Graduate Certificate in Finance and Sustainability

Environmental Economics and Policy

Abatement cost: The cost of reducing pollution or greenhouse gas emissions. Abatement costs can be incurred by businesses, governments, or individuals and can include the cost of technology, operations changes, and regulatory compliance.

Adaptation: The process of adjusting to the impacts of climate change, such as rising sea levels, increased frequency of extreme weather events, and changes in temperature and precipitation patterns. Adaptation measures can include building sea walls, changing agricultural practices, and improving infrastructure.

Agent-based modeling: A computational approach to understanding complex systems, in which individual actors (agents) make decisions based on a set of rules and interact with each other and their environment. Agent-based modeling is used in environmental economics and policy to study the behavior of individuals, organizations, and governments in response to environmental changes.

Alternative energy: Energy sources that do not rely on fossil fuels, such as wind, solar, hydro, and geothermal power. Alternative energy is often used as a synonym for renewable energy, but it can also include nuclear power.

Anthropogenic: Originating from human activity, such as greenhouse gas emissions from burning fossil fuels. Anthropogenic causes of environmental change are often contrasted with natural causes, such as volcanic eruptions or solar radiation.

Biodiversity: The variety of living organisms, from genes to ecosystems, and the processes that support their existence. Biodiversity is important for maintaining ecosystem services, such as pollination, water filtration, and soil formation.

Bioeconomy: The use of biological resources, such as plants, animals, and microorganisms, to produce food, energy, and other products. The bioeconomy is often seen as a way to transition to a more sustainable and circular economy, but it also raises ethical and environmental concerns.

Biomass: Organic matter, such as wood, crops, or waste, that can be converted into energy through combustion, gasification, or anaerobic digestion. Biomass is often considered a renewable energy source, but its use can have negative impacts on biodiversity and air quality.

Carbon capture and storage (CCS): The process of capturing carbon dioxide emissions from industrial sources, such as power plants, and storing them underground in rock formations or other geological structures. CCS is seen as a way to reduce greenhouse gas emissions from large-scale industries, but it is still in the early stages of development and deployment.

Carbon footprint: The total amount of greenhouse gas emissions associated with a product, service, or

organization. Carbon footprints can be calculated for individual consumers, businesses, or countries, and they can be used to compare the environmental impact of different activities or entities.

Carbon pricing: A market-based approach to reducing greenhouse gas emissions, in which a price is imposed on carbon dioxide or other greenhouse gases, either through a carbon tax or a cap-and-trade system. Carbon pricing is intended to provide incentives for businesses and individuals to reduce their carbon footprint and invest in cleaner technologies.

Circular economy: An economic system that aims to minimize waste and maximize resource efficiency by keeping materials in use for as long as possible, recovering and regenerating products and materials at the end of each service life, and stripping waste out of the system. The circular economy is often contrasted with the linear economy, in which resources are extracted, used, and discarded.

Clean energy: Energy sources that have low or no greenhouse gas emissions, such as wind, solar, hydro, and geothermal power. Clean energy is often used as a synonym for renewable energy, but it can also include nuclear power and carbon capture and storage.

Climate change: A long-term change in the average weather patterns that have come to define Earth's local and regional climates. Climate change is caused by natural and anthropogenic factors, such as changes in solar radiation, volcanic activity, and greenhouse gas emissions.

Climate finance: The flow of financial resources, both public and private, from developed to developing countries to support climate change mitigation and adaptation efforts. Climate finance is critical for achieving the goals of the Paris Agreement and the Sustainable Development Goals.

Co-benefits: The additional benefits, beyond greenhouse gas emissions reductions, that can result from climate change mitigation and adaptation efforts. Co-benefits can include improved air quality, reduced traffic congestion, and increased energy security.

Command-and-control regulation: A regulatory approach in which governments set specific standards or limits for emissions or other environmental impacts, and enforce them through penalties or other incentives. Command-and-control regulation is often contrasted with market-based regulation, such as carbon pricing.

Cost-benefit analysis: A method for evaluating the economic impact of a policy or project, by comparing the costs and benefits of different alternatives. Cost-benefit analysis is often used in environmental economics and policy to assess the efficiency and effectiveness of different interventions.

Decarbonization: The process of reducing greenhouse gas emissions from energy production, transportation, and other sectors. Decarbonization is a key goal of climate change mitigation efforts, and it can be achieved through a variety of strategies, such as increasing energy efficiency, switching to cleaner energy sources, and implementing carbon pricing.

Demand-side management: A policy approach that aims to reduce energy demand through incentives or regulations, such as energy efficiency standards, demand response programs, and smart grid

technologies. Demand-side management is often contrasted with supply-side management, which focuses on increasing energy supply through new infrastructure, such as power plants and transmission lines.

Discount rate: A rate used to calculate the present value of future costs and benefits, by taking into account the time value of money. Discount rates are used in cost-benefit analysis and other economic evaluations to compare the relative value of different investments or policies.

Dynamic integration: A modeling approach that combines different models, such as economic, environmental, and social models, to study the interactions and feedbacks between them. Dynamic integration is used in environmental economics and policy to understand the complex systems that underlie environmental challenges, and to evaluate the impacts of different policy interventions.

Ecological economics: An interdisciplinary field that studies the relationships between human economies and natural ecosystems, and the impact of economic activity on the environment. Ecological economics emphasizes the importance of sustainability, resilience, and justice, and seeks to develop policies and practices that promote these values.

Economic instruments: Policy tools that use market mechanisms, such as taxes, subsidies, and cap-and-trade systems, to influence economic behavior and achieve environmental goals. Economic instruments are often used in conjunction with regulatory approaches, such as command-and-control regulation and voluntary agreements.

Efficiency: The optimization of resources, such as energy, water, or materials, to minimize waste and maximize productivity. Efficiency is a key concept in environmental economics and policy, and it can be achieved through a variety of strategies, such as technology innovation, process optimization, and demand management.

Electric vehicles (EVs): Vehicles that use electricity as their primary source of power, either from batteries or fuel cells. EVs have lower greenhouse gas emissions than conventional vehicles, and they can also reduce air pollution and noise pollution.

Emissions trading: A market-based approach to reducing greenhouse gas emissions, in which a cap is set on total emissions, and permits are allocated or auctioned to companies or countries. Companies or countries can then trade permits, allowing those with lower emissions to sell their excess permits to those with higher emissions.

Energy efficiency: The optimization of energy use, such as reducing energy consumption or increasing energy productivity, to minimize waste and maximize the value of energy services. Energy efficiency is a key strategy for reducing greenhouse gas emissions and improving energy security.

Energy justice: The fair distribution of energy resources, services, and benefits, taking into account social, economic, and environmental factors. Energy justice is an important concept in environmental economics and policy, as it seeks to ensure that all communities have access to affordable, reliable, and clean energy.

Environmental economics: An interdisciplinary field that studies the economic impact of environmental policies and practices, and the economic value of natural resources and ecosystem services. Environmental economics uses economic theory and methods to analyze environmental challenges, and to develop policies and practices that promote sustainability, efficiency, and equity.

Environmental impact assessment (EIA): A process for evaluating the potential environmental impacts of a proposed project or policy, and for identifying and mitigating those impacts. EIAs are required by law in many countries, and they are often used to inform decisions about land use, infrastructure development, and resource management.

Environmental policy: The set of laws, regulations, and practices that aim to protect and enhance the environment, and to promote sustainable development. Environmental policy can include a wide range of interventions, such