



Participatory Hazard Mapping Tool for Informal Markets

INTRODUCTION

Street vendors and market traders worldwide face occupational health and safety (OHS) hazards on a daily basis. OHS refers to the prevention of injuries and diseases that happen in the workplace, and hazards are defined as physical (including noise), chemical, ergonomic (including lifting, standing long hours), psychosocial (including violence, gender harassment, long working hours), and biological (including infections such as TB).

In Durban, South Africa, one of the main concern of market traders at Warwick Junction, the city's main market, is fire, along with other issues, such as sanitation. The Phephanathi ("be safe with us" in isiZulu) project was a pilot project conducted by Women in Informal Employment: Globalizing and Organizing (WIEGO) and support NGO Asiye eTafuleni (AeT) that aimed to engage informal traders in the development of a health and safety system for eight markets in Warwick Junction, Durban.

Learning from the participatory exercises has informed the development of a *Participatory Hazard Mapping Tool for Informal Markets*. This tool focuses on a collaborative process for market traders and local government officials to develop a disaster response plan. The project's principles are based on WIEGO's organizational model of change, in which systemic change can only emerge when informal workers have:

- **Voice** in relevant rule-setting, policy-making, and collective bargaining processes;
- **Visibility** among policy-makers;
- **Validity** as legitimate workers and economic agents, which this requires changing the mindsets of government, the private sector/owners of capital, and the public at large.

The *Participatory Hazard Mapping Tool for Informal Markets* provides urban planners, architects, and city officials with an adaptable blueprint for engaging

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informal workers in urban planning processes, such as disaster risk reduction management.

PARTICIPATORY PROCESS

PART 1: Improve understanding of underlying risk issues and risk management

Expected result: Traders have to see a point in taking health and safety seriously if they are to change their behavior, and city authorities have to be encouraged to see traders not just as people taking up the sidewalks but as business people who need services and have rights.

STEP 1: Hazard Mapping Walkabouts

Two hazard mapping walkabouts involving AeT, traders, and city officials—mainly personnel from the fire services and a representative from Disaster Management—walked through Warwick Junction’s markets identifying fire risks or hazards. The first walkabout resulted in the immediate recognition of risks by both traders and city officials. During the walk, the groups checked fire extinguishers to see if they were in working condition and also to see if there was adequate water in the markets in case of a fire. The second walkabout aimed to map environmental sanitation hazards, and included a representative from Environmental Health and Fire Safety.

The walkabout resulted in some problems being fixed, including a toilet in one of the markets, but it also prompted fire officials to understand the need for fire training geared specifically toward the informal market situation. Importantly, it also – even if temporarily – improved relations between government officials and traders.

STEP 2: Trainings

Training raises consciousness among traders about the idea of ‘workplace’ and encourages them to take responsibility for a healthy workplace for themselves, their customers, and commuters walking past. Training also gives some technical skills on how to deal with emergency situations.

Occupational Health and Safety Training for Traders

A select group of market traders underwent OHS Training after a focus group discussion (FGD) identified their level of knowledge and understanding of OHS. Based on that FGD, a one-day course was developed on basic health and safety for workers in the informal sector. Objectives of the training were to:

- Educate workers on OHS for a better quality of work and life;
- Empower workers to take steps to work better and be healthy;
- Develop an understanding of the link between health and safety, and economic conditions;
- Develop a work ethic of protection, health, and safety.

Technology to Emphasize Key OHS Training Messages

The training was followed up by mobile phone text messages that were sent to participants on a weekly basis. The project used **Frontline SMS** (www.frontlinesms.com) to send health messages to 550 traders. This is a good behaviour change strategy, because one of the key difficulties in targeted behaviour change is that the change is not maintained.

Receiving text messages serves as a regular reminder.

- *Frequency:* 15 health messages were sent over a period of three weeks (one message per working day).
- *Language:* Messages were sent in isiZulu to the majority of participants, although English messages were also used for the few traders who preferred to receive messages in that language.
- *Types:* Messages included health tips; how to lift heavy things; the importance of resting; reminders to go for regular health checks – especially blood pressure and blood sugar levels.

First Aid Training for Traders

Traders were trained in first aid through a private accredited company that offered introductory training and certification. (See First Aid Stands in Figure 5.)

Fire Marshal Training

Fire marshals completed a one-day Basic Course in Fire Technology. This course was a standardized one, but the materials were adapted for this audience. For example, sand as an extinguishing medium was incorporated, which is important for informal market situations. The fire training involved trialing the use of different types of sand to extinguish fires that might break out in the market – caused by electrical problems, cooking oil, and flammable materials.

***Challenge:** For people to really know what to do in the case of a fire, there have to be fire drills. However, in informal markets, it is often unclear who will do the training, who will work out and explain the escape routes and evacuation plans, and whether roll calls can be conducted at all, given that members of the public will also be involved.*

PART 2: Improve the infrastructure for risk management

Expected result: Improved risk management infrastructure better equips traders to deal with hazards they face in the workplace, and low-tech warning and extinguishing systems were found to be appropriate options. Also, hazards are digitally mapped so that the information can be shared with city authorities and traders can monitor if and when things are fixed.

STEP 1: Identify risk areas

Digital Technology for Hazard Mapping

The Phephanathi project explored digitally mapping hazards using a free crowdsourcing platform, called Ushahidi (www.ushahidi.com), which allows users to send information about a hazard and its exact co-ordinates to a central system that generates a hazard map.

Ushahidi was used to map fire and sanitation risks in Warwick Junction market (see Figures 1 & 2 below).

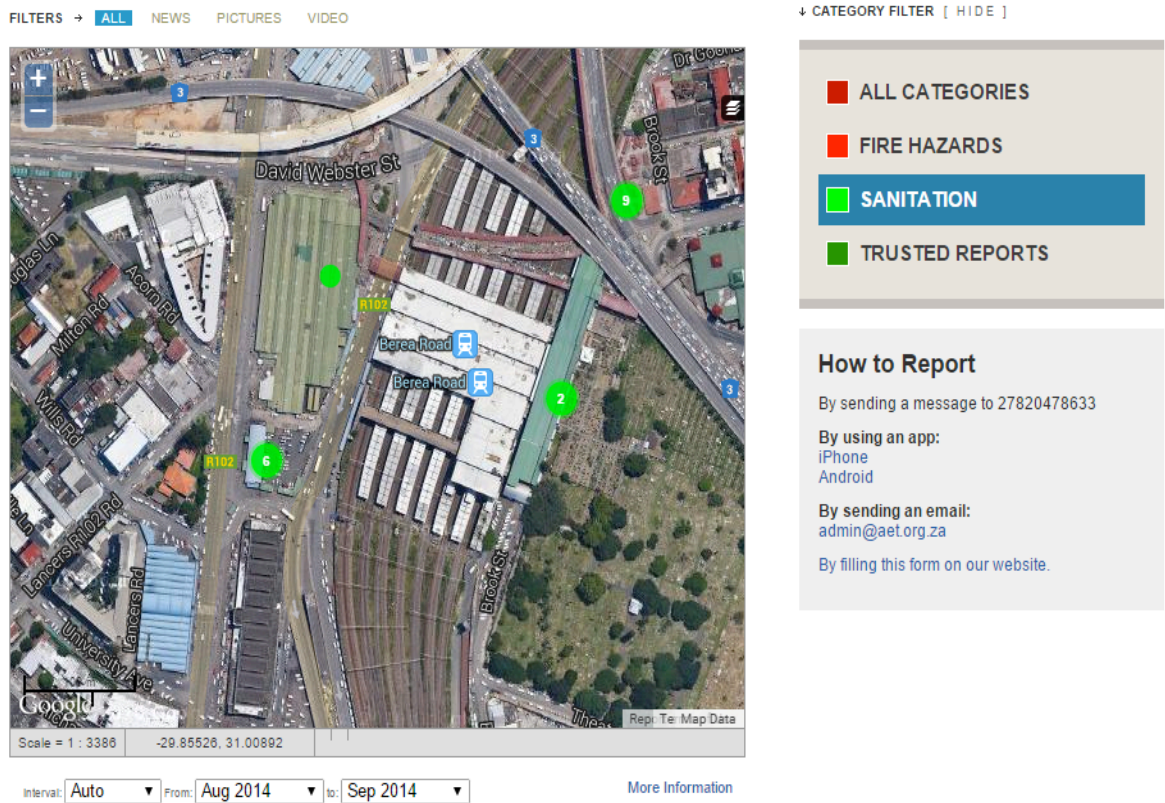


Figure 1: Satellite view of Warwick Junction with sanitation hazards mapped using the Ushahidi Platform.

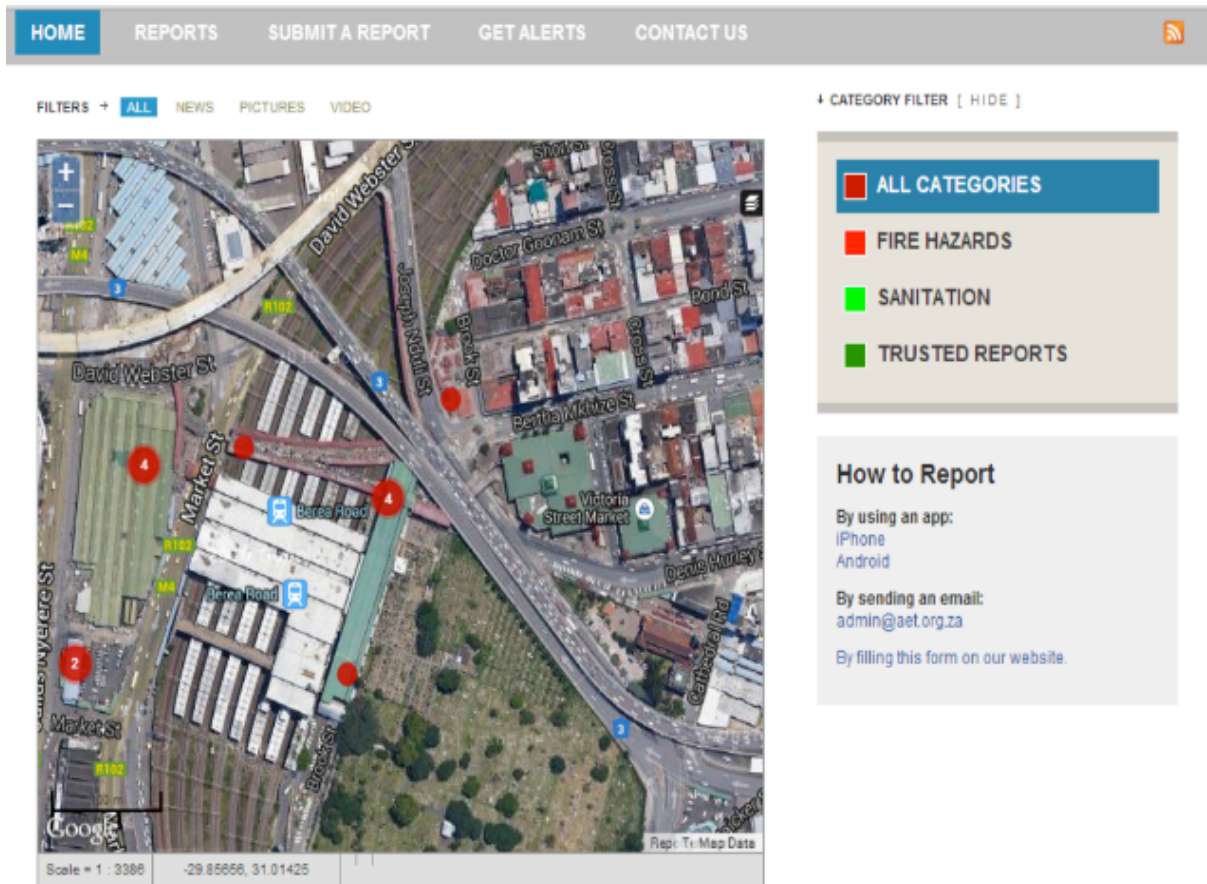


Figure 2: Satellite view of Warwick Junction with fire hazards mapped using the Ushahidi Platform.

The Ushahidi Platform proved to be useful as a tool for recording hazards in Warwick Junction. In addition to the map that is generated, the “report” function allows one to keep a description of the hazard, a photograph, and the date and time that the hazard was recorded (see Figure 3 below). This allows for the development of a systematic database (even data set) of infrastructural problems and hazards within the market that can be updated on a regular basis. These reports can be used as an information source when working with local government authorities on improved service provision. Such reports can also be extended to reports of harassment, evictions, crimes and other hazards.

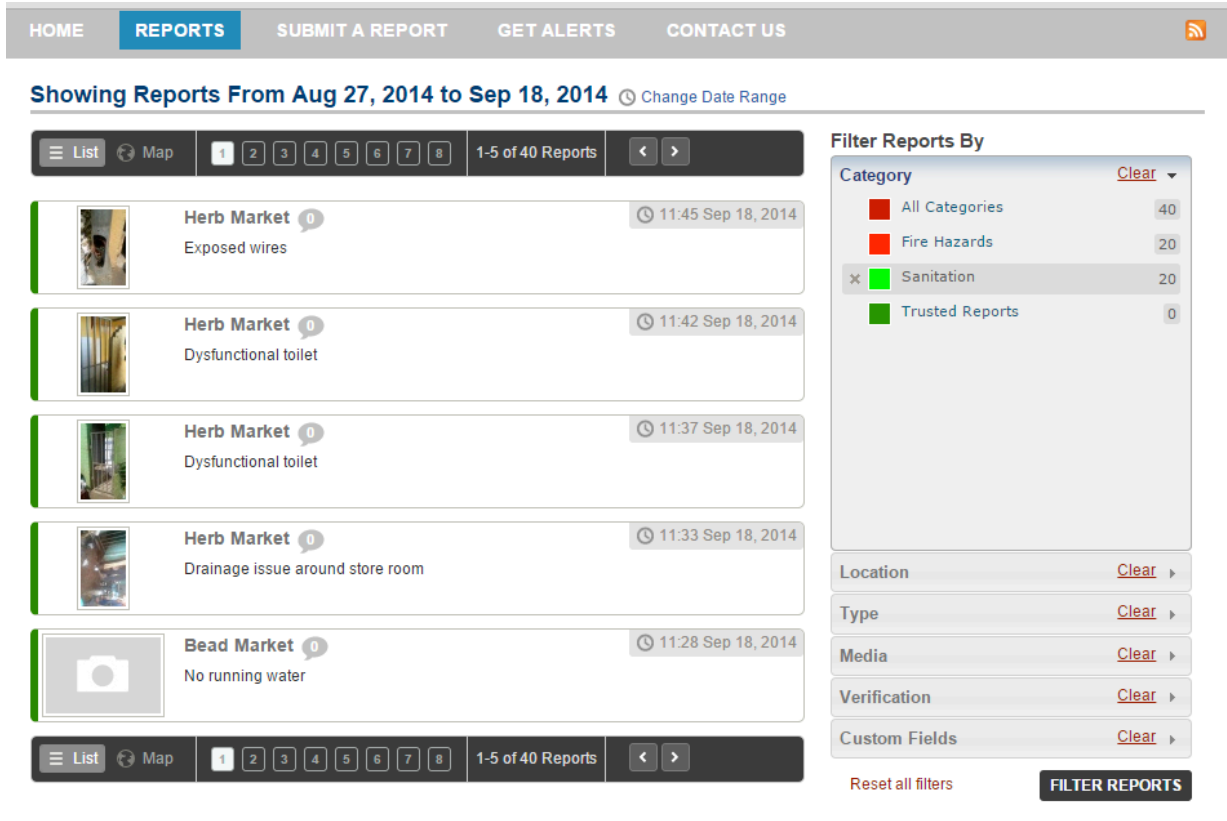


Figure 3: Ushahidi Report Function tracks locations of hazards and times identified.

Challenge: The technology proved difficult to set up. If these technologies are going to be included, a budget should be set aside for a dedicated Information Technology (IT) person, one who preferably has some experience in using such technology. It also requires an Android phone, and few traders have these, so a text message system was set up instead. This also proved difficult to use, and it requires capacity building for it to be effective. Finally, in South Africa the cost of an SMS is relatively expensive, and this would also have been a factor inhibiting traders from using the service.

Enabling Conditions for Technology to be Effective

The information gathered eventually needs a place to go – it needs at least a partially responsive audience from an institution that has the mandate and capacity to institute changes on the ground. Technology can only operate optimally if it is situated within social and governance systems that are also operating optimally. These systems need to be developed prior to, or at least alongside, the use of the technology.

STEP 2: Identify affordable alternatives to expensive fire-fighting and first aid equipment

Prior to rolling out first aid and fire-fighting stands into the market, the WIEGO/AeT team undertook a detailed siting exercise with the help of traders in each market. During this exercise, the number and placing of the stands in each market was decided upon. Measurements were also taken to ensure that the stands could be tethered to appropriate infrastructure (traders' tables, poles, and so on).



Fire Cones

AeT prototyped cardboard cones that can be used to throw sand onto fires (See Figure 4). This is an alternative to expensive fire-fighting equipment that may be stolen or vandalized or used for other purposes. This fits in with the idea that solutions and training should be pitched at the correct level for the context: they should be implementable, desirable, and appropriate – the first aid stands and fire extinguishers must be easy to see, easy to use, and easy to store and access every day.

Figure 4: Fire Cone design for markets.

First Aid Stands

To demarcate where traders in the market could receive first aid in case of an emergency, AeT designed and piloted what have been dubbed as 'green crosses' by traders: A-frame stands with a platform for the first aid box and a vinyl protection cover with a green cross on both sides. (See Figure 6.)

Health screenings conducted at the market identified respiratory and reproductive issues, especially among women traders. Subsequently, a health clinic was brought to the market. Doctors and nurses were now available *on site*, so traders did not have to leave their workplaces to go to a clinic, but could drop in without much loss of trading time.

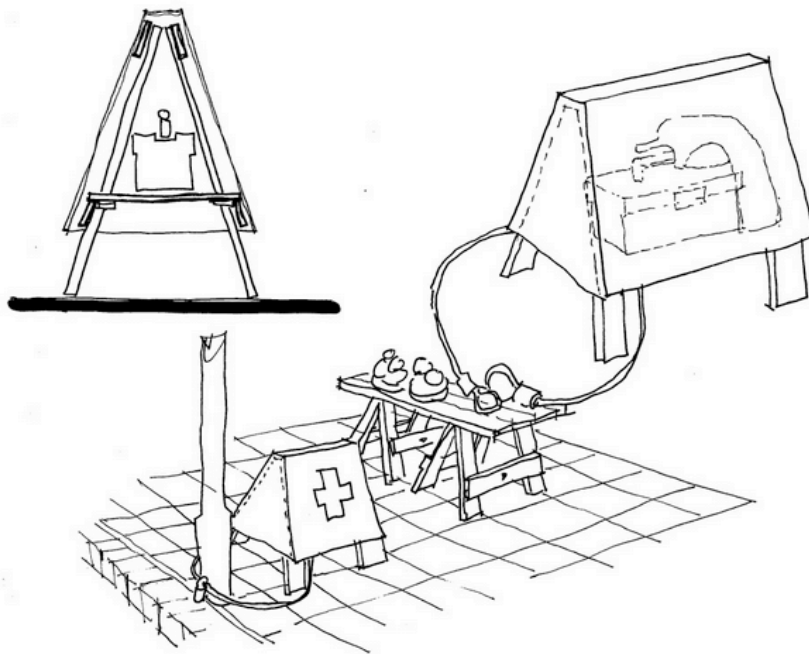


Figure 5: Design prototype of a First Aid Stand for informal workers developed for the Phephanathi Project. Design and sketch by Richard Dobson.



Figure 6: First Aid 'green cross' prominently displayed in Warwick Junction market.

PART 3: Improve the collaboration amongst traders and the communication with local government in managing risk

Expected result: Informal traders are enabled to be part of city planning through participatory disaster risk management. The intent is to collaborate with city officials and thereby build a foundation to develop collaboratively a more resilient city for all.

Risk Management Committee

Risk management sub-committees exist in each market and have been charged with managing the First Aid stands and the Fire Cones. AeT will continue to track the progress of both these designs over the next year. An expert urban planning consultant has developed a Disaster Response Plan for the Early Morning Market. The Phephanathi Committee (originally known as the WJ Central Risk Management Committee) continues to meet. The committee is tasked with promoting health and safety in Warwick Junction. It meets at least four times a year, and has representatives from all the markets. It is supposed to coordinate the participation of traders and report back to them.

CONCLUSION

The *Participatory Hazard Mapping Tool for Informal Markets* shows a two-fold result: 1) a better understanding of the health and safety risks in the place of work as well as steps to take to improve those conditions; and 2) the participatory process of empowering market vendors leads to more sustainable and systemic change, improving the health and safety of informal workers as well as the community who frequents the market. The information gathered can also be the basis for collaborating with local government on larger scale infrastructure upgrades in informal markets.