Energy governance and management

**Fall semester, 2018-2019**

|  |  |
| --- | --- |
| Coordinator | **Nguyen Thi Anh Tuyet** |
| Credits | 3 ECTS (optional course), 30 in-class hours |
| Lecturers | **Nguyen Thi Anh Tuyet** (Hanoi University of Science and Technology, Vietnam)  **Nguyen Duc Quang** (Hanoi University of Science and Technology, Vietnam) |
| Level | Ph.D candidates |
| Host institution | **Hanoi University of Science and Technology**, School of Environmental Science and Technology |
| Course duration | November 27 – December 8, 2019 |

### Summary

*The course provides students coming from* *environmental and energy science backgrounds with fundamental and advanced knowledge related to energy governance and management such as economic of energy resources; measuring energy resource security; sharing resource revenue with sub-national levels and local communities; renewable energy options; environment and sustainability oriented innovation system; energy security and governance. In addition, learners will be introduced to the solution of energy resource management through exercises on methods of evaluating and analysing the selection of energy sources towards sustainable development.*

### Target student audiences

Ph.D students in majors of environmental management and technology, environmental and energy sciences

### Prerequisites

Required courses (or equivalents):

* Cleaner production principles
* Natural resources and environmental management
* Energy engineering and/or science
* Environmental policy
* Economic theory

### Aims and objectives

The main course objective is to introduce the leaners to energy governance frameworks, to explain what the role of sustainable energy development in the national agendas is, and what policy and management mechanisms are in place to promote them. In particular, the course will provide the necessary background with a two-way approach to economic of energy resources; measuring energy resource security; sharing resource revenue with sub-national levels and local communities; renewable energy options; environment and sustainability-oriented innovation system; energy security and governance. Participants will know how to assess and analyze the choice of energy sources towards sustainable development.

To support the understanding of relevant tools and mechanisms, leaners are familiarized with several macro-level solutions for energy resource management as well as solving problems related to management and sustainable development of energy sources such as solving problems related to sustainable management and development of energy sources.

### General learning outcomes:

By the end of the course, successful students will:

* address dimensions of energy security and energy security challenges
* understand the importance and key factors in sustainable energy development
* understand energy policy process and be able to perform its structured analysis
* understand energy governance framework and its sustainability objectives and links to global/national agendas (e.g. SDGs, NDCs)
* be able to develop tools for long-term energy development analysis and planning

### Overview of sessions and teaching methods

The course will start with an overview of energy governance principles, next it will continue with combination of interactive lecturing and assisted work on individual exercises. The focus will be either on key energy management issues (e.g. describing and defining national energy security, what kind of governance issues are presented in Vietnam and other countries, are the policies factoring negative externalities while assessing the cost of energy). The third part of the course is built around case-study assignments: a multi-part project and a modeling tools addressing issues of long-term energy development analysis and planning.

### Course workload

The table below summarizes course workload distribution:

|  |  |  |  |
| --- | --- | --- | --- |
| **Activities** | **Learning outcomes** | **Assessment** | **Estimated workload (hours)** |
| **In-class activities** | | | |
| Lectures | Understanding theories, concepts, methodology and tools;  Understanding policy and management contexts and common problems in energy security governance | Class participation | 30 |
| Moderated in-class discussions | Understanding various policy and management contexts and common problems in energy security governance | Preparedness for discussions | 20 |
| **Independent work** | | | |
| Group work:  Contribution to the case-study projects | Ability to interpret data, to use the concepts, modeling tools, and methods for long-term energy development analysis and planning | Quality of individual presentations | 20 |
| Course group assignment | Ability to conceptualize and frame an energy governance problem, interpret data, use the concepts, tools and methods covered in the course, draw management relevant conclusions | Quality of developed modelling tools and their presentation | 20 |
| Reading and discussion of assigned papers and preparation for lectures | Ability to critically and creatively discuss key concepts, tools and methods as presented in the literature | Creative & active contribution to discussion | 18 |
| ***Total*** |  |  | ***108*** |

### Grading

The leaners’ performance will be based on the following:

* Level of preparedness for participation in class discussions and seminars (10 %) (from 100 % for active participation and demonstrated familiarity with the course readings to 0 % for completely ignoring in-class discussions)
* Contribution to seminar assignment (20 %) (from 100% for clearly demonstrated input to 0 % for non-participation)
* Quality of the tool application (30%)
* Quality of development strategies (40%)

### Course schedule

|  |  |  |  |
| --- | --- | --- | --- |
| **Day** | **Time** | **Topic** | **Lecturer** |
| November 27 | 12:30-14:00 | - Guide to the course – purpose, objectives, learning outcomes, assignment and grading  - Introduction to energy development policy framework and institutions; links to innovative agendas | Nguyen T. A. Tuyet  Nguyen Duc Quang |
| November 29 | 12:30-14:00 | - Defining energy security and basic concepts  - Dimensions of energy security | Nguyen T. A. Tuyet |
| 14:15-15:45 | - Vietnam’s NDCs: main features and ambition | Nguyen T. A. Tuyet  Nguyen Duc Quang |
| 16:00-17:30 | - Vietnam’s NDCs: energy scenarios  - Addressing energy security challenges | Nguyen T. A. Tuyet |
| December 03 | 12:30-14:00 | - Defining governance and basic concepts  - What is good governance? | Nguyen T. A. Tuyet  Nguyen Duc Quang |
| 14:15-15:45 | - Energy governance and institution issues; science-policy interfaces | Nguyen T. A. Tuyet |
| December 04 | 12:30-14:00 | - In-class individual work assignments – actions in energy sector in Vietnam | Nguyen T. A. Tuyet  Nguyen Duc Quang |
| December 05 | 10:15-11:45 | - Introduction to modeling tools addressing issues of energy development analysis and planning | Nguyen T. A. Tuyet |
| December 06 | 12:30-14:00 | - Development of modeling tools – in-class work | Nguyen T. A. Tuyet |
| 14:15-15:45 | - Development of modeling tools – in-class work | Nguyen T. A. Tuyet |
| 16:00-17:30 | - Development of modeling tools – in-class work | Nguyen T. A. Tuyet |
| December 07 | 14:15-15:45 | - Development of long-term energy planning scenarios to economic sectors – an introduction to energy governance | Nguyen T. A. Tuyet  Nguyen Duc Quang |
| 16:00-17:30 | - Development of long-term energy planning scenarios to economic sectors – an introduction to energy governance | Nguyen T. A. Tuyet  Nguyen Duc Quang |
| December 08 | 10:15-11:45 | - Reports by assignment individuals | Nguyen T. A. Tuyet  Nguyen Duc Quang |
| 12:30-14:00 | - Reports by assignment individuals | Nguyen T. A. Tuyet  Nguyen Duc Quang |

### Course assignments

Course assignments will constitute a multi-part project:

* Assignment #1 (mostly in-class) – A seminar focusing on key energy governance and management issues
* Assignment #2 (mostly in-class) – Development of modeling tools for energy development analysis and planning
* Assignment #3 – Development of energy strategies for economic sectors

### Literature

ADB (2015). Vietnam energy sector assessment, strategy and road map.

Allilio Bisio, Sharon Boots (1995). Encyclopedia of energy technology and the environment. Vol. 1, 2, 3, 4. John Wiley & Sons, Inc.

Bio-Grace (2015). Harmonised calculations of bio-fuel GHG emissions in Europe. Bio-Grace project, available online at [www.biograce.net](http://www.biograce.net)

Davis S.J., Ken C., Damon M. (2010). Future CO2 emissions and climate change from existing energy infrastructure. Science 329: 1330-1333.

Food and Agriculture Organization of the United Nations (2011). The Global Bio-energy Partnership (GBEP) Sustainability Indicator for Bio-energy.

Food and Agriculture Organization of the United Nations (2018). Sustainability of biogas and cassava-based ethanol value chains in Vietnam - Results and recommendations from the implementation of the Global Bioenergy Partnership indicators. Working paper 69 "Environment and Natural Resources Management" - ISBN: 2226-6062.

M. Moﬁjur, H.H. Masjuki, M.A. Kalam, S.M. Ashrafur Rahman, H.M. Mahmudu (2015). Energy scenario and biofuel policies and targets in ASEAN countries. Renewable and Sustainable Energy Reviews, vol. 46, June 2015, Pages 51-61.

Shonali Pachauri Narasimha D. Rao Yu Nagai Keywan Riahi (2012). Access to Modern Energy - Assessment and Outlook for Developing and Emerging Regions. United Nations Industrial Development Organization (UNIDO) under Project No. GF/GLO/10/004 – Contract No. 16002078. IIASA Reference: 10-134.

Stockhom Environmental Instutute (2011). LEAP System, Model 2011. Stockholm.

Randolph J., Masters G.M. (2008). Energy for Sustainability: Technology, Planning, Policy*.* Island Press.