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| **Tárgy neve:**KÖRNYEZETGAZDÁLKODÁS ÉS HATÁSVIZSGÁLATEnvironmental Management and Impact Assessment | **NEPTUN-kód:**RKXHV1EBNF | **Óraszám:** ea+gy+lb2+1 | **Kredit:** 4**Köv.**: é  |
| **Tantárgyfelelős és** **előadó:**Dr. Zsarnóczai J. Sándor, CSc, habil | **Beosztás:** egyetemi docensAssociate Professor | **Előkövetelmény: -** |
| **Description of subject/ Ismeretanyag leírása** |
| **Introduction:** Environmental economics is the subset of economics that is concerned with the efficient allocation of environmental resources. The environment provides both a direct value as well as raw material intended for economic activity, thus making the environment and the economy interdependent. The “law of diminishing returns” is one of the best-known principles outside the field of economics. It was first developed in 1767 by the French economist Turgot in relation to agricultural production, but it is most often associated with Thomas Malthus and David Ricardo.Changes in population can have a variety of economic, ecological, and social implications. One population issue is that of carrying capacity – the number of individuals an ecosystem can support without having any negative effects. English economist Thomas Malthus who stated that continued population growth would cause over-consumption of resources. Malthus further argued that population was likely to grow at an exponential rate while food supplies would increase at an arithmetic rate, not keeping up with the exponential population growth. United Nation's World Commission on Environment and Development commissioned a study on the subject by what is now known as the Brundtland Commission. The resulting report, *Our Common Future* (1987), defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," which has become the accepted standard definition. Two basic terms that are used most often by economists are *supply* and *demand*. |
| **Timetable of subject in detailed / A tárgy részletes leírása, ütemezés** |
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| **Objectives / Témakörök** |
| **Modul** | **Lectures / Előadások témakörei**  |
| 1. | Introduction to Environmental & Resource Economics, Environmental economics is the subset of economics that is concerned with the efficient allocation of environmental resources. The environment provides both a direct value as well as raw material intended for economic activity, thus making the environment and the economy interdependent. |
| 2. | The “law of diminishing returns” is one of the best-known principles outside the field of economics. It was first developed in 1767 by the French economist Turgot in relation to agricultural production, but it is most often associated with Thomas Malthus and David Ricardo. They believed that human populationwould eventually outpace the production of food since land was an integral factor in limited supply, marginal return or marginal benefit. |
| 3. | Changes in population can have a variety of economic, ecological, and social implications. One population issue is that of carrying capacity – the number of individuals an ecosystem can support without having any negative effects. It also includes a limit of resources and pollution levels that can be maintained without experiencing high levels of change. If carrying capacity is exceeded, living organisms must adapt to new levels of consumption or find alternative resources. |
| 4. | Over the past few decades, many definitions of sustainable development have been suggested and debated, resulting in a concept that has become broad and somewhat vague. In recognition of the need for a clearer understanding of sustainable development, the United Nation's World Commission on Environment and Development commissioned a study on the subject by what is now known as the Brundtland Commission. The resulting report, Our Common Future (1987). |
| 5. | Two basic terms that are used most often by economists are supply and demand. How much of something that is available - the supply - and how much of something people want - the demand - are what makes a working market. Markets have existed since early in history when people bartered and made exchanges for food, trinkets, and other goods. |
| 6. | Externalities are unintentional side effects of an activity affecting people other than those directly involved in the activity. A negative externality is one that creates side effects that could be harmful to either the general public directly or through the environment. An example would be a factory that pollutes as a result of its production process. This pollution may pose health risks for nearby residents or degrade the quality of the air or water. |
| 7. | Crisis management is basically a fate in the life of a company. To ensure liquidity and bankruptcy protection, the sincere exploration of the reasons is to face, to make a business plan, implementation. The environmental responsibility of corporate executives in industrial states, the impact of the environmental challenge on the economy is likely to compete with the industrial revolution. However, while management science representatives are largely affordable business opportunities, businessmen largely narrowing business opportunities, increasing costs. They emphasize the decline in competitiveness and the threat of increasing uncertainty. |
| **Educational week /****Oktatási hét** | **Objectives of experiences / Gyakorlatok témakörei** |
| 1..2.. | Valuation can be a useful tool that aids in evaluating different options that a natural resource manager might face. Because our ecological resources and services are so varied in their composition, it is often difficult to examine them on the same level. However, after they are assigned a value, an environmental resource or service can then be compared to any other item with a respective value. Ecosystem valuation.As we make everyday choices – how much time to spend working or studying, what to spend our money on – we are experiencing what in economics are called trade-offs and opportunity costs. A trade-off is when we choose one option in favour of another and the opportunity cost is what is sacrificed in order to get something. Whether we realize it or not, we are constantly evaluating the costs and benefits of each decision we make; therefore, it can also be said that we are performing our own cost-benefit analysis each time we make a choice. |
| 3. 4. | Marginal costs and benefits are essential information for economists, businesses, and consumers. Even if we do not realize it, we all make decisions based on our marginal evaluations of the alternatives. In other words, “what does it cost to produce one more unit?” or “what will be the benefit of acquiring one more unit?” Cost-benefit analysis (CBA) is an analytical way for society to make decisions about complicated issues such as education, health care, transportation, or the environment. Like most personal decisions, it involves a comparison of the costs of an action compared with considerations of the benefits of that action. |
| 5. 6.  | An environmental impact analysis is typically conducted to assess the potential impact a proposed development project will have on the natural and social environment. This may include an assessment of both the short- and long-term effects on the physical environment, such as air, water and/or noise pollution; as well as effects on local services, living and health standards, and aesthetics. Regulatory Policy vs. Economic Incentives. Environmental regulation in the United States has traditionally relied on command-and-control policies in which regulators – typically the government– set standards or limits and apply them uniformly to a broad category of sources. There are three types of command-and-control mechanisms that regulators can choose to implement: ambient, emissions, or technology standards. |
| 7.8. | Reviewing the state of the environment in Europe reveals considerable progress, but challenges remain. many of Europe's environmental issues, such as climate change or biodiversity loss, are linked and have a complex and often global character; · they are closely linked to other challenges, such as unsustainable resource use, that span the societal and economic spheres and undermine important ecosystem services; as environmental challenges have become more complex and more profoundly linked to other societal concerns, the uncertainties and risks associated with them have increased.*Presentation for case-study*Climate change is one of the most obvious effects of these past developments: breaching the 2 oC target is probably the most tangible example of the risk of going beyond planetary boundaries. The long-term ambition of achieving 80 to 95 % reductions in CO2 emissions by 2050 in Europe to stay in line with the above target, strongly argues for a fundamental transformation of Europe's current economy, with low-carbon energy and transport systems as central planks of the new economy - but not the only ones. *Writing exam-I., Presentation for case-study* |
| 9. 10.  | ­Dedicated management of natural capital and ecosystem services increases social and economic resilience. Natural capital embraces many components. It is the stock of natural resources from which ecosystems goods and services can be derived. Such capital provides the sources of energy, food and materials; the sinks for wastes and pollution; the services of climate, water and soil regulation; and the environment for living and leisure - in essence, the core fabric of our societies. Using it often involves trade-offs between different services and striking a balance between maintaining and using stocks.*Presentation for case-study*Green economy will require dedicated policy approaches embedded in a coherent, integrated strategy covering demand and supply aspects, both economy-wide and at the sectoral level. In this context, the key environmental principles of precaution, prevention, rectification of damage at source, and polluter pays, combined with a strong evidence base, remain most relevant and need to be more broadly and consistently applied.*Writing exam-II. Presentation for case-study* |
| 11.12. | Human beings have faced other circumstances with lessons that could be valuable in adapting to any adverse impacts of climate change on water resources. These circumstances include increased pressure on limited surface and ground water re­sources due to population growth, *migration into arid or flood-prone areas*, periods of short-term and *prolonged drought*, and *degraded water quality*. Detailed institutional and legal mechanisms and ar­rangements have been established to make water more available and dependable, or of better quality. *Presentation for case-study**The water is often priced inefficiently, below its cost of delivery or its long-run marginal cost. This leads to overuse of water and the other resources needed to construct water supply facilities.* There is substan­tial additional opportunity, for cities and irrigation districts to utilize pricing as a means of conserving water by employing marginal-cost pricing (charging for the cost of the last-added and most expensive increment of supply) or progressive-rate pricing (charging more per unit to users of large amounts). |
| 13.14. | Natural resources management programs include integrated river basin or watershed management programs; in­tegration with forestry practices and reforestation in upland areas; soil conservation, forage selection, livestock grazing practices, land management, and other agricultural practices in the plains; and coastal estuarine, marsh, and mangrove management.*Presentation for case-study, Oral-Exam-1 (Optional)*Waste management continues to shift from disposal to recycling and prevention. Any society with a history of rapid growth of industry and consumption faces the issue of sustainable waste management, and for Europe, this issue continues to raise considerable concerns. The EU is committed to reducing waste *generation,* but is not succeeding. Trends for those waste streams for which data are available indicate the need to reduce the generation of waste in absolute terms to ensure further reduction of environmental impacts. In 2006, EU-27 Member States produced some 3 billion tonnes of waste - an average of 6 tonnes per person.*Oral-Exam-2 (Optional)*. |

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| **Demands in semesters / Félévközi követelmények** |
| **Participation on classes / Foglalkozásokon való részvétel:**Active participation in occupational (due to the exceeding the clearance of the TVSZ is disabled), the administration of the thesis to be administered and a 20-minute presentation of students from the deadline. EKHT Rating: "did not meet / meet / appropriately comply". The subject of the written exam is to be injected. The deadline for mid-term responses is possible with the payment obligation under the TTSZ, with the printed verification of the performance. The "Excellent" interim task gives the opportunity - exceptionally, in the border, to round the result of the written exam, to obtain a better interim remark. If the student cannot fulfil the requirements of the interim remark during the term of the extension, on the first 10 working days of the exam period, a new attempt may take another attempt at the remuneration under TTSZ. |
| **writing exams, 3 presentations, optional oral exam / Zárthelyik, prezentációk, beszámolók stb.**2 writing exams, 3 presentations from Given material, Study region and Case study. Option 2 oral exams.**The replacement-closed site is the exam duration TVSz. prescribed for the period prescribed.** |
| **Az elsajátítandó szakmai kompetenciák** |
| The examination method (written, to be administered) and evaluation method: a study to be administered and performed in 20 minutes. During the written exam, the students must answer three or three explicit questions. The questions will be made from the curricula marked in the table of contents of the university note. For the case study to be administered, a maximum of 10-page material should be compiled, the subject of which is related to an environmental investment, which may be for any economic branch, extractive industry, processing industry, energy sector, agriculture, transport, tourism, services, innovation developments. The subject may be linked to projects of priority or international relations at national level, for an EU-supported investment. There may be a theme related to the UN specialized organizations' decisions (world, international currency base, UNCTAD, WHO, ILO). The highlighted aspects are environmental protection and the hedges. The subject to be administered may be the work of the student's possible degree or scientific student conference work. Parallelism is possible. Structure to be administered Party: Summary and 5-10 keywords; Half page Introduction, half page methodological description, a page call list, references to the text are also indicated; half side of the summary experiences. In 6 or 7 pages, the circumstances, costs, purpose, essential and operational mechanism, usefulness and results of the investment are to be explained. The study must be administered in word as a presentation as a student of 12 to 15 slides in 20-20 minutes. The recommended literature is to assist in the preparation of work and further work.**As a yearly, an educational review is carried out per year, in which we take into account the effectiveness of knowledge transfer and information from the evaluation of the opinions given by the students and graduates. On the basis of the evaluation, the development promotions can be started, whose areas - the methodology of knowledge transfer, - the contents of the curriculum, - lectures and practices were built on each other. We perform a yearly evaluation of the changes and their results; we make a note about this and the proven items are scheduled by the professional program to be part of the subject program.****Qualified insurance methods of the subject** Meanwhile, waste *management* has improved in almost all EU Member States, as more waste is being recycled and less land-filled. Nevertheless, still about half of the 3 billion tonnes of total waste generated in the EU-27 in 2006 was land-filled. The rest was recovered, recycled and reused, or incinerated. Good waste management reduces environmental impacts and offers economic opportunities. It has been estimated that roughly 0.75 % of EU GDP corresponds to waste management and recycling. The recycling sector has an estimated turnover of EUR 24 billion and employs about half a million persons. Thus, the EU has around 30 % of world share of eco-industries and 50 % of the waste and recycling industries.European waste management builds on the principles of a waste hierarchy: preventing waste; reusing products; recycling; recovering, including energy through incineration; and finally, disposal. Waste prevention can help reduce environmental impacts during all stages of the life-cycle of resources.Domestic material consumption (DMC) is often used as a proxy for the environmental pressures of resource use. DMC measures resources directly consumed within a national economy, with an understanding that eventually each tonne of material entering an economy will come out as waste or emissions.The *environmentally-weighted material consumption (EMC)* indicator attempts to combine information on material flows with information on environmental pressures for specific categories including a-biotic resource depletion, land use, global warming, ozone layer depletion, human toxicity, terrestrial ecotoxicity, aquatic ecotoxicity, photochemical smog formation, acidification, eutrophication, and radiation. Consumption patterns are key drivers of resource use and waste generation. Measurements of the global atmospheric concentrations of *greenhouse gases (GHG)* show marked increases since pre-industrial times, with levels of *carbon dioxide (CO2)* far exceeding the natural range of the past 650 000 years. The concentration of atmospheric CO2 has increased from a pre-industrial level of about 280 ppm to more than 387 ppm in 2008. |
| **Study Materials / Irodalom** |
| *Obligatory / Kötelező:*Materials of the lectures / Előadás anyagai (Moodle system).* Zsarnóczai, Sándor (edited by, 2025): First Notbook. Environmental Management and Impact Assessment\_2025\_RKXKH1EBNF. ÓBUDA University, Rejtő Sándor Faculty of Light Industrial and Environmental Engineering, Environmental Engineering Institute
* Zsarnóczai, Sándor (edited by, 2025): Second Notbook. SIGNED CHAPTERS, Environmental Management and Impact Assessment\_2025\_RKXKH1EBNF. ÓBUDA University, Rejtő Sándor Faculty of Light Industrial and Environmental Engineering, Environmental Engineering Institute. Environmental Literacy Council (2007): Environmental Economics.Volume 1 Essential. Washington DC, US. P. 43.
* Relevant legislation, Laws / Vonatkozó jogszabályok, törvények:
* ISO 14000 Series of Standard Series /-es szabványsorozat
* 1995./LIII. Act on the General Rules for Protecting the Environment /
* törvény A környezet védelmének általános szabályairól
* 314/2005. (XII.25.) Government Decree on Environmental Impact Assessment and Single Environmental Authorization Procedure / Kormányrendelet a környezeti hatásvizsgálati és az egységes környezethasználati engedélyezési eljárásról
* Moodle online study materials / tananyag

*Recommended materials / Ajánlott:** Zsarnóczai, J. Sándor and Editing Board (edited by, 2010): Economics of Sustainable Agriculture (Fenntartható mezőgazdaság közgazdaságtana) Gödöllő, p. 151, ISBN 978 963 269 145 9
* Zsarnóczai, J. Sándor (edited by, 2021): ENVIRONMENTAL MANAGEMENT. Notebook. ÓBUDA University, Rejtő Sándor Faculty of Light Industrial and Environmental Engineering, Environmental Engineering Institute
* Federica Cimato and Michael Mullan (2010): Adapting to Climate Change: Analysing the Role of Government, UK, January 2010, *Series Paper 1. DEFRA* (Development for Environment Food and Rural Affairs), p. 78.
* Tim Everett, Mallika Ishwaran, Gian Paolo Ansaloni and Alex Rubin March (2010): Economic Growth and the Environment. Evidence and Analysis *Series Paper 2. DEFRA* (Development for Environment Food and Rural Affairs) PB13390, UK, March 2010, p. 52.

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