



The Department of Engineering cordially invites you to the following event:

A Paradigm Shift for Selectively Decarbonizing China and Cyprus

Abstract



Carbon dioxide (CO₂) emissions have caused a temperature increase of 1.0°C since 1880. China, with a share of 29.3% of CO₂ emissions is the world's top emitter. In turn the electricity sector accounts for 35% of these emissions. Four different scenarios were formulated to investigate the future emissions and costs of China's electricity sector along with carbon sinks, until **2050**. The study indicates that **renewable energy** alone **cannot** meet China's power needs unless supplemented by fossil fuels. China

can attain a **net-zero emissions** electricity sector only by **phasing out coal**. Renewable energy yields the most expensive electricity for China.

Turning attention to Cyprus, the EU has established a long-term strategy towards net-zero emissions by 2050. Cyprus' electricity sector is unique in that it relies on oil-fired power generation while the national electricity grid is isolated. The island's **transportation and electricity** sectors compromise **77%** of its total emissions. In this presentation 4 different scenarios are examined with a view of meeting the goals set by the European Commission, for 2050. Under certain circumstances **carbon free electricity** and transport sectors are possible. Moreover, a **100% electric** passenger vehicle fleet could be achieved. Interestingly, a high carbon tax can minimize emissions. Broadening the study, a road **traffic and an emissions dispersion model** are used to estimate NO_x, PM_{2.5} and PM₁₀ in the centre of Nicosia. The model utilises real traffic and weather data to calibrate the dispersion model. Simulated data has a **high correlation** factor for all the three pollutants. Moreover, to examine the impact of different policies, various scenarios were applied resulting to emission changes. The research has shown that **NO_x emissions** will be increased by **10%** if the speed limit reduces to **30km/hr** and will be decreased by **30%** if a **ban of all diesel** passenger and light-duty vehicles occurs.

Speaker's bio:

Mr. Evangelos Demetriou is currently a PhD candidate in Oil, Gas and Energy Engineering, at the University of Nicosia. His doctoral research focuses on the energy policies of the electricity and transportation sectors of China and Cyprus. As part of this investigation, Evangelos has analyzed different scenarios associated with the full decarbonization of the future energy mix, the role of renewables, electric power storage and carbon removal technologies. His research interests focus on climate change, electricity and transportation policy and carbon emissions. Evangelos holds a Civil Engineering degree from the National and Technical University of Athens (NTUA) with a grade of 7.8/10.

The talk to be delivered in English, will be open to the public and will be lived streamed via WebEx: www.webex.com; link: <https://bit.ly/2GBIq60>; Meeting number: 174 945 1124; Meeting password: DAds2C3Vg64. For more info please visit the Marine & Carbon Lab: www.carbonlab.eu

Date: Monday, November 9th, 2020.

Time/duration: 13:00-14:00.