

Energy and the Environment
Lecturer: Prof. Jozef M. Pacyna
Date of lecturing: 13 – 16 January, 2015

Summary

The following subjects will be lectured:

1. Basic technologies to produce energy for stationary and mobile sources. Production of energy from fossil fuels and renewable sources. Current situation and future projections.
2. Can combustion of coal be regarded as environmentally friendly source of energy? How to improve combustion efficiency and reduce climate change gases?
3. How to reduce emissions of greenhouse gases from energy production sources?.
4. Energy production and energy consumption as major drivers of environmental change, including climate change. Emissions of various gases and particles from energy sources to the atmosphere. Releases of contaminants and nutrients to aquatic and terrestrial ecosystems. Re-emission processes as a source of atmospheric pollution.
5. Waste disposal management in the energy production sector. Production of biofuels for stationary and mobile sources. Barriers limiting the production of energy from biomass.
6. Renewable energy sources as a way to improve the quality of the environment. Current use of renewable to meet the energy demands in Europe and worldwide and future projections. Focus on solar energy, hydropower plants and wind mills.
7. Is the nuclear energy a safe source of energy production?
8. Economic aspects of environmental management systems in the energy production and use sectors. Description of the concept of best available technology (BAT) for the reduction of air and water pollution and waste with examples for various international strategies for the improvement of environmental quality.
9. Social aspects of environmental change due to emissions from energy production and use sectors. Various models of energy demands, population rate change, and employment index. Relations between the environmental management and employment change.
10. Role of monitoring networks in implementation of environmental management strategies in the power production sector. General concept of monitoring at various scales. Examples of various monitoring systems.
11. Implementation of international agreements on pollution reduction from power production sector. Global and regional agreements on the reduction of environmental pollution. Major factors hampering implementation of these agreements.

| Termin | Dzień tygodnia | Godzina | Miejsce |
|---------------|-----------------------|----------------|----------------|
| 13.01.2015 | Wtorek | 9.15 – 12.00 | LUWR |
| 14.01.2015 | Środa | 9.15 – 12.00 | LUWR |
| 15.01.2015 | Czwartek | 16.15 – 19.00 | LUWR |
| 16.01.2015 | Piątek | 9.15 – 12.00 | LUWR |