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Intercontinental comparison of building construction and / or building material use by case study of building design

Background

Urbanization is advancing with high dynamism. This is especially true for developing countries, where the developments are largely focused on cities. Building-materials are needed in large quantities. The mining of the raw materials leads to significant intervention in the environment and different land use conflicts.

Current research activities and political statements claim for strategies towards reducing land degradation, seeking for alternatives. The use of substitutes in the production of building materials maybe one possible solution. However, requirements of civil engineering construction were often taken insufficiently into consideration by politicians and environmentalists. Research has shown, that the constructions of buildings as well as the used building materials vary significantly from country to country. This may be caused by different regional static requirements, climatic conditions as well as availability of raw materials. The topic provided here should contribute to fill this gap of knowledge.

Desired requirements

Ideally, you have come from a country which is particularly struck of such environmental problems or hurt by natural disasters such as earthquakes (e.g. Bangladesh, Vietnam, China, Japan or another countries) and you are interested in bringing your civil engineering experience to solve them. Based on your precedent civil engineering study you are well versed in the technical requirements in your country.

Task

The task encompasses a case study of a selected building for a special purpose (e.g. office building, housing, etc). The building should be designed for being situated in Germany at first, taking the typical materials as well as the climatic conditions into consideration. The static requirements arise from the Eurocodes (available in English language).

For the intercontinental comparison the model building designed before should be "moved" your home country. There a new design is required for the same purpose, but using a typical construction method of this region. The composition and amount of materials should then be compared. With the building in your home country you will finally perform a parameter study where either the used building materials or the ground condition resp. loads on the buildings will be changed. I.e., focus will be led either on various options for the use of building materials or on different static conditions (e.g. earthquake zones).

Summarizing, the project report or thesis should consider and reflect requirements to building construction and its materials, which give scope for optimization in the future. Details will be specified before starting (exact title) and during working on the task.

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