

# Stakeholders' role in improving Ghana's construction safety

**1 Dorothy Donkoh** BSc, MPhil  
Department of Building Technology, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

**2 Emmanuel Aboagye-Nimo** BSc, MSc, PhD  
Lecturer, Built Environment and Civil Engineering Division, School of Environment and Technology, University of Brighton, Brighton, UK  
(corresponding author: [e.aboagye-nimo@brighton.ac.uk](mailto:e.aboagye-nimo@brighton.ac.uk))



Health and safety (H&S) management has traditionally been the responsibility of the contractor. Most often, contractors are blamed for the accidents and other ill health that occur on their construction sites. H&S performance is, however, enhanced when there is effective collaboration between those involved in the construction process. This paper therefore explores the role of stakeholders in promoting construction H&S in Ghana through public works procurement. The four main stakeholders identified and evaluated in this study are the government, the client (employer), the contractor and the employee(s). Seven interviewees (comprising procurement managers, consultants and quantity surveyors) from public institutions in Ghana participated in the research. Data were collected using semi-structured interviews and were thematically analysed. Results indicate a conflict in the perceived functions and relation of these stakeholders in the construction process. To address the constraint to improving construction H&S, certain recommendations are offered. These include the identification of specific individuals responsible for supervision and employee training, the development of H&S policies by the government and contracts that clearly outline the contractual obligations of all parties involved. Additionally, the specific roles and involvements of other stakeholders in the procurement process in improving construction H&S are also outlined.

## 1. Introduction

With Ghana as an emerging economy, the Ghanaian construction industry (GCI) is theoretically at the threshold of its peak and, if tapped, would help the economic growth of the country. The construction industry contributes 8.6% to the total gross domestic product (GDP) of Ghana and employs over 1.4% of the country's labour force (African Development Bank, 2012). The sector has grown significantly from around 4.5% of GDP in the 1980s to become one of Ghana's most important industries (African Development Bank, 2012).

The government and other clients (including private clients) also engage the services of professional consultants such as architects, quantity surveyors and engineers (structural, electrical and services engineers) who make up the professional body in the construction industry. All the roles mentioned have national professional governing bodies (Donkoh *et al.*, 2015; Gyadu-Asiedu, 2009).

It is widely acknowledged that effective collaborative work in construction leads to safer environments and, as such, must be encouraged (ICE, 2015; Weinstein *et al.*, 2005). Involving different stakeholders including clients and other trade contractors in projects can significantly reduce uncertainty in both the design

phase and the construction phase and subsequently reduce unsafe occurrences in the project (Weinstein *et al.*, 2005). With the rate of fatal injuries in the GCI being uncomfortably high (see Fugar and Agyakwah-Baah (2010) and Boakye *et al.* (2010)), it is imperative that measures that can help reduce site accidents and injuries (e.g. collaborative work through public procurement) are considered in national policies and procedures. Furthermore, there is an evident gap in the literature on the use of collaborative work in improving safety in the GCI. A further search of literature indicates that Ghana has no comprehensive health and safety (H&S) policy solely for the construction industry (see Donkoh *et al.* (2015) and Bruce (2009)). The role of contractors in H&S has been well researched in Ghana (e.g. Fugar and Agyakwah-Baah (2010), Kheni *et al.* (2007) and Eyiah and Cook (2003)), unlike the roles of other stakeholders.

The current approach to H&S management adopted by the GCI is fragmented (Cotton *et al.*, 2005), and this leads to ambiguities in interpretation. Although the Institution of Occupational Safety and Health (IOSH, 2013) revealed that Ghana was about to make strides in comprehensive H&S frameworks, this is yet to become a reality. IOSH (2013) revealed that the Ghana Contractors Association Council has started working on overhauling present laws guiding workplace H&S. Unfortunately, after years of

waiting, this has still not materialised. Ghana desperately needs a comprehensive framework for H&S in the construction industry. This is one of the main aims for initiating the current research project.

As stated earlier, there are fragmented H&S laws used by various ministries, departments and agencies for enforcement and complementary roles in Ghana (see Donkoh *et al.* (2015) and Cotton *et al.* (2005)). For example, the Department of Factories Inspectorate (Dofi) under the Ministry of Employment and Labour Relations (formerly the Ministry of Employment and Social Welfare (MoESW)) promotes H&S of persons through the Factories, Offices and Shops Act 1970 (Government of Ghana, 1970; MoESW, 2011). The named institutions all offer their versions of H&S policies for their workers, but these do not specifically cover the construction industry. The legislation adopted mainly in the GCI is the Labour Act 2003 (Government of Ghana, 2003: part 1), which limits its scope of application to workers and employers (Furber *et al.*, 2012).

All this further confirms the lack of a comprehensive H&S policy in the GCI. For this reason, the present research aims to explore the role of stakeholders in improving H&S in the GCI. It is further argued that the government can encourage this improvement by incorporating H&S requirements in public procurement works. The public works procurement route has been chosen, as it will encourage collaborative work on safety at the inception of the given projects.

The general roles of some key stakeholders in the construction industry are discussed next.

## 2. Stakeholders in the construction industry

A stakeholder, as defined by the Project Management Institute (2008: p. 246), is any person, group or organisation who can be positively or negatively impacted by, or cause an impact on, the actions or activities proposed. In the construction industry, the checklist for stakeholders is often huge. Each of them, however, can have an influence in the course of the project at some time. Developed countries have regulations for H&S in their construction industries – for example, the UK has the construction design and management (CDM) regulations and Australia has Safe Work, which both provide guidance for the legal requirements and obligations for all stakeholders in the construction process with regard to safety. However, due to the lack of maturity in Ghana's H&S in the construction industry, these systems cannot be replicated. Aspects of the CDM regulations and Safe Work can, however, be adopted by Ghana in the public works' sector as the government would be the client and thus can appoint an individual or group of individuals to ensure safe practices are incorporated in projects. Being a former British colony and a commonwealth state, Ghana imitates many good practices undertaken in the UK – for example, Standard Method of Measurement (SMM7) and the British Standard codes (Rics and Bec, 1988). Unfortunately, Ghana has not succeeded in

learning from the UK's construction H&S practices and thus lacks explicit safety rules and regulations. This is a very efficient safety standard to aspire to emulate, as it incorporates all stakeholders in one way or the other.

Charles *et al.* (2007) suggest that to enhance construction H&S performance, collaboration between those involved in concept, design, construction planning, construction work, maintenance and demolition are essential. The contractor, who executes the work at the construction stage of procurement, is, most of the time, blamed for accidents that occur on the site. Hislop (1999) further emphasises that construction H&S is not the responsibility of the contractor alone. This means that all parties involved in a construction project should be accountable for its H&S.

This paper focuses on four main stakeholders in the GCI, and their roles in promoting H&S public works procurement are discussed next.

### 2.1 The government

Governments are major employers, policymakers and regulators and have a leadership role in preventing work-related death, injury and disease by promoting, legislating and enforcing H&S requirements (Government of Australia, 2006). The starting points for the government's activities are policy outcomes. Procurement is often only one of a number of mechanisms which could be used to deliver government policy (Office of Government Commerce, 2008). The Government of Australia (2006) advised that governments can help promote better H&S by requiring projects to include a range of safety measures, such as specifying the safety budget, building layout or the use of certain construction materials.

Agencies and ministries of the government of Ghana may be seen as public sector clients, and in Ghana the government is the major construction client (Laryea and Mensah, 2010).

### 2.2 The client

Masterman (2002: p. 6) defines the client as 'the organisation, or individual, who commissions the activities necessary to implement and complete a project in order to satisfy its or his needs and then enters into a contract with the commissioned parties'. The client is referred to as the head of the procurement chain and has the most influence in establishing and monitoring H&S. This influence can be exercised through the setting of criteria to promote a positive H&S culture throughout the life of a project. Clients should focus on the result of the project and bear in mind that a project that is difficult to build and difficult to maintain is not a good design (CCG HSWG, 2007). Haywood (2004) agrees and also believes that the decisions made by the client who procures the work help in ensuring good standards of safety and health on a construction project. In public procurement works, the government may often act as the client (Laryea and Mensah, 2010). However, they can also delegate this role to private organisations.

### 2.3 The contractor

A contractor may be a person or group of persons or company with a formal contract to undertake the construction. The contractor may be responsible for supplying labour and material and providing and overseeing staff if needed (Ashiboe-Mensah, 2012; Sengupta and Guha, 1995). Contractors have the duty to provide a work environment which is free from recognised hazards that are causing or are likely to cause death or serious physical harm to their employees. The contractor is to ensure that employees comply with the H&S regulations on the site. Finally, the contractor must provide H&S training for the employees.

### 2.4 The employee(s)

Employees or site operatives should ensure that they put on the appropriate personal protective equipment (PPE) for every type of work. They are also to adhere to the H&S rules on the site and should not do things that can put themselves and others in danger. They should also know emergency procedures and the location of the first aid kit and report any workplace hazards to employers (see Government of Ghana, 2003). The employees have to demonstrate an understanding of the H&S training they have received and subsequently work accordingly.

## 3. Research method

An in-depth qualitative approach was adopted for the study. Semi-structured interviews were conducted with seven participants who are involved in construction procurement from the following public institutions: the Kumasi Metropolitan Assembly (KMA), Public Procurement Authority (PPA), Urban Roads Department (URD), Kwame Nkrumah University of Science and Technology (KNUST), Architectural and Engineering Service Limited (AESL) and Building, Roads and Research Institute (BRRI). The interviews were conducted to help in the identification of roles and responsibilities of stakeholders and identify challenges encountered by these stakeholders in their quest to improve H&S. Participants were chosen based on their experience and expert knowledge in the field of study. The study adopted a non-probabilistic purposive sampling in selecting the research participants for the interview. The reason for using purposive sampling lies in the selection of information-rich cases, with the objective of yielding insight into and understanding of the phenomenon under investigation. The average tenure of the

interviewees in the industry is 14 years, and all of them have a bachelor's degree or higher. The interviews took place face to face between the interviewer and the interviewees. The interviews were recorded (with the consent of participants) and, on average, took between 30 and 45 min. Questions asked during the interview process were to uncover participants' views on the importance of collaboration in improving construction project H&S. Furthermore, participants were asked how beneficial the inclusion of a requirement for collaborative work during the procurement stages of public works would be to the entire industry. Some questions in the interview were geared towards the use of rules and regulations because of the current state of H&S in Ghana or lack thereof. Finneran and Gibb (2013: p. 7) explain that the first phase of improving H&S (also known as a traditional phase) should be more focused on rules and regulations before the practices can evolve to focus on individual behaviours. This concept is popularly known as the 'Pybus theory of safety evolution' (see Lingard and Rowlinson (2005) and Pybus (1996)). In the case of Ghana, the establishment of H&S is still in its infancy – that is, the traditional phase – and hence the need to ask participants about rules and regulations. Eyiah (2004) encourages the increase of regulation in the GCI as a means to improve overall H&S.

Participants were also asked how best H&S could be incorporated in the very early stages of projects, such as procurement stages. One very important question that all participants were asked was the role they believed stakeholders in the industry could play in the improvement of H&S in Ghana. Considering their roles and years of experience, it can be argued that they are well placed to be able to offer such recommendations. After a further analysis of their recommendations, a comparison with existing safety practices was conducted to produce a recommendation table for the various stages of the project (see Table 2).

To help in the easy identification of the research participants and systematic representation of data, a coded key to each of them is represented in Table 1. Each participant is labelled with a pseudonym that is cross-referenced to the report text. For example, BRRI participant 1 is labelled BRRI 1. BRRI participant 2 is labelled BRRI 2. The participant from the URD is labelled URD. Table 1 captures the profession and the working experience of the research participants in the construction industry.

Table 1. Coding of participants

Participant	Code	Profession	Length of experience: years
Building, Roads and Research Institute respondent 1	BRRI 1	Quantity surveyor/lecturer/procurement specialist	24
Building, Roads and Research Institute respondent 2	BRRI 2	Quantity surveyor/research officer	13
Urban Roads Department	URD	Quantity surveyor	14
Kumasi Metropolitan Assembly	KMA	Quantity surveyor	20
Public Procurement Authority	PPA	Procurement specialist	12
Kwame Nkrumah University of Science and Technology	KNUST	Quantity surveyor	8
Architectural and Engineering Service Limited	AESL	Quantity surveyor/design consultant	8

BRR1 1 and BRR1 2 work for an independent research institute and consult for private contractors on major projects, who often carry out public works. URD, KMA and PPA all work as civil servants in the public sector. AESL works as a quantity surveyor and design consultant for a private design firm. With the exception of URD and KMA, all other participants play diverse roles in their work roles.

Following the interviews, a verbatim transcription of the recorded audio files was undertaken to allow for the intricate details of the data to be captured and analysed. This also ensured that the rich data being sought were acquired. Themes identified in the literature review were used in a thorough thematic analysis.

#### 4. Results and discussion: role of stakeholders in promoting construction H&S

The findings from the interviews are presented in this section. The opinions of the purposely selected experts are presented with regard to the themes identified through the thematic data analysis. Furthermore, a discussion of the research findings is carried out using the relevant literature presented in Section 2. As identified, the effective collaboration of various stakeholders in early stages of the project can significantly improve the H&S of the project (Charles *et al.*, 2007).

##### 4.1 Government's obligation

Some interviewees mentioned that the government of Ghana has a crucial role in maintaining H&S in the construction industry. They suggested that the government should enact laws to make H&S mandatory in the procurement process and on construction sites. Not only should the government enact laws or make policies, but it should also make sure that these laws and policies are adhered to through effective monitoring and enforcement. As found by Kheni (2008: p. 226), the government of Ghana is similar to those of other developing countries and has paid little attention to hazards that the activities of the industry pose to construction workers and the public thus far.

The participants gave the following as the role of the government.

The government's obligation is to pass the law in construction H&S. And once the government passes the law, it is incumbent on everybody to apply. (KMA)

Government should be responsible in maintaining good construction environment. The government should create a platform such that, this issue is addressed so that everyone knows why H&S is relevant.

Government position should be by law. (BRR1 1)

Although KMA and BRR1 1 state that the government should create policies, they do not state how. Furthermore, unlike BRR1 1, KMA is a civil servant and, as such, he represents the government in many transactions, especially during the tender stages. Thus, he would be in a position to encourage or include such policies in tender requirements.

Government is a policymaker. Government should possibly strengthen the existing provisions for H&S. If some provisions are not applicable now, then new ones should be introduced, that is amended. The government as a policymaker must also be the enforcer and so must have a unit to ensure monitoring and enforcement. (KNUST)

The views of the participants are in line with the research of Wells and Hawkins (2011), who assert that since the government is the major employer, policymaker, regulator and procurer of construction works, it can play a crucial role in preventing accidents and other work-related illnesses by promoting, legislating and enforcing H&S requirements through a wide range of mechanisms. However, none of the participants mentioned the individual roles they could play in this exercise.

The government's involvement in promoting construction H&S is not only to make policies, but also to finance the project as pointed out by URD. He explained that the government, which is also the client for most of the public works undertaken in Ghana, has the role of financing these H&S schemes, as illustrated in his comment.

... Mind you, all these H&S measures come down to money. When these things are done, people have to be paid. The government therefore has the obligation of making funds available and ensuring that the right thing is done by the contractor through the requisite agencies. (URD)

An argument that comes up from the response is the money/cost involved in including H&S items in the bill of quantities. Wells and Hawkins (2011) pointed out that the addition of H&S may tend to increase the cost of the project since items such as PPE, temporary works, site meetings and safety committees are included as a fixed sum in the bill of quantities and paid for in interim valuations when the surveyor or engineer checks that they are provided. It is important that stakeholders do not prioritise financial issues over H&S matters in projects. Research has revealed that the frequency of an accident which involves loss of time is reduced considerably when H&S costs are included in a tender and accepted by the client (Holmes *et al.*, 1999).

##### 4.2 Client involvement

Studies have shown that, where clients are committed to H&S, a high H&S standard is achieved. The extent to which the client influences construction H&S varies. The Construction Clients' Group (CCG) Health and Safety Working Group (CCG HSWG, 2007) explains that the client has the most influence in establishing and monitoring H&S, and this influence can be exercised through the setting of criteria to promote a positive H&S culture throughout the life of a project. The participants mentioned that the client plays a crucial role of monitoring to ensure that H&S measures are adhered to. They also stated that the client must make provisions for H&S in every stage of the procurement process, as indicated in the comment given below.

Clients must complement the effort of the government by making sure that the provisions and rules are incorporated in the various stages of

procurement. They could also help in the monitoring of contractors adhering to the provisions by incorporating it in the process. So in their documentation, there should be a section that takes care of health and safety. (KNUST)

KNUST's comment is in line with practices undertaken by developed countries. In Ghana, clients in many situations may not be well informed to make construction H&S decisions. In the case of the government acting as a client, there are knowledgeable and experienced individuals, such as some of the participants presented in this study, to offer invaluable counsel. The government is often the client for most public works executed in Ghana. AESL made a critical point that, because the government serves as a client and the implementing authority of H&S laws, conflicts tend to arise. The conflict stems from the fact that the people supposed to monitor H&S are also the same people or institution playing the role of the client at the same time. Certain H&S procedures are therefore overlooked and, in some cases, ignored altogether most of the time. Thus, he argues for an independent body to oversee H&S in such projects.

AESL stated the following.

[As of now] the government is the client for most public projects and also serves as the implementing authority. So you see where the conflict comes from. He is the referee, the goalkeeper and the player. When the government is the client and the site is not safe, sometimes the implementing bodies will go, but because it's government (it's like government on government) so they leave it. As at now, I can tell you that most of the government projects go on without building permits when in actual fact there should be. (AESL)

Deducing from this, it is evident that AESL believes that setting up an independent body to consult on safety matters will bring about improvement in project safety. He adds that

There should be a separate unit coming from the district assembly, municipal assembly or metropolitan assembly that go round sites making sure that people are complying. If that one is in place, when I come to your site and see that your site is not safe, we shut down your site. You make it safe and then come and call us, and we certify that it is now safe. (AESL)

This comment indicates a decentralisation of government offices when it comes to H&S improvement. This will help in ensuring effective enforcement and monitoring in every part of the country. More importantly, this independent body must be given the autonomy to operate freely.

#### 4.3 Role of the contractor

On the role of the contractor, the interviewees gave the following comment.

The contractor must actually see the need for H&S, and the long-term benefits it has on the project, and not on the immediate cost. (PPA)

PPA immediately indicated that contractors are torn between working safely and financial issues. Financial issues should not be a basis for compromise on H&S issues as the consequences of neglecting H&S can be catastrophic and could lead to fatalities (Gad and Collins, 2002).

The contractor must strictly adhere to procurement H&S rules and must employ competent H&S personnel that will educate workers and enforce rules on site. He must provide PPEs for the workers. (KNUST)

Responses from PPA and KNUST indicate a theoretical approach to safety. However, this is currently not the practice in Ghana. In order for the contractors to 'strictly adhere to procurement H&S', there must be some form of enforcement, and this solidifies the need for independent bodies.

The Labour Act 2003 (Government of Ghana, 2003) requires contractors to provide a clean and a safe working environment for their employees. The law also charges the employer, who is in this case the contractor, to provide PPE to the employees at no cost. The opposite is rather happening in the nation, as contractors are not even aware of their contractual obligations under the laws according to the study conducted by Laryea and Mensah (2010). Considering that tender fees include H&S provisions (Wells and Hawkins, 2011), it is surprising that contractors fail to provide the adequate support needed for their workers. Participants failed to offer in-depth discussions on the role of contractors in the fight to improve H&S in the industry. They also made no reference to contractors being responsible for H&S training. This could mean that they either assume this is a given or they are not aware that it is the contractors' responsibility.

Another area that was not highlighted in the interviews was the use of the strong collectivist culture in Ghanaian societies to harness better H&S practices on site, as found by Kheni *et al.* (2007). Site observations may reveal more of the practices carried out by the main contractors. This is, however, beyond the scope of this study and can be revisited in future studies.

Findings regarding site operatives are presented next. It is understandable that they are mainly under the responsibility of the contractors; however, for the purpose of this research, they have been separated in order to apportion roles accordingly.

#### 4.4 Site operatives (employees) and their responsibilities

The research participants were of the view that the employees' obligation is to know and adhere to H&S rules on site. This is evident in the following quotation.

The employees are also to take instructions and do as have been prescribed, and not as they want. (URD)

This is an interesting response worth commenting on given that instructions from authorities (if interpreted) may sometimes lead

to more risks being incurred. This is because contractors under the pressures of competition, and in their quest to maximise profit, may tend to undermine H&S practices on project sites (Kheni *et al.*, 2010). Employees, also, in their bid to secure their jobs, may not complain about poor site conditions or rules which are coming from authorities so long as they are being paid their wages.

They have personal obligations to themselves first to follow H&S procedures, and then also to third parties as their actions or inactions could result in an accident not to themselves, but to third parties. (KNUST)

Kheni *et al.* (2010) again argued that workers may be limited in their capacity to resist poor H&S conditions on site due to the existence of cheap labour in addition to low socioeconomic status in developing countries. Workers may not have personal autonomy when it comes to H&S issues as H&S rules are from authorities. They, however, owe it to themselves and to others not to indulge in behaviours that may pose a threat to themselves and to others.

As an employee, you should demand your right. That is why the Labour Act is saying that, as an employee, you must know your rights. Should there be any mishaps, you should be able to demand what is due you, that is, your workman's compensation. (BRR1 2)

It is worth knowing that ignorance of one's identity and rights is normally a recipe for abuse. In view of this, BRR1 2 explained that an employee must be aware of their rights in order to demand them, as illustrated in the comment above. However, this is not the case in Ghana as the industry is full of 'not formally' educated people so they may not have a full understanding of the law or their rights. Low literacy levels and ignorance may contribute to increased risk of exposure to accidents (Kheni *et al.*, 2010). None of the participants mentioned the effect that the training of employees would have on H&S practices. If workers are not given good H&S training, they may not know what is safe and unsafe.

#### 4.5 Discussion and recommendations for H&S improvement in Ghana

Duties are placed on clients, construction teams and other stakeholders with more authority given to an individual or group of individuals in what is considered a more authoritative and policing role. This would thus lead to accountability and a better reporting system through a hierarchical structure. In Ghana and many other developing countries, this structure is absent (Sohail *et al.*, 1999). Such rules and procedures can be set up by the government, and this practice can usher Ghana's construction industry into the traditional phase (see Finneran and Gibb (2013)). Findings from the study indicate weakness in the monitoring and enforcement of H&S laws, low awareness of laws and conflicts in roles as to who does what, which confirms the studies of Kheni *et al.* (2008) and Akorsu (2013). While the Labour Act 2003

(Government of Ghana, 2003) places emphasis on H&S at work, the administration and the enforcement of the regulations is very weak. Akorsu (2013: p. 16) stated that 'we tend to have fine laws, we tend to ratify labour standards as quickly as they are adopted by the ILO but we hardly enforce these'. Research carried out by Akorsu (2013) shows the statistics of an inspection carried out by the Labour Department in 2008. These indicate that 106 inspections were conducted nationwide, while there are about 26 088 firms in Ghana's manufacturing sector alone (of which construction is part). The Ashanti and Greater Accra regions were oddly among the regions with no inspections at all, although these regions have the largest cities and largest number of manufacturing activities. The enforcement of H&S regulations remains a problem due to the lack of adequate resources available to government institutions responsible for H&S administration (Kheni *et al.*, 2008). The enforcement of H&S rules is critical in the initial stages of projects (Finneran and Gibb, 2013) and, as such, must be encouraged.

The study indicates that making rules and regulations relating to H&S of workers is one step of progress in causing a positive change in the sector, but it does not end there. Going further to ensure implementation – that is, making sure individual contractors and consultants strictly adhere to these rules and regulations – will make a great difference in ensuring the H&S of workers.

The laws alone cannot deal with the issue of H&S, as the spirit of the law may not always be followed. Effective collaboration between the stakeholders involved and the integration of H&S procedures at every stage of procurement are likely to reduce construction injuries and ill health in the country. Having identified a lack of enforcement of rules and regulations in this research, it is recommended that an independent H&S enforcement body be instated. Although GCI is not comparable to the UK's construction industry, appointing independent H&S bodies such as the Health and Safety Executive (HSE) and local authorities would be very beneficial. Such bodies could use a wide range of tools, ranging from prosecution to the use of fines in ensuring compliance with H&S rules and regulations. Another approach to safer working could be the use of social influence on safe practices. Furber *et al.* (2012) found that, in Ghana, people were concerned about what others thought about them. This is as a result of the collectivist culture that prevails (see Kheni *et al.* (2007)). Thus, certain individuals can be motivated or incentivised to work safely, and this can subsequently influence others to follow suit. However, this aspect may be an option once H&S practices take root in the construction industry – that is, encouraging individual behaviours (see Finneran and Gibb (2013)).

The current study provides the industry with a simplistic and yet practical way of improving construction H&S management through procurement by outlining the various stages of procurement and how H&S can be embedded in each stage, as

Table 2. Role of stakeholders in improving H&S in Ghana's construction industry

Procurement stage	Roles	Stakeholder responsible
Planning stage	The scope of the project and who to bring on board the project should be determined, and risk assessment should be carried out.	Government agencies acting on behalf of the government of Ghana
Design stage	Bills of quantities must include itemised provision on H&S. Designs should be H&S friendly and there should be a requisition of safe method statements.	Design and cost team (architects, quantity surveyors, engineers)
Tender stage	H&S should be included as a requirement for evaluating tenders. Evaluating and awarding tenders should be based on criteria set which includes H&S.	Evaluation team, government agency
Contract stage	Include H&S clause in the contract; clearly defined roles and responsibilities of parties involved in the project, especially in the area of H&S at the contract stage. H&S training must be carried out.	Government of Ghana, contractors
Construction stage	Carry out regular site visits, effective monitoring and supervision to ensure compliance and requisition of monthly H&S reports is done at the construction stage. Encourage collective safety practices among site operatives.	Engineer-in-charge, Dofi, Environmental Protection Agency (EPA), labour department
Post-evaluation stage	H&S audits should be carried out in addition to the financial audits after the completion of the project.	Auditors from Dofi, evaluation team

well as the roles of the stakeholders, as indicated in Table 2. The recommendations are based on the analysed data and literature on the state of H&S in the GCI.

These recommendations will hopefully create a foundation on which further development in the overall safety practices in the GCI can be built. Once such ideas have become more commonplace and widely accepted, advanced safety regulations bearing similarities to the UK's CDM regulations and Australia's Safe Work can be introduced into Ghana's safety policies – that is, specific roles and responsibilities for all stakeholders involved in the construction and design phases. Currently, the industry is not mature enough for such advanced measures.

## 5. Conclusion

The roles of stakeholders in the GCI have been explored in this paper. Through a qualitative study, this research has uncovered lapses in the regulations currently being used in Ghana with regard to workplace H&S, in particular that of construction. The current laws alone are not adequately ensuring effective H&S in the construction industry. A collaboration between all the parties involved in the process is therefore essential. Potential contractors must also be encouraged to participate and contribute during the design phase to improve overall project safety. Furthermore, contractors must be given an ultimatum of not compromising H&S for financial reasons. H&S performance targets must be set on all projects irrespective of the scope. These can be introduced at the inception of projects – that is, the procurement stages. If the government of Ghana initiates such positive safety practices, major private clients can follow in their footsteps, and this can become a prevalent practice. Although the Ghana Contractors Association Council indicated the need for an overhaul of the H&S practices in Ghana, this never came to fruition, and for this reason, the government may be the best institution to make this happen. Professional bodies in the GCI must also encourage

their members to work safely and provide them with continuous professional development and H&S training. In addition, such professional bodies can help the government develop comprehensive codes of practice applicable to the GCI. The government can set up an office at various metropolitan, municipal and district assemblies for H&S with highly skilled and competent personnel who will engage in training, monitoring and enforcement of provisions for projects. These teams will have to work independently.

Lastly, the government of Ghana should equip the Department of Labour and the Dofi with the needed resources and autonomy to strengthen the monitoring and enforcement of H&S laws.

Future research is recommended to explore further the GCI H&S practices. These must include longitudinal studies of government projects from the planning stages to post-evaluation stages. There were limitations in the sole use of interviews in this project. Observations of H&S practices are highly recommended to uncover the otherwise hidden practices in construction projects.

## 6. Implications for the industry

The paper has implications for the construction industry of Ghana as it attempts to offer an approach to improve H&S in the industry. Complete conformance will guarantee effective collaboration and thus safer projects. This is because all parties involved in the projects will have specific roles, and thus H&S practices in Ghana will become streamlined. There will not be usurping of roles, as the roles and responsibilities are clearly defined, resulting in the reduction of conflicts. Effective systems ensure effective communication and vice versa; therefore, there will be less ambiguity. The recommendations given can be benchmarked to improve H&S in other developing countries with similar H&S issues, and not restricted only to Ghana.

## REFERENCES

- African Development Bank (2012) *African Economic Outlook – Special Theme: Promoting Youth Employment*. African Development Bank, Abidjan, Ivory Coast. See <http://www.afdb.org/en/knowledge/publications/african-economic-outlook/african-economic-outlook-2012/> (accessed 03/03/2014).
- Akorsu AD (2013) Labour standards application in the informal economy of Ghana: the patterns and pressure. *Economic Annals* **58(196)**: 157–176.
- Amoah P, Ahadzie DK and Dansoh A (2011) The factors affecting construction performance in Ghana: the perspective of small-scale building contractors. *The Ghana Surveyor* **4(1)**: 41–48.
- Ashiboe-Mensah NA (2012) *Photovoltaic Adoption in the Ghanaian Building Industry: Perceptions and Relational Dynamics of Innovation Adoption Decision Factors*. PhD dissertation, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
- Boakye NA, Fugar FDK and Akomah BB (2010) Ensuring the health and safety of Ghanaian construction workers by decentralised government agencies: an exploratory study. In *Proceedings of West Africa Built Environment Research (WABER) Conference, Accra, Ghana* (Laryea S, Leiringer R and Hughes W (eds)). WABER, Reading, UK, pp. 295–304.
- Bruce TF (2009) *Occupational Safety and Health in Ghana*. Ghana Business Code, Accra, Ghana. See [http://www.ghanabusinesscode.com/downloads/presentations/occupational\\_safety\\_and\\_health\\_inghana%5b1%5d%5b1%5d.ppt](http://www.ghanabusinesscode.com/downloads/presentations/occupational_safety_and_health_inghana%5b1%5d%5b1%5d.ppt) (accessed 20/01/2014).
- CCG HSWG (Construction Clients' Group Health and Safety Working Group) (2007) *Good Practices for Clients to Follow When Procuring Construction Work*. Construction Clients' Group, Watford, UK.
- Charles M, Pillay J and Ryan R (2007) *Guide to Best Practice for Safer Construction: Literature Review, from Concept to Completion*. Icon.Net Pty Ltd, Brisbane, Australia.
- Cotton AP, Sohail M and Scott RE (2005) Towards improved labour standards for construction of minor works in low income countries. *Engineering, Construction and Architectural Management* **12(6)**: 617–632.
- Donkoh D, Adinyirah E and Aboagye-Nimo E (2015) An exploratory study into promoting construction health and safety in Ghana through public works procurement. In *Benefitting Workers and Society through Inherently Safe(r) Construction* (Behm M and McAleenan C (eds)). CIB, Belfast, UK, pp. 289–297.
- Eyiah A (2004) *Regulation and Small Contractor Development: A Case of Ghana*. Institute for Development Policy and Management, University of Manchester, Manchester, UK, No. 30668.
- Eyiah A and Cook P (2003) Financing small and medium-scale contractors in developing countries: a Ghana case study. *Construction Management and Economics* **21(4)**: 357–367.
- Finneran A and Gibb A (2013) *Safety and Health in Construction: Research Roadmap Report for Consultation*. CIB General Secretariat, Rotterdam, the Netherlands, CIB W099, CIB Publication 376.
- Fugar FD and Agyakwah-Baah AB (2010) Delays in building construction projects in Ghana. *Australasian Journal of Construction Economics and Building* **10(1/2)**: 128.
- Furber A, Duncan S, Smith SD and Crapper M (2012) The health and safety implications of socio-cultural context for community construction projects in developing countries. *Construction Management and Economics* **30(10)**: 857–867.
- Gad S and Collins AM (2002) *Safety Culture: a Review of the Literature*. Health and Safety Laboratory, London, UK.
- Government of Australia (2006) *Guidance on Occupational Health and Safety in Government Procurement*. Australian Safety and Compensation Council, Canberra, Australia.
- Government of Ghana (1970) *Factories, Offices and Shops Act 1970. Act 328*. Government of Ghana, Accra, Ghana.
- Government of Ghana (2003) *Labour Act 2003. Act 651*. Government of Ghana, Accra, Ghana. See [http://laws.ghanalegal.com/acts/id/162/section/9/Duties\\_Of\\_Employers](http://laws.ghanalegal.com/acts/id/162/section/9/Duties_Of_Employers) (accessed 01/11/2015).
- Gyadu-Asiedu W (2009) *Assessing Construction Project Performance in Ghana: Modelling Practitioners' and Clients' Perspectives*. PhD thesis, Eindhoven University of Technology, Eindhoven, Netherlands.
- Haywood G (2004) *Achieving excellence in construction procurement. European Agency for Safety and Health at work: Actions to Improve Health and Safety in the Construction Industry*. Office for Official Publications of the European Communities, Luxembourg, Luxembourg.
- Hislip RD (1999) *Construction Site Safety: a Guide for Managing Contractors*, illustrated edn. Taylor & Francis, Abingdon, UK.
- Holmes N, Lingard H, Yesilyurt Z and De Munk F (1999) An exploratory study of meanings of risk control for long term and acute effect occupational health and safety risks in small business construction firms. *Journal of Safety Research* **30(4)**: 251–261.
- ICE (Institution of Civil Engineers) (2015) *ICE Health and Safety 2015*. Institution of Civil Engineers, London, UK. See <http://www.ice-conferences.com/ice-health-and-safety-2015/> (accessed 19/09/2016).
- IOSH (Institution of Occupational Safety and Health) (2013a) *Ghana Steps into Health and Safety*. Institution of Occupational Safety and Health, Wigston Magna, UK. See <http://www.iosh.co.uk/News/Ghana-steps-into-health-a.aspx> (accessed 19/09/2016).
- Kheni N (2008) *Impact of Health and Safety Management on Safety Performance of Small and Medium-Sized Construction Businesses in Ghana*. PhD thesis, Loughborough University, Loughborough, UK.
- Kheni NA, Dainty ARJ and Gibb AGF (2007) Influence of political and socio-cultural environments on health and safety management within SMEs: a Ghana case study. In *Proceedings of the 23rd Annual ARCOM Conference, Belfast, UK* (Boyd D (ed.)). Association of Researchers in Construction Management, Reading, UK, pp. 159–168.
- Kheni NA, Dainty AR and Gibb AG (2008) Health and safety management in developing countries: a study of construction SME's in Ghana. *Construction Management and Economics* **26(11)**: 1159–1169.
- Kheni NA, Gibb AG and Dainty AR (2010) Health and safety management within small- and medium-sized enterprises in developing countries: study of contextual influences. *Journal of Construction Engineering and Management* **136(10)**: 1104–1115.
- Laryea S and Mensah S (2010) Health and safety on construction sites in Ghana. *Proceedings of the Construction, Building and Real Estate Research Conference of the Royal Institution of Chartered Surveyors, Paris, France*.
- Lingard H and Rowlinson S (2005) *Occupational Health and Safety in Construction Project Management*. Spon Press, London, UK.
- Masterman JWE (2002) *Introduction to Building Procurement Systems*, 2nd edn. Spon Press, London, UK.
- MoESW (Ministry of Employment and Social Welfare) (2011) *Vision, Mission and Objectives of Department of Factories Inspectorate*. Ministry of Employment and Social Welfare, Accra, Ghana. See [http://www.lmisghana.org.gh/index.php?option=com\\_content&view=article&id=106&Itemid=116](http://www.lmisghana.org.gh/index.php?option=com_content&view=article&id=106&Itemid=116) (accessed 03/03/2014).
- Office of Government of Commerce (2008) *An Introduction to Procurement*. Office of Government Commerce, London, UK.
- Project Management Institute (2008) *A Guide to the Project Management Body of Knowledge*, 4th edn. Project Management Institute, Newtown Square, PA, USA.
- Pybus R (1996) *Safety Management: Strategy & Practice*. Butterworth-Heinemann, Oxford, UK.
- Rics and Bec (The Royal Institution of Chartered Surveyors and the Building Employers Confederation) (1988) *Preliminaries/General Conditions. Standard Method of Measurement of Building Works*, 7th edn. Eyre & Spottiswoode, London, UK.

Sengupta B and Guha H (1995) *Construction Management and Planning*. Tata McGraw-Hill Publishing Co., Delhi, India.

Sohail M, Miles D and Cotton A (1999) Contrasting perceptions: a study of entry barriers to participation in public works contracting by micro enterprises in India and Pakistan. *Construction Industry Development in the New Millennium: Proceedings of the 2nd International Conference on Construction Industry Development, Singapore*, pp. 1–9.

Weinstein M, Gambatese J and Hecker S (2005) Can design improve construction safety? assessing the impact of a collaborative safety-in-design process. *Journal of Construction Engineering and Management* **131(10)**: 1125–1134.

Wells JD and Hawkins J (2011) Briefing: Promoting construction health and safety through procurement. *Proceedings of the Institution of Civil Engineers – Management, Procurement and Law* **164(4)**: 165–168, <http://dx.doi.org/10.1680/mpal.10.00001>.

## How can you contribute?

To discuss this paper, please email up to 500 words to the editor at [journals@ice.org.uk](mailto:journals@ice.org.uk). Your contribution will be forwarded to the author(s) for a reply and, if considered appropriate by the editorial board, it will be published as discussion in a future issue of the journal.

*Proceedings* journals rely entirely on contributions from the civil engineering profession (and allied disciplines). Information about how to submit your paper online is available at [www.icevirtuallibrary.com/page/authors](http://www.icevirtuallibrary.com/page/authors), where you will also find detailed author guidelines.