Postgraduate Certificate in Shipping Decarbonization Strategies

Carbon Accounting and Reporting in Maritime Transport

AER: Absolute Emission Reduction, refers to the total reduction in greenhouse gas emissions from a specific source, such as a ship or a fleet, over a certain period of time. The AER concept is essential in Carbon Accounting and Reporting in Maritime Transport as it provides a baseline for measuring the effectiveness of emissions reduction strategies. Related terms include Relative Emission Reduction and Net Emission Reduction.

Adaptation Fund: The Adaptation Fund is an international fund that provides financial support to developing countries to implement projects that help them adapt to the impacts of climate change. In the context of maritime transport, the Adaptation Fund can be used to support projects that help ports and shipping companies adapt to the effects of climate change, such as sea-level rise and more frequent extreme weather events.

Alternative Fuels: Alternative fuels refer to low-carbon or zero-carbon fuels that can be used to power ships, such as liquefied natural gas (LNG), hydrogen, and ammonia. The use of alternative fuels is a key strategy for reducing greenhouse gas emissions from maritime transport.

Ballast Water Management: Ballast water management refers to the process of managing the water that is used to stabilize ships at sea. Ballast water can contain invasive species and other pollutants that can harm the environment, and effective management is essential to prevent these impacts.

Bunker Fuel: Bunker fuel refers to the type of fuel that is used to power ships, such as heavy fuel oil and marine diesel oil. Bunker fuel is a significant source of greenhouse gas emissions from maritime transport, and efforts to reduce bunker fuel consumption are essential to mitigating climate change.

Cap-and-Trade System: A cap-and-trade system is a market-based mechanism that sets a limit on the amount of greenhouse gas emissions that can be emitted by a particular industry or sector, such as maritime transport. Companies that emit more than their allocated limit must purchase credits from companies that have reduced their emissions.

Carbon Accounting: Carbon accounting refers to the process of measuring, reporting, and verifying greenhouse gas emissions from a particular source, such as a ship or a fleet. Carbon accounting is essential to understanding the climate change impacts of maritime transport and to developing effective emissions reduction strategies.

Carbon Footprint: A carbon footprint refers to the total amount of greenhouse gas emissions that are associated with a particular activity, product, or service, such as the transportation of goods by sea. Carbon footprints can be used to identify areas where emissions can be reduced and to develop strategies for

mitigating climate change.

Carbon Intensity: Carbon intensity refers to the amount of greenhouse gas emissions that are emitted per unit of energy consumed, such as grams of CO2 per megajoule of fuel. Carbon intensity is an important metric for evaluating the emissions performance of different fuels and technologies.

Carbon Neutrality: Carbon neutrality refers to the state of achieving net-zero greenhouse gas emissions, either by reducing emissions to zero or by offsetting emissions through the purchase of carbon credits. Carbon neutrality is a key goal of many companies and organizations in the maritime transport sector.

Carbon Offset: A carbon offset refers to a credit that represents a reduction in greenhouse gas emissions that has been achieved through a project or activity, such as the installation of renewable energy systems or the implementation of energy efficiency measures. Carbon offsets can be used to compensate for emissions that cannot be reduced or eliminated.

Carbon Pricing: Carbon pricing refers to the process of placing a monetary value on greenhouse gas emissions, either through a carbon tax or a cap-and-trade system. Carbon pricing provides a financial incentive for companies and individuals to reduce their emissions and to invest in low-carbon technologies.

Carbon Tax: A carbon tax is a type of tax that is levied on the production, distribution, or use of fossil fuels, such as coal, oil, and natural gas. The revenue generated from a carbon tax can be used to support low-carbon technologies and to promote sustainable development.

Clean Development Mechanism: The Clean Development Mechanism (CDM) is a mechanism under the Kyoto Protocol that allows developed countries to invest in projects that reduce greenhouse gas emissions in developing countries. The CDM can be used to support projects that promote sustainable development and reduce emissions in the maritime transport sector.

Climate Change: Climate change refers to the long-term warming of the planet due to the increasing levels of greenhouse gases in the atmosphere, such as carbon dioxide and methane. Climate change has significant impacts on the environment, human health, and the economy, and is a major challenge for the maritime transport sector.

CO2 Equivalence: CO2 equivalence refers to the process of expressing the global warming potential of different greenhouse gases in terms of carbon dioxide. This allows for the comparison of emissions from different sources and the development of effective emissions reduction strategies.

Compliance Carbon Market: A compliance carbon market refers to a market where companies buy and sell carbon credits to comply with emissions reduction regulations, such as cap-and-trade systems. Compliance carbon markets provide a financial incentive for companies to reduce their emissions and to invest in low-carbon technologies.

Corporate Social Responsibility: Corporate social responsibility (CSR) refers to the voluntary efforts of companies to improve their social and environmental performance, such as by reducing greenhouse gas emissions and promoting sustainable development. CSR is an important concept in the maritime transport

sector, where companies have a significant impact on the environment and society.

Decarbonization: Decarbonization refers to the process of reducing or eliminating greenhouse gas emissions from a particular source, such as a ship or a fleet. Decarbonization is a key goal of the maritime transport sector, where emissions reduction is essential to mitigating climate change.

EEDI: The Energy Efficiency Design Index (EEDI) is a metric that measures the energy efficiency of new ships. The EEDI provides a benchmark for evaluating the energy performance of different ship designs and for promoting the development of more efficient vessels.

Emissions Reduction: Emissions reduction refers to the process of decreasing greenhouse gas emissions from a particular source, such as a ship or a fleet. Emissions reduction is essential to mitigating climate change and can be achieved through a variety of strategies, including the use of alternative fuels and the implementation of energy efficiency measures.

Energy Efficiency: Energy efficiency refers to the use of less energy to perform the same task, such as by using more efficient technologies or optimizing energy consumption. Energy efficiency is an important strategy for reducing greenhouse gas emissions from maritime transport and can be achieved through a variety of measures, including the use of more efficient engines and the optimization of ship operations.

Energy Transition: The energy transition refers to the shift from fossil fuels to low-carbon energy sources, such as renewable energy and alternative fuels. The energy transition is essential to mitigating climate change and will require significant investment and innovation in the maritime transport sector.

Environmental Impact Assessment: An environmental impact assessment (EIA) is a process that evaluates the potential environmental impacts of a project or activity, such as the construction of a new port or the implementation of a new shipping route. EIAs provide a framework for identifying and mitigating environmental risks and for promoting sustainable development.

Fuel Efficiency: Fuel efficiency refers to the use of less fuel to perform the same task, such as by using more efficient engines or optimizing fuel consumption. Fuel efficiency is an important strategy for reducing greenhouse gas emissions from maritime transport and can be achieved through a variety of measures, including the use of more efficient engines and the optimization of ship operations.

GHG: Greenhouse gases (GHG) refer to the gases that contribute to the greenhouse effect, such as carbon dioxide, methane, and nitrous oxide. GHGs are a major contributor to climate change and are a key focus of emissions reduction efforts in the maritime transport sector.

IMO: The International Maritime Organization (IMO) is a specialized agency of the United Nations that is responsible for developing and implementing global standards for maritime safety, security, and environmental protection. The IMO plays a key role in promoting sustainable development and reducing greenhouse gas emissions from maritime transport.

International Shipping: International shipping refers to the movement of goods and passengers by sea across international borders. International shipping is a critical component of global trade and commerce,

but also has significant environmental and social impacts that must be addressed.

Kyoto Protocol: The Kyoto Protocol is an international treaty that aims to reduce greenhouse gas emissions from developed countries. The Kyoto Protocol established a cap-and-trade system and other mechanisms for reducing emissions, and has been an important framework for international climate change policy.

Low-Carbon Fuel: Low-carbon fuel refers to fuels that have a lower carbon content than traditional fossil fuels, such as liquefied natural gas (LNG) and hydrogen. Low-carbon fuels are an important strategy for reducing greenhouse gas emissions from maritime transport and can be used to power ships and other vehicles.

Marine Diesel Oil: Marine diesel oil (MDO) is a type of fuel that is used to power ships. MDO is a significant source of greenhouse gas emissions from maritime transport, and efforts to reduce MDO consumption are essential to mitigating climate change.

Marine Pollution: Marine pollution refers to the release of pollutants into the marine environment, such as oil spills and waste disposal. Marine pollution has significant impacts on the environment and human health, and is a major challenge for the maritime transport sector.

MARPOL: The International Convention for the Prevention of Pollution from Ships (MARPOL) is a treaty that aims to prevent pollution from ships. MARPOL has been an important framework for reducing marine pollution and promoting sustainable development in the maritime transport sector.

Net Emission Reduction: Net emission reduction refers to the total reduction in greenhouse gas emissions from a particular source, such as a ship or a fleet, over a certain period of time. Net emission reduction takes into account any emissions that are offset through the purchase of carbon credits or other mechanisms.

Nitrogen Oxides: Nitrogen oxides (NOx) are a type of air pollutant that contributes to the formation of ground-level ozone and particulate matter. NOx emissions from ships are a significant concern, as they can have negative impacts on human health and the environment.

Ocean Acidification: Ocean acidification refers to the process of increasing the acidity of the ocean due to the absorption of carbon dioxide from the atmosphere. Ocean acidification has significant impacts on marine ecosystems and is a major concern for the maritime transport sector.

Offshore Wind: Offshore wind refers to the generation of electricity from wind turbines located in the ocean. Offshore wind is a promising source of renewable energy and can be used to power ships and other vehicles.

Port State Control: Port state control refers to the inspection and enforcement of ships in ports to ensure compliance with international regulations, such as those related to safety, security, and environmental protection. Port state control is an important mechanism for promoting sustainable development and reducing greenhouse gas emissions from maritime transport.

Renewable Energy: Renewable energy refers to energy that is generated from natural resources, such as

solar, wind, and hydro power. Renewable energy is a promising source of low-carbon energy and can be used to power ships and other vehicles.

Route Optimization: Route optimization refers to the process of identifying the most efficient route for a ship to take, taking into account factors such as weather, sea state, and traffic. Route optimization can help to reduce fuel consumption and greenhouse gas emissions from maritime transport.

SEEMP: The Ship Energy Efficiency Management Plan (SEEMP) is a plan that outlines the strategies and measures that a ship will take to reduce its energy consumption and greenhouse gas emissions. The SEEMP is a key component of the IMO's energy efficiency regulations and provides a framework for promoting sustainable development in the maritime transport sector.

Ship Recycling: Ship recycling refers to the process of dismantling and disposing of ships at the end of their life. Ship recycling is a significant concern, as it can have negative impacts on the environment and human health if not done properly.

Shipbreaking: Shipbreaking refers to the process of dismantling and disposing of ships, often in developing countries. Shipbreaking is a significant concern, as it can have negative impacts on the environment and human health if not done properly.

Slow Steaming: Slow steaming refers to the practice of reducing the speed of a ship to reduce fuel consumption and greenhouse gas emissions. Slow steaming is a promising strategy for reducing emissions from maritime transport and can be implemented through a variety of measures, including the use of more efficient engines and the optimization of ship operations.

Sulfur Oxides: Sulfur oxides (SOx) are a type of air pollutant that contributes to the formation of acid rain and particulate matter. SOx emissions from ships are a significant concern, as they can have negative impacts on human health and the environment.

Sustainability: Sustainability refers to the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability is a key concept in the maritime transport sector, where companies and organizations must balance economic, social, and environmental considerations to promote sustainable development.

Voluntary Emission Reduction: Voluntary emission reduction refers to the process of reducing greenhouse gas emissions on a voluntary basis, such as through the implementation of energy efficiency measures or the use of alternative fuels. Voluntary emission reduction is an important strategy for promoting sustainable development and reducing emissions from maritime transport.

Waste Management: Waste management refers to the process of handling and disposing of waste, including hazardous and non-hazardous materials. Waste management is a significant concern in the maritime transport sector, where ships generate a significant amount of waste that must be disposed of properly.

Weather Routing: Weather routing refers to the process of identifying the most efficient route for a ship to

take, taking into account factors such as weather and sea state. Weather routing can help to reduce fuel consumption and greenhouse gas emissions from maritime transport.

Zero Emission: Zero emission refers to the state of achieving net-zero greenhouse gas emissions, either by reducing emissions to zero or by offsetting emissions through the purchase of carbon credits. Zero emission is a key goal of many companies and organizations in the maritime transport sector, and can be achieved through a variety of strategies, including the use of alternative fuels and the implementation of energy efficiency measures.