



International Federation of
Consulting Engineers (FIDIC)

Humanitarian Engineering to Rescue

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1. Introduction

FIDIC Young Professionals Forum Steering Committee (YPFSC) has identified **Humanitarian Engineering** as one of the main topic of interest of the Young Professionals (YPs) in 2017 and accordingly worked on this research and survey, which was presented as part of 1st International YPs Symposium in FIDIC International Infrastructure Conference in Jakarta, Indonesia on 1st Oct. 2017.

A **humanitarian crisis/ disaster** is defined as a singular event or a series of events that are threatening in terms of health, safety or well-being of a community or large group of people, usually occurs throughout a large land area. Therefore, local, national and international responses and collaboration are necessary in such events.

Different **types of humanitarian crises** are considered, including (Natural, Man-made, Conflicts, etc.) regardless of the types, the Survivors are left in urgent need of life-saving assistance such as shelter, food, water, energy & health care.

Consequently, **Humanitarian engineering** aims to research, design and implement to directly improve the well-being of poor, marginalized, or under-served communities, which often lack the means to address pressing problems. Through go beyond traditional approaches to finding smart, sustainable, innovative and appropriate solutions that can heal communities and help meet future challenges for developing communities.

2. Goal

The main goal of this paper is to study the role of engineering industry in the humanitarian responses worldwide.

3. Objectives of this study are:

- Assess the awareness of humanitarian works.
- Study and recognize the unique skills for the engineering industry/ engineers to situations of humanitarian conflicts.
- Highlight the challenges and the opportunities of Humanitarian Engineering.

4. Methodology

- Literature review for related papers and studies.
- Identify goal, objectives, dimensions, etc.
- Prepare a questionnaire as a tool for data collection for this study.
- Review questionnaire by subject matter expert,
- Distribute the Questionnaire (using an Online Survey Tool) worldwide.
- Analyse the survey responses to reach the survey findings/ results.

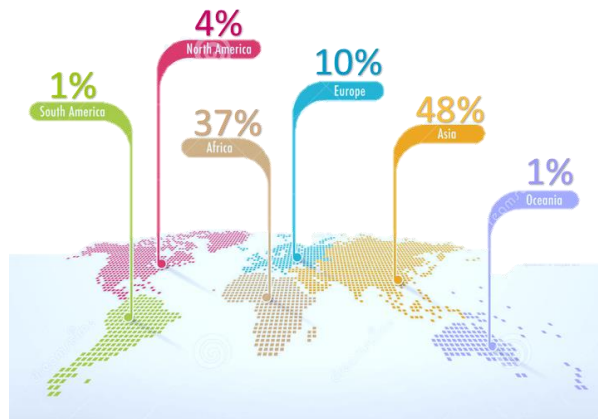
5. Results Analysis

300 Reponses

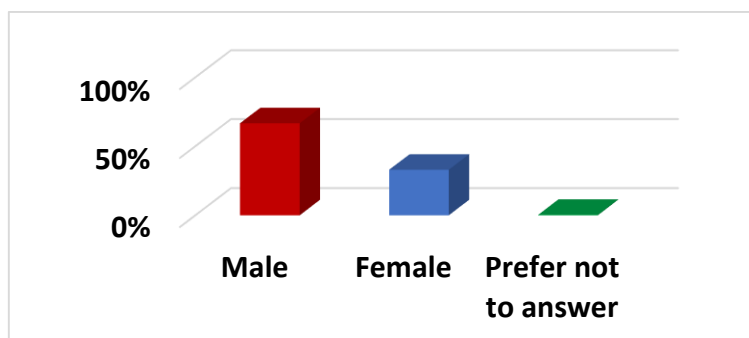
Where collected for the period from **July- September 2017**, the analysis and outcomes are as below:

Demographic Analysis:

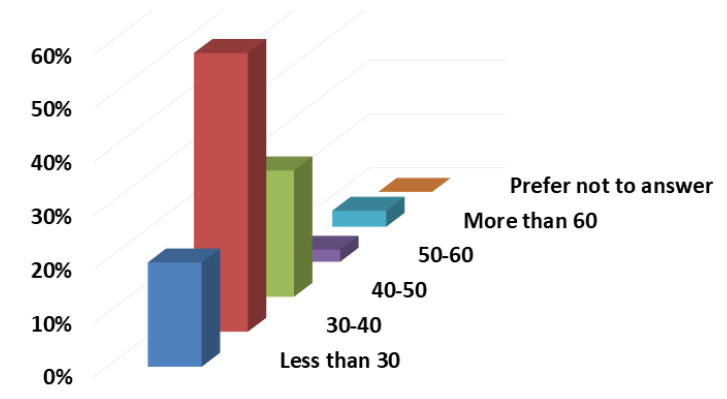
- About **56 Countries** from all over the world participated. The highest rates of responses were from Sudan, Jordan, KSA, Qatar, South Africa, UAE, Ghana, Canada, Iran
- Responses distribution in term of **Continents** are as below:



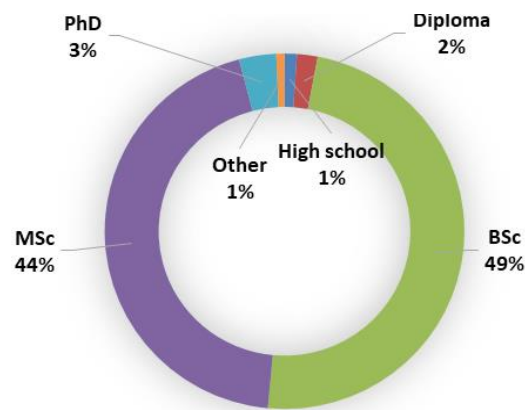
- **Gender:** Male 70% and Female 30%



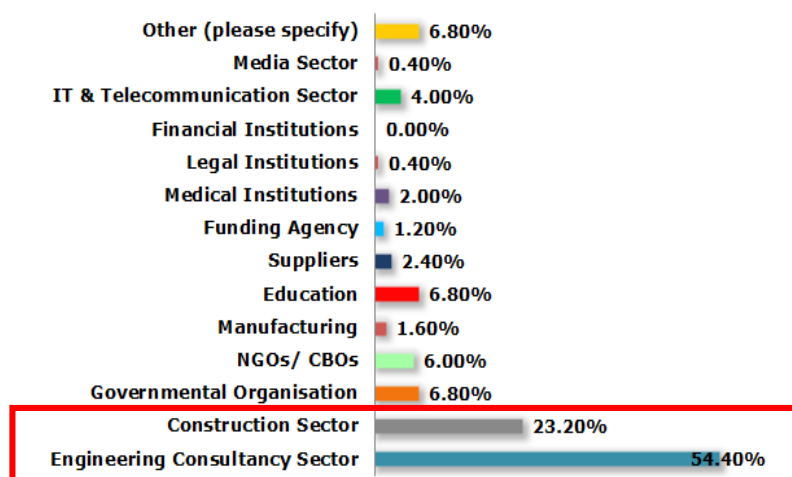
- d. **Age:** 70% less than or equal 40 years old (Young Professionals as per FIDIC definition) and 30% more than 40 years old.



- e. **Achieved Academic Qualification:** Majority are bachelor and Master Degree holders.

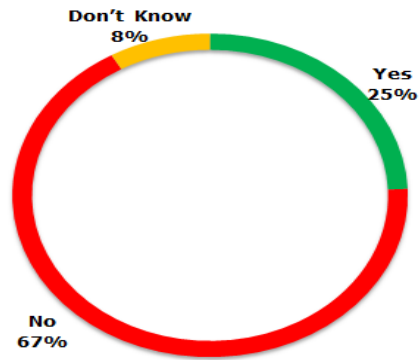


- f. **Professionals Sectors:** About 55% from consultancy Engineering Sector and 23% from Construction Sector.



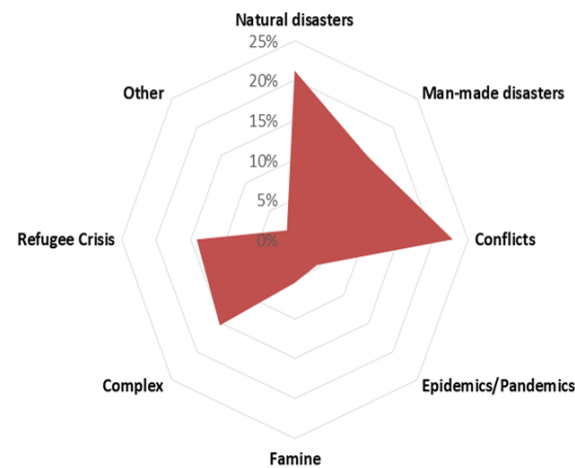
Main Results Analysis:

- i. **Awareness about Humanitarian Engineering:** 25% of the respondents were aware of Humanitarian Engineering Topic, throughout working in NGOs, personal awareness due to crisis or working for International Organizations.



ii. Human crises types that considered the most influential based on the below types:

- **Natural disasters** (earthquakes, volcanic eruptions, floods, etc.),
- **Man-made disasters** (hazardous material spills, nuclear accidents, etc.),
- **Conflicts** (War, Terrorist, etc.),
- **Epidemics/Pandemics** (AIDS, bird flu, etc.),
- **Famine,**
- **Complex** (a combination)
- **Refugee Crisis**



iii. How Engineering Sector (Consulting Engineering) Can helps Effectively in Humanitarian Works?

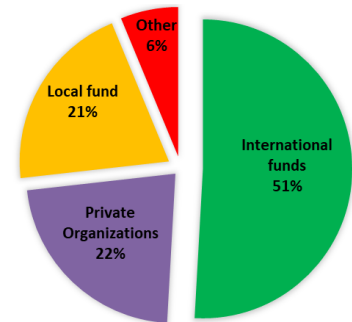
Most of the respondents focused on the below for both response and recovery phases:

- Provide temporary & rapid solutions
- Share knowledge & experiences
- Develop flexible approaches
- Work continuously on innovative solutions & new ideas
- Enhance its role in Pre-crisis (occurrence, behavior and extent)
- Enhance its role in Post-crisis (adaptation & responses)
- Consider sustainability concept
- Effective use of local resources

- Develop rapid assessment tools/ checklists to assess conditions on the ground
- Provide holistic approach (opportunities/ threats & stakeholders)
- Take the lead....be the initiators for certain technical initiatives
- Be prepared, trained and involved prior to the crises
- Awareness

iv. Main sources of funds to help Humanitarian Engineering

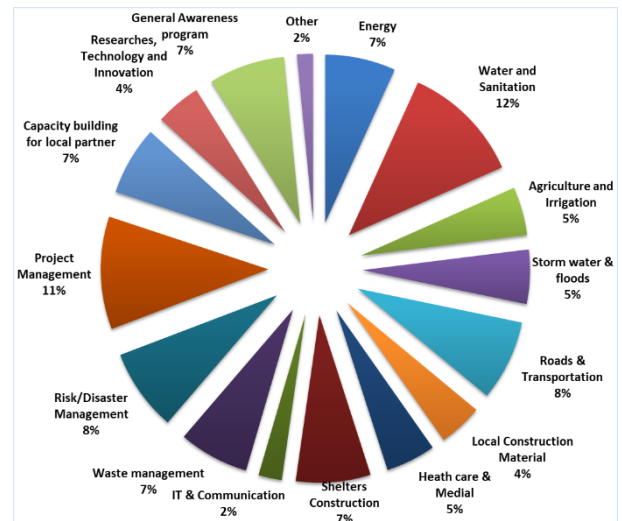
51% of the respondents considered that the funds can be availed through international funds, 22% from private organizations, 21% from local funds and 6% other sources.



v. Sectors which are you able to contribute to help in the humanitarian crises

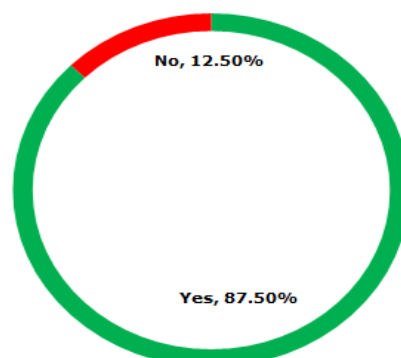
Highest rate of responses were as below:

- Water and Sanitation 11.58%
- Project Management 10.88%
- Risk/Disaster Management 7.91%
- Roads & Transportation 7.77%
- General Awareness program 7.34%
- Shelters Construction 7.20%



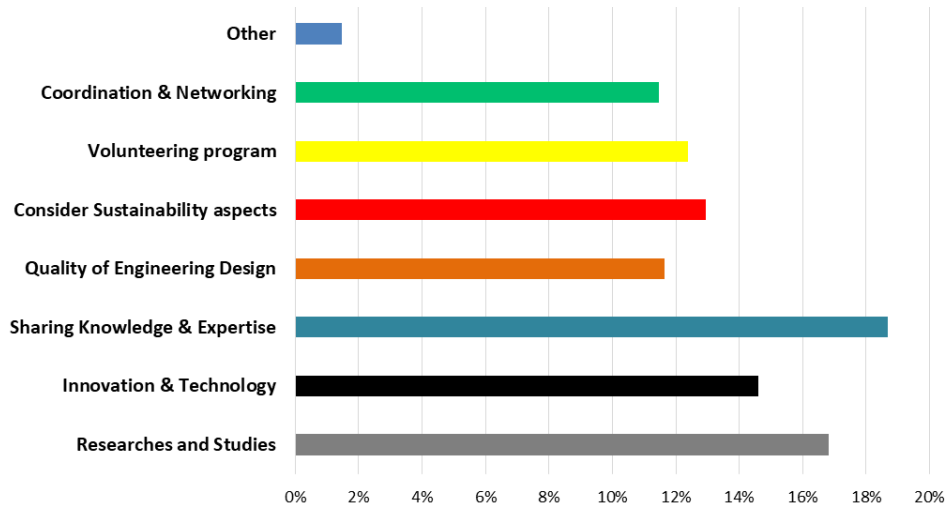
vi. Do you think company's Corporate Social Responsibility (CSR) program can be integrated with Humanitarian Works?

88% agreed on this statement, through sharing knowledge & experiences, provide time and technical advises, fund rising, provide efforts on ground where possible.



vii. How to integrate the efforts to achieve the global partnership between Engineering sectors & Humanitarian works?

Considering that the funds are available. This can be achieved through focusing on the Sharing knowledge & Experience and focus on Researches & Studies since these two points considered as the fastest way to accelerate the integration efforts.

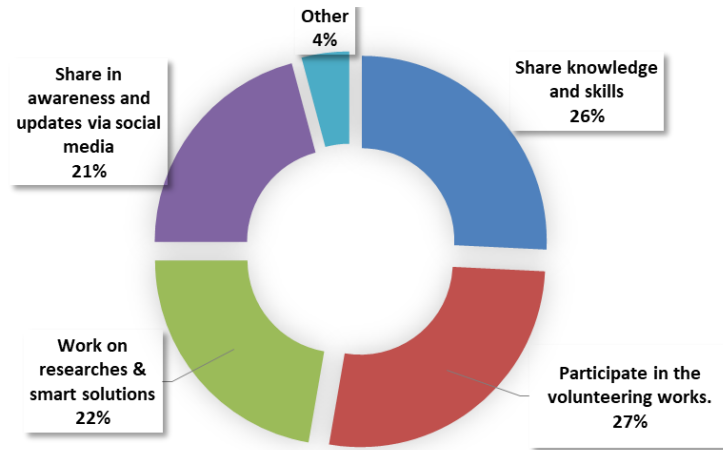


viii. How to mitigate the integration gaps? Between Engineering sectors & Humanitarian

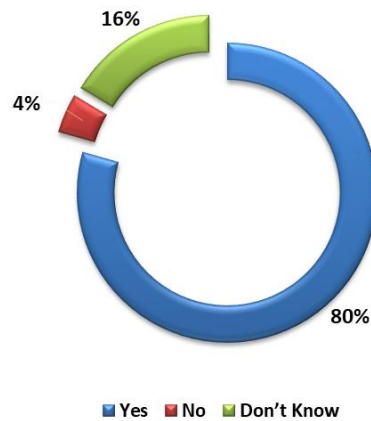
works, this can be achieved through the below ideas:

- Framework/ hub for sharing data, knowledge & experience
- Standardize contracts forms
- Enhances networking & coordination
- Study humanitarian works in university and training courses
- More awareness
- Focus on researches & innovations
- Consider in CSR policy
- Have a link between Engineering (Technical) with Decision Makers
- Bridge the gap between short-term solution and long-term development
- Partnership with all stakeholders
- Capacity building

ix. **How Young professionals (YPs) can help in Humanitarian Engineering?** YPs can lead the integration efforts worldwide and help through the below:



x. **Are you willing to Participate in Humanitarian Efforts via Volunteering Works?** 80% of Most of the respondents showed interest in participating in volunteering works related to Humanitarian Engineering (80%)



6. Closing

We hope that this study has highlight the essence and scope of Humanitarian Engineering, in order to help effectively in facing the challenges and improve skills and talent ahead.

We the professionals who work in engineering sectors should be proud of our work, by improving the lives of others, through the development and disaster relief works.

Finally, this research and survey is a message of solidarity for all the people who suffer from different kind of disasters/ crisis that we the workers in engineering sectors promise to continue our efforts to help everyone and everywhere.

7. References:

- Humanitarian Engineering: Advancing Technology for Sustainable Development, 2016
- Humanitarian Engineering: Innovative Approaches and Partnerships in Crisis Response, 2016
- UNSW Engineering, 2005
- The Bridge, Linking Engineering and Society, 2007
- https://www.Revolvy.Com/Main/Index.Php?S=Humanitarian%20crisis&Item_Type=Topic
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