

Modul 43: Sustainable Energy Innovation/Implementation in Developing Countries

Studiengang:	M. Eng. Energie- und Umweltmanagement / M. Eng. Energy and Environmental Management
Modulbezeichnung:	Sustainable Energy Innovation/Implementation in Developing Countries
ggf. Kürzel	
ggf. Untertitel	
ggf. Lehrveranstaltungen:	
Semester:	The module takes place in the second semester and is offered once in a year.
Modulverantwortliche(r):	Dipl.-Ing. Peter Heßbrüggen
Dozent(in):	Dipl.-Ing. Peter Heßbrüggen
Sprache:	English
Zuordnung zum Curriculum	M.Eng. SESAM, 2. Semester, Compulsory Module
Lehrform / SWS:	4 SWH seminar, max. 24 students/group The seminar consists of inputs through lectures and moderated working sessions. The students have to prepare small presentations on selected topics. These can be done in small groups or individually, depending on the topic. 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
Voraussetzungen:	
Lernziele / Kompetenzen:	The overall goal of the module is to give students an illustration/interpretation of policy frameworks and systems of innovation that are essential to the implementation of sustainable energy technologies in developing countries. They will be able to assess and contrast the impact of local and national systems of innovation on technology change and implementation, and they will be able to appraise the importance of entrepreneurship in technology transfer and capacity building in the energy sector. Specific objectives

	<p>The students will be able to</p> <ul style="list-style-type: none"> - discuss the current methods of energy provision in developing countries - demonstrate how energy policy is transformed from ideas to reality through the decision making, approvals and administrative processes - identify key elements that affect the successful introduction of renewable technologies in a development setting including needs assessment, technology transfer, capacity building, financing and gender issues - analyse energy policy for its effectiveness to accelerate deployment and access to sustainable energy in developing countries - assess the role of entrepreneurship in energy projects - differentiate between national and local systems of innovation in relation to energy provision - outline the costs and challenges of integrating increasing shares of renewable energy into energy supply systems in developing countries - describe how energy policy ideals may become compromised through the political processes involved
<p>Inhalt:</p>	<p>This module identifies and appraises the linkages between renewable energy innovation and dissemination, such as the co-benefits and co-costs, mitigation potential, to achieve sustainable development in developing countries. It evaluates policy options, outcomes and conditions for their effectiveness, as well as constraints for integration into the energy supply system.</p> <p>The module analysis how accelerated deployment of renewable energy technologies could be achieved in developing countries in a sustainable manner. The mitigation potential and costs of renewable energy technologies are assessed and the role of entrepreneurship in the process of innovation of energy technologies is assessed.</p> <p>In addition the module deals with the processes and institutions that give rise to the shape, direction, and outcomes in the energy sector.</p> <p>Contents</p> <ul style="list-style-type: none"> • Sustainable energy and development • Entrepreneurship in energy projects • Local versus national innovation systems • Policy framework • Institutional arrangements • Finance mechanisms • Assessment of renewable energy technologies and related policy and financial instruments

	<ul style="list-style-type: none"> • Capacity building • Evaluate the potential of renewable energy for the mitigation of climate change • Technology transfer • Assessment of the appropriateness of the range of energy technologies applicable to a developing country (social/cultural, practical, economic and environmental) • Community engagement • Renewable energy and sustainability • Gender issues • Barriers and drivers
Studien- Prüfungsleistungen:	<p>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)</p>
Medienformen:	<p>Media</p> <ul style="list-style-type: none"> • Power point presentation, Flip chart, Pin board, cards, transparencies, Notebooks/Planning tools • Handouts, e-books, exercises and weblinks are available on BSCW-server
Literatur:	<ul style="list-style-type: none"> - IPCC (2011) Special Report Renewable Energy Sources (SRREN) - Schumpeter, J. (1934) The Theory of Economic Development, Harvard, New York - Lundvall, B.Å. (2010) National Systems of Innovation – Towards a Theory of Innovation and Interactive Learning, Anthem Press, UK - Aubert, J-E (2004) Promoting Innovation Developing Countries : A Conceptual Framework, The World Bank, on line, available: http://siteresources.worldbank.org/KFDLP/Resources/0-3097AubertPaper%5B1%5D.pdf - Suthersane, U. (2006) Utility Models and Innovation in Developing Countries, UNCTAD-ICTSD Project on IPRs and Sustainable Development, on line, available: http://www.unctad.org/en/docs/iteipc20066_en.pdf - Shane, S. (2003) A General Theory of Entrepreneurship – The Individual Opportunity Nexus, Edward Elgar Publishing Limited, UK - Martinot, E. et al (2002) Renewable Energy Markets in Developing Countries, Annu. Rev. Energy Environ. 2002. 27:309–48