
Professional Certificate in Environmental Economics

Climate Change Economics

Abatement cost refers to the cost of reducing environmental pollutants or the cost of reducing greenhouse gas emissions. It is a crucial concept in climate change economics as it helps policymakers and businesses understand the economic implications of reducing emissions. Abatement costs can vary depending on the technology, industry, and location. For example, the abatement cost of reducing carbon emissions from a coal-fired power plant might be higher than from a natural gas-fired power plant.

Absolute advantage is a concept in international trade that refers to a country's ability to produce a good or service at a lower cost than another country. In the context of climate change economics, absolute advantage can be relevant when considering the production of renewable energy technologies or green goods. Countries with an absolute advantage in these areas may be able to export their products to other countries, promoting sustainable development and reducing greenhouse gas emissions.

Adaptation refers to the process of adjusting to the impacts of climate change, such as sea-level rise, more frequent natural disasters, or changes in temperature and precipitation patterns. Adaptation can involve a range of strategies, including infrastructure development, agricultural changes, and public health measures. In climate change economics, adaptation is often considered in conjunction with mitigation, which involves reducing greenhouse gas emissions to limit the magnitude of climate change.

Adaptive management is an approach to managing complex systems, such as ecosystems or economies, in the face of uncertainty and change. It involves a cyclical process of planning, implementation, monitoring, and evaluation, with an emphasis on learning and adjusting to new information. Adaptive management can be applied to climate change economics, where it can help policymakers and businesses respond to the uncertainties and complexities of climate change.

Aggregate demand refers to the total demand for goods and services in an economy. In climate change economics, aggregate demand can be influenced by climate change policies, such as carbon pricing or green subsidies, which can affect the demand for fossil fuels, renewable energy, or green products. Understanding aggregate demand is crucial for policymakers to design effective climate change policies that minimize economic disruptions.

Air pollution is a significant problem that affects human health, the environment, and the economy. In climate change economics, air pollution is often considered in conjunction with greenhouse gas emissions, as many pollutants that contribute to air pollution also contribute to climate change. Reducing air pollution can have numerous benefits, including improved public health, increased economic productivity, and reduced greenhouse gas emissions.

Alternative energy refers to energy sources that are alternative to fossil fuels, such as solar, wind, hydro, geothermal, or biomass energy. Alternative energy sources can help reduce greenhouse gas emissions and dependence on fossil fuels, promoting sustainable development and mitigating climate change. In climate change economics, alternative energy sources are often considered as a key strategy for reducing emissions and promoting energy security.

Anthropogenic refers to human-induced changes to the environment, such as climate change, deforestation, or pollution. Anthropogenic climate change is caused by human activities, such as burning fossil fuels, deforestation, or land-use changes, which release large amounts of greenhouse gases into the atmosphere. Understanding anthropogenic climate change is crucial for developing effective climate change policies and mitigation strategies.

Asset stranding refers to the loss of value of assets, such as fossil fuel reserves or infrastructure, due to changes in market conditions, regulations, or technological advancements. In climate change economics, asset stranding can occur when policies or technologies reduce the demand for fossil fuels, making them less valuable or even stranded. Asset stranding can have significant economic implications, including losses for investors and companies.

Avoided cost refers to the cost savings that result from avoiding a particular activity or investment, such as reducing energy consumption or avoiding the construction of a new fossil fuel-fired power plant. In climate change economics, avoided costs can be used to evaluate the cost-effectiveness of climate change policies or investments, such as energy efficiency measures or renewable energy projects.

Barriers to entry refer to the obstacles that prevent new companies or industries from entering a market, such as high startup costs, regulatory hurdles, or limited access to technology. In climate change economics, barriers to entry can limit the development of new industries or companies that specialize in low-carbon technologies or sustainable products. Reducing barriers to entry can promote innovation and competition in the low-carbon sector.

Baseline emissions refer to the level of greenhouse gas emissions that would occur in the absence of climate change policies or mitigation measures. Baseline emissions provide a reference point for evaluating the effectiveness of climate change policies or investments, such as the reduction in emissions achieved by a particular policy or project.

Benefit-cost analysis is a method used to evaluate the benefits and costs of a project, policy, or investment, such as a climate change mitigation measure or a renewable energy project. Benefit-cost analysis can help policymakers and businesses determine whether a particular investment or policy is cost-effective and provides net benefits to society.

Biodiversity refers to the variety of ecosystems, species, and genes that exist on Earth. Biodiversity is essential for maintaining ecosystem services, such as air and water purification, soil formation, and climate regulation. In climate change economics, biodiversity can be affected by climate change, which can alter

ecosystems, disrupt species interactions, and reduce ecosystem resilience.

Bioenergy refers to energy produced from biomass, such as wood, crops, or waste, which can be used to generate electricity, heat, or transportation fuels. Bioenergy can be a low-carbon alternative to fossil fuels, but its production can also have environmental and social impacts, such as land-use changes, water pollution, or competition with food crops.

Blue carbon refers to the carbon stored in marine ecosystems, such as mangroves, salt marshes, or seagrasses, which can help mitigate climate change by sequestering carbon dioxide from the atmosphere. Blue carbon ecosystems can also provide other benefits, such as shoreline protection, water filtration, and habitat for marine species.

Border tax adjustments refer to the taxes or tariffs imposed on imported goods that are produced with higher greenhouse gas emissions or less stringent environmental regulations than similar goods produced domestically. Border tax adjustments can help level the playing field for domestic industries and encourage countries to adopt more stringent climate change policies.

Cap-and-trade refers to a market-based instrument that sets a limit on greenhouse gas emissions and allows companies to buy and sell emission allowances. Cap-and-trade systems can provide a flexible and cost-effective way to reduce emissions, as companies can choose to reduce their emissions or buy allowances from other companies that have reduced their emissions.

Carbon budget refers to the amount of carbon dioxide that can be emitted globally or by a particular country or company while still limiting global warming to a certain level, such as 1.5°C or 2°C. Carbon budgets can help policymakers and businesses develop strategies to reduce emissions and stay within the allowable carbon budget.

Carbon capture and storage (CCS) refers to the technology that captures carbon dioxide emissions from power plants or industrial processes and stores them underground, preventing them from entering the atmosphere. CCS can be a crucial technology for reducing emissions from fossil fuel-based power plants and industrial processes.

Carbon footprint refers to the amount of greenhouse gas emissions associated with a particular product, service, or activity, such as a company's supply chain, a consumer's lifestyle, or a government's policies. Carbon footprints can help individuals, companies, and governments understand their contribution to climate change and develop strategies to reduce their emissions.

Carbon intensity refers to the amount of carbon dioxide emitted per unit of economic output, such as per dollar of GDP or per unit of energy consumed. Carbon intensity can be used to evaluate the effectiveness of climate change policies or investments, such as the reduction in carbon intensity achieved by a particular policy or project.

Carbon leakage refers to the phenomenon where companies or industries relocate to countries with less stringent climate change policies or regulations, potentially leading to increased global emissions. Carbon leakage can be a challenge for policymakers, as it can undermine the effectiveness of climate change policies and create economic distortions.

Carbon neutrality refers to the state where an individual, company, or country achieves net-zero greenhouse gas emissions, either by reducing emissions to zero or by offsetting emissions with equivalent removals. Carbon neutrality can be achieved through a range of strategies, including energy efficiency, renewable energy, and carbon capture and storage.

Carbon offsetting refers to the practice of compensating for greenhouse gas emissions by investing in projects that reduce emissions elsewhere, such as reforestation, renewable energy, or energy efficiency projects. Carbon offsetting can be used by individuals, companies, or governments to offset their emissions and achieve carbon neutrality.

Carbon pricing refers to the practice of assigning a monetary value to greenhouse gas emissions, either through a carbon tax or a cap-and-trade system. Carbon pricing can provide a financial incentive for companies and individuals to reduce their emissions and invest in low-carbon technologies.

Carbon sequestration refers to the process of capturing and storing carbon dioxide from the atmosphere, either through natural processes, such as photosynthesis, or through technological interventions, such as carbon capture and storage. Carbon sequestration can help mitigate climate change by reducing the amount of carbon dioxide in the atmosphere.

Carbon sink refers to a reservoir that absorbs more carbon dioxide from the atmosphere than it emits, such as forests, oceans, or soils. Carbon sinks can help mitigate climate change by sequestering carbon dioxide and reducing the amount of greenhouse gases in the atmosphere.

Carbon tax refers to a tax levied on greenhouse gas emissions, either on the production or consumption of fossil fuels. Carbon taxes can provide a financial incentive for companies and individuals to reduce their emissions and invest in low-carbon technologies.

Climate change refers to the long-term warming of the planet due to an increase in average global temperatures, primarily caused by human activities, such as burning fossil fuels, deforestation, or land-use changes. Climate change can have significant impacts on the environment, human health, and the economy, including sea-level rise, more frequent natural disasters, and changes in temperature and precipitation patterns.

Climate change mitigation refers to the efforts to reduce greenhouse gas emissions and limit the magnitude of climate change. Climate change mitigation can involve a range of strategies, including energy efficiency, renewable energy, carbon capture and storage, and sustainable land use.

Climate change adaptation refers to the process of adjusting to the impacts of climate change, such as sea-level rise, more frequent natural disasters, or changes in temperature and precipitation patterns. Climate change adaptation can involve a range of strategies, including infrastructure development, agricultural changes, and public health measures.

Climate finance refers to the financial resources needed to support climate change mitigation and adaptation efforts, such as investments in renewable energy, energy efficiency, or climate-resilient infrastructure. Climate finance can come from a range of sources, including governments, private companies, or international institutions.

Climate justice refers to the fair and equitable distribution of the benefits and burdens of climate change policies and investments. Climate justice can involve issues of human rights, social justice, and environmental justice, particularly for vulnerable populations, such as low-income communities, indigenous peoples, or small island developing states.

Climate policy refers to the laws, regulations, and incentives that aim to reduce greenhouse gas emissions and mitigate the impacts of climate change. Climate policies can include carbon pricing, renewable energy targets, energy efficiency standards, or green subsidies.

Climate resilience refers to the ability of a system, such as a community, economy, or ecosystem, to withstand and recover from the impacts of climate change. Climate resilience can involve a range of strategies, including infrastructure development, social protection, or ecosystem-based adaptation.

Co-benefits refer to the additional benefits that can be achieved by implementing climate change policies or investments, such as improved air quality, increased energy security, or enhanced economic competitiveness. Co-benefits can be an important consideration in climate change economics, as they can help justify the costs of climate change mitigation and adaptation.

Cost-benefit analysis is a method used to evaluate the costs and benefits of a project, policy, or investment, such as a climate change mitigation measure or a renewable energy project. Cost-benefit analysis can help policymakers and businesses determine whether a particular investment or policy is cost-effective and provides net benefits to society.

Decarbonization refers to the process of reducing the carbon intensity of an economy or a particular sector, such as the energy sector. Decarbonization can involve a range of strategies, including energy efficiency, renewable energy, and carbon capture and storage.

Deforestation refers to the clearing of forests, usually as a result of human activities, such as agriculture, urbanization, or logging. Deforestation can contribute to climate change by releasing carbon dioxide into the atmosphere and reducing the ability of forests to act as carbon sinks.

Demand response refers to the ability of consumers to adjust their energy consumption in response to

changes in the price of energy or other incentives. Demand response can be an important strategy for managing energy demand and reducing peak energy consumption.

Disaster risk reduction refers to the efforts to reduce the risks and impacts of natural disasters, such as hurricanes, floods, or droughts. Disaster risk reduction can involve a range of strategies, including early warning systems, emergency preparedness, and infrastructure development.

Discount rate refers to the rate at which future costs and benefits are discounted to their present value. Discount rates can be an important consideration in climate change economics, as they can affect the evaluation of long-term costs and benefits of climate change policies or investments.

Ecosystem-based adaptation refers to the use of ecosystem services, such as coastal protection, water filtration, or soil formation, to help communities adapt to the impacts of climate change. Ecosystem-based adaptation can be a cost-effective and sustainable way to promote climate resilience.

Ecosystem services refer to the benefits that people obtain from functioning ecosystems, such as air and water purification, soil formation, or climate regulation. Ecosystem services can be an important consideration in climate change economics, as they can help justify the costs of conservation and sustainable land use.

Elasticity of demand refers to the sensitivity of demand for a particular good or service to changes in its price or other factors. Elasticity of demand can be an important consideration in climate change economics, as it can affect the evaluation of the impacts of climate change policies or investments on energy demand.

Emissions trading refers to the market-based instrument that allows companies to buy and sell emission allowances. Emissions trading can provide a flexible and cost-effective way to reduce emissions, as companies can choose to reduce their emissions or buy allowances from other companies that have reduced their emissions.

Energy access refers to the ability of individuals or communities to access modern energy services, such as electricity or clean cooking fuels. Energy access can be an important consideration in climate change economics, as it can affect the evaluation of the impacts of climate change policies or investments on energy poverty and sustainable development.

Energy efficiency refers to the use of technology or practices that reduce energy consumption while maintaining or improving energy services. Energy efficiency can be an important strategy for reducing greenhouse gas emissions and promoting sustainable development.

Energy poverty refers to the lack of access to modern energy services, such as electricity or clean cooking fuels, which can affect the health, education, and economic well-being of individuals or communities. Energy poverty can be an important consideration in climate change economics, as it can affect the evaluation of the impacts of climate change policies or investments on sustainable development.

Energy security refers to the reliability and accessibility of energy supplies, which can affect the economic and social well-being of individuals or communities. Energy security can be an important consideration in climate change economics, as it can affect the evaluation of the impacts of climate change policies or investments on energy systems.

Environmental economics refers to the study of the economic aspects of environmental issues, such as climate change, pollution, or conservation. Environmental economics can help policymakers and businesses understand the economic implications of environmental policies or investments and develop cost-effective solutions to environmental problems.

Environmental impact assessment refers to the process of evaluating the potential environmental impacts of a project, policy, or investment, such as a climate change mitigation measure or a renewable energy project. Environmental impact assessment can help policymakers and businesses identify potential environmental risks and develop strategies to mitigate them.

Externalities refer to the costs or benefits that are not reflected in the market price of a good or service, such as the environmental impacts of pollution or the health benefits of clean air. Externalities can be an important consideration in climate change economics, as they can affect the evaluation of the costs and benefits of climate change policies or investments.

Forest carbon refers to the carbon stored in forests, which can be an important carbon sink and help mitigate climate change. Forest carbon can be affected by deforestation, land-use changes, or forest degradation, which can release carbon dioxide into the atmosphere.

Fossil fuels refer to the energy sources, such as coal, oil, or natural gas, which are derived from ancient plants and animals. Fossil fuels can contribute to climate change by releasing carbon dioxide into the atmosphere when burned.

Fuel poverty refers to the lack of access to affordable energy services, such as heating or cooling, which can affect the health and well-being of individuals or communities. Fuel poverty can be an important consideration in climate change economics, as it can affect the evaluation of the impacts of climate change policies or investments on energy poverty and sustainable development.

Game theory refers to the study of strategic decision-making in situations where the outcome depends on the actions of multiple individuals or parties. Game theory can be an important consideration in climate change economics, as it can help policymakers and businesses understand the incentives and behaviors of different actors in the context of climate change.

Green bonds refer to the bonds that are specifically used to finance environmentally friendly projects, such as renewable energy or green infrastructure. Green bonds can be an important source of financing for climate change mitigation and adaptation efforts.

Green economy refers to the economy that is based on sustainable development, social justice, and environmental protection. Green economy can involve a range of strategies, including renewable energy, energy efficiency, and sustainable land use.

Green finance refers to the financial resources that are specifically used to support environmentally friendly projects, such as renewable energy or green infrastructure. Green finance can be an important source of financing for climate change mitigation and adaptation efforts.

Greenhouse gases refer to the gases that trap heat in the atmosphere, such as carbon dioxide, methane, or nitrous oxide, which can contribute to climate change. Greenhouse gases can be emitted by human activities, such as burning fossil fuels, deforestation, or land-use changes.

Human development refers to the process of improving the well-being and quality of life of individuals or communities, which can involve a range of factors, such as education, health, or economic opportunities. Human development can be an important consideration in climate change economics, as it can affect the evaluation of the impacts of climate change policies or investments on sustainable development.

Impact assessment refers to the process of evaluating the potential impacts of a project, policy, or investment, such as a climate change mitigation measure or a renewable energy project. Impact assessment can help policymakers and businesses identify potential risks and benefits and develop strategies to mitigate them.

Incentives refer to the motivations or rewards that encourage individuals or companies to adopt certain behaviors or make certain investments, such as reducing greenhouse gas emissions or investing in renewable energy. Incentives can be an important consideration in climate change economics, as they can affect the evaluation of the costs and benefits of climate change policies or investments.

Integrated assessment models refer to the models that integrate multiple factors, such as economic, social, and environmental factors, to evaluate the potential impacts of climate change policies or investments. Integrated assessment models can help policymakers and businesses understand the complex interactions between different systems and develop cost-effective solutions to climate change.

International cooperation refers to the collaboration between countries or international organizations to address global challenges, such as climate change. International cooperation can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Investment refers to the expenditure of resources, such as money or time, to acquire or improve assets, such as infrastructure, technology, or human capital. Investment can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Land use refers to the management of land for different purposes, such as agriculture, forestry, or urban development. Land use can affect the evaluation of the impacts of climate change policies or investments on greenhouse gas emissions, biodiversity, or ecosystem services.

Low-carbon economy refers to the economy that is based on low-carbon energy sources, such as renewable energy, and low-carbon technologies, such as energy efficiency or carbon capture and storage. Low-carbon economy can involve a range of strategies, including sustainable land use, green infrastructure, or climate-resilient development.

Marginal abatement cost refers to the cost of reducing one additional unit of greenhouse gas emissions. Marginal abatement cost can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Market failure refers to the situation where markets fail to allocate resources efficiently, such as when there are externalities, information asymmetries, or market power. Market failure can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Mitigation refers to the efforts to reduce greenhouse gas emissions and limit the magnitude of climate change. Mitigation can involve a range of strategies, including energy efficiency, renewable energy, carbon capture and storage, and sustainable land use.

Monitoring, reporting, and verification (MRV) refer to the processes used to track and verify the implementation and effectiveness of climate change policies or investments, such as emissions reductions or green finance. MRV can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Natural capital refers to the stocks of natural resources, such as water, soil, or biodiversity, which provide ecosystem services and support human well-being. Natural capital can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Net present value refers to the value of a project, policy, or investment in terms of its expected future benefits and costs, discounted to their present value. Net present value can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Non-market benefits refer to the benefits that are not reflected in market prices, such as the value of ecosystem services, human health, or social justice. Non-market benefits can be an important consideration in climate change economics, as they can affect the evaluation of the costs and benefits of climate change policies or investments.

Opportunity cost refers to the value of the next best alternative that is given up when a choice is made, such as the opportunity cost of investing in renewable energy instead of fossil fuels. Opportunity cost can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Participatory governance refers to the process of involving multiple stakeholders, such as governments, businesses, or civil society, in the decision-making process to address climate change. Participatory governance can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Payment for ecosystem services (PES) refers to the payments made to individuals or communities for maintaining or improving ecosystem services, such as carbon sequestration, water filtration, or soil conservation. PES can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Policy instruments refer to the tools used by governments to implement climate change policies, such as carbon pricing, regulations, or subsidies. Policy instruments can be an important consideration in climate change economics, as they can affect the evaluation of the costs and benefits of climate change policies or investments.

Polluter pays principle refers to the principle that the polluter should bear the costs of pollution, such as the costs of reducing emissions or cleaning up pollution. Polluter pays principle can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Poverty reduction refers to the efforts to reduce poverty and improve the well-being of individuals or communities, which can involve a range of factors, such as education, health, or economic opportunities. Poverty reduction can be an important consideration in climate change economics, as it can affect the evaluation of the impacts of climate change policies or investments on sustainable development.

Public goods refer to the goods or services that are provided by the government or other public institutions, such as national defense, education, or healthcare. Public goods can be an important consideration in climate change economics, as they can affect the evaluation of the costs and benefits of climate change policies or investments.

Renewable energy refers to the energy sources that are replenished naturally, such as solar, wind, hydro, or geothermal energy. Renewable energy can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Resilience refers to the ability of a system, such as a community, economy, or ecosystem, to withstand and recover from the impacts of climate change. Resilience can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or

investments.

Risk assessment refers to the process of evaluating the potential risks and impacts of a project, policy, or investment, such as a climate change mitigation measure or a renewable energy project. Risk assessment can help policymakers and businesses identify potential risks and develop strategies to mitigate them.

Scenario analysis refers to the process of evaluating the potential outcomes of different scenarios, such as different climate change policies or investments. Scenario analysis can help policymakers and businesses understand the complex interactions between different systems and develop cost-effective solutions to climate change.

Social cost of carbon refers to the cost of the impacts of climate change, such as damage to infrastructure, human health, or ecosystems, which can be used to evaluate the costs and benefits of climate change policies or investments. Social cost of carbon can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Stakeholder engagement refers to the process of involving multiple stakeholders, such as governments, businesses, or civil society, in the decision-making process to address climate change. Stakeholder engagement can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Sustainable development refers to the process of improving the well-being and quality of life of individuals or communities while protecting the environment and promoting social justice. Sustainable development can be an important consideration in climate change economics, as it can affect the evaluation of the impacts of climate change policies or investments on human development and the environment.

Technology transfer refers to the process of sharing knowledge, skills, and technologies between countries or organizations to address climate change. Technology transfer can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Uncertainty refers to the state of uncertainty or ambiguity about the outcomes of climate change policies or investments, which can affect the evaluation of the costs and benefits of climate change policies or investments. Uncertainty can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Valuation refers to the process of assigning a monetary value to the benefits and costs of climate change policies or investments, such as the value of ecosystem services or the costs of reducing emissions. Valuation can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.

Willingness to pay refers to the amount that individuals or companies are willing to pay for a particular good or service, such as renewable energy or green infrastructure. Willingness to pay can be an important consideration in climate change economics, as it can affect the evaluation of the costs and benefits of climate change policies or investments.