

Report of the First Meeting of Working Group 9: “Adoption and Development of Energy Technologies - State of the Art Review” of the UNESCO Ethics of Energy Technologies Project

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Meeting held on 12 June 2008 (8.30 – 15.30) at the National Science and Technology Development Agency (NSTDA) building, Soi Yothee, Bangkok, Thailand.

Background

This working group meeting was held in the context of Working Group 9: Adoption and Development of Energy Technologies - State of the Art Review, in the Ethics of Energy Technologies in Asia and the Pacific (EETAP) project. It was the first meeting of Working Group 9. The working group was formed after the launch conference of UNESCO's Regional Unit for Social and Human Science in the Asia-Pacific (RUSHSAP) ‘Ethics of Energy Technologies in Asia and the Pacific’ Conference held in Bangkok, 26 to 28 September 2007.

The EETAP project is coordinated by the Regional Unit in Social and Human Sciences in Asia and the Pacific (RUSHSAP) at UNESCO Bangkok, and is linked to several key activities of UNESCO Social and Human Sciences sector, including the ethics of science and technology, environmental ethics, philosophical dialogues, linking research with policy-making and promoting the culture of peace. The work will also feed into considerations of the ethics of climate change that are being made by the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST).

This working group will review selected energy alternatives for local and national scale projects, and will focus on the ethical implications inherent in different research options for energy production and delivery. It will include development of innovation in new science and translational research, diffusion of technology, and energy diversity. It will also consider global networking and IT. It will apply an ethical matrix to analyze points of different alternative energy technologies, with case studies.

Summary

There were twenty participants of balanced gender (a name list is in annex 1). Participants attended in their individual capacity and came from diverse backgrounds, including engineering, research, education, bioethics, philosophy, and development studies. The working group session was jointly chaired by the Chair of EETAP working group 9, Dr. Sumittra Charojrochkul, National Metal and Materials Technology Center (MTEC), NSTDA, and Dr. Darryl Macer, UNESCO, EETAP project coordinator.

The overall report structure is envisaged to have a section outlining the factors identified to examine, which will be summarized in a matrix form but written in paragraph style.

Then there will be a series of case studies, in particular fuel cells, wind energy, bio-fuels and a form of solar energy. The number and subjects of further case studies to be conducted will depend on the availability of experts with relevant experience.

The example matrixes will be further developed first among member group members and experts, and then more widely circulated via the web and among more experts. The matrix may also be expected to be relevant to the specific analyses of water ethics, which could include hydroelectricity, and nuclear energy technologies.

Meeting Report

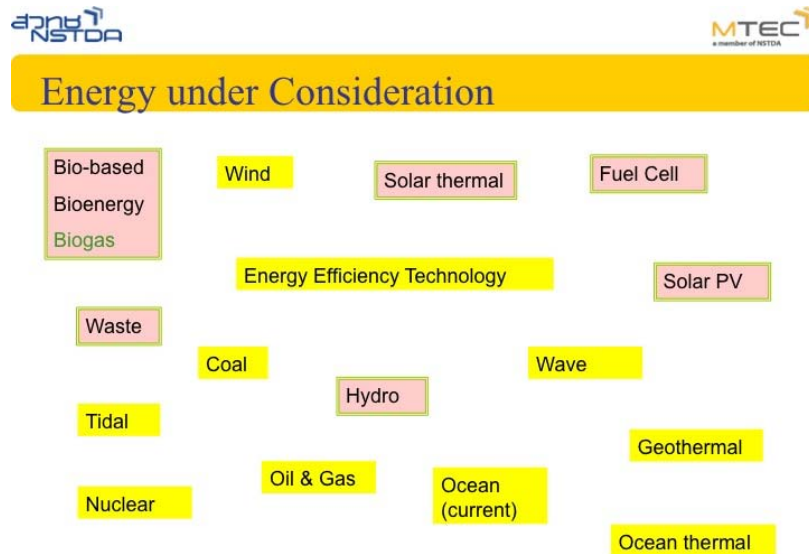
Following welcoming remarks and self-introductions, Dr. Darryl Macer, Regional Advisor in Social and Human Sciences for Asia and the Pacific, UNESCO, Bangkok, and meeting co-chair, introduced the overall project with a framework in regard to the origins of ethics and the international standards for bioethics.

Dr. Sumittra Charojrochkul reported on the pre-meeting discussion with Prof. Greg Tegart of Australia, Glen Kurokawa and Krishna Murali from UNESCO Bangkok, on the 21st May, 2008 in Bangkok. The suggestion was to limit the scope of the report to less than five technologies which should be finalized. Prof. Tegart also suggested that the life span of each technology is rather long and inert, and may vary from one to another. Therefore, we should consider an effect of at least 20 years. The information of each listed technology is extensive, and the report should focus on the ethical issues. Experts such as Dr. Tegart, also on the board of NSTDA, would be expected to provide advice on specific technologies. She also mentioned persons from the following organizations which are expected to collaborate with MTEC inside Thailand on the working group: Chulalongkorn University, Joint Graduate School of Energy and Environment (JGSEE), Sirindhorn International Institute of Technology (SIIT), Mahidol University, King Monkut's Institute of Technology Ladkrabang (KMITL), Chulachomklao Royal Military Academy, Srinakharin Wirot University, Thai Knowledge and ACE Technologies. There were also members of the working group from the Thai Ministry of Energy, and international colleagues (as shown on the working group homepage at the UNESCO website).

The meeting on 12 June discussed the technologies of interest that had emerged from 21 May, 2008, namely: 1. bio-energy, 2. wind, 3. solar-thermal and 4. fuel cell. After a discussion of target energy technologies for analysis, and the ones suitable for case studies, the participants brain stormed in groups to assess a dozen different alternatives. Additional alternative technologies that were discussed included: small scale micro-hydro, geothermal, photovoltaic solar, clean coal technology, deep geothermal, Wave and tidal energy, bio-waste, waste. At this meeting there was active discussion of alternatives to include (as shown below in Figure 1).

Dr. Macer proposed to use a matrix of issues to summarize the concerns of a variety of technologies. It was noted that water ethics and nuclear energy was a subject for a separate working group, WG12. The choice of energy technology will also be affected by the specialties of the willing members.

Figure 1: Summary of technologies discussed, with attention to be first paid to those in pink.



UNESCO Conference on Ethics of Energy Technologies and Human Rights, 19 August 2008, Imperial Tara Hotel, Bangkok.

The main questions encountered with the progress of the work are human resources. How can we gather the right people to participate and to gather information, to allocate time that each person can spend since the work is on a voluntarily basis or else supported by the institutions allowing persons to spend some time away from their general duties.

In this meeting there was useful interventions and discussion through internet conferencing with Dr. Masami Nakata of UNESCO Regional Natural Science Bureau in Jakarta. Much of their work in Jakarta was on educational linkages and knowledge dissemination through e-learning. Broadcast e-learning lectures to south east Asian and other countries. UNESCO signed MOU with Indonesian school network, and higher education connections. The main communication is through e-mail and internet means, especially for those outside of Bangkok where sessions of this working group will be based.

The discussion of various concerns has been summarized below. The framework of the present report has a span of 20 years. However, a forecast of the technologies in 2050, 2100 may be added if enough resources are available. The role of UNESCO would be on impact on developing countries policies especially on the social impact – adverse impact, macro and micro impacts.

The short term drives for energy should be identified such as price, environment and other issues. For the long term impact like social behavior and long term environmental issues, which might not be regarded much as a major impact should be included.

Education is one tool to improve the situation through energy saving and renewable energy. Access and availability to good quality products and understandings are also ethical. Most people only choose the most economical choice for their own benefit without considering other impacts: e.g. the use of cheap, clean coal in industries which saves a lot of money spent on energy, but which has increased the import of coal by 400% over the past 3 years.

Prof. Varalakshmi Manohar (Chair EETAP WG 4) gave comments by Skype that the efficiency depends on availability of technology at the country's reach. Integrating and harvesting similar technology is what we should aim for looking at the ethical milieu in using it. Most of the proposals like bio fuel, solar energy, fuel cell, wind, and wave require appropriate production facilities in the countries concerned so that eco friendly tech is used to generate power and utility without generating much wastes which will be dangerous. In addition, the waste disposal needs to be planned.

Future work

A brief background of each technology, related ethical issues of each technology in the past, present and foresight should be assembled. The report could include a summary matrix of a range of alternatives, organized by the ethical issues. The report will also include case studies of selected examples, with a variety of community and environmental situations.

It is a target to draft the WG12 report by the end of October 2008. There will be another chance to gather more comments after posting the first draft on the web which will be combined for the revised report. Comments will also be requested from Ministries across Asia-Pacific region.

The tentative schedule of the final report is early 2009. There will also be a conference to discuss the report, and possibly a Ministerial Forum.

Annex 1: Participants at the meeting

Dr. Sumittra Charojrochkul (chair of WG; co-chair)
Mr. Chartsak Chettapongsaphan, MTEC
Ms. Lana Issa, UNESCO Bangkok
Dr. Samai Jai-In, Royal Thai Navy
Ms. Pranuda Jivaganont, MTEC
Mr. Rajesh S. Kempegowda, Asian University Thailand
Dr. Weerachet Khan-Ngern, KMITL
Dr. Glen Kurokawa, UNESCO Bangkok
Dr. Pimpa Limthongkul, MTEC
Dr. Darryl Macer, UNESCO Bangkok (co-chair)
Mr. Manop Masomtob, TAIST
Mr. Krishna Murali, UNESCO Bangkok
Mr. Patiwat Onbuddha, MTEC

Mr. Nitinai Panyabutsakul, KMITL
 Dr. Nudjarin Ramungul, MTEC
 Ms. Anita Roth, University of California at Berkeley
 Dr. Sarinya Sophia, UNESCO Bangkok
 Ms. Pintila Wangviwat, UNESCO Bangkok

Dr. Masami Nakata, Indonesia (by Internet Video Conference)
 Prof. Manohar, India (by Skype)

ANNEX 2: Explanation of the template for ethical analysis with an example of wind

Topic: WIND

Scale: Range of power production in Watts

Time frame: In years [until the technology is fully commissioned]

Issues in Research and Development of the Technology

<i>Issue</i>	<i>Notes</i>	<i>Citations</i>
Costs	<i>Low cost materials for construction, blades, turbines</i>	
Private sector investment	<i>Significant; many small companies</i>	
Public sector investment	<i>Low</i>	
Scale up technology	<i>Significant range already available</i>	
Access to technology	<i>Financially low amount of investment, perhaps limited access geographically?</i>	

Issues in Production

<i>Issue</i>	<i>Notes</i>	<i>Citations</i>
Size and site of unit manufacture	<i>Parts produced in factories</i>	
Initial cost of unit	<i>Medium</i>	
Resource use	<i>Low for turbine production</i>	
Consultation costs	<i>Low - depends on area; bird protection societies</i>	
Stakeholders	<i>Small number, communities; birds, insects; air traffic</i>	
Risks	<i>Low probability and low consequence risk, localized</i>	
Sector of use	<i>Residential, industrial, away from grid, farms</i>	
IPRs	<i>Not many issues, depends on size, especially for large plants</i>	

Issues in Use

<i>Issue</i>	<i>Notes</i>	<i>Citations</i>
Resource price and availability	<i>Wind is free but unpredictable</i>	
Competition (local, national, international)	<i>None</i>	
Land use	<i>Land use for windmills – costs of leasing land</i>	
Water use	<i>None</i>	
Waste products	<i>None</i>	
Type of pollution in use	<i>Visual, noise, minor lubricant oil leaks</i>	
Operating costs	<i>Low – no transport needed</i>	
Continuing consultation with technical committee	<i>Low maintenance, need for technical competence is low</i>	
Price of energy	<i>Currently 3x energy from coal</i>	
Stakeholders	<i>Landowners; nature societies; birds</i>	
Sovereignty and ownership	<i>Household, village</i>	
Risks	<i>Low probability; localized consequences</i>	
Seasonality	<i>Wind variations</i>	
Constancy of supply	<i>Wind is unpredictable</i>	
Risk of harm	<i>Minimal (if turbine falls, wind speed in atmosphere affected in minor way, sea-life affected in the ocean)</i>	
Ecological concerns	<i>Birds colliding with turbine</i>	

Disposal and Decommissioning

<i>Issue</i>	<i>Notes</i>	<i>Citations</i>
Waste leaving site	<i>Minimal</i>	
Type of decommissioning	<i>Low difficulty</i>	
Environment control requirement	<i>Low concern</i>	
Toxic by products (specify)	<i>Very low concern</i>	

Other Social Factors

<i>Issue</i>	<i>Notes</i>	<i>Citations</i>
Security	<i>Minimal</i>	
Conflict	<i>If high production, could be competitive to the central power grid</i>	
Independence	<i>Can be independent</i>	