

Assignment 01 – Ecological Footprint and Benefits of Green Buildings



Objectives

- To study the concept of ecological footprint to measure progress toward sustainability.
- To identify ways that engineers can contribute toward sustainability.
- To examine the benefits and typical features of green buildings.

Methodology

Each student should consider the principles and details of ecological footprint and examine the benefits and typical features of green buildings through practical assessment and real-life experience. The student should identify possible ways to reduce the ecological footprint and evaluate the potential benefits and characteristics of green buildings.

(a) Assessment of ecological footprint

- Using the recommended ecological footprint calculators and toolkits, complete an assessment of your own ecological footprint (EF).
- Consider and analyze personal behaviour as measured by EF.
- Experiment with some possible changes you could make and to what extent it changes your EF. Suggest at least one change in each category (easy, moderate and difficult) that you might consider (see Table 1 for some examples).

Table 1. Ease of change and the effect on ecological footprint

Ease of change	Description of change	Effect on ecological footprint
Easy	Eat one less meal per day with meat	Decrease EF by 2%
Moderate	Reduce electricity use by 30%	Decrease EF by 20%
Difficult	Reduce landfill waste by 50%	Decrease EF by 30%

(b) Benefits of green buildings

- Select one example of green buildings that you like and have enough information.
- Examine the typical features and characteristics of the building.
- Evaluate the potential benefits to different stakeholders and any drawbacks.
- Consider what engineers can do to reduce EF and adverse impacts in their design work.

Submission

Each student should write a report of not more than twenty (20) A4 pages to communicate your findings and insights. The report should be neat and properly formatted and organised. Proper credit and referencing should be provided to the information sources. Students making direct copy of the information in other publications (plagiarism), if found, will be disqualified.

The report should be submitted as an electronic copy in PDF format through the Moodle system. The assessment criteria of the report include quality of the content, organization, clarity of thought, and report writing skills.

Report submission (via Moodle): **on or before 16 March 2018 (Fri)**

The report will be evaluated on synthesis of information during the course and from your own reading/study, and evidence that you have thought about the subject and the lecture topics in some depth. A clear structure and a logical argument are important and you should provide evidence of critical thinking, originality and effective writing.

Resources

Ecological footprint calculators and toolkits:

- Footprint Calculator <http://www.footprintcalculator.org/>
- Carbon Footprint Management Toolkit <http://www6.cityu.edu.hk/aerc/CFT/>

Ecological footprint (Britannica.com)

<https://www.britannica.com/science/ecological-footprint>

Global Footprint Network <http://globalfootprintnetwork.org/>

Sustainable City & Ecological Footprint (WWF-HK)

https://www.wwf.org.hk/en/whatwedo/biodiversity_and_sustainability_in_hong_kong/sustainable_city_ecological_footprint/

References

Building the Business Case: Health, Wellbeing and Productivity in Green Offices
http://www.worldgbc.org/sites/default/files/WGBC_BtBC_Dec2016_Digital_Low-MAY_24_0.pdf

Edwards, B. and Naboni, E., 2013. *Green Buildings Pay: Design, Productivity and Ecology*, 3rd ed., Routledge, London. <http://webpac.vtc.edu.hk/record=b11074290> (ebook)

WGBC, 2013. The Business Case for Green Building: A Review of the Costs and Benefits for Developers, Investors and Occupants, World Green Building Council (WGBC), London. https://group.skanska.com/4af531/globalassets/sustainability/reporting--publications/reports-on-green-building/business_case_for_green_building_report_web_2013-03-13.pdf