Regional and Environmental Economics (MSc)

Final examination topic questions

Sustainable Environmental and Natural Resource Economics

February 2025

1. Theoretical foundations of environmental economics

a. The purpose and methods of environmental economic analyses. The concepts of environmental and natural capital. The concept and types of ecosystem goods and services.
b. Monetary valuation of natural capital: the concept of total economic value. Methods of environmental valuation.
c. Endogenous macroeconomic causes of pollution: economic growth, scarcity and the necessity of choosing between alternatives, the problems of measurement. The concept of sustainable development, the political and economic interpretations of sustainable development. The concept of strong/strict and weak sustainability.
d. Endogenous microeconomic causes of pollution: externalities or spillover effects, public goods and free goods, discounting.

2. Theory and application of environmental economics, environmental policy tools

a. Efficient level of environmental impact. Reaching the efficient level through environmental policy tools. Pigou's theorem, applicability and its criticisms. Coase's theorem, applicability and its criticisms.
b. Environmental policy instruments based on Coase's theorem: property rights and entitlements, responsibility and litigation.
c. Environmental policy instruments based on Pigou's theorem: direct policy instruments, indirect/economic policy instruments.
d. The economics of pollution control. The aspects of selecting the appropriate mix of policy instruments for environmental regulations. Origins and consequences of government failure in environmental regulation.

3. Natural resource economics: current state of affairs, theoretical foundations

a. The state of the planet: the interactions between humans and the environment. The quest for sustainable development. Particularities of population change and development: megatrends, visions of the future, future scenarios. Key responses, objectives, dominant strategies.

b. Resource use and the pursuit of efficiency: static efficiency and dynamic efficiency in resource management. Intergenerational solidarity, respecting the needs of future generations. Implications from the Theory of Justice, and implementing Hartwick's Rule.
c. Allocation of depletable, non-renewable resources. Conditionally renewable resources. Hard and soft transitions to sustainable resource use. The role of longer time horizons, substitutes, extraction costs and environmental costs.
d. The transition from depletable to renewable energy resources.

4. Natural resource economics: transition to sustainable resource use

a. Recyclable resources: minerals, packaging materials, structural materials and electronic waste.
b. Depletable and renewable water resources.
c. Land, as a locationally fixed, multi-purpose resource. Forests as storable, renewable resources. Sustainable agriculture and food production issues. Issues of food security.
d. Common-pool resources: sustainable fisheries and wildlife management.

5. Natural resource economics: pollution-based problems

a. Mankind's role in a changing climate.
b. Air pollution: stationary, mobile, point-source, linear and diffuse pollution. Theoretical mitigation approaches, experiences from past practical application.
c. Water pollution. Surface and sub-surface water pollution. Pollution of rivers, lakes and high seas. Regulatory approaches and their limitations.
d. Toxic substances, persistent pollutants and environmental justice.

Recommended literature

- Daniel J. Phaneuf, Till Requate: A Course in Environmental Economics. Cambridge University Press, 2016.
- Tom Tietenberg, Lynne Lewis: Environmental and Natural Resource Economics. 11th Edition. Routledge, 2018.

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Regional Economics

February 2025

1. Fundamentals of regional economics and location theories

a. The difference between the "main-stream" and regional economics; characteristics of economics and space. Fundamentals of Regional Science, role of Walter Isard.
b. Johann Heinrich von Thünen: early theory of agricultural location, and subsequent application.
c. Alfred Weber's Theory of Industrial Location, criticisms of the model.
d. Theory of August Lösch and Walter Christaller.
e. Optimizing the location choice (correlation of the cost minimization and profit maximizing approach by Melvin Greenhut), the three foundation stones of regional economics: complete or partial immobility of land and other productive factors (1), economies of spatial concentration (2) and transport costs (3).
f. Location choice of Transnational Companies - John Dunning's Eclectic Paradigm (OLI-Framework)
g. The concept of infrastructure and public goods, their main characteristics.
h. Cost-Benefit Analysis. The role of infrastructure in development strategies.

2. Regions, regional development

a. The Nature of a Region and its main types.
b. Multiplier and accelerator effects. Douglass C. North's Export-Base Theory.
c. François Perroux's Concept of a Growth Pole, its application.
d. Interregional Factor (capital, labour) Movements, Neoclassical Growth Theory.
e. Paul Krugman: The New Economic Geography.
f. Factors of regional growth. Fundamentals and theory of regional economic development.
g. Spatial characteristics and regional policy activities.
h. Regional development, regional competitiveness and sustainability.

3. Spatial Development and Sustainable Regional Development

a. The characteristics of spatiality and the relationship between them and regional development activities.
b. Principles and methodology of preparing spatial development plans.

c. The concept and explanations of sustainable local economic development. The role, types, characteristics, tools and opportunities of local development in regional economic development.
d. The interrelationships of sustainable spatial development and regional competitiveness, its relationship with climate change in the age of digitalization.
e. The new dimension of sustainable spatial development: adaptation to climate change.
f. Interpretation of the concept of climate innovation. Regional differences, spatial and sectoral effects of climate innovations.

4. Regional (Cohesion) Policy

a. Development and history of the EU Regional Policy until the Reform as of 1988.
b. The necessity for the Reform as of 1988, its principles, the content of the principles and subsequent amendments.
c. History, goals and intervention areas of the funds supporting the implementation of the EU Regional Policy.
d. Regional Policy of the EU from the 2000s to the enlargement as of 2004 (objectives and instruments of regional policy, Instrument for Pre-Accession Assistance (IPA)).
e. The effects of the enlargements as of 2004 (and 2007, 2013), the future of Regional Policy.
f. Cross-border cooperation and rural development in the EU.

Recommended literature

- Hoover, Edgar M. and Giarratani, Frank, "An Introduction to Regional Economics" (2020). Web Book of Regional Science. 4. available at: https://researchrepository.wvu.edu/rri-web-book/4
- Capello, Roberta (2016). Regional Economics. Routledge, ISBN 9781138855885

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Final examination topic questions

Environmental Performance Assessment

February 2025

1. Environmental risks and corporate strategy

a. Describe the relationship between technological development, economic growth and the state of the natural environment. Demonstrate the benefits and drawbacks of the technological solutions of sustainability issues.
b. What do we mean by environmental risks and what are their types? Characterise companies from the point of view of their environmental risks. What do we mean by the social dimension of environmental risks?
c. Introduce the factors determining the environmental strategy of business organisations and the most important strategy types (use typologies by Steger and Reinhardt).
d. Introduce the most important approaches to corporate environmental protection, their benefits and drawbacks: end-of-pipe solutions, cleaner production and industrial ecology.

2. Environmental performance evaluation

a. What is the importance of the evaluation of the environmental performance of companies and what factors make it difficult?
b. Introduce the role of environmental indicators in company decision making relating to environmental protection.
c. Introduce the types of environmental indicators (according to several criteria). Describe the indicator types suggested by the ISO14031 standard and characterise them.
d. What requirements should be met by environmental indicators? Describe the information demand of different stakeholders and how companies can meet them.
e. What do we mean by environmental accounting and what are its benefits to company management? What are the most important types of environmental costs?

3. Environmental Management Systems

a. Introduce the roles of Environmental Management Systems in company management.
b. What are the basic principles of Environmental Management Systems?
c. Introduce the steps of implementation of an Environmental Management System in a company.
d. Demonstrate the role of the company environmental policy in company operations.

e. Demonstrate how Environmental Management Systems operate within the company.
f. What market mechanisms guarantee the appropriate operation and transparency of Environmental Management Systems?
g. Compare the ISO14001 international standard and the EMAS regulation of the European Union. What are the differences and similarities between the two?

4. Tools of environmental management

a. Introduce the role of eco-marketing in company operations. What is the role of green products and eco-labels? Introduce the problem of greenwashing.
b. How can the principles of environmental protection be integrated into the 4P marketing strategy?
c. Introduce the importance of Corporate Social Responsibility. What factors led to its emergence and what are its most important fields?
d. What is the relationship between CSR and Sustainable Development? What are the most important critics of CSR and what results can we expect from corporate CSR activities?
e. What are the most important sources of environmental conflicts? How can we handle these conflicts? Based on a few specific environmental conflicts, draw some conclusions relating to how we can handle environmental conflicts.
f. What kind of innovative business models do you know? How would you assess them with regard to Sustainable Development?
g. What do we mean by a business model canvas? Why do companies prepare them? Introduce the elements of the three layers of the sustainable business model canvas.
h. What are the most important tendencies in the field of sustainable consumption and how can companies promote more sustainable lifestyles?

Recommended literature

- Mushtaq, Bandh, Shafi, " Environmental Management: Environmental Issues, Awareness and Abatement" (2020). https://link.springer.com/book/10.1007/978-981-15-3813-1
- Hundloe, “Environmental Impact Assessment: Incorporating Sustainability Principles” (2021). https://library.sprep.org/sites/default/files/2022-08/%5BPalgrave%20Studies%20in%20Environmental%20Policy%20and%20Regulation%20%5D%20Tor%20Hundloe_%28auth.%29%20-%20Environmental%20Impact%20Assessment_%20Incorporating%20Sustainability%20Principles%20%282021%2C%20Palgrave%20Macmillan%29%20%5B10.1007_978-3-030-80942-3%5D%20-%20lib.pdf