

## **EV10003: ENVIRONMENTAL SCIENCE**

### **GROUP PROJECT**

This module requires students to work in groups to study a specific theme that is of emerging interest from the viewpoint of sustainable development. Each group will have 6 or 7 members and will be facilitated by a group leader. Upon completion of the project, each group is required to submit a white paper on or before **15 June 2021**.

**Background:** Group projects can help you develop critical thinking and problem-solving skills specific to collaborative efforts, allowing members of each group to (1) tackle more complex problems than what each individual could on his/her own, (2) delegate roles and responsibilities, (3) share diverse perspectives, (4) pool knowledge and skills, (5) develop new approaches to resolving differences, (6) find effective peers to emulate, and (7) develop independent voice and perspectives in relation to peers.

**Problem statement:** Singapore is a city state with limited land and natural capital to meet competing needs from residential, commercial and industrial users. Through innovation and the adoption of new technologies, Singapore has made enormous environmental progress over the years, and is today recognised as a sustainable and liveable city. However, exponential population growth, economic progress, climate change, as well as changing lifestyles and attitudes will continue to put tremendous pressure on the country's finite resources, the energy security, the state of the environment and the quality of life. In Singapore's context, one of the grand challenges is to increase the pace of de-carbonization of the energy supply and minimize emission of greenhouse gases. You are required to work together with your peers in the respective groups to identify "innovative and integrated solutions" to address these interrelated issues in a sustainable manner.

**White paper submission:** The purpose of the white paper is to allow each group to conceptualise a technical response to the problem statement and description, discuss the relevant details and demonstrate the potential merits of the proposed approach. The total number of pages of the white paper should not exceed **10 pages** (*font: Arial, font size: 11, line spacing: exactly 14 pt., margin: 2.54 cm all around*). The page limit does not include figures, tables, references and annexes.

The white paper may be structured as follows:

1. *Current Situation:* Describe briefly the current situation, the gaps and problems faced.
2. *Proposed Strategy:* Explain the proposed concept/solution, the corresponding research & development strategy with key objectives. Highlight the novelty/innovation(s) in the proposed concept/solution.
3. *Potential Impact and Benefits:* Explain the potential impact and benefits, i.e., economical, societal, etc., of the proposed concept/solution to Singapore and the community in general.

**Credit author statement:** The credit author statement (CAS) offers each individual the opportunity to share an accurate and detailed description of their diverse contributions to the white paper. The group leader is responsible for ensuring that the descriptions are accurate and agreed by all the members. The role(s) of all members should be listed. Members may have contributed in multiple roles. The CAS should appear at the end of the white paper. A sample CAS is given below:

“*Aditya Basu*: Conceptualization, Methodology, Software. *Priya Singh*: Data curation, Original draft preparation. *Tanvi Garg*: Investigation. *Amit Sonawane*: Supervision. *Ajay Kumar*: Data curation and analysis. *Manvi Godika*: Draft editing and finalization.”

**General guidelines:** Group projects are intended to be an enjoyable learning experience in which you become familiar with *technical, economic, social, political, and environmental* issues associated with the topic you are exploring. The project preparation may involve the following stages: (i) identifying possible causes and effects of a problem, (ii) identifying the underlying problem, (iii) brainstorming potential solutions to the underlying problem, (iv) developing criteria for evaluating solutions, (v) evaluating all solutions to determine the best one, and (vi) developing an action plan for the best solution.

**Deadline for submission of the white paper:** Please upload the white paper (in .pdf format) into the ‘Group Project’ folder on MS Teams by **no later than 5 PM on 15 June 2021.**

**Evaluation of the white paper:** The assessment criteria include (1) quality and depth of analysis in the white paper, (2) clarity of presentation, (3) succinctness, (4) presentation quality, and (5) educational value.