

# Safety Intervention Role Played by Various Entities in Disaster Risk Reduction in Eldoret Municipality Industries, Kenya

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## Abstract

Work place disasters have been a major global concern. In Kenya, media reports and literature sources indicate that the government has poor safety standards and inadequate disaster preparedness. Disruption of business activities as a result of disasters can be attributed to inadequate attention to disaster risk prevention and poor management by organizations as an economic and business issue. A much closer interaction between businesses and government as well as related organizational bodies is needed to ensure appropriate risk reduction strategies and adequate measures for implementation. This paper thus evaluates the safety intervention role played by various entities and organizations in reducing the Disaster risks. Eldoret Municipality in Kenya is the area of focus given that it is one of the towns with the biggest manufacturing industries in Kenya. The authors carried out a survey of large, middle and small scale factories in Eldoret. Purposive sampling was used to select the industries and simple random sampling to select the study units which included Managerial staff and operational workers as well as labor officers in the Ministry of labor (Public Health Officers), fire brigade officers, Kenya National Environment Management Authority (KNEMA) and the Kenya Red Cross Society (KRCS) Regional officials. Interviews and questionnaires were used for data collection. Data was then analyzed using descriptive statistics. The study found out that there is need for a combined effort of disaster risk reduction between international agencies, national governments and the local community as well as individuals at work since each one has a role to play in ensuring safety of the workplace. The paper recommends enhancement of work-based interventions in all the organizations despite the level of production. Organizations and individuals must adhere to and be accountable to health and safety requirements of their workplace in order to reduce risks.

**Key words:** Disaster, Risk reduction, International agencies, Local agencies, Safety, Collaboration.

## 1. Introduction

Experience has shown that the effects of disasters on poorer nations are long lasting and more severe than in developed countries, often depleting scarce financial resources and diverting essential funds towards post-disaster relief and reconstruction (Srinivas, 2015). This slows operational activities of involved industries hindering growth. International organizations UN/ISDR (2009), ILO (2000) and UNEP DITE (2004) due to industrial expansion and an increase in accidents have been working on accident prevention and preparedness to reduce these accidents in industries. They have come up with programmes to create awareness at international, regional, national and local levels on hazardous installation that endanger life property or environment. However, findings by UN/ISDR and PWC (2013) have shown that industry leading companies have made

disaster risk reduction as their core focus and each of them has developed unique capabilities. Within the last 10-15 years, they have focused on managing disaster risks within their boundaries and still plan to reduce them further in future.

## 2. Literature Underpinning

Disaster Risk Reduction (DRR) efforts in industries are evolving and rallying behind finding ways for DRR agencies to work together more effectively and efficiently to ensure that organizations deliver safe and secure environment for their workers. Rosenstock *et al.* (2006) posit that due to increased population growth, the number of workers has also increased and the burden of disease and injury attributable to workplace risks in the formal and informal sector has continued to rise. They noted that according to ILO; out of the worlds' 2.7 billion workers, 2 million deaths per year are attributed to occupational disease and injuries; and that 4% of the GDP is lost because of work related diseases and injuries. Safety intervention strategies have been grouped by Rosenstock and others based on four entities: International intervention, National intervention, workplace and individual based interventions which are here by discussed (Rosenstock *et al.*, 2006).

### 2.1 International Organizations Intervention

International organizations play a vital role in researching, surveillance, documenting and preventing injuries of workers at workplace thus reducing risks. These include; National Institute for Occupational Safety and health (NIOSH) and Bureau of Labor Statistics (BLS) who have used surveillance systems to identify fatal and non-fatal injuries at work places (NIOSH, 2014).

Myers (2005) notes that injury and illness rates provide a measure of the success of worker protection strategies; those portions of industry with the highest rates indicate failures in protection and opportunities for research intervention to improve the safety and health of these workers (Myers, 2005). Risk Management Advice, Guidelines, Policies, Hazard Alerts and Risk Management Programs are provided by the Occupational Health and Safety units (UQ, 2010). Rosenstock *et al.* (2006) agree that international organizations like ILO and WHO guide and support OHS programs. They enhance regional collaboration and coordination, coordinate and enhance information and educational programs and materials and provide awareness activities and instruments through campaigns, events and special days. All these are important for Disaster and Risk Reduction (DRR) in the workplace.

In general, international regulations on major industrial accidents need binding regulations that have been justified in order to assist the international cooperation needed in the case of major accidents with effects extending beyond national borders (ILO, 1992). This study sought to establish if there were any international organizations involved in DRR for workers and the support given to them in the factories. International Labor Offices with the mandate to protect the public and the environment, demands that a system of major hazard control, which is designed primarily to achieve safety at workplace should provide for the protection of the public and the environment since they are likely to be affected by major accidents in the workplace (ILO, 1992). For example in Ramzy's (2010) report, a series of industrial disasters hit the country of China. The July 28 explosion at a shuttered plastics factory in Nanjing rocked the surrounding neighborhood, killing at least 10 people and injuring another 300. Investigators suspected the rupture of a propylene pipeline, possibly caused by workers who were dismantling the factory, triggered the midmorning blast. The explosion collapsed nearby structures, shattered windows in the surrounding area and sent columns of acrid black smoke into the air.

The study sought to find out if ILO was one of the international organizations involved in safety issues for workers in factories in Eldoret Municipality and establish the international laws in use in these workplaces. The role of these international organizations was also established.

## 2.2 National Intervention

Protective regulations should rely on national legislation and practice and should define dangerous places, substances and quality of substances (ILO, 1992). Rosenstock *et al.* (2006) observed that the major role the government can play is to establish workplace rules and provide a system of dissemination and enforcement i.e. garnering resources to enhance compliance, to attract adequately trained people and to establish and monitor laboratories to support regulatory efforts. Rosenstock *et al.* (2006) posit that the government should also introduce the workers' compensation regulations and stipulations that employers of certain size must engage professionals in health and safety matters. These will reduce reluctance to regulate and enforce control strategies. They agree with other scholars that the level of regulation and enforcement is woefully inadequate compared to that in industrialized countries. This guided the study into establishing the national regulations in place and how they were enforced in the workplace.

## 2.3 Workplace-Based Interventions

According to Rosenstock *et al.* (2006), employers need to be informed about available controls and their value for example insurance agencies, local safety groups, and trade unions. Due to economic factors, industries use materials that are far cheaper than safer substitutes for example materials banned in industrialized countries are damped in developing world like solvent mixtures containing benzene and construction materials containing asbestos. They also observed that equipment such as machines are well guarded to prevent injury or baffled to limit noise maybe prohibitively expensive in the market place compared with respirators or groves. Employers should realize that with ILO (1992) and numerous non-governmental organizations and with widening access to the internet, vast resources have become available.

Employers need to train their workers and supervisors since most of them may not interpret common warning signs used for hazard identification due to inadequate education proficiency, language barrier and the non-applicability of training materials to the local situations. Small enterprises present special challenges because they lack resources and expertise to address health and safety problems (Rosenstock *et al.*, 2006; Haight, 2006). In each unit posing a risk, the employer and employees jointly draw up a regularly updated labour protection program to map out risks and provide safety instructions which will always be constantly visible and known to authorities. The authorities should also monitor the quality of these programs (ILO, 1992).

## 2.4 Individual Interventions

Rosenstock *et al.* (2006) saw the need for workers to enjoy broad access to high quality healthcare but this is limited in developing countries. There is need for medical surveillance examinations for workers at risk for chronic condition noise induced hearing loss, pneumoconiosis or cancer. In developing countries, access to health care is critical both work-related and other health issues. There is need for control of non-occupational exposures for example in large, remote industrial complexes and farms, workers with or without their families often cohabit with the workplace and often with many or all of its risks including; noise, chemicals and biohazards. Other individual hazards are misuse of drums/tanks that had been used for carrying chemicals and environmental pollution. There is therefore need for individual surveillance and reporting, capacity building, enforcement of national regulations and participation in training, conferences as well as in research and development.

In Kenya, Section 21 of the OHS Act (2007) requires an employee to take all reasonably practicable steps, while at work to ensure that their actions or omissions don't create risks to their health and safety of or that of others. They must also co-operate with the employer in matters of health and safety and use any equipment in a manner consistent with its safe and proper use. Active involvement of employee in workplace risk reduction leads to increased productivity due to employee ownership of safer and more effective work, and reduction in direct and indirect OHS costs.

There is reduction in frequency and severity of injury, as staff become familiar with the principles of OHS risk management in their area and begins to practice them. The staff takes ownership of problems at the workplace level and common OHS goals between management and employees can be established. Employees also engage in identifying OHS problems and solutions in the workplace. There is increased awareness of OHS issues in the workplace, as staff takes ownership of problems at the workshop level, and increased knowledge of how to deal with risks effectively (UQ, 2010). The study through observations sought to find out if workers were using Personal Protective Equipment (PPE) properly and if they had knowledge/information on OHS.

### 3. Materials and Methods

The study was conducted in two large scale industries: Raiplywoods on Kenya-Uganda road three kilometers from Eldoret town and Ken Knit on Eldoret-Nairobi road half a kilometer from Eldoret town; Two middle level industries: the Rift Valley Bottlers, and Pyramid Packaging Ltd; and, two small scale industries: the Maize Milling Company and MajiMatamu Laundry in Eldoret CBD, Kenya. The town is a home to heavy industries like food processing, steel mills, timber and paper manufacturing. It also has numerous light and major industries (MCE, 2013).

The target population included managerial staff and operational workers in the selected factories, Labor officers in the Ministry of labor, Ministry of Industrialization, fire brigade officers, Public health officers, National Environment Management Authority (NEMA) and the Kenya Red Cross Society Regional officials.

The study adopted survey and evaluation research designs. According to Babbie (2010) in *The Practice of Social Research* in a survey design the respondents are selected and standardized questionnaires administered to them. Purposive sampling was used to identify officers or partners of factory occupational health and safety management and preparedness like executive officers in the Ministry of Labour, NEMA and the Kenya Red Cross Society Regional Health Officer and hospitals in Eldoret. This method helped to acquire information that was relevant to the study. The study made intensive inquiry from the few selected individuals as suggested by Kothari (2003). Secondary data that consisted Information on the government policies and strategies was sourced from the Labor officers in the Ministry of Labor, Fire Brigade officers, Public Health officers, National Environmental Management Authority (NEMA) and the Kenya Red Cross Society Regional officials. Primary data on the other hand was collected through interviews and use of structured questionnaires. Face to face interview was conducted with executive officers in the Ministry of Labour, NEMA and the Kenya Red Cross Society regional officers as well as occupational health officer. Data analysis was done using descriptive statistics and results thematically presented as follows.

### 4. Results and Discussions

International organizations provide legislations for health and safety of workers by providing risk management advice, guidance and policies. They support these programs and enhance collaboration and coordination. They also provide information and educational programs and materials, and create awareness through campaigns events and special days.

#### 4.1 International Organizations Intervention

Disasters are seen as complex problems demanding a collective response and therefore the need for a broader relationship between types of organizations between sectors (public and private) and nonprofit. There should be strong vertical and horizontal linkage since capacities and resources are insufficient calling for governments and organizations to make effective investment decisions choosing which aspect of disaster risk reduction to inspect on (UNISDR, 2009).

Interviews revealed that there were no international interventions in all the industries apart from the Rift Valley Bottlers which is affiliated to the international Coca-Cola Company. This company has in this case acquired ISO certificates and International Register of Certified Auditors.

## 4.2 National Intervention

National legislation and practice define dangerous places, substances and quality of substances as per literature review (GoI, 2012). The government establish workplace rules and provide a system of dissemination and enforcement (enhance compliance). They provide work compensation and stipulations that employers of certain size must engage professionals in health and safety (GoK, 2011). Interviews revealed that the government of Kenya through the Ministry of Labour, the department of Directorate of Occupational Safety and Health services (DOSHS), has made great strides in enhancing Occupational Health and Safety (OHS) and reinforcing compliance to Occupational Safety and Health Acts e.g. the one of 2007 Kenya by various industries. There is therefore the need for a coordinated effort on disaster risk reduction. Interviews with the officials of some of these humanitarian organizations (Fire brigade, Kenya National Environment Management Authority and the Kenya Red Cross Society Regional officials) revealed valuable information and here discussed are the roles of the organizations in risk reductions in industries under study.

### 4.2.1 The Kenya Red Cross Society

A discussion with the Kenya Red Cross Society regional disaster management officials revealed that a department of disaster management has been established. The department prepares mid to long term programs as components of disaster operations and disaster response. The establishment of this department is based on government policies of disaster management and risk reduction. The Kenya Red Cross deals with various departments and institutions depending on the area of disaster management. The organization works hand in hand with; the ministry of special programs, Administration Police Service (to provide security), Ministry of health, Environment Impact Assessment, Livestock Department, Ministry of gender and social progress and community groups.

Kenya Red Cross handles and deals with various departments depending on the area of disaster management. It uses the national policy guidelines on disaster risk reduction based on the Factories Act. The Kenya Red Cross deals with specific factories on:

- (i) Evacuation drills
- (ii) Fire drills with regard to OHS in factories. This is done at various levels in factories given the consent of the factory management.
- (iii) Training of workers on first aid and fire safety
- (iv) Doing capacity building of workers.
- (v) Equipping the factories e.g. with first aid kits.
- (vi) Carrying out risk assessment in factories. This is done upon request by the factories since it has cost implications.

According to the regional officer, the Kenya Red Cross response to emergencies has been quite instrumental in reducing disaster risks by training communities, improving the livelihood of communities at risk, creating awareness of risk reduction in communities and has gone full blast in risk reduction and emergency intervention. However, the humanitarian organization through her duties has faced some challenges given that some factories give less focus on disaster risk reduction but more on production. Kenya Red Cross requires some money to pay their staff for training facilitation but this becomes difficult since many factory managers are not willing to chip in for the training sessions as they count it as loss. An inspection of the selected industries revealed that most factories lack the very necessary equipment like 'The First Aid Kit'. Disasters have a high impact on factories and are costly. The regional officer also explained that, Kenya Red Cross lacks equipment for emergencies, for example if a factory building collapses; despite the skills, they lack equipment for lifting the wall to rescue people. Such equipment is too costly for the government to acquire. It is also unfortunate that the Kenya Red Cross Society sometimes is barred from accomplishing emergency rescue missions in estates. This is as a result of the poor road networks and may be attributed to the government's lack of proper training.

In the years 2008 - 2013, the Kenya Red Cross had improved in equipping themselves with fire extinguishers, protective equipment, fire engines and ambulances which had not been available previously. The Regional office revealed that the organization relies on outside donor funding which is inadequate, and therefore, is trying to generate her own funds through; establishing Redcot hotels, charging some fee for trainings e.g. on fire safety, M-PESA projects and establishing green houses for vegetables and tomatoes. It has also decentralized her activities to the regions and branches which carryout independent activities to generate funds. The Kenya Red Cross has now established advocacy at various forums at the head quotas, regional district and even in branches. They educate their workers on the best policies as well integrated in government policies. They also encourage donors to invest in risk reduction programs and capacity building.

#### 4.2.2 National Environment Management Authority

An interview with the regional officer, National Environment Management Authority (NEMA) confirmed that there are enhanced precautionary principles in all major activities in the field of environment, especially those with significant environmental impacts. Its policies are based on Acts such as: Environmental Management and Coordination Act (EMCA) 1999, Environmental Audit (EA) regulations 2003, Environmental Impact Assessment (EIA) regulations 2003, Water Quality regulations 2006 and Waste Management regulations 2006. The organization mainly inspects processes and enforces EA and EIA regulations, 2003. It disseminates information in ASK shows and Industries. Through cleaner production Centre they train industrial employers on energy management and handling of wastes, working hand in hand with Kenya Association of Manufacturers.

According to the regional officer in charge of NEMA – Kenya, the compliance level to environmental standards is still low due to: lack of knowledge/information on environmental management; cutting down of costs of management; lack of updated technology due to expenses involved and that the country does not have the latest Environment Management machinery. In their attempt to reducedisaster risks, the main challenges have been non – compliance with Environmental standards, cases in court taking too long to be determined, lack of Environmental standards (air quality) and shortage of law enforcement officials.

The organization, as revealed by the interview with the regional officer, is however trying to build enforcement unit (NEMA police), training judiciary officers to understand environmental offences, train compliance and enforcement officers to investigate and prosecute offences and disseminate information on environmental management. To enhance DRR, the organization gives licenses for waste facilities, transporters and service providers. It also enforces annual environmental Audits. Together with Cleaner production Center, has been training industries on environmental standards on handling the wastes and economic use of energy. One of the institutions with NEMA certificate under study was the Rift Valley Bottlers.

#### 4.2.3 Fire Brigade and Ambulance Services

Fire Brigade and Ambulance Service (Eldoret Municipality) is another organization that works in partnership with industries on disaster risk reduction. In a discussion with the officers in charge of the station, it came out clearly that its policies are based on the following legal framework: the Municipal by laws on safety; Building codes section 211 to 214; Physical Planning Act Cap 116 and Factories and other Places of Work Act of 2007. These are used during inspection of workplaces. This organization has a major role in risk reduction in that they train workers in the factories; carryout mock drills, fire awareness and awareness of safety rules, teach evacuation procedures in case of a disaster and installation of fire equipment in their premises. They make sure that fire extinguishers are properly installed and in good working conditions.

From the interview conducted, the Fire Brigade and Ambulance Service officials have been successful in reducing disaster through training and educating the public. They have successfully managed to extinguish 90% of fires in factories.

#### 4.3 Workplace-Based Interventions

These are control measures set by employers e.g. insurances, local safety groups and trade unions. Employers need to train their workers and supervisors on risk management procedures using appropriate language and local materials. This study, based on interviews with employees, found out that small enterprises lack resources and expertise to address health and safety problems and this becomes a challenge. Employers should draw up labour protection programs to map out risks and provide safety instruction. They also according to literature need to train employees and supervisors on hazards, warning signs and instructions on raw materials and equipment, and their interpretation. Interviews revealed that employees had been insured, were trained on occupational safe practices and monitored on monthly basis to ensure they complied with safety measures mainly in the large scale and medium scale industries. New employees were trained before assignment of duties.

Also observed on notice boards were training schedules and memos written to employees for caution or reminders on safety measures. Those employees, according to interviews with departmental/section supervisors, who did not conform to safety practices were given warning letters, suspended or dismissed if noncompliance was repeated or became regular. In some policies based on the OHS Act of 2007 were displayed on notice boards. These policies were reinforced and inspection carried out by OHS officer to ensure adherence. In Rift Valley Bottlers for example, in an interview with the OHS officer, it was stated that the management was also involved in inspection process and had introduced in the organization '5 S' as shown in Table 1.

**Table 1. The 5 'S' used in reducing risks at workplaces, Rift Valley Bottlers**

English	Kiswahili
Sort	Kuchagua
Set in order	Kupanga
Shine	Kusafisha
Standardize	Kufundisha
Sustain	Kudumisha

(Source: Authors, 2015)

These were geared towards ensuring good practices, discipline and order among employees.

#### 4.4 Individual Interventions

Individuals need to adhere to high quality healthcare and there is need to conduct medical surveillance examinations for workers at risk (UQ, 2012). There is need for individual surveillance and reporting, capacity building, enforcement of national regulations and participation in training, conferences and research. Cooperation with the employer in matters of health and safety, and safe and proper use of equipment is important. This reduces frequency and severity of injury. Employees identify problems and solutions to workplace problems.

This paper established that employees were expected to ensure proper use of PPE, be work conscious, avoid drug and alcohol use during working hours; they were also prohibited from smoking and were required to ensure proper hygiene. The workers and visitors were checked daily at the gate before they were allowed to enter the industries. They were inspected for drug and alcohol abuse, matchbox, cigarettes, and weapons like *pangas*, swords or knives. Workers were also restricted to their area of jurisdiction and were required to strictly follow working instructions failure to which could lead to suspension or dismissal. Sick persons were allowed to fill sick leave and go for treatment. In the Rift Valley Bottlers the workers carried out self-appraisals and compared them to the assessment by the management and they used the comparison to strike a working agreement. This helped them accept and correct their miss-ups.

## 5. Conclusion

Occasionally, local people and organizations are the main actors in disaster risk reduction and disaster response. When a disaster strikes, immediate response (i.e., search and rescue and care for those injured, traumatized and homeless) is often carried out by family members, friends and neighbours and local organizations. In the case of the many events triggered by natural hazards, there may be little or no external support at all, especially in countries where government capacity is limited. There is need for a combined effort of disaster risk reduction between international agencies, national governments and the local community as well as individuals since each one has a role to play in ensuring safety at workplace.

## 6. Recommendations

- (i) Work-based interventions should be enhanced in all the organizations despite the level of production. Organizations and individuals must adhere to and be accountable to health and safety requirements of their workplace in order to reduce risks.
- (ii) Finally, research should be carried out to establish the effectiveness of the NGOs and other agencies in DRR in industrial workplaces.
- (iii) Mechanisms whereby businesses and the authorities meet to discuss their respective roles and contributions to national disaster security need to be set up and operationalized on a regular basis.
- (iv) A lot still needs to be done by different stakeholders to identify how mainstreaming can be achieved in practical terms. Developing basic targets and indicators to help integrate and expand DRR initiatives into relief management and development planning could be one way to curb this menace. This could include but not limited to:
  - Policy & advocacy
  - Knowledge and education
  - Vulnerability Risk Assessment
  - Community –based mitigation and preparedness

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