagnostic and tactical training of the basic components or other IRS bodies. |
| Alert Plan of the IRS | A document which describes the procedure for calling particular forces and means of the IRS component during the joint intervention for rescue and clean-up operation |

The chapter gave an insight of the basic terms associated with emergency management which is commonly understood amongst the stakeholder in the field of emergency and crisis managers and also provided the information on the legal frame in which the Integrated Rescue System is been operated. It further defined the various laws according to individual components and the Act No. 239/2000 Coll., determines the situations and how the Integrated Rescue System (IRS) bodies should cooperate.

3 THE ORGANIZATIONAL STRUCTURE OF THE INTEGRATED RESCUE SYSTEM WITH STATUS OF RESPONSES TO EMERGENCY

The organizational structure of any organization shows how the functioning and hierarchy of positions and level of authority which flows from the head to the least person in the organization.

3.1 Integrated Rescue System Organizational structure

The organizational structure of the integrated Rescue System can be split into two based on their status of response to emergency during crisis situation by either Primary or Secondary (Basic or Others). Where the basic components are used in solving daily emergencies and the other is activated in an overwhelming (extraordinary) situation which cannot be solve alone by the basic bodies.

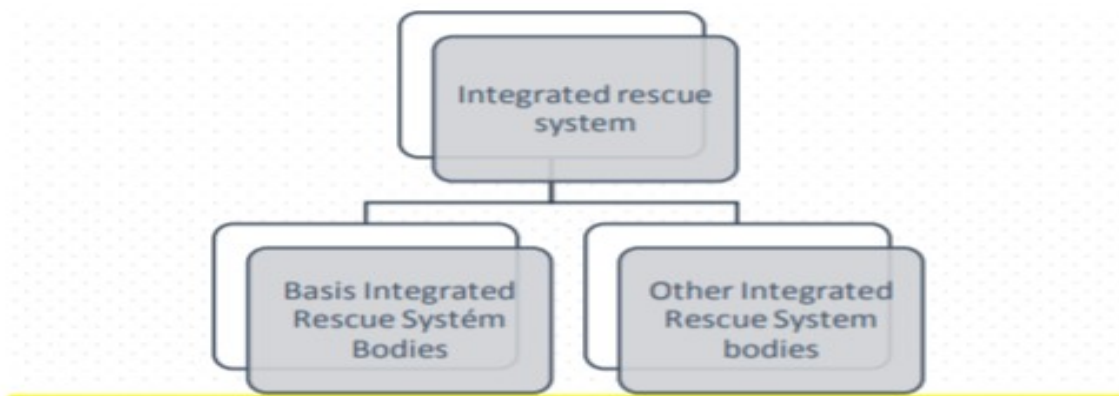


Fig 2: Structure of IRS based on status

Source: [5]

INTEGRATED RESCUE SYSTEM

Basic IRS bodies

- Fire Rescue Service of the Czech Republic and Fire units, based on fire cover,
- Police of Czech Republic,
- Medical Rescue Service.

Other IRS bodies:

- Specified forces and means of armed bodies,
- Other armed security services,
- Other rescue services,
- Public health protection authorities,
- Emergency, stand-by, specialised and other services,
- Civil Protection establishments,
- NGOs and civil associations, which can be used for rescue and clean-up operations.

Fig 3: Basic and other Bodies of IRS.

Source: [5]

Since Integrated Rescue System is the coordination of proceedings of its bodies during preparations for emergencies, rescue and clean – up operation, it follows that the command on site are given by the authority with the largest part in the emergency response[4].

In an overwhelming or extraordinary situation where the basic component of the IRS were unable to manage a crisis situation by its own forces and resources the other bodies are called upon for assistance in accordance with regulation and by law. The Special units of IRS of Czech Republic are Urban Rescue and Search units which its operation is focused abroad based on government bilateral agreements.

3.1.1 The Basic components of the Integrated Rescue System

The basic component of bodies of the IRS is made up of the following forces

- the Fire Rescue Service and Fire Units of the Czech Republic,
- Police of Czech Republic,
- Medical Rescue Service.

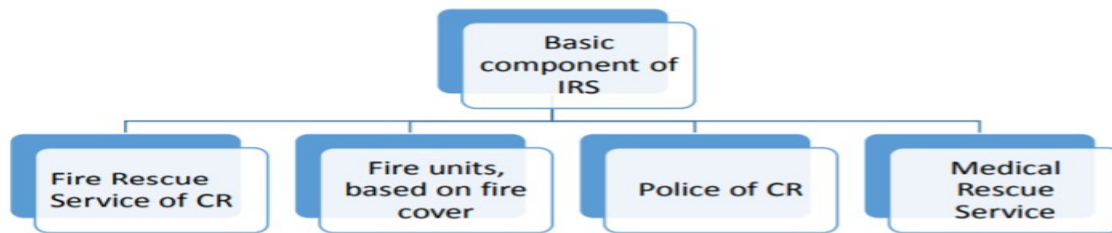


Fig 4: Basic IRS Component

Source: [5]



Fig 5: Picture of IRS Basic Components

Source: [1]

3.2 Fire Rescue Service of the Czech Republic and fire protection unit

The Fire Rescue Services of the Czech Republic (herein referred as FRS CR) [4] is one of the basic bodies of the Integrated Rescue System (hereinafter referred to as IRS), and operates in its new structure since the 1st of January 2001. The FRS CR fulfills tasks in the scope and under conditions determined by special laws, which are:

- Act No. 133/1985 Coll., on Fire Protection, as amended,
- Act N. 320/2015 Coll., on the FRS CR and on amendment of certain acts, as amended,
- Act N. 239/2000 Coll., on the Integrated Rescue System and on amendment of certain acts, as amended,
- Act N. 240/2000 Coll., on the Crisis Management and on amendment of certain acts (the Crisis Act), as amended. Under the Act N. 320/2015 Coll., new organizational structure was established and the basic tasks were determined.

The Fire Rescue Services of the CR has primary mission to protect the lives and health of inhabitants, environment, animals and properties of the citizens from fire and other emergencies and pro-

vide effective emergency assistance in crisis situation within the scope of task defined by the laws (Acts) mention above. These include:

- Fire Protection,
- Integrate Rescue System,
- Population Protection and,
- Crisis / Emergency Management.

The FRS CR also fulfills exceptional tasks of providing Humanitarian Aid within the framework of the Czech Republic and organizes the acceptance of Humanitarian Aid from abroad and provides Humanitarian Aid to abroad in cooperation with the Ministry of Foreign Affairs. These tasks are provided by members of the FRS CR employees under the labour code.

In carrying out its tasks, the Fire Rescue Service of the Czech Republic cooperates with administrative authorities and other state bodies, self-government bodies, legal and natural persons, international organizations and foreign entities.

3.2.1 Main Activities of the Fire Rescue Service of Czech Republic

- Interventions (firefighting, liquidation of consequences of natural disasters and other emergencies).
- State Fire Supervision.
- Population Protection
- Provision of Humanitarian Aid in within the country and abroad
- Formulation and presentation of Preventive Educational activities and
- Creation of legislation with regards to Fire Protection, Integrated Rescue System and Crisis Management.

3.2.2 Organizational structure of Fire Rescue Service of Czech Republic

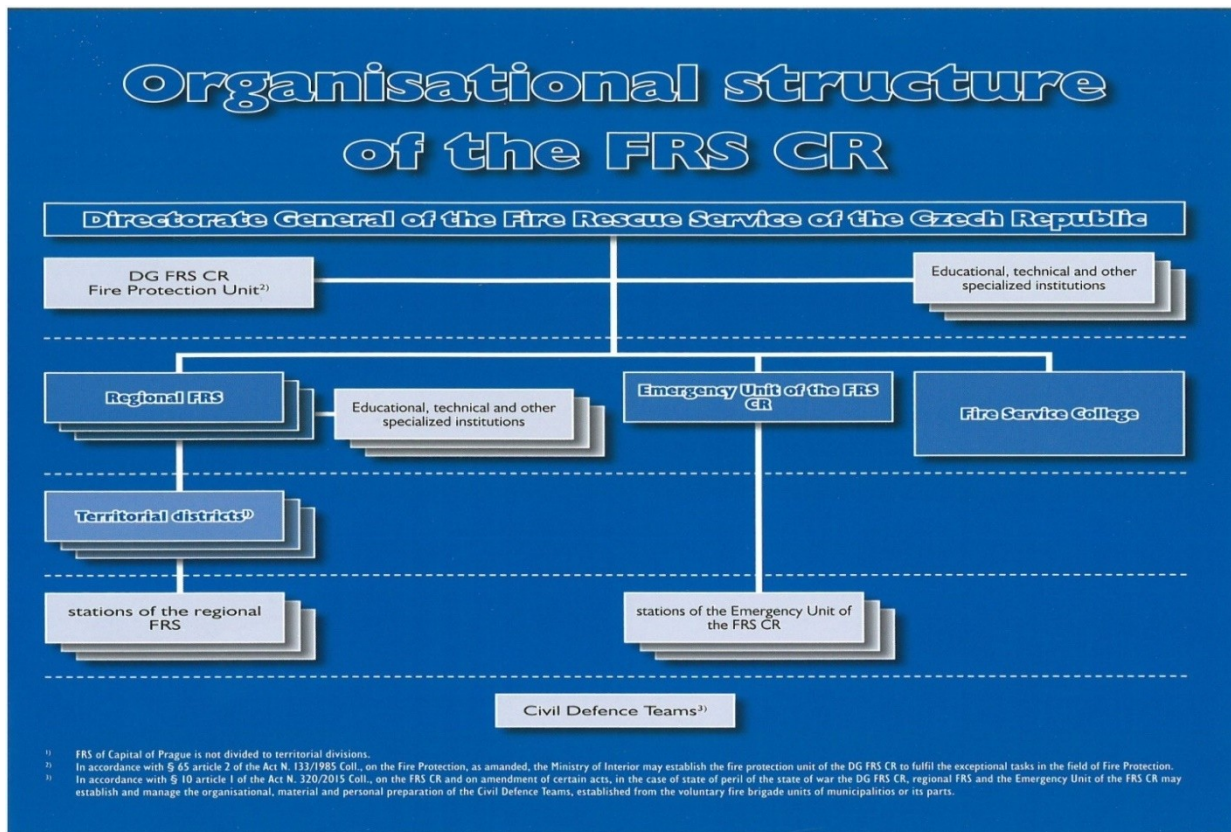


Fig 6: Organogram of the Fire Rescue Service of the CR

Source: [4]

3.2.3 The Directorate General of the Fire Rescue Service of Czech Republic

The Directorate General of the Fire Rescue Service of the Czech Republic (Herein referred as DG FRS CR) also includes educational, technical and special-purpose facilities, the Directorate is an organizational part of the Ministry of the Interior and have 14 Fire Rescue Corps of the Regions, Secondary Technical School of Fire Protection and the Higher Technical School of Fire Protection in Frýdek-Místek.

The DG FRS CR fulfills the task of Ministry of Interior (MOI) in the field of fire protection, Crisis management, Population Protection, Civil Emergency planning and Integrated Rescue System [11]

3.2.4 Regional Fire Rescue Service

A total of 14 (fourteen) Regional fire rescue service exist in the Czech Republic, The Head of fire brigade of each region who is appointed by the Directorate General of FRS CR is the director of the Regional Fire Rescue Service. The Operation and information center (OPIS) of Integrated Rescue system is established in each region where the emergency number (Call Centre for IRS line 112 and

150) is operated from the Regional OPIS, Educational, Technical and specialized Facilities fall within the Fire Rescue Service of each the given Region.

3.2.4.1 Territorial Districts

This is a department of the Regional FRS CR whose members are organizational member of the Regional Fire Rescue Service headed by District Director

3.2.4.2 Stations of the Regional Fire Rescue service

These are units of Regional fire rescue stations, members of this unit performs their task of rescue and liquidation within the circuit of their territory.

3.2.5 Emergency Unit of the Fire Rescue Service

The unit became active since January 2009 and in accordance to the Act on the fire rescue of Czech Republic the Emergency unit carries out its activities in providing;

- Rescue and Relief Works
- Rescue and Humanitarian assistance to abroad (under the provisions of Urban Search and Rescue)
- Education of the Firefighters.

3.2.6 Fire Protection Units

This unit is considered as an organized system comprised of professionally trained personnel (firefighters), fire equipment and material means of fire protection (vehicles, car equipment, diesel generators etc.) [1]. The Fire Protection Unit has a formation of Platoons, Teams and Group. One Platoon has 2 – 3 teams or group, one team has a commander and other firefighters. One group has a group commander plus 1 – 2 firefighters [11].

3.2.7 Types of Fire Protection Unit

- Regional FRS Units they are professional firefighters of the Czech Fire Rescue Service, who are performing their task as employees in the Fire stations of the region.
- Company FRS Unit They are company employees performing their activities in the company as their profession.
- Municipal unit of voluntary firefighters These individuals does not perform firefighting duties as their profession
- Company unit of voluntary firefighters Company Employees who do not perform firefighting duties as their profession but are prepared to solve emergency.[1]

- Military Fire Unit they consist of employees or members of the Army of Czech Republic, Its establishment, internal organization and equipment are in the responsibility of the Ministry of Defence.

About 78,000 firefighter's works in the Fire Protection Units, with approximation of 9,000 professional firefighters, 69,000 are voluntary firefighters. The number of Fire Protection Unit ad of 31st December 2017 was 7,348 and number of interventions carried out was approximately 107,000 on average per year. [11]

3.2.8 Activities of Fire Units

Besides firefighting, the fire units participate in rescue and clean -up operations during Traffic accident, (daily emergencies and accidents), in accident with HazMat leakage, Technical interventions and natural disaster.

They carry out the tasks connected with prevention of spread of dangerous infections and diseases, Citizens Protection against consequences of possible terror attack or dealing with calamity caused by extremely unfavorable weather condition [1].

NOTE: In the Czech Republic the Equipment and internal organization of fire brigade units as well the allocation of individual fire brigade units are selected in such that the territories of the municipalities are secured by required amount of forces and resources within a set time and based on the degree (level) of danger. This is the basics for the so-called coverage area of the region by the fire protection unit as illustrated in the table (1) below:

Table 2: Basic Area coverage and dispatch of Fire Protection Units

source: [34]

| Degree of Danger of the Municipality Territory | Number of fire brigade units and time of their arrival at site of intervention (crisis scene) |
|--|---|
| i. A | 2 JPO within 7min. and another 1 JPO within 10 min. |
| B | 1 JPO within 7 min. then another 2 JPO within 10 min. |
| ii. A | 2 JPO within 10 min. then another 1 JPO within 15 min. |
| B | 1 JPO within 10 min. then another 2 JPO within 15 min. |
| iii. A | 2 JPO within 15 min. then another 1 JPO within 20 min. |
| B | 1 JPO within 15 min. then another 2 JPO within 20 min. |
| iv. A | 1 JPO within 20 min. then another 2 JPO within 25 min. |

Each type of PO has its operational value which is reflected in the ability of the fire brigade unit to carry out their responsibility of firefighting, emergency response, population protection and natural disaster.

3.2.9 Dispatch (departure) schedule of the FRS CR from its location:

- With 30 min. during business hours, weekdays – a single technique with a crew.
- Within 60 min. during business hours, weekdays – more pieces of technology and this team include techniques that are not capable to arrive at incidence site at the required time and must be transported to the site through other route.
- Within 90 min. outside of business hours. [www.hzscr.cz].

3.2.10 Command and Control – Right of Command

As the regulation provides according to the special regulation of (Act No. 247/2001 Coll.) in such an event where two or more units of FRS arrives at the scene of incident in order of organization and coherence the law stipulates that:

- The commander of the regional FRS unit takes charge of proceedings over the commanders of all units but in one exception, which is the commander of the fire unit of company fire unit. The exception is valid if the intervention takes place in the firm which the unit is established.
- Commander of Company's fire unit has the territory of the firm where the unit is established, therefore, he takes charge over all other commanders because he/she understands the terrain of the company better and should coordinate the intervention.
- Commander of the community voluntary brigade has right proceedings over the commander of company voluntary brigade if the intervention is outside the company's premises
- The follows that the commander of the unit in whose premises (territory) the intervention is taking place has priority of command over all other units. However, the law should not apply if: the unit for whose territory the intervention is taking place is not engaged or the unit commander agreed otherwise.

3.3 Emergency Medical Service – Ambulance

The need to provide an effective and efficient system which will bring about pre-hospital emergency medical care for individuals under severe health or life-threatening condition was the basic idea for initiating an EMS. Czech Republic like many other countries have this kind of services and it is included as a basic body of the Integrated Rescue System.

The Act No.374/2011 Coll., On Emergency Medical Service (Herein referred as EMS) is the basic legislation it is also administered on the decree issued by the ministry of Health, Decree No. 240/2012 as amended, on Emergency Medical Service and Decree No 296/2012, specifies the roles and requirements for medical service provider equipment, transport providers of urgent care by transport and requirements for these means of transport as amended.

The EMS in Czech Republic is structured with 14 regional operational centers which to assure the availability and planned coverage of the regions with exit bases determined by number of locations of the base exits depending on the Topography, demography and risk indices of the locality so as to be able reach the nearest exit base with 20 minutes [11].

The ministry of Health provides the EMS methodological functions while the pre-hospital emergency care is funded by the State budget and Health Insurance.

The EMS – have as mission to provide to offer efficient and urgent pre-hospital care from time distress call was received to ensuring that the victim(s) receive best medical support on the spot until transfer to hospital.

3.3.1 Activities of Emergency Medical Service

- Preparedness, Prompt reception of distress call on emergency line 155 and calls forwarded from the Operation Center of another basic IRS body.
- Determination of the degree of emergency and decision on which appropriate immediate solution to offer depending on the victim health condition.
- Dispatch of an outbound group, redirection of the group and operational management of the group.
- Provision of first aid instruction by e-communication on the network until arrival of the exit group at the incident scene.
- Organization and management of pre-hospital care at incident scene and corporation with commander of the IRS intervention Unit.
- Ensuring that the patient receives proper healthcare, includes providing lifesaving support on site to avoid damage of any vital organs.
- Classification of individuals affected by health condition in accordance with professionalism of emergency medicine in an event of mass casualty/disability due crisis situation.

3.3.2 Dispatch of Emergency Medical Service

For the purpose of efficient coverage, the Czech Republic has a network of workplaces and facilities where departure teams are deployed from their base stations. the Teams are divided into:

- Rapid Medical Assistance (RMP in Czech) - this team is consisted and led by a medical doctor
 - Rapid medical assistance (RZP) – Team without a medical doctor.
 - Rapid Medical assistance in the Rendez-Vous (RV) – the team is a formation of two members including a driver, a paramedic and a doctor who works mostly in cooperation with the RZP exit team.
-
- Air Rescue service (LZS) - Made up of a paramedic, doctor and a pilot.
 - Transport of wounded and sick in urgent health condition – this team are trained professionally on transporting of persons in trauma condition.

3.3.3 Air Rescue Service

The Air Rescue Service (LZS) of the Czech Republic which is also part of special force on urban search and Rescue team plays a vital role in provision pre-hospital emergency care; because of the significant role they play, the outfit is giving much attention and adequate funding. There are 10 operational Centers of the LZS in the Republic and it is been by government and private individuals. The financier of the LZS is the Ministry of health and few financial contributions from health insurance companies.

The service / operation of Air Rescue Service are split into:

- Helicopter Emergency Service (HEMS)
- Scheduled Heliport.

3.4 Police of the Czech Republic

The Police of the Czech Republic [13] are an armed security forced established by the National Act of June 21 1991. The main objective of the Police is to protect the security of people, property and maintain public order and prevent criminal offences, to meet the task prescribed by the criminal code, and to carry out other duties regarding to internal order. They are also vested by laws, legal regulations of the European communities and International agreements which are part of the legal framework of the Czech Republic.

The Police of the Czech Republic are subordinate to the Ministry of Interior, Headed by the Police Presidium. With units having a republic wide competence, Regional Police Directorate and units managed within Regional Directorates. [13]

Police of the Czech Republic has 14 Regional Directorates established by law, the territorial regions of the Regional Directorate are identical with the geographical areas of the fourteen administrative regions of the Czech Republic. The Police amongst its duties have the responsibilities to:

- Protect the safety of persons and properties; ensure the protection of Czech constitutional officials and safety of protected persons.
- Ensure and oversee the safety and free flow of traffic on the roads (be a participant in road management)
- Provide the security of objects and buildings of special importance, provide emergency protection of nuclear installation, protection of Embassies, Constitutional Court, buildings of the Parliament, President of the Czech Republic, Ministries of Foreign Affairs and Interior.
- Lead in the fight against terrorism and other criminalities.

The Police of the CR operate several services which include:

Protective service, Riot Police, Air service, Foreign Police, Traffic Police, Pyrotechnic service and other specialized services [14]

3.5 The Permanent authorities for coordination of IRS bodies are considered:

The Operation and Information Centre of the General Directorate (DG) of the Czech Fire Rescue Services and the Operation and information Centers of Regional Fire Rescue Services [1] (herein referred as OPIS). The OPIS can further be divided by Species and Territorial Scope.

Accordingly it can be distinguished type:

- Separate – here the relevant IRS operates independently in own object using its own means and resources and it is the most widely type of operational centers in the Czech Republic.
- Spatially associated type – this is where two activities are carried in one common space or more centers independently of each other under cooperate agreement.
- System Pooled – this is a case of joint operators, universal operators communication and information technologies.

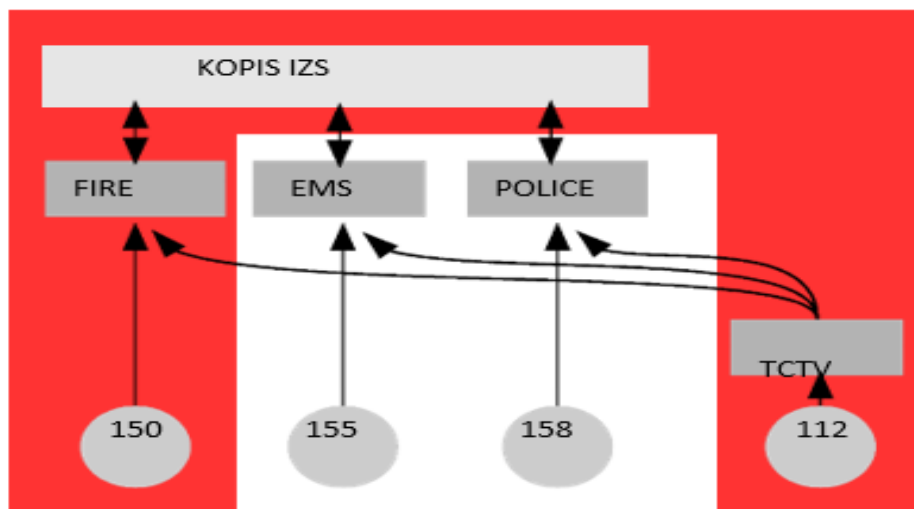
Classification based on territorial scope.

- Regional (for instance) OPIS of Fire brigade, Regional administration of the Police and that of EMS.

- Territorial (for instance – territorial department of Fire Brigade Units and the Police)
- Local – Company fire brigade unit.

In an event that requires joint Intervention of the basic IRS bodies in which the coordination is performed by the Operational and Information centers of regional fire rescue service, which exist in all major regional cities and have responsibilities to:

- cooperate with Operational and Information centers of other regions and bodies of the IRS
- Receive emergency calls on either the single EU emergency number 112 and evaluate the information based on level of urgency: fire, accidents, or other extraordinary events.
- Notify the relevant IRS bodies and other public authorities.
- Calls, puts forces and means and organizes personal materials and assistance for legal person as well cooperate in solving crisis situation with the Security Council of the region.
- Performs warning and Informing of the populace [5]



Operation is provided by FRS CR

Fig 7:

Emergency call routing to Regional OPIS of the Integrated Rescue System source: [1], [author]

3.6 Responsibilities of other Armed Forces/Security Bodies and Public Authorities in Relation to IRS

Aside the basic components of the IRS there are other arm security bodies and public authorities that take part in rescue and clean-up work whose responsibilities that needs to take into consideration.

3.6.1 Municipal Police

The roles and Powers of the Municipal (if it the Municipality is establish with the status of a Town) are regulated under the Act No.553/1991 Coll., On Municipal Police, as amended [15] with the responsibilities to ensure local public order within the competence of the municipality.

The Mayor of a Municipal oversees the management and organization of the Municipal Police, unless in a situation where the management is entrusted to another member of the municipal council or the council may delegate certain task of the management to a constable, also within the framework of public law have an agreement between the municipal, which established it and another municipality in the same region to carry out activities also in the territory.

Under the framework of cooperation of Integrated Rescue System the Municipal Police performs the following responsibilities:

- Ensure and participate in the protection of safety persons and properties
- Conduct traffic management at the site of incidence
- Close an intervention area and prevent the entrance of unauthorized persons
- Search and verify the Identities of affected individual in at the crisis site.
- Warn and restrict people in the vicinity of an intervention site.
- Permitted to enter Business premises and can also use coercive force
- Carry out intervention together with special trained Dogs in search of persons
- They are permitted to make Recordings (audio / video) of the operation and proceedings.

3.6.2 The Army of the Czech Republic (ACR)

The Army of the Czech Republic is amongst the components of the armed forces of the Czech Republic which can be called upon to assist in rescue operation and clean-up (liquidation) work of disaster when the situation becomes overwhelming for the basic components of the IRS.

In accordance with the law No. 219/1999 Coll. on the Armed Forces of CR, the military may be engaged for the protection of civilian population during cases of rescue operation in crisis situation, disaster or other serious situations that threaten Life, Health, Property of important value, or the environment, inter alia, as well to assist in liquidation of the consequences of disaster and removal of another eminent danger using military equipment. This law provides that the military can be used for:

- Provision of air medical and Humanitarian transport
- Aerial disaster monitoring, Radiation and chemical simulation monitoring
- Provision of air search and rescue services
- Provide the use of military equipment and technology for elimination of another eminent danger and provision of emergency shelter for the rescued.

The engagement of the ACR as reinforcement to the basic IRS bodies is only temporary deployment of the military forces units, equipment with relevant materials under the command of the commander or army chief. The request for assistance of the ACR is planned on-demand assistance is based on arrangement and concluded agreement by the Ministry of Interior – General Directorate of the Fire Rescue Service of the CR and the Ministry of Defence – Chief of General Staff which allows for deployment of special forces and resources (military Equipment) for rescue and clean-up (liquidation) work.

This on-demand assistance of the ACR can be requested by Regional Fire Rescue Service, Regional authority with competence or Ministry of Interior for the use military units or equipment of the armed forces in carrying out rescue and liquidation work and the deployment of these forces and resources (military Equipment) is decided by the Chief of General Staff of the ACR.

The notification to the ACR for provision of assistance is done through the Operation and Information Centre (OPIS) of the DG Fire Rescue Service of the Czech Republic.

3.7 Public Authorities

The scope of authority for both the regional authorities and municipality with extended powers and municipal authorities during coordination of rescue and clean-up work is defined by the Act No. 239/2000 Coll. on IRS which is performed as public administration under delegated powers [5] where the duties of the Regional bodies and the Regional Governor are:

- Regional bodies organize, regulate and unify the IRS within its region,
- Regional Governor approves the Plans of the region which includes an Alarm Plan of IRS, Regional Emergency Plan and external emergency plan.

3.7.1 Regional Governor

As provided by regulations the through his/her executive competence ensures the regional preparedness for solving crisis situation organizes trainings and coordinates rescue and clean-up works. The commissioner ensures control of competence through the Security Council of the region towards IRS [5] and the IRS is required by Government regulations shall submit an annual report about their activities to the Security Council of its region.

3.7.2 Municipal office and the Mayor

The IRS Act provides that the municipal office/authority to ensure the preparedness of the municipality in the case of extraordinary event or disaster, ensure population protection and participate in rescue and clean-up work together with the IRS.

In fulfilling their task the Regional authority of each Municipality have a major responsibility aimed at Population protection which is about provision of early warning, evacuation, sheltering and emergency survival.

3.7.3 Mayor of Municipality with Extended Power

In a situation of crisis state the regulations empowers the major to provide warning and informing of the populace and the mayor obligated to stay in the municipality territory of the eminent danger. [S/He performs other tasks as provided by the Act which includes:

- Organize the evacuation of people from the endangered Municipal area together with an Officer in charge or Mayor of Municipality with extended powers [5].
- Is entitled to call legal and natural persons to provide personal or material assistance.
- Organize activities in the Municipality under the condition of emergency survival amongst others.

3.7.4 Legal and Natural Entities

The scope of responsibilities of legal and natural entities during an extraordinary event or crisis situation can be classified into two: Active and Passive –

Active – situation concerned with their participation during intervention and provision of certain obligation to their employees.

Passive – concerned with obligation particularly in limitation to area of population protection, permit access to property and similar action.

The legal and natural undertaking entities are under obligation to provide means and resources for solving crisis situation on the request of the officer in charge, the Major of a Municipal or by the Operation and Information Centre of IRS.

Natural Entities as the regulation demands during emergency/crisis situation are obliged to:

- Report at the municipality, at the administrative section where (s)he will poses as temporal change of residence.
- Obey the instructions of crisis management authority to register at determined place for possible assigning of labor or for labor assistance.
- Endure the limitations resulting from the crisis measures determined during the crisis state.

In summary the IRS consist of several bodies that partake in emergency and rescue operation which forms the basic component and host of other organizations, the basic component are used in solving daily emergencies and if the crisis situation overwhelm the basic component other bodies and administrative office are activated as stipulated by law, the IRS can be used outside the territory of Czech Republic for humanitarian assistance which will be coordinated through the relevant ministries. The most important duty these components are to be as efficient and effective as possible towards elimination of situation which threatens the lives, health, property and environment. The guarantor of IRS is the Ministry of Interior of the Czech Republic.

4 APPROACHES, METHODOLOGIES AND SELECTED TYPE ACTIVITIES OF INTEGRATED RESCUE SYSTEM

This master thesis was carried out on the basis of self-motivation which I developed interest to study the Integrated Rescue System of the Czech Republic as to use the knowledge gained to make recommendation for establishment of such system policy in Enugu state Nigeria

4.1 Approaches and Methods

Both Inductive approach and Action research was adopted in the course of the thesis. Where the inductive approach deals with observations and theories which recommendation are proposed toward the end of the research process as a result of the observation, then the action research is used on the basis of the need to solve practical a real world problem as to produce guideline for a good standard and best practice.

4.2 Qualitative Method

The qualitative research methods used to explore the process used in response to Road Traffic Accident relies on unstructured and non-numerical data, the data includes class notes, course materials, excerpt from interview while on excursion, and interviews with some officers – Policeman, FRSC marshal and a Registered Orthopedic Nurse (RON) who are involved in emergency response in traffic road Accident in Enugu State. Other source of my data includes several documentation of IRS, mass media – prints, some focused groups on social media and vox pop by a third party, etc.



Fig 8: Illustration of how the qualitative method can be used for data collection. [24]

Source

4.2.1 Interviews

As part data collection strategy or methods which represent one-on-one conversation for collection of detailed information this or a subject matter. There are several ways to carry out an interview: structured, semi-structure, unstructured group and focused group interview. Other ways interview can be conducted is via the internet so long the interviewee and researcher has access a computer or an ip phone and communication software installed it, they can be connected in many platform either on teleconference application like Skype, zoom and other social media platform like facebook, whatsapp etc. it can also be done through email with a prepared script and then wait for a response.

In carrying the task of the master thesis I had the opportunity to interview three official from the emergency services – a Police man, an official of the Federal Road Safety Corps and Nurse, I also spoke to former Local government chairman representing administrative authority, through the vox pop carried out by a third party there were over a hundred feedback. The purpose the interviews were:

For the officer – To know about their current mode of operation.

To ascertain their level of cooperation during intervention (especially in Traffic Road Accident),

To seek their willingness to engage in such an inter-agency corporation and simple coordination of proceeding towards emergency,

For the focused group – to inquire their level of awareness about emergency management bordering on their right and responsibility in the event of a Road Traffic Accident and other emergencies,

Generally to gather information as possible that will help me gain more insight as to make recommendation towards the implementation of an integrated rescue system.

4.3 Risk Analysis methodologies used in the Czech Republic for Emergency and Crisis Management

Risk analysis: is usually a process of defining threat, probability threat or hazard occurring and its effect on infrastructure (system). In emergency management the basic quality solution of any problem in an area is based on quality risk analysis. The risk analysis includes [23]:

- I. Assets identification – determination of subject and assets description
- II. Assets value determination – value determination of assets and their importance for the subject, evaluation of a possible impact on their loss, changes or damages on existence.

- III. Threat and Weak point Identification – determination of the sort of events and actions that can impact the assets value in a negative way and determination of the weak points of the subject that influence the threat.
- IV. Assessment of threat seriousness and vulnerability ratio – determination of the threat (hazard) occurrence probability and the determination of the subject vulnerability ratio against threat.

Risk Analysis Methodologies:

The methods of risk analysis for IRS are conducted by its guarantor the Ministry of Interior which is aimed at mapping the development and progression of extraordinary circumstances. Use of the risk analysis involves careful consideration of data input, pre-conditions and requirements for or of a chosen methodology and consideration of the specific aim of the analysis are substantial and attention must be giving to the specificity, truthfulness and verification of data files about the extraordinary event involving the large scale to which scale or territory delimitation and time interval [MoI].

The two kinds of risk analysis methods often used in relation to risk includes: Quantitative and Qualitative. However, in emergency management it also possible use other risk analysis method which are in use within the military management or in technical branches with regards to accident prevention or in water services as it the case in Czech Republic as studies shows. The most used risk analysis methods includes:

- Failure Mode and Effect Analysis (FMEA): a procedure for determining the way of failure analysis and its impact which enable the searching for impacts and reasons based on systematic and structured delimited equipment failure. The method serves for control of individual elements of project system and its running.
- Fault Tree Analysis (FTA): Is a graphical-statistic method and a procedure back analysis of systematic events by use of chain utilization that can lead to chosen top event.
- Hazard Operation Process (HAZOP): this is a multi-disciplinary method for teams. It is a procedure based on the probability threat evaluation and resulting risk. The purpose of this method of analysis is a scenario identification of potential risk. Experts work on the joint meetings by means of brainstorming; they focus on the risk assessment and operability problems.
- Preliminary Hazard Analysis (PHA): this is the procedure of searching for dangerous states or emergencies, their reasons and impact, their categorization according to pre-de-

terminated criteria [23]. This method principle is a set of various techniques for risk assessment.

- Sensitivity Analysis – or called What-if Analysis: the analysis is a procedure of possible impacts stemming from a selected emergency. The method involves many ways of changing the input values of the models to determine the effect on output value. The main goal of sensitivity Analysis is to gain insight into which assumptions are critical, e.g which assumptions affects the selection.

However, the list of methodologies in use is numerous and some of which are from foreign experience [MoI] examples of some those methods are: fuzzy Set and Verbal Method (FL-VV), Safety Audit, Human Reliability Analysis (HRA), Check List, Quantitative Risk Analysis (QRA), Causes and Consequences Analysis (CCA) e.t.c.

4.4 IRS management levels and coordination

The management and coordination of IRS during crisis situation, rescue operation and clean-up work are divided into three levels of management namely:

Tactical – Coordination is by Intervention Commander.

Operational level - Coordination is by operation and information center

Strategic level – Coordination is by the mayor of the municipality with extended powers, the regional governor or the minister of Interior.

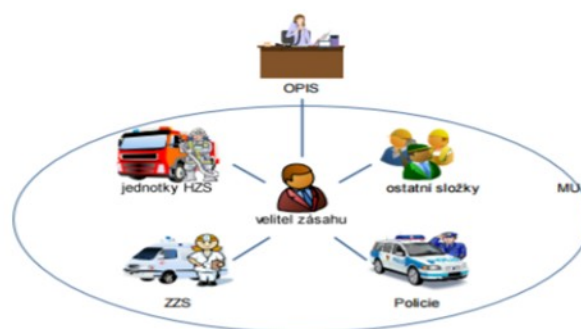


Fig 9: System of coordination at an intervention site

Source: [26]

4.4.1 Tactical Level – intervention commander

This level of coordination includes activities performed at the intervention site. The Intervention commander declares the corresponding level of alarm and determines the need of the forces and means for the rescue and clean-up work. In complex and time consuming intervention may establish a staff of the intervention commander. The intervention commander organizes the intervention based on consultation with the other IRS component leaders and follows a document called Model Action Plan [21].

4.4.2 Operational level

The coordination of the rescue and clean-up intervention is coordinated by the operation and information center. When the rescue and liquidation of extraordinary event overwhelms the commander of intervention at site the OPIS coordinates the dislocation of IRS component means and forces this task is performed using IRS documentations (eg IRS alert Plan, regional emergency plan, water source survey and the Model Action Activity of the IRS component).

4.4.3 Strategic level

Based on required condition as stipulated by regulations the coordination taking –over ; extraordinary event, the highest alarm level coordination demand is performed by the mayor of municipal with extended powers, the regional governor or the Minister of Interior - General Directorate of the FRS of CR. The permanent bodies (authority) for coordination rescue and clean-up works of IRS component is the Operation and Information center of the General Directorate of Fire Rescue Services of the Czech Republic and the Regional Operation and Information center (KOPIS) of the regional Fire Rescue Service.

4.5 Integrated Rescue System structure in Joint Intervention

Every organization uses hierarchically structured authorization for decision making from the head of organization to the least worker or officer, this management structure is often referred as Organizational management. However, in Rescue, Military, Security and other Paramilitary organization also have organizational management – called Operational management [5].

The use of IRS is run under operational management and the permission is set by legislation for:

- Operational Centers of the IRS,
- Permission of the Officer in Charge --- Intervention Commander,

- Governor of Region,
- Mayor of Municipality with extended powers
- and other subjects [5]

IV.5.1 Status of command – Intervention Commander

The status and responsibilities of an intervention commander is stipulated in § 19 of the Act. No 239/2000 Coll., on Integrated Rescue Service as amended. (S)He is in charge of coordinating rescue and relief work at the crisis scene of the IRS units. Depending on the level of severity of the emergency he /she shall decide on:

- Determine the level of alarm in accordance to the IRS alarm plan
- Unless in special case other the Commander of the Fire Brigade unit is the Intervention Commander or a competent official of the fire brigade with the right of priority. the status of command within the fire rescue service and fire protection unit is regulated by Decree No 22/1196 Coll., Regulating the task of the task of fire protection units, states the activities of a person involved in the execution and principle of command on intervention, it applies that unless that the commander at the place of intervention controls the cooperation of the IRS component commanders or head of intervention forces and rescue units at the scene of intervention
- The Commander of intervention is entitled to dictate when discharging rescue and liquidation work based the IRS Act: Prohibit or restrict the entry of persons to the intervention site and may order them to leave the scene; a person whose present is not needful, order the evacuation of persons, or determine other temporary restrictions on protection of life, health, property and environment, can also demand from a person who doesn't comply to the restriction to prove his / her identity and such individual is obliged to comply.
- Order the instant construction or removal of structure, landscaping for the purpose of mitigating or preventing risk arising from emergency.
- He /she can invite a legal person or natural persons to provide personal or material assistance.
- Divide the site of intervention into sectors and or sections, where necessary and appoint their commanders whom are authorized to delegate tasks and take decision on the allocation of forces and resources to their subordinate commander of the sector or section.

(This power is extensive and used only in critical situations especially in rescuing of people in accordance with IRS Act)

- In accordance with the Section of the Decree of the Ministry of the Interior No. 328/2001 Coll., on details of IRS Security; the Intervention Commander ensures synergies between the different heads of units and other staff of the intervention team.
- She/he organizes rescue and winding – up work, with considerations to the principle of coordination of the forces. The consultation with heads of other units shall be used to determine the general procedure for carrying out the rescue and relief works—this is also dependent on the Type activity of the units in the joint intervention.
- Call for necessary forces and resources of the forces at the scene of intervention through the territorial competent operational and Information centers.
- Appoint his /her successor at the place of incase of transfer of the commander of intervention, shall organize the links between the intervention and the territorial and operational and information center when transmitting information, and in accordance with decree of the Ministry of the Interior No. 328/2001 Coll., (on removal of intervention commander).

IV.5.2 Identification of intervention commander

The designation of Intervention commander, including the chief and staff members, is regulated by sections 4(3) of the Ministry of Interior Decree No 328/2001 Coll., while the specific form of designation is indicated in § 29 Decree of the Ministry of the Interior of the Czech Republic No. 247/2001 Coll., On organization and operation of fire protection units, it follows that in view of this legislation it on assumption that in a joint intervention the right of command will be a member of the FRS of the CR.

During the intervention, firefighters are marked

- (a) A vest worn by the commander with the inscription "Commander of the intervention" or a red tape bearing the word "VZS" on the left arm;
- (b) The Chief of Staff by a vest bearing the words 'Chief of Staff'; or red tape with the words "NŠ" on the left arm,
- (c) A member of staff by a vest with the inscription 'Link'; red tape with "S" on the left arm.

IV.5.3 Place of Intervention

The place of intervention is specified in Section 5 of the Decree of the Ministry of the Interior No. 328/2001 Coll., Depending on the extent of the emergency, level of coordination required for the intervention, the Intervention Commander can organizationally divide the site of intervention into:

- a danger zone with hazardous characteristic at the site
- an outer zone to close the site of the intervention
- evacuation meeting point
- boarding area / zone
- decontamination area
- zone for providing health care for evacuated persons affected by emergency
- zone for placing and identification of victims
- Alternative housing for rescue animals, if need arises provide veterinary care.
- Create a section and a sector, whereas section is a part of the intervention site where the components carry out intervention work and sector is multiple of sections.
- a command Post
- zone for information on persons affected by emergency
- space for the media
- The unit of the intervention commander's staff.

IV.5.4 The System in a joint intervention

The cooperation between the heads of the IRS units in the joint intervention is guaranteed in the sense by the provisions of § 4 of Decree of the Ministry of the Interior No. 238/2001, on certain amendment of securing IRS,

Through:

- The intervention commander,
- The sector commander or the section commander whose tasks are in relation to the management of interoperability of components similar to the Ministry of Interior Decree No. 247/2001 Coll., on organization or activity fire protection units (§ 27),
- The staff of the intervention commander, whose internal structure is determined by the same decree (§ , Where there is presence of heads of individual IRS units in a joint inter-

vention, it is a duty of management contained in § 4 of the above-mentioned decree of the Ministry of the Interior that the head of that component body (Police Or EMS) to inform and report to the Intervention Commander.

As the regulation prescribes the individual Head of the IRS unit should upon arrival:

- Report to the commander his presence, the amount of forces and resources of the file after arriving at the scene of the intervention
- Comply and obey the orders of the commander of intervention, or the command of the section commander or commander of Sector (hereinafter referred to as "superior"), provides him with information on the performance of tasks and the situation in the place of deployment; in the event of an imminent threat to the life of the Force is entitled change the decisions of superiors,
- Should hand over the management of the file during the absence to the successor,
- Notifies the superior of a situation where there is an imminent threat to health; and life of forces and takes urgent measures to protect their lives and health,
- Hand over the necessary documents to the commander of the intervention to prepare the intervention report.

IV.6 Type Activity of Integrated Rescue System

The type action includes selected IRS procedures for rescue and clean-up operations. It is a special tactics of FRS, Police, Medical Rescue Service and other bodies for solving of complicated Accidents (emergencies).

By searching for possible events (preventive interventions, accidents and rescue operations), necessary for designing and testing solutions based on the interaction of the IRS, test of content, methods of intervention, management, skills needed by groups for exercise.

It is authorized by the committee for Civil Emergency Planning [1].

IV.6.1 Catalog of standard activities IRS components

STČ 01 / IZS - Realized and verified use of radiological weapon

Č STČ 02 / IZS - Demonstrating the intent of suicide

Č STČ 03 / IZS - Notice of deposit or finding of an explosive or explosive system

Č STČ 04 / IZS - Air accident

Č STČ 05 / IZS - Finding an object with suspected B-agents or toxins

STČ 06 / IZS - Joint intervention in conditions of extensive police measures for maintaining public order during a Techno-party

Č STČ 07 / IZS - Rescue of missing persons - search in the field

STČ-08 / IZS Typical activities of IRS units during joint intervention during traffic accident

STČ-09 / IZS Typical activities of IRS units during joint intervention at extraordinary events with a large number of injured persons and victims

STČ-10 / IZS Typical activity of IRS components in case of joint intervention in dangerous motorway fluency failure

Č STČ 11 / IZS - Bird flu

Č STČ 12 / IZS - Providing psychosocial assistance

STČ 13 / IZS - Reaction to chemical attack in the subway

STČ 14 / IZS - Amok - Active shooter

Č STČ 15 / IZS - Exceptions in the operation of passenger railway transport - soon 2017

Č STČ 16 / IZS - Highly virulent infections (Ebola) Source: [26]

This chapter introduced the approaches and methods adopted in the course of this masters thesis, it also elaborated the various methodology of risk analysis with regard to understanding the system of emergency management in the Czech Republic highlighting the levels of management as well a system of coordination in the event of emergency with a guided procedure by way of Type Activity of IRS in which one of the Type Activity (Joint intervention during Traffic Road Accident) I will be selecting for elaboration of the Practical part of this thesis.

Overview of the theoretical part:

The theoretical part introduces and describes in chapter 1 the historical development of the emergency management as it evolves, chapter 2 highlights the Terms and the legislative framework of Integrated Rescue System with emphasis on IRS of the Czech Republic, while in chapter 3 the organizational structure and description of the basic components and other bodies including their roles and status of response to emergency, chapter 4 was about the approaches and methodologies as well the principles of its operation and management as well Type Activities (Joint Intervention during

Traffic Accident) of the Integrated Rescue System (IRS) which sets the background for the Analytical part of the thesis

II. ANALYSIS

5 ANALYSIS AND STRUCTURE OF GOVERNMENT OF ENUGU STATE – QUALITATIVE RESEARCH

The Analytical part will be based on applying the procedure in the Type Activity card of IRS units during joint intervention in road traffic accident to formulate questions that will be used to assess effectiveness of emergency response in Enugu State

5.1 Objectives

The primary objective of this Master Thesis is to study the Integrated Rescue System of the Czech Republic with a view to prepare a document that could serve as a guide for legislative process for the establishment of an Integrated Rescue System Policy in my home state Enugu State Nigeria which help will ensure the proper coordination, define and enhance the roles played by the basic emergency rescue bodies includes the Police, Fire Fighters, Federal Road Safety Corps (FRSC), the Medical emergency services (Ambulance), so as to minimize the time between distress call and arrival of rescue services to the scene of incidence so as to bring to barest minimum the loss of lives and properties due to late and uncoordinated rescue services and for economic purposes.

5.1.1 Background of study

The integrated rescue system came as a need for co-ordination of rescue and clean-up operations in cases, where a situation requires operation of forces and means of several bodies, e.g. firefighters, Police, Medical rescue service and other bodies also in case, where the rescue and clean-up operation is necessary to be co-ordinated from the Ministry of Interior or by a leader of region's level, or by mayors of municipalities with extended responsibilities (as applied in the Czech Republic) [1]

In accordance to the National Disaster Management Framework (NDMF) written by the National Emergency Agency –NEMA- in 2010 under which the ENSEMA operates defines emergency and disaster management in Nigeria as coordination and integration of all necessary activities to build, sustain and improve the capability to prepare for, protect against, respond to and recover from threatening or actual natural and human induced emergencies and disaster [2]

Qualitative research method was adopted in this master's thesis in order to study the Integrated Rescue System (IRS) of the Czech Republic using the case of type activity for traffic road accident so as to provide useful, practical information and to make recommendation that will help in the legislative process for establishing an Integrated Rescue System Policy in Enugu State. The research however, focused on smaller and targeted respondents in order to gain deeper expository into the research problem. To achieve the aim of this analytical (practical) part I formulated research ques-

tions, from the analysis and evaluations I will be able to make recommendations. The research questions were targeted mainly for:

Officials (mentioned in chapter 4) of basic first responders to Road Traffic Crash – RTC

1. What are the operational procedure of your agency for rescue during an event of RTC
2. Who and How is the cooperation with other bodies in joint intervention in RTC
3. Share your thought and perceptions on the current mode of operation and do you think a new system will be better than what is now – do you think the IRS procedure of Czech Republic should be adopted.

The Focused group interviewed through VOX Pop by third party.

1. Who and what will contact or you do in an event of road traffic crash
2. Do you know or have the emergency numbers to contact in an event of RTC or other emergencies.
3. What are your opinions about the emergency management system presently in Enugu State?

5.2 The Profile of Enugu State

Ever since attaining its statehood through the military decree of August 1991 Enugu as a state has continuously witnessed an increase in population growth, urbanization, industrialization, armed banditry and other vices which has led to increased road traffic accidents, industrial accidents, natural disasters, fire incidents amongst other medical emergencies where the use of combine forces for emergency response were needed for intervention. Some of such instances were in 2012 when a 50 year old bridge collapsed in Abakpa-Nike this incidence took the effort of a private construction to rescue trapped victims, the Fulani Herdsmen attack at Nimbo town in April 2016 where over 40 persons were killed in one night despite earlier tip off to the Police as speculated. Windstorm Disaster of 2018 at Agbaogugu town which took days before relief came to victims affected by the incidence. Fire Inferno at Amigbo Timber Market Enugu in July 2019 where over 68 shops were burnt, there were major and minor road traffic accidents across both local roads and highways across the state in 2019 which about 1319 persons were involved and 71 deaths was recorded amongst others. As the case is today, the first to arrive at the emergency scene becomes in charge amongst all the forces and may carry out the intervention alone depending on the severity of the incidence (especially as it concerns Traffic Road Accident).

In order to have a functional and well-coordinated emergency/ crisis management in the state there is a need to have an Integrated Rescue System (IRS) Policy which will clearly state the roles, what

and who does what in an event of emergency and at the site of intervention, this will enhance the proper utilization of available resource and personnel and ensure well functionality of the incident system which the State Emergency Agency recently implemented so as to have a uniform radio network and central coordination for the Police, Fire Service, FRSC and Medical Emergency (Ambulance) who are mostly the basic component and first responders to emergency incidence in the State.

The very essence to have such a policy of Integrated Rescue System enacted and implemented in the state will not be for the social-economic gains but also for the strategic impact it will make in the entire region of south east considering the pre-historical status of the state. The state has in past in the decades hosted the headquarters of the following;

Eastern and Southern province of Nigeria in 1929, Eastern Region 1954 – 1967, Defunct states of the Republic Biafra 1967 – 1970, East Central State 1970 – 1976, Old Anambra State 1976 – 1991.

5.3 The Government of Enugu State

State executive council is made of

A Governor,

Secretary to the Government

Commissioners,

Local Government Chairpersons

The parliament:

Known as the State House of Assembly which has twenty four (24) Assembly members headed by the Speaker of the House of Assembly

Federal Law Makers (Nigerian National Assembly Representatives):

Three Senatorial Representatives and Six House of Representative Members

The Judiciary – headed by an Attorney General of the state.

The Security Council – this has the Governor as the Chairman, members are drawn from heads of all the Forces in the State – Commissioner Police, Representatives from the Army, State Security Service (known as SSS or DSS), Federal Road Safety Corps, Enugu State Fire Service, Nigerian Security and Civil Defense Corps as well special adviser to government on security.

5.3.1 Geography of Enugu state:

Enugu State is one the 36 (thirty six) state that made up the Federal Republic of Nigeria it is located in the South East geopolitical zone of Nigeria and has a total of 17 (seventeen) Local government areas – (county or Okres) and occupies an area of 7,161 square kilometers (2,765 square miles). The state shares boundaries with the following states: Anambra to the west, Abia and Imo states to the south, Ebonyi to the East, Benue in the North East and Kogi to the North West.



Fig 10: map of Enugu state showing borders with other States and all its local government area

Source: [18]

5.3.2 Population

Enugu state has a population of 3,267.837 which comprises of 1,596.046 male and 1,671.795 female which made it the 22nd state in Nigeria in terms of population (according to the 2006 National Census by The National Population Commission). [<https://www.enugustate.gov.ng/index.php/elements-devices/>]

5.4 The Emergency Management and Response bodies in Enugu State

The Enugu state Emergency Management Agency (ENSEMA) is the government agency saddled with the responsibilities of coordinating disasters and emergencies in the state

It has its structure with:

The State Governor as its Chairman

A Permanent Secretary – An appointee by the Governor to perform the administrative functions for the Agency

Other Members includes:

The Ministry of Health,

Ministry of Finance and Economic planning

Ministry of Transport

The Police (Enugu State Command)

Fire Service (Brigade)

Federal Road Safety Corps

Nigerian Security and civil Defense Corps

The Red Cross Society

Local Government Chairpersons

Civil society groups,

And Non- governmental organization

5.5 List of threats in the state

Major Natural hazards: Landslides, Soil erosion and Flood

Other Hazards includes, Fire outbreaks, Traffic Road crashes (of which sometimes involving vehicle transporting dangerous goods),

Criminal killings occasioned by armed banditry and students cult activities, fewer Industrial accidents, and recently rising cases of attacks from Fulani Herdsmen and communal violence resulting in large number of casualties.

5.6 Type Activity requiring Joint intervention during traffic road accident

It was the procedures of this type activity of IRS that I formulated the questions for the interviews which was now used to compare and make assessment of the emergency response (intervention) in Enugu state, if it meets with the required standard of ensuring the prompt saving of live to be provided by the first responders –FRSC, Police, Medical Emergency Service, Fire Brigade and some-

times with the NSCDC which I did a review of their role and how they cooperate as well how their operation is carried out compared to that of basic IRS components in CR. Also where the opinion of some focused groups were sort to explore their level of awareness regarding their right, responsibilities and perception in the event of road traffic crash and other emergencies.

Traffic Road Accident definition:

As defined on the basis of (STČ-08 / IZS Typical activities of IRS – Traffic Accident, 2008). Traffic Accident is an emergency in connection with traffic on the road, motorway - highway or special purpose road or local road where there is threat or direct danger to life or health of persons also if damages has happened to properties or the environment` which is subject to notification and intervention [26].

Traffic road accident can also be defined as an event having led to personal injury or damage to property that has taken place in an area intended for public transport or generally used for transport and in which at least one of the involved parties is a moving vehicle or as vehicles specified in the Road Traffic Act[25]

5.6.1 Breakdown of basic forces during intervention in the case of Road Traffic Accident Management in Enugu State

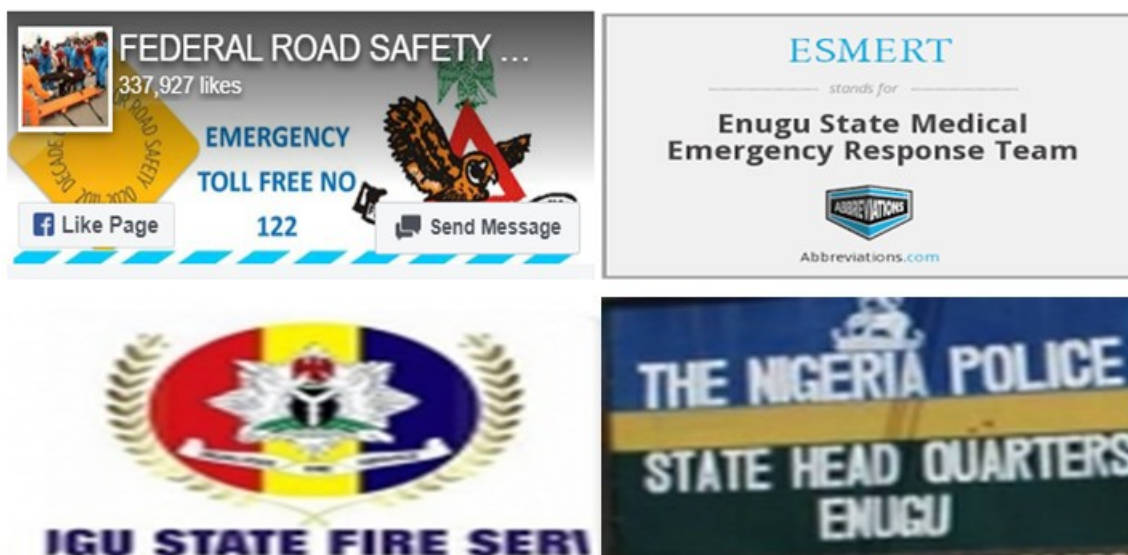


Fig 11:

Basic bodies providing Rescue, Pre-Hospital care and Transport to victims of RTC source: [34]

Federal Road Safety Corps

In an event of road traffic accident, the Federal Road Safety Corp (Nigeria) is the Agency according to the law establishing it (FRSC Establishment Act 2007, as Amended) has the main responsibility for Road safety and traffic management in Nigeria in extension Enugu State.

Their main role is to eradicate road traffic crashes and create safe motoring in Nigeria

Aside formulation of road traffic management the corps provides medical rescue service (basically for road traffic crash) as well mobile clinics for RTC victims.

Distribution of FRSC Enugu State Command

Table 3: distribution of FRSC Enugu State Command

Source: [28]

| Zone | No. of Zonal Command | No. of Sector Command | No. of Unit Command | Number of Outpost | Total No. of Formations |
|-------------------|----------------------|-----------------------|---------------------|-------------------|-------------------------|
| Rs 9 Enugu | 1 | 4 | 17 | - | 22 |

The Police

The Nigeria Police Enugu State Command participation in traffic road accident is mostly for ensuring safety of the properties and ensuing of police report which will enable accident victims to access hospital care on arrival to hospital facilities.

The Police in Enugu State have 1 Command Headquarter

19 Divisional Headquarters

34 Police Stations with several Police out post providing state wide coverage.

The Police Emergency Number in the State are based on GSM: 080320003702, 08075390883 and 08086671202, however, they are also reached in cases of emergency on individual telephone lines of the various Division or personal phone number of Police officers.

The Fire Brigade – Enugu state Fire Service.

The fire services (brigades in Enugu state are most times not involved during intervention in traffic road accident unless incase where there is perceived fire danger during the accident as they seem to be more concern with Firefighting interventions.

The Fire Service have 8 Stations located across the state, this locations are in:

Ogui Road Fire station Enugu – As the Headquarters
9th Mile Fire station – Udi Local government
Oji Fire Station – Oji River Local government
Idaw river Fire station – Enugu south Local government
Orba Fire station – Udeno Local government
Ogruta Fire station – Igboeze North Local government
Nsukka Fire station – Nsukka Local government
4Corners-Ozalla Fire station – Nkanu Local government

The Fire Service (Brigade) has its Emergency Contact numbers which are GSM based as follows: **08088073080**, **07056530330** and the newly implemented toll free number 117 as well every fire station at different locations across the state has their individual gsm lines that can be reached by the people.

Emergency Medical Services – Ambulance

In the event traffic road accident within the where pre- hospital care and transportation to hospital of victims are required this services are provided simultaneously by both the FRSC ambulance scheme (Ambulance scheme known as Emergency Ambulance Service Scheme – (EASS) aka Zebra (with that of Enugu Zonal command known as Zebra 32 and its Emergency Number is **09053976957**) and through the Enugu State Medical Emergency Response Team (ESMERT) which was established by the State government with a total of 5 ambulance Buses in its fleet when it was commissioned in 2013 and subsequent donation of one Bus each from the 17 local government bringing the number of the fleet to 25 ambulance to compliment the emergency healthcare help for accident victims and for those in critical health condition, however, the service coverage is only limited to those in the urban area as those in the rural doesn't feel the impact. The Emergency Hot-line includes; 08091111162, 08162906850.

This chapter introduced the analytical part of the thesis where qualitative research will be adapted it gave a general objective and background of the master thesis with an overview of Enugu state its government, population and geography as well the list of threat from which activity for intervention was selected. The breakdown of the basic forces that participates during intervention in an event of traffic road accident in the state was enumerated, the chapter generally served as pointer towards what the thesis was meant to achieve.

6 DEFINITIONS AND PROCESS, ROLES AND USAGE OF INCIDENT COMMAND SYSTEM AND INTEGRATED COMMUNICATION IN CONTEXT OF ROAD TRAFFIC ACCIDENT

It is important to define processes and the role which the use of incident command system and integrated communication plays during a joint intervention by multi-agency

6.1 Definition: Road Traffic Accident or Road Traffic Crash (Nigerian parlance)

As defined on the basis of (STČ-08 / IZS Typical activities of IRS – Traffic Accident, 2008). Traffic Accident is an emergency in connection with traffic on the road, motorway - highway or special purpose road or local road where there is threat or direct danger to life or health of persons also if damages has happened to properties or the environment` which is subject to notification and intervention [26].

Traffic road accident (Traffic Road Crash – RTC) can also be defined as an event having led to personal injury or damage to property that has taken place in an area intended for public transport or generally used for transport and in which at least one of the involved parties is a moving vehicle or as vehicles specified in the Road Traffic Act [25].

It can also be defined as an extraordinary event resulting in death, injuries and loss of property or damage to environment which subject to notification obligation [21]. It may be in the motorway, Federal roads, state or Local road – Trunk A, B or C roads as it is the case in Enugu state Nigeria.

6.2 Process of Emergency management – Road Traffic Crash

The design process for solving emergency situation (including RTC) which is basically not only about coping with the situation when it occur but it is also to prepare for their solutions and mitigating the risks due to the occurrence. It is aimed at providing adequate response to victims of emergency and it describes what to do, how to respond and how to recover from the emergency event. The process from my finding shows that FRSC which the Agency Responsible for Traffic Road management in Nigeria applies the same emergency management standard Procedure used in United States, Europe (Czech Republic inclusive) which is basically: Mitigation, Preparation, Response, and Recovery.



Fig 12: Emergency Management Process [21].

6.2.1 Levels of management in the case Road Traffic accident

Following the interviews with an FRSC official (Assistant Route Commander, ARC – [names withdrawn], Police Officer (an Inspector) and Paramedic Officer (A registered Orthopedic Nurse) based of the research questions(see 5.1.1) towards RTC interventions, from their answers and analysis it showed that the management and interventions are carried out on two levels; Operational and Tactical levels.

6.2.1.1 Operational Level – Emergency Operation Center

The steps in managing the event of a traffic road accident starts when an Emergency notification (Distress Call) is sent to the Operation Center of FRSC through her Toll free number 122 or the Emergency Operation Centre(EOC) of the Enugu State Emergency Management Agency – EN-SEMA, Toll free number 117 or most times direct to individual telephone numbers of the either Police or FRSC officials from whence routed to nearest Sector Command or Unit Command (as it's the case with FRSC) to accident Jurisdiction depending on information provided by the caller.

Basic information an individual reporting an accident MUST provide includes: Location (if possible address) where the Crash has taken place, Type of Vehicles involved, to what extent of severity is envisaged from the caller perspective. This information is necessary for analyses and to determine the kind and amount of forces to dispatch for the rescue operation.

6.2.2 Tactical Level – At intervention Site

From gathered information intention for Road Traffic Crashes in Enugu State – Nigeria is sole responsibility of the FRSC which other bodies participates passively when there are invited or alerted depending on the level of severity of the road traffic accident. At this Tactical level which the intervention at the accident scene is headed by an FRSC official within the rank of a (RC or DRC or ARC) following the notification they received from their National or State EOC to the gsm or Radio network (Radio Messenger and Closed Caller Group) of their Unit Command prompt them for a dispatch for RTC intervention.

6.3 Role of Incident command system in Traffic Crash Intervention

The Incident Command Systems (ICS) is a standardized approach to command, control and coordination of emergency response providing a common hierarchy within which responders from multiple agencies can be effective. This system was developed in the 1970's in the United States to address inter- agency response to wild fires in California and Arizona. The system is used today in All- Hazards situation Like Traffic Road Accident, Active shooting to HazMat scene [24].

However, the system has evolved into National Information Management system over the years as it has become used in many countries in emergency management such like the Czech Republic where it's operated as Information and Operation Center (OPIS) and in Nigeria its call Emergency Communication (ECC) for coordination of emergency rescue operations. In many emergency situations, all emergency rescue services are present at the incident scene due to their overlapping tasks. For example, in a life threatening situation where a victim of a car crash is stuck, it is the responsibility of the firemen to free the victim from the crash so that the paramedics may proceed to the hospital.

- The main function of ICS is to establish standard planning and management system that would help the agencies responding to a disaster to work together effectively.
- It provides a common use of terminologies amongst the forces in rescue operation during a traffic accident or other emergencies
- It help in forming a unified command structure for rescuers at the scene of traffic incidence
- It uses integrated communication to support both the intervention commander in other to have an effective rescue and clean-up work.

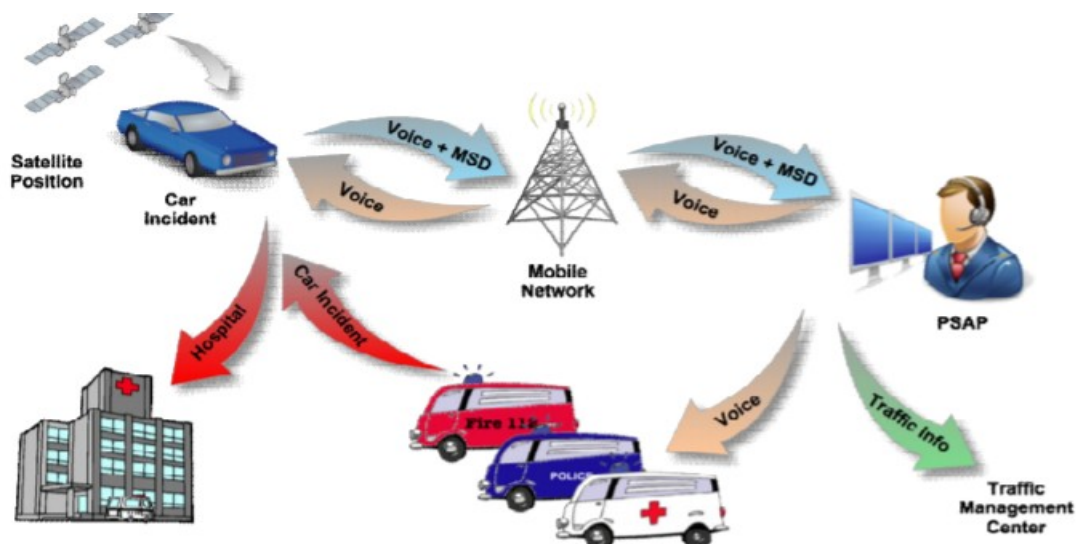


Fig 13: A system of communication in the event traffic road accident.

Source

[30]

Incident Command System is divided into five sections: Command, Operations, Planning, Logistics and Administration sections.

6.4 Integrated Communication

One of the characteristics of ICS is integrated communication is that it's structured in a way that it ensures communication among all the emergency agencies at the incident scene and supervisors. ICS must support efficient flow of Information through the system from the Command center down to the lowest level and also from the lowest level to the command center. It serves as unified level information system of operational management and modernization of technologies for receiving emergency calls for and subsequent deployment of forces and resources [20]. One typical example of an integrated communication system is the Information Support of the IRS (IS IRS) which hosts the single European emergency number 112 TCTV which integrates other emergency toll numbers 155 & 158 and it is fulfilled by processes of data collection, management, processing, transmission, protection and presentation of information.

TCTV Structure

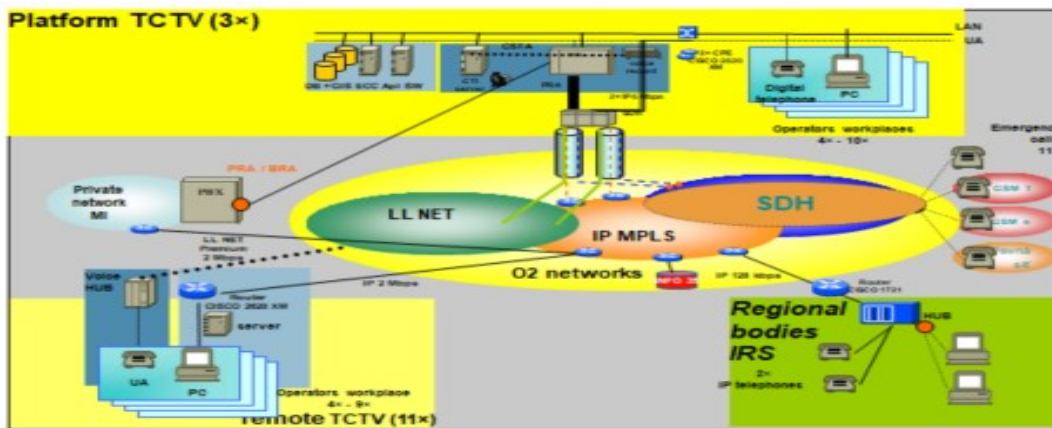


Fig 14: an illustration of how Integrated Communication works.

Source [29]

A Practical example of integrated communication usage in Traffic Accident is curled from [20]

Before implementation of Integrated Communication: when a traffic accident occurs with a seriously injured person. Call is placed to the emergency line (for instance 122 FRSC), the operator will analyze and record the event in its information system, and then a rescue team of its own is sent to the accident scene. The dispatcher then transmits information about the accident to the operation center of (Fire Service) and subsequently to (Police & Ambulance) via Telephone numbers. The FRSC team arrives 10-20 minutes.

Upon arrival, the team finds out the accident is a complicated where the victims are trapped and needs equipment of fire brigade to assist unfortunately the team have to wait for assistant breaking the vehicle so as to resuscitate and to transporting of the injured to hospital facility.

Using integrated communication; a called is placed to emergency toll (112) reporting an accident of injured person, the operator records the accident information in its information system and automatically requests the corporation of other components (Police, FRS & EMS as it's the case in Czech Republic - IRS). The location of the accident immediately displays on the maps of the other component bodies which goes to the accident scene same time and almost simultaneously arrive and intervene in the accident.

Some of the key benefits and functions of using the integrated communication system like that of the information support system of in the Czech Republic' Integrated Departure System (IDS 5.0) and TCTV, the system uses 4 main Protocol for emergency event:

Caller ID and its position with maximum use of automatic identification and location of call address, incident site localization, classification of the incident and additional information obtained during emergency call.

The functions includes: that it supports in location of event place by using GIS, monitoring the status of forces and its resources, issues command for emergency group, automatic design of equipment according to location, type and range of incident, list professional and volunteer units, address, phone numbers, functions and emergency service contacts, automatic delivery of voice messaging systems, communications (GSM) including voice synthesis (AMDS), makes playback of recorded calls from the integrated recording equipment to the police authorities, start-up of technology actions, data and voice traffic on local and remote fire rescue units and performs sending of information about the events affecting the situation on the roads and highways (in Czech Republic) into the National Information Centre.

IDS 5.0 is a comprehensive, modular designed system of software application that provides command, control, organization and management of rescue and clean-up activities of IRS bodies,

Individual applications are divided into groups; applications group provide operational activities, management and technology management and administration activities of the IRS to deal with emergencies.

The role of communication during a joint activity of traffic road accident cannot be overemphasized for an effective intervention to take place, it then explains why the incident command system is so important, it helps to harmonize the planning, command and control and streamline the supply of logistic, define the role and supporting even the commander of intervention at the scene of incident. The chapter defined Traffic Road accident and the process of how it is managed and the how the use of an integrated communication is useful at both operational and tactical level as it regards to a joint intervention.

7 APPLICATION OF PROCESSES IN THE CASE OF ROAD TRAFFIC ACCIDENT MANAGEMENT ACTIVITIES

To be able to achieve the aim of thesis I developed two categories of research questions 3 each for the target audience (see 5.11) which the evaluation of the response will be applied to the procedure for the Case of intervention in Road Traffic Accident at tactical level. The purpose is to use the analyses in comparison to intervention with that of IRS of the Czech Republic. Reason for chosen Traffic road accident is because it contributes to the highest second cause of death and casualties. According information extracted from the FRSC Road Traffic Crash Statistic showed that in 2018 total of 1033 persons were involved in RTC in Enugu state resulting in 60 deaths and 378 persons injured. While the year 2019, 1319 persons were involved in RTC with 71 deaths and 532 injured persons recorded out of the 150 road traffic crashes that happened in the state.

Note: this statics was the ones FRSC was able to records as some accidents were not recorded especially those that happened in the rural areas and some others that in which other rescue bodies may have intervened.

Processing of question on type activity during joint traffic road accident intervention – at tactical Level

7.1 Place of intervention – Intervention Commander

On arrival at the scene of accident (as processed from the FRSC officer) the Intervention Commander who leads his team to rescue operation at accident site (must be within the rank of Route Commander or Deputy Route Commander or Assistant Route Command in accordance with FRSC ranking) for the Police (starting from the rank of Inspector) and Chief Fire Marshal for the Fire Brigade respectively.

Upon Arrival with his team, the Intervention Commander in this case – Route Commander accesses and analyses the situation at the accident scene, in line with the procedures of the Accident Plant assigns task to the subordinates and determines whether a back-up team is needed as well call for deployment of other forces like the police and Fire Service Men.

The task at the intervention site includes:

- Activation of special signal light on the patrol vehicles – flash light of red, blue and white.

- Condoning and placement of barriers and reflective tapes at appreciable meters to ensure safety of rescue officers and to avoid any future collision – leading to multiple accidents.
- Dividing the intervention site and start the sorting of victims of the accident.

Based on severity of injury provide pre-hospital care for the injured.

The sorting is divided in categories

- [Green]those with high threat to injury – or health will be first to be moved to hospital
- [Yellow]those with lesser injuries and broken bones will be second to be moved to hospital
- [Black]those already confirmed dead will be last to be moved to the mortuary

Next phase is documentation of the accident

The clean-up work will start as well as evaluation of the eminent cause of the accident and press (media) briefing takes place and handing over to the police (if available) for further investigation.

The data filled during documentation are the sent to the Unit Command and forwarded to the Sector Command, then to the State/ Zonal Command for onward transmission to the Headquarters.

The entire process of intervention starts with a distress call been received at the EOC toll free 122 or through a sector commanders Personal phone number reporting the occurrence of an accident, the call must be evaluated and from the information provided by the caller a dispatch of the intervention Unit is made.

There is basic information that must be noted: The location (address) of the crash, type of vehicles involved, and then activation of the relevant unit nearest to the for accident site. The time frame for arrival at the accident scene usually between 10-20 minutes

Table 4: extract of Road traffic Crashes in Enugu State [29]

Record of Road traffic crashes in Enugu State- 2019

| | RTC 1st quarter | RTC 2nd quarter | RTC 3rd quarter | RTC 4th quarter | Total |
|----------------------------|-----------------|-----------------|-----------------|-----------------|--------------|
| Road traffic crashes | 50 | 16 | 31 | 53 | 150 |
| Number of injured | 209 | 44 | 115 | 164 | 532 |
| Number of deaths | 35 | 7 | 6 | 23 | 71 |
| Number of Persons involved | 521 | 88 | 235 | 475 | 1319 |

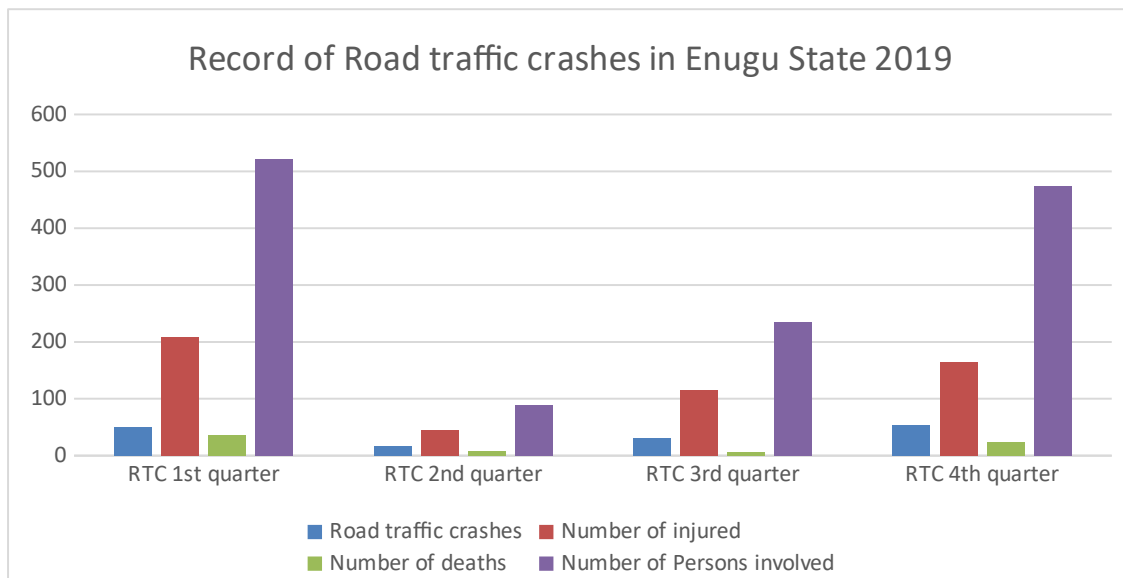


Fig 15: chart display of Road traffic Crashes in Enugu state – 2019[29]

7.2 Coordination during joint Intervention

During joint intention where situation of the accident is overwhelm to the FRSC in which the invite either the Police, Fire Service the coordination is usually based on inter-personal relationship as each of the agencies tries to use its own standard of operation (SOPs) due to the fact that there is not central incident command system. However applying mutual understanding the FRSC officers usually have their way in term of management of the accident site, but indicate case where each individual came to the site on their own whoever got there first leads the command. This follow that there no unified coordination amongst the rescue bodies.

7.2.1 Intervention with other Bodies

This is a situation where the Route Commander requires the assistance of other forces or private individual to offer one form of help or the other during an intervention in the road traffic accident, it could be material or personal assistance in other to save lives or secure properties.

7.2.1.1 With the Police

The Police most times view their job to be only security of lives and law enforcement as majority of the officers only provides security of properties at joint intentions especially in the case where the crashed vehicle is carrying easily stolen goods such as Drinks – Beer, soft drinks etc. while the FRSC carries out other duties as started in 7.1. The Police also issues what is called Police report to accidents victims to enable them obtain hospital treatment especially when they are conveyed to the hospital facility with public vehicle (this system however, was abolished in 2018)

7.2.1.2 *ESMERT – Enugu State Medical Emergency Response Teams*

ESMERT is the state owned ambulance scheme which was established in 2013 to offer emergency pre-hospital and transportation to hospital facility for those in critical health situation and accident victims. The FRSC collaborate with ESMERT in providing pre hospital care and transfer of victim to hospital. Though in the recent year ESMERT has been well functional making the FRSC to rely on its own ambulance scheme – EASS

7.2.1.3 *Fire Brigade (Service)*

The Fire though have most of the equipment required for any kind of intervention, however the perception is that their job is limited to Firefighting whence they are joint the FRSC in traffic road accident intervention mostly in situation where the victim is stocked in the crashed vehicle and there will be need to extricate it in other to rescue such individual and secondly where there is suspicion that the crashed vehicle may explode and cause fire, they are also invited where there is leakage of fluid (like petrol or other hazardous substances in other to perform clean-up work.

7.2.1.4 *Other Agencies – Red Cross*

The Red Cross most times partner with the FRSC in carrying out joint intervention during road traffic accident this is because most members of the Red Cross are trained on how to give resuscitation and Triage to accident victims and help in transporting them to hospital.

7.2.1.5 *Public*

Nigerians and Enugu people in particular are known to be naturally good people they are always ready and willing to offer help and assist in cooperating with relevant authorities in other to save a live, to this end they are always ready to offer assistance mostly in providing logistics for transporting accident victims to hospital, from available information it shows that the people have carried out more intervention than all the rescue agencies in the state. This assertion was agreed upon by the sample focus group interview through third party who helped in conducting a vox pop data collection based on the research question mention in chapter 5. The limitation is that most of the populace has no formal training on managing accident victims.

In summary this chapter which is about application of the research question for procedures of Type Activity in Joint Intervention during Road Traffic Accident, the individual officers and a paramedic interviews shared their opinion and answer which showed that there are lack of proper condition, lapses in command and control, no central information support system and each body acts based on

their own standard of operation. The result is that it proved the aim of the research to be true that there is need to have an Integrated Rescue System Police enacted which is a system of coordination of its bodies. The Policy give a robust positive change in emergency management in the State if establish.

8 DRAFT AND RECOMMENDATION FOR GOVERNMENT ACTIVITIES RELATED TO ESTABLISHMENT OF IRS POLICY IN ENUGU STATE

Following the data and informations collected through the qualitative research, it is necessary to put them into perspective in the form of draft and recommendation and to give opportunity for further studies and implementation.

8.1 Research findings

Coordination, Command and Control structure and Operation procedures;

Strength:

From observations coordination of emergency rescues is predominantly based on interpersonal relationships and ad-hoc arrangements rather than a formalized, pre-established coordination structures and standard operating procedures, making the system very vulnerable.

However, regarding cooperation between SEMA (ENSEMA) and key stakeholders in the state, including the military and the Red Cross Furthermore, involvement of the private sector in emergency response activities is not left. For example, the Federal Road Safety Corps in Enugu state uses private contractors on a most times to tow heavy trucks since they do not have the capacity to do so themselves

Challenges

The incident Command and control is supposed to harmonize the SOPs under one coordination structure. The ENSEMA through NEMA has developed SOPs for the different types of emergencies stating essentially who should do what but not how it should be done. Incident command and control seems to be largely dependent on which organization that gets on the scene first and not on pre-established incident command systems.

There is this inter-agency discord when it comes to command and control at accident scene, as the police sees the FRSC official be inferior and not willing to take orders from the official same goes FRSC official to NSCDC.

There is less awareness of on the part of the populace especially those in the rural communities about the emergency phone lines (GSM) for Police, Fire Service and toll free numbers of 117 and 122 FRSC that they can reach in an event of emergency.

There is no proper integrated communication system with modernized technology (like the IDS 5.0 used for information support system in the Czech Republic) that seamlessly receives data and shares it simultaneously to the individual toll numbers of the basic emergency rescue bodies in the state.

There is Multiplicity of or even no “ambulance services” and lack of professionally coordinated ambulance services within and outside the state capitals. As it the case some accident victims are transported to hospital facilities by volunteer public car, tricycle or buses.

There is general lack of trained medical staff in trauma care and emergency health care and lack of equipment especially in the rural area.

The tasks performed by the fire services as enshrined in the legislation are not sufficiently known, understood and integrated by other partner services or the highest administrative authorities as it applies also that most of the populace believed their job is only about firefighting.

Road Traffic Crashes are a real scourge and it’s the second biggest cause of death in the state after malaria. Secondly, the risk associated with (transportation of hazardous materials), including oil, in Nigeria is constant. This is compounded due to some factor lack of adequate training of the drivers.

There is lack of manpower amongst the FRSC, however the state cannot do much in this aspect as this officials are posted through the federal government.

8.2 Recommendations

Establishment of Integrated Rescue System Policy including the identification of emergency responders and stakeholders which shall serve as system of coordination to clarify their roles and responsibilities.

Establish a database of emergency service providers at all levels, which would include their hotlines & locations.

Emergency Response Community Volunteers encouraged and should be provided adequate training to enhance their capacity – can be fire rescue clubs

The overall response capacity of the fire services should be prioritized and strengthened in terms of equipment, manpower, training, and management procedures, and should be expanded to cover all the local government areas in the state

It will be needful to recruit additional staff to strengthen each fire service. Use of the current forest guards (personnel) could be a solution

The fire service should be repositioned to play the lead role in all the emergency rescue intervention as they have most of the required rescue equipment and resources.

The Government should do its best to revamp all the general hospital across the 17 local government area in the state with equipment and trained medical staff in trauma care and emergency health care as to have a good coverage of the rural area

It is necessary to create more awareness about the toll free emergency lines of various rescue agencies in the state through public enlightenment and to use legislation to ensure that the number are placed in all public buildings and religious centers in the State.

It is necessary that if we as a people desire a better, efficient working emergency approach that will streamline to a global best practice and harmonize the deficiency in our emergence management system we need to adapt and establish through legislation the Integrated Rescue system policy as it practice in the Czech Republic

The drafted findings and recommendation are open for further investigation and implementation of the recommendation will help bring about a new and better all- hazard approach in the management of emergencies in the state which should be done on an integrated rescue system and this what this master this trying to achieve

Overview of Practical (Analysis) Part

The practical part of this thesis deals with using Qualitative research to analyzing a selected type activity for joint intervention during traffic accident which is one the daily emergencies in the state in order to check the efficiency and effectiveness of the IRS in solving such emergency. It covered the Analyses and structure of Government of Enugu State, defining the process, role and usage of incident command system and integrated communication in the event of joint intervention during traffic road accident, Application of the of the process in traffic road accident activity and lastly present a draft of recommendation towards the establishment Integrated Rescue system Policy.

CONCLUSION

The master thesis was divided into theoretical and practical (Analyses) of which Qualitative research method was adopted in solving the analytical part.

The theoretical part provided the historical development of the issues as regards to Integrated Rescue System, Basic terms with legal framework, basic organizational structure of Integrated Rescue System component and other bodies with status of response to emergency and as well the approaches and methodology of selected type activity of the Integrated Rescue System.

The Analytical (practical) part

Qualitative research was used to analyze the Emergency response in Enugu State as compared to the IRS of the Czech Republic using a type activity of traffic road accident to be able to make recommendations towards establishment of Integrated Rescue System Policy in Enugu State Nigeria.

However, this work should be followed with wider coverage of public respondents and opinion poll as part of legislative process in order to find out whether to implement such policy for a better emergency response system in the State.

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LIST OF ABBREVIATIONS

ARC – Assistant Route Commander

CR – Czech Republic

DG – General Directorate

EASS – Emergency Ambulance Service Scheme

EMS – Emergency Medical Services

ENSEMA – Enugu State Emergency Management Agency

ESMERT – Enugu State Medical Emergency Response Team

EOC – Emergency Operation Center

EU – European Union

FCDA – Federal Civil Defense Agency

FEMA – Federal Emergency Management Agency

FMEA – Failure Model and Effect Analysis

FL-VV – Fuzzy Set and Verbal Verdict

FTA – fault Tree Analysis

FRS – Fire Rescue Services

FRSC – Federal Road Safety Corps

HAZOP – Hazard Operation Process

HRA – Human Reliability Analysis

ICS – Incident Command System

IDS – Integrated Departure System

IRS – Integrated Rescue System

JPO - Jednotka Požární Ochrany – Fire Protection Units (English)

KOPIS – Regional Operation and Information Center

LZS – Letecká Lékařská Služba – Air Medical Service

MoI – Ministry of Interior

NEMA – National Emergency Management Agency

NERA – National Emergency Relief Agency

NSCDC – Nigerian Security and Civil Defense Corps

OPIS – Operation and Information Center

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