

# CIVE230 – Engineering and Sustainable Development

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**WATERLOO | ENGINEERING**



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# Big topics!

- Sustainable Development Goals
- Canadian Engineering Grand Challenges



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## SUSTAINABLE DEVELOPMENT GOALS



Title is the sustainable infrastructure or technology of interest

City, Country

Audio recording icon insertion

Representative image on half the slide (make sure the image is labeled for reuse)

Your name

The colour of the title banner is your choice

A few bullet points describing the challenge first, and then the sustainable infrastructure or technology, strategy of interest.

Image title

Photo Reference (where attribution is required)

Reference for the information/ data presented

Notes on fonts:  
Title: Calibri 22 bold  
Author: Calibri 22  
Bullets and References: Calibri 12

Press shift and click for image description (PDF)

**Bus Rapid Transit in Jakarta, Indonesia**  
By Nadine Ibrahim

- Jakarta is a booming economy and it is fast growing. Indonesia's GDP is growing at rate of 5.7% on average for the past 20 years. Because of the rapid growth, sustainability in transportation planning is not widely practiced, and its infrastructure is not keeping up and failing. Traffic conditions and resulting air pollution are not sustainable.
- The Bus Rapid Transit Development in Greater Jakarta is a project that was started in 2004 to improve traffic conditions in a sustainable manner, alleviate congestion and reduce greenhouse gas emissions.
- The Indonesian Ministry of Transportation purchased 380 natural gas-fueled buses in 2015 – 2017.
- New construction of three new corridors of bus lanes that span 49.3 km was completed between 2016 and 2017.
- Construction of five natural gas refueling stations also took place by 2017.
- The project achieved a reduction of automobile transportation by 25% relative to car and motorcycle transportation.
- Between 2007 and 2012 the implementation of the existing 12 corridors led to an average mode share shift of 9.33% cars and 21.73% motorcycles to the bus rapid transit (BRT) from the business as usual scenario in Jakarta.
- The project also increased travel time savings, and improved pedestrian facilities.
- The government is currently exploring supporting energy diversification in transportation to include alternative fuels such as biofuels.
- Since this project the city saw an increase in the use of bicycles and much improved traffic safety.
- Add more bullet points as necessary. Last bullet point. Leave a space after.

Image: Harmoni Central Busway in Central Jakarta, Indonesia

Photo Credit:  
Harmoni Central Busway Transjakarta 1 by Gunawan Kartapranata is licensed under CC BY-SA 4.0  
[https://commons.wikimedia.org/wiki/File:Harmoni\\_Central\\_Busway\\_Transjakarta\\_1.JPG](https://commons.wikimedia.org/wiki/File:Harmoni_Central_Busway_Transjakarta_1.JPG)

Information Reference:  
UNDP. 2015. Bus Rapid Transport Development in Greater Jakarta (Jabodetabek): Finance-Ready Proposal.  
<https://www.undp.org/content/dam/LECB/docs/pubs-namas/undp-lecb-Indonesia-Bus-Rapid-Transport-Report-201512.pdf>



# Class Contribution

- The Sustainability Contribution Project
- E-book (free, downloadable PDF)



The screenshot shows the OER Commons interface. At the top, there's a navigation bar with 'Discover', 'Hubs', 'Groups', and 'Our Services' menus, along with an 'Add OER' button. The main content area features the 'Canadian Engineering Education Association' group. It includes the group's logo (CEEAA/CEEG), a description: 'This group is a place for Canadian Engineering Educators to collect and share materials.', and statistics: '35 members' and '44 affiliated resources'. There are two buttons: 'Contribute to this Group' and 'Leave this group'. A 'Manage Group' link is also visible.

[https://www.civil.uwaterloo.ca/n25ibrah/CIVE\\_230\\_SUSTAINABILITY\\_EBOOK\\_FINAL.pdf](https://www.civil.uwaterloo.ca/n25ibrah/CIVE_230_SUSTAINABILITY_EBOOK_FINAL.pdf)



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ENGINEERING AND SUSTAINABLE DEVELOPMENT (CIVE 230)

## THE SUSTAINABILITY CONTRIBUTION PROJECT

Dr. Nadine Ibrahim  
Spring 2020



Bicycle by a canal in Amsterdam/ Wallpaper Flare

# QUOTES

I am optimistic when looking into the future, because I think that sustainability has to be an integral part of future designs.

“

- Phillip Liu

I believe there's a lot of politics involved in environmental/sustainability, and there are not enough advocates at the top to improve regulations.

- Ghazal Malekanian

**While I understand the optimistic and pessimistic future of sustainability, I am optimistic that the cons of the future of the subject will halt with futuristic solutions.**

- SeJoon Park

**I believe in the ability of future engineers to recognize the important of sustainability and work towards achieving it.**

- Herman Li

**I incorporate sustainability into my personal life by reducing my footprint. At school, all my travel was walking, biking and the bus.**

- Levi Prinsen

**Sustainability means using practices that won't harm our environment, while still producing the desired results in the present and not negatively affecting the ability of future societies to achieve their desired results.**

- Joshua Winger

**If something is sustainable, I see it to mean that it can be maintained for a long time.**

- Rebecca Anna Rust

**To me, sustainability is using our knowledge and skills to continuously develop communities around the globe, with the goal of achieving basic needs for each person.impact on the sustainability effects of the product as long as the product is used.**

- Emmanuel Omorose Akpata

”

**I think the role of engineers is to incorporate the environment into their designs whether it is a new highway or a new building.**

- Ahiesh Thampaiyah

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image description (PDF)