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## Designing an Improved and Sustainable Housing Cabin for Refugees in Dadaab Camps in Kenya

تصميم كبائن سكنية محسنة ومستدامة للاجئين في مخيمات داداب في كينيا

### 1. Introduction

Temporary shelters are a vital survival method in times of crisis, war or displacement. Over 2.6 million refugees currently live in camps worldwide in 2017 according to UNHCR. Nowadays, delivering protection and humanitarian assistance is commonly through refugee camps especially for camps located in rural areas. Camps can be significantly useful and practical during emergencies however; some problems negatively affect the overall living conditions of refugees such as poor water quality, poor infrastructure, low quality housing, unreliable power supply and poor general health. Providing an improved shelter unit designed especially to overcome and solve these problems using the most suitable engineering and sustainable solution can additionally help refugees in restoring privacy, protection, safety, personal security, self-sufficiency and dignity. It also will help in reducing suffer and pain and improve the overall living conditions.

### 2. EWB Kuwait

EWB-KW believes that delivering appropriate housing for refugees' communities is a major humanitarian challenge. EWB-Kuwait aims to deliver suitable engineering solutions by using engineering skills, knowledge, technologies and by the implementation of sustainable engineering and innovation. EWB-Kuwait has raised this competition as "The Challenge" that is designed for engineering students to give them the opportunity to contribute and to develop their capacity in producing innovative ideas and appropriate solutions for problems. This competition may also provide a unique opportunity for students to take part in supporting the livelihood and development of refugees in Dadaab Camps in Kenya.



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### 3. Dadaab Camps in Kenya

EWB-KW has selected Dadaab Camps in Kenya due to the poor living condition of the refugees there and the lack of essential elements of life. Dadaab Camps were constructed in 1992 as a temporary camp to host Somalia refugees displaced by civil war and hunger; however, it became a permanent camp since then. Dadaab Camps nowadays hosts 245,126 refugees and it is run by UNHCR. The Camps has seen many waves of displacement due to the long-running conflict in Somalia and the drought that hit Africa. Somalis make up 95% of the camp's population now. Dadaab is located 100 km from Kenya's border with Somalia.

### 4. Competition Topic

The participants are required to use their problems solving and design skills to support the development of the disadvantaged communities living on refugee Dadaab Camps. The participants are required to propose a project for designing a housing unit/cabin that provides a safer shelter for the refugee families consisting of up to 5 persons.

The modular housing design ought to focus on and improve; sanitary conditions, interior flexibility for various family sizes, space usage, power supply, water supply, water storage, natural ventilation system, heating and cooling system ( if needed ) and waste. The design should propose a suitable and efficient/sustainable solution to the current housing problems that refugee experience in the Dadaab Camps.

The proposed housing unit/cabin design should demonstrate the ability in adhering and displaying the goals of sustainable development considering the following effects:

**(a) Environmental effect:** with respect to Materials used, Energy, Water, Biodiversity, Emissions, Effluents and Waste

**(b) Economic effect:** with respect to Occupational Health and Safety, and Economic Impact

**(c) Social effect:** with respect to Occupational Health and Safety, Human Rights Assessment, and Local Communities.



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## 5. The Criteria for Assessment

- Global Sustainability Standards (GRI Standards)
- Materials suitability
- Materials eco-logicality
- Construction simplicity
- Design efficiency
- Financial viability
- Overall quality of resident life
- Environmental impact
- Sustainability of resource
- Health and safety of labor/resident
- Aesthetics
- Innovative engineering solutions
- Realistic and applicable solutions

## 6. Participation Rules and Registration

- The competition is open to students enrolled in the bachelor of engineering program in Kuwait University and the Private Universities in Kuwait.
- All Kuwaiti students studying abroad in universities recognized by the Ministry of Higher Education (MoHE).
- Fresh engineering graduate (within 2 years), that satisfy all the above conditions.

**Participation** is only accepted as teams of 3 to 5 members where each team should have:

- Minimum 2 Kuwaiti students.
- Teams with minimum 2 different majors will get extra partial points.

Registration for the Competition will be through the web site ([www.ewb-kw.org/thechallenge/](http://www.ewb-kw.org/thechallenge/)) within the registration period. Final report submission from teams that are not registered in the website **will not be accepted**.

**Communication** with teams will be through the registered team contacts/emails.

## 7. Report Submission Requirements and Rules

Each participating team submission should include a design report, written in English. The report should contain:

- Cover sheet and design summary.
- A brief data collection of site and space requirement for proposed design project.
- Contain details of the following items:



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- Architectural drawings including plans, sections and elevations.
- Structural, mechanical, electrical drawings and calculations.
- Construction cost and sequence.
- Provide a justification for the selected design, approach or process.
- Identify how the selected design is appropriate to the social, environmental and economic context of Dadaab refugee Camps.
- 3D drawings/rendering for the concept design of the project.
- Soft and hard copy of the final report shall be submitted in EWB-KW Head Quarter.

## 8. Deadlines and Evaluation Process

- Competition announcement on 20 NOV 2017.
- Registration period ends on 15 FEB 2017.
- Competition final submission Deadline on 15 MAY 2018.

All submission will be judged against a common set of criteria and guidelines through 2 rounds of judging:

- 1<sup>st</sup> Round: Shortlist of participating teams will be announced to compete in the second round.
- 2<sup>nd</sup> Round (Final Judging): On April 2018, the top teams will present their work through a PowerPoint presentation and the top three teams will be announced in the event.

## 9. Winners Prize

- First place prize: The winning team will be invited to attend the annual conference of “World Federation of Engineering Organizations” (WFEO) which will take place in the UK in 2018. The winning team will present a paper during the meeting of “Young Engineers Future Leaders Committee” which will be taking place during WFEO conference. The travel Invitation is being sponsored by EWB-KW in collaboration with Kuwait Airways.
- Second and third places prizes will be announced later.



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## 10. Supporting Resources and Workshops

3 Workshops will be held before the submission deadline:

- 1<sup>st</sup> workshop: Introductory session to explain the requirements in details and answering teams questions. (Post registration)
  
  - 2<sup>nd</sup> workshop: Recommended from the team to present project/design proposal (preliminary design). Also to present design sustainability and how it is appropriate to the social, environmental, economic context of Dadaab refugee Camps.
  
  - 3<sup>rd</sup> workshop: Recommended from the team to present design development (architectural drawings including plans, sections and elevations & structural, mechanical, electrical drawings).
- Workshops dates will be announced later.
  - The workshops will provide support and assistance to the registered teams by offering an opportunity to meet with professional engineers and advisors for consultation and guidance.
  - Valued guidelines will be given to the registered teams.

## 11. Useful Links

- GRI Standards

<https://www.globalreporting.org/standards/gri-standards-download-center/>