

Course title: Traditional knowledge and water management				
Course code: WSW 142		No. of credits: 2		L-T-P: 1-1-0
Pre-requisite course code and title (if any): None				
Course Description				
<p>This course will explore various dimensions of knowledge -local, indigenous, traditional, global, scientific- and its criticality as a resource for development. The course explores how governments and development organizations have developed strategies to create knowledge systems and societies for sustainable development of resources. Particular emphasis of this course is on traditional knowledge for water management. This is an important issue given the discussion on “wicked water problems” that emphasize dealing with uncomfortable knowledge and necessitates greater synergies between different knowledge systems to meet the sustainability challenge.</p>				
Course objectives				
<ol style="list-style-type: none"> To explore various dimensions of knowledge and its impact on water management. To provide students a critical understanding of ‘why’ the emphasis on traditional knowledge for water management is necessary. To introduce students to debate on knowledge networks, knowledge societies and adaptive water management taking into account traditional approaches to water management. 				
Course content				
Module	Topic	L	T	P
1	Introduction <i>I. Knowledge for development</i> <ul style="list-style-type: none"> - What is knowledge? Different aspects of knowledge (traditional, social, technical) - Understanding of knowledge (static, processesual, past) - Whose knowledge counts? - What is traditional knowledge? <i>II. Utility of various aspects of knowledge for water management</i> <ul style="list-style-type: none"> - Diverse policy perspectives need of the hour <i>III) Bridging the knowledge gap: the science-management divide</i> <ul style="list-style-type: none"> - Local and global/scientific knowledge - Need for greater synergies of these two knowledge systems given social and cultural diversity - Need to go beyond binaries 	5	3	
2	Knowledge for water management <i>I) Knowledge societies (hydraulic societies)</i> <i>ii) Critical discussion of various (traditional) knowledge systems for water management in different ecological zones in South Asia</i> <ul style="list-style-type: none"> - Notably, discussion will not focus on design of structures. Rather the emphasis will be on untangling the complex socio-political and economic realities that led to demise/or sustenance of these knowledge systems through case studies of different knowledge systems in different ecological zones. - Discussion on evolution of institutions and ideas with respect to traditional knowledge on water management and how this influences response of various stakeholders at present - Harnessing water, and building structures is not the only knowledge system 	6	5	
3	Traditional knowledge and adaptive management	5	4	

	I) <i>Integration of traditional and western / contemporary knowledge for adaptive management</i> II) <i>Traditional knowledge and conflict resolution</i> III) <i>Knowledge management & Knowledge networks</i>			
		16	12	
Evaluation criteria				
1.	25% of the grades will be based on class participation. Class participation will be adjudged based on the quality of discussion that students engage in based on their reading/understanding of the material circulated and their preparedness for seminars and tutorials. Additionally, debates, etc. will be conducted to adjudge class participation.			
2.	25% of the grade will be assessed through class presentation. Students can choose to present any session's reading. A list will be circulated in the first week of class, wherein students can mark their selection of text for presentation.			
3.	25% of the grades will be assessed through a short reaction papers (2000 words) that the students will be expected to hand in once in the semester. Students can choose any week's readings for writing their reaction papers. The reaction papers should go beyond summarizing readings and clearly articulate grasp of concepts and debates in order to undertake good analysis. If students like, they can draw on any additional work for making their argument. It is expected that students will adhere to tenets of academic honesty, as elaborated in university regulations.			
4.	Another 25% of the grade will be assessed through written exam at the end of the semester.			
Learning outcomes				
By the end of the course, students will:				
<ul style="list-style-type: none"> - Understand the salience of various dimensions of knowledge and its relevance for water management. - Appreciate the need to go beyond binaries and articulate the need for greater synergies between two knowledge systems and bridging the science-management divide. - Be familiar with the concept and need for use of traditional knowledge for adaptive water management. - Be aware of traditional practices of water management in South Asia, especially India and also understand why these practices did not sustain, i.e. an insight into the institutional processes that are key to understanding management issues. 				
Pedagogical approach				
This course curriculum has been designed as a learning programme wherein students will be able to read, discuss and write about the work being discussed. The course will be run as a seminar and it will be expected that students read beforehand the assigned reading and come prepared to the class to participate in the discussion. This will also give them an opportunity to reflect on authors' approach, methods employed, and explanatory building blocks used to take forward their argument. Audio visual tools like short documentaries on old water management systems will also be used in the course.				
Materials				
Module 1. Introduction				
i) Evers, H. D. (2008). <i>Knowledge Hubs and Knowledge Clusters: Designing a Knowledge Architecture for Development</i> , ZEF Working Paper Series 27. Bonn: Centre for Development Research.				
ii) Hornidge, A.-K., Ul Hassan, M., & Mollinga, P. P. (2011). Transdisciplinary innovation research in Uzbekistan -one year of "follow-the-Innovation". <i>Development in Practice</i> , 21(6), 834-847.				
Module 2. Traditional knowledge for water management				
i) Agarwal, A., & Narain, S. (1997). <i>Dying Wisdom: Rise, fall and potential of India's traditional water</i>				

harvesting systems (Vol. 4): Centre for Science and Environment New Delhi. Chapter 2. Pp 25-268.

Module 3: Traditional knowledge and adaptive management

i) Berkes, F., Colding, J., & Folke, C. (2000). Rediscovery of traditional ecological knowledge as adaptive management. *Ecological applications*, 10(5), 1251-1262.

ii) Saravanan, V. S. (2008). A systems approach to unravel complex water management institutions. *Ecological Complexity*, 5(3), 202-215.

iii) Armitage, D. R. (2003). Traditional agroecological knowledge, adaptive management and the socio-politics of conservation in Central Sulawesi, Indonesia. *Environmental Conservation*, 30(01), 79-90.

Suggested readings:

i) Pahl-Wostl, C. (2007). Transitions towards adaptive management of water facing climate and global change. *Water Resources Management*, 21(1), 49-62.

ii) Sengupta, N. (1985). Irrigation: Traditional vs Modern. *Economic & Political Weekly*, 20(45/47), 19.

iii) Raymond, C. M., Fazey, I., Reed, M. S., Stringer, L. C., Robinson, G. M., & Evely, A. C. (2010). Integrating local and scientific knowledge for environmental management. *Journal of Environmental Management*, 91(8), 1766-1777.

iv) Roux, D. J., Rogers, K. H., Biggs, H., Ashton, P. J., & Sergeant, A. (2006). Bridging the science-management divide: Moving from unidirectional knowledge transfer to knowledge interfacing and sharing. *Ecology and society*, 11(1), 4 (online).

v) World Bank. (1998). WDR 1998/1999: Knowledge for Development: World Bank and Oxford University Press.

vi) Agrawal, A. (1995). Dismantling the divide between indigenous and scientific knowledge. *Development and Change*, 26(3), 413-439.

vii) Koul, D. N., Singh, S., Neelam, G., & Shukla, G. (2012). Traditional water management systems-An overview of Ahar-pyne system in South Bihar plains of India and need for its revival. *Indian Journal of Traditional Knowledge*, 11(2), 266-272.

vii) Mosse, D. (1999). Colonial and Contemporary Ideologies of 'Community Management': The Case of Tank Irrigation Development in South India. *Modern Asian Studies*, 33(02), 303-338

Websites:

Development Gateway <http://knowledge.developmentgateway.org>

United Nations University Traditional Knowledge Initiative <http://www.unutki.org>

World intellectual property organization http://www.wipo.int/tk/en/indigenous/customary_law

Journals

1. Journal of environmental management
2. Ecology and society
3. Water resource management

Additional information (if any)**Student responsibilities**

Students are expected to come prepared for class, having done the required reading and be able to participate in class discussions. Additionally, class representative will be responsible for recording attendance.

Course reviewers:

1. Dr. Anna-Katharina Hornidge, Center for Development Research (ZEF), University of Bonn, Germany
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