Modul 31: Sustainable Energy Planning in Rural Areas

Studiengang:	M. Eng. Energie- und Umweltmanagement / M. Eng. Energy and Environmental Management
Modulbezeichnung:	Sustainable Energy Planning in Rural Areas
ggf. Kürzel	SEPRA
ggf. Untertitel	-
ggf. Lehrveranstaltungen:	-
Semester:	The module takes place in the first semester (spring term) and is offered once in a year.
Modulverantwortliche(r):	Prof. Dr. Bernd Möller
Dozent(in):	Prof. Dr. Bernd Möller
Sprache:	English
Zuordnung zum Curriculum	M. Eng. Energy and Environmental Management for 'Developing Countries', 1. Semester, Compulsory Module
Lehrform / SWS:	4 SWH seminar The seminar consists of inputs through lectures, exercises and moderated working sessions. The students have to prepare small presentations on selected topics. These can be done in groups or individually, depending on the topic. The seminar is complemented by a case study which allows the students to practice the knowledge acquired from these inputs. A fine-tuning of the seminar contents will take place at the beginning of the seminar in order to incorporate the knowledge and experience of students who dispose of professional experience in the fields concerned.
Arbeitsaufwand:	Attendance: approx. 60 hours Self-study/Group work: approx. 90 hours
Kreditpunkte:	5 ECTS
Voraussetzungen:	none
Lernziele / Kompetenzen:	The overall goal of the module is to enable students to prepare rural and regional energy plans, to consult stakeholders in rural energy planning processes and to moderate such processes. The module thereby complements the competencies gained in the technical and management modules of the first semester. Specific objectives The students - are able to critically reflect the interrelation between energy, environment, social and economic development in rural areas - understand the relevance of stakeholder involvement and participation in rural energy planning - know the different approaches to rural energy planning - are able to design and apply tools and instruments for data collection

	- are able to assess local energy demand and resources - are able to develop and assess local energy scenarios - can draft energy programme and project proposals
Inhalt:	The module focuses on energy planning in rural areas of developing countries. After introducing the interrelationship between rural development and energy and different planning approaches, it emphasizes the different steps of a participatory rural energy planning process. The theoretical course is complemented with a comprehensive case study and planning exercise. Contents • Rural Development and Energy Planning - Rural Demographics - Economic Development and Energy - Social Development and Energy - Environment and Rural Energy • Energy Access and rural electrification • Community Mobilisation • Community Energy Planning • Integrated Resource Planning • Geospatial aspects of Energy Planning o Introduction to Geographical Information Systems o Geospatial data for energy planning o Geospatial analysis of energy access • The Rural Energy Planning Process - Assessment of Baseline Situation Resources, Demand and Technologies Data Sources Rural Energy Uses - Development Scenarios - Local Energy Strategies and Policies - Energy programmes and Projects for Rural Development • Institutional Aspects • Planning Exercise
Studien- Prüfungsleistungen:	Presentation (30 min.) and written paper (approx. 15 pages) Alternatively, if too many students attend the course, the presentation can be replaced by a more extensive written paper (approx. 30 pages)
Medienformen:	Media • Power point presentation, Flip chart, Pin board, cards, transparencies, Notebooks/Planning tools • ArcGIS software and geodata • Handouts, e-books, exercises and weblinks are available through the Moodle system.

Literatur:	- Barnes, D.F (ed): The Challenge of Rural Electrification – Strategies for Developing Countries. ESMAP and RFF Press, 2007. - Singh, S. and Bajpai, U. (2010) Integrated energy planning for sustainable development in rural areas: A case study from Eastern Uttar Pradesh, Energy and Environment, Vol.1, Issue 6, pp.1083-1096, Journal homepage: www.IJEE.IEEFoundation.org - Tsoutsos, T. et. al. (2009) Sustainable energy planning by using multi-criteria analysis applicationenergy planning by using multi-criteria analysis application in the island of Crete, Energy Policy, Vol.37, 1587–1600, journalhomepage: www.elsevier.com/locate/enpol - Lund, H. (2007) EnergyPLAN - Advanced Energy Systems Analysis Computer Model, Documentation Version 7.0, Aalborg University, Denmark - Economic and Social Commission for Asia and the Pacific (2003): Guidelines on the Integration of Energy and Rural Development Policies and Programmes, New York, United Nations - Basnet, Suman (1999): District energy planning and implementation guidelines, Lalitpur, Rural Energy Development Programme - Kleinpeter, Maxime (1996): Energy planning and policy, Chichester, Wiley - Swisher, Joel N.; de Martino Jannuzi, Gilberto and Redlinger, Robert Y. (1997): Tools and Methods for Integrated Resource Planning- Improving Energy efficiency and Protecting the Environment, UNEP/Risø National Laboratory