

Report of the UNESCO Conference on Ethics of Energy Technologies: Energy Flow, Environment and Ethical Implications for Meat Production

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Background

This conference was held in the context of Working Group 13: Energy Flow, Environment and Ethical Implications for Meat Production, in the Ethics of Energy Technologies in Asia and the Pacific (EETAP) project. This was the first meeting of Working Group 13. Working Group 13 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).

The objectives of the Conference were to discuss the topic from a holistic perspective, and to set the agenda for the Working Group. There were a series of background presentations followed by detailed discussion of the areas for further focus in the working group sessions. Meat, as a food, is a form of energy for humans, however in order to produce enough meat to satisfy global demand huge reserves of energy are required in the form of feed, fertilizers, pharmaceutical production, transport and refrigeration.

The objectives of the conference included:

- Providing a forum for exchanging views on diverse perspectives on ethical issues;
- Framing the debate in an ethical framework by identifying and clarifying the values at stake and providing ethical reasons for alternative choices; and
- Identifying areas for further research and consideration and different policy options.

The Working Group agreed to focus on industrialized meat production, and the report will examine issues including:

1. Energy requirements in agriculture, with a focus on energy requirements for industrialized meat production and consumption by sector.
2. The economics of meat production
3. The materials used in the feeds for land-based, sea-based, and lagoon-based industrialized meat production.
4. The oversight infrastructure for industrialized meat production by country, by sector.
5. Water over-consumption and water pollution through industrialized meat production (input to Working Group 14 on water ethics).
6. Land degradation and deforestation, and biodiversity loss.
7. Production and release of multi-antibiotic-resistant bacteria.

8. The use and release of synthetic and natural hormones.
9. The accumulation of heavy metals and persistent organic pollutants in the food chain and in soil and sediments.
10. The direct effects on climate change by meat production and meat consumption.
11. The changes caused in local communities by industrialized meat production.
12. The potential for causing regional and global infectious disease pandemics through industrialized meat production.

Summary

There were thirty participants of balanced gender including persons from Australia, Brazil, China, France, India, Iraq, Japan, Jordan, the Netherlands, New Zealand, the Philippines, Romania, United States, and several other states. Participants attended in their individual capacity and came from diverse backgrounds, including engineering, government, civil society organizations (CSOs), energy-related industries, diplomatic offices, education, and academia. The disciplines amongst academics included agriculture, bioethics, biology, engineering, philosophy, ethics, energy science, education, and development studies.

Presenters were asked to give 15 minute talks, followed by questions and discussion. The presentations will be made available on the EETAP website (<http://www.unescobkk.org/index.php?id=energyethics>). The working group session was jointly chaired by the Chair of EETAP working group 13, Dr. Robert A. Kanaly, Yokohama City University, Yokohama, Japan and Darryl Macer, UNESCO, EETAP project coordinator. The papers presented will be used to shape the outline of the report of the working group, and feed into the body of knowledge produced by the EETAP project.

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, discussed “Food Production and Ethics of Energy Technologies”. In his presentation Dr. Macer introduced the concepts of ethics and bioethics and provided a framework in regard to the origins of ethics and the international standards for bioethics.

Emphasis was placed on the fact that the 2005 Universal Declaration on Bioethics and Human Rights (UDBHR) includes issues of food security and issues related to food that are inclusive of bioethics. A large challenge is how to make ethics relevant to people that are living under very different circumstances. Points from article 14 of the Universal Declaration on Bioethics and Human Rights were raised, including that article 14 addresses access to quality health care, nutrition and water, and improvement of living conditions in the environment. The ethics of the conservation, management and utilization of natural resources for present and future generations were stressed including the fact that there are currently controversies in regard to the use of energy and agriculture, especially in regard to biofuels. He reported on his meeting with FAO who is examining bioenergy and food.

He went on to explain the background of the UNESCO Ethics of Energy Technologies in Asia-Pacific (EETAP) Project including how the 14 working groups were formed and that the aims of the working groups are to develop dialogues around the issues of each working group with a focus on environmental ethics and human security. A final aim is to produce a report that may be used by policy makers, scientists and researchers to consider the ethical dimensions of energy policy. It was explained that there would be overlap between working groups, including that Energy Flow, Environment and Ethical Implications for Meat Production will share some common elements with other working groups such as Working Group 14, Water Ethics and Water Resource Management.

Among the conference documents, the co-chairs also noted the FAO documents,

background papers, which had been provided as background materials to the meeting: David Fraser, *Animal welfare and the intensification of animal production: An alternative interpretation* (Rome: FAO 2005) and FAO ETHICS SERIES 3, *The ethics of sustainable agricultural intensification* (Rome: FAO 2004); Henning Steinfeld, et al., *Livestock's Long Shadow, Environmental Issues and Options*(Rome: FAO 2006).

Meeting co-chair and Working Group 13 Chairperson, Dr. Robert Kanaly, Associate Professor from Yokohama City University provided the background of Working Group 13 and gave a brief introduction to industrialized meat production and how it is related to agriculture and fossil fuels. Dr. Kanaly explained that FAO projections indicate large increases in meat demand in Asia through 2050 and that this was occurring in large part due to increases in urbanization and per capita income. Projections for China included that per capita consumption of animal products were expected by 2020 to almost double compared to 1993 but that throughout the world, even in the developed countries, per capita consumption was projected to increase.

The aims of the working group were presented and included assessing the energy requirements and the economics of meat production with focus on the negative externalities of the process including environmental degradation, production of multiple antibiotic resistant bacteria, impacts on community health and the potential for causing regional and global disease pandemics and their ethical implications. Emphasis was placed on energy flow whereby the production of cereal grains for animal feeds require large amounts of fertilizer and that production of fertilizer, especially nitrogen fertilizer, requires large amounts of fossil fuels such as natural gas and coal, and therefore, industrialized meat production requires relatively large inputs from the fossil fuel sectors.

Dr. Atsushi Tajima, School of Agriculture, Tsukuba University, Tsukuba, Japan gave a presentation titled “Implications of Animal Production on the Environment”. Dr. Tajima explained that in Japan, the Meiji era government provided more protein to Japanese citizens by adding meat and meat products to their diets and this was accomplished by promoting the animal production industry after the opening of Japan. Increases in average height and weight for Japanese males and females were some of the effects of this program. Dr. Tajima also explained that there has been a large trade imbalance in Japan whereby agricultural imports (food and animal feeds but excluding fish products) far exceed exports and explained the results of this scenario on nitrogen and virtual water mass balance whereby total nitrogen is accumulating and has impacts on groundwater and the surrounding sea in Japan and also that Japan is a net importer of virtual water. In terms of agricultural trade, excess unidirectional trade results in eutrophication for importing countries and results in soil erosion and salt accumulation for exporting countries for example. Dr. Tajima emphasized that agricultural trade results in both economical merits and environmental demerits and that a balance must be made in the form of sustainable agriculture including that some kind of sustainability index or indicator may be necessary.

In discussion, Dr. Ayoub Abu-Dayyeh, Jordan asked about the necessity of the Japanese government’s investment in protein from animals considering that they may receive adequate amounts of protein from seafood. Dr. Tajima explained that protein levels were not adequate because the total amount of essential amino acids in the Japanese diet were lacking but also went on to explain that there were political purposes for the plan as well in that the Japanese government felt that the perception of “meat-eating” was considered to be a symbol of a culturally advanced society. Dr. Masahira Anesaki, The Asiatic Society of Japan, explained that the book of Genesis in the Bible promotes a materialistic view because God created living things for the purpose of man and that factory meat production may be a typical example of this view. Based on biological evidence for example, humans and animals are not

so different and it seems that we should change the way that we perceive our relationships with animals.

Dr. Sivanandam Panneerselvam, University of Madras, Chennai, India discussed the subject of respect for animals from the context of the Indian tradition and argued how this issue could be approached in his paper, “Respect for Animals: An Examination of the Replaceability Argument in the Context of Meat Production”. Dr. Panneerselvam explained that there are various philosophical viewpoints including anthropocentric views and in contrast, there was a need for environmental protection and “responsibility ethics”. Dr. Panneerselvam asked if it was true that meat eating was necessary and that industrialized meat production was an efficient way of producing food because there is no medical evidence which suggests that meat is necessary for human survival and that industrialized meat production requires the use of cereal grains to feed the animals that could otherwise be used to feed humans directly. By consideration of the ethics of the use of animal flesh, relatively speaking, the lives of humans must be balanced versus the lives of animals.

The following ethical issues were raised: (1) animals are led to live a miserable life so that their flesh can be eaten by humans at the lowest possible cost and that due to this, the animals do not receive proper treatment [e.g. living conditions], (2) modern forms of intensive farming are part of a system that implies that animals are objects for humans to “use” and society tolerates this system because it provides cheap meat even though sentient beings live their entire life in unsuitable, cramped conditions – i.e. animals are treated as machines that convert grain into flesh and includes animal crowding and cage confinement and that humans have failed to act responsibly or ethically by adopting these systems; (3) caging of animals, castration, breaking of the bond between mother and young, breaking of herds, transportation and slaughter all involve suffering and do not take into account the interests of the animals. Killing also does not take place painlessly.

The counterarguments include: (1) how do we know that animals feel pain? (2) why should we not eat them and although the counterarguments can be made, the ethical issues are not taken into account. The environmental repercussions of factory farming were listed and Dr. Panneerselvam closed his discussion by stating that his main consideration was that if we start with the presupposition that meat-eating is inevitable, then we must treat animals guided by ethical principles.

In discussion, Dr. Abu-Dayyeh asked how one would enforce an ethical system over a capitalist system [i.e. industrialized meat production] and also how one could justify one’s anguish over slaughtering animals in a world where slaughtering of people occurs without enough ethical consideration. Dr. Panneerselvam explained that even though the world is run on a capitalist system, ethical values cannot be ignored and that social values must find a place within the system. Dr. Kanaly posited that although the design of the slaughterhouse is of course important, that the death of the animal may be the best part of its life because it represents the end of the animal’s lifetime of suffering and that industrialized meat production allows for a disconnection between the consumer and the animal that leads to a kind of convenient ignorance in regard to the suffering of that animal. Dr. Panneerselvam explained that humans must be custodians of the biosphere and that a methodology must be involved.

In her paper, “Ethical Implications of Poverty and the Environment”, Dr. Daniel Nesy, Department of Philosophy, University of Kerala, Kerala, India discussed three points (1) a definition of poverty, (2) the relationship between poverty and the environment, and (3) the ethical aspects of the relationship between poverty and the environment. Environmental crisis can be understood as the failure of humans to understand the relationship between humans

and the environment and the result of this misunderstanding includes millions of people throughout the world that are missing the basic needs such as food, clothing and shelter, natural resource depletion, loss of soil fertility, overuse of nonrenewable resources, and overconsumption. Dr. Nesy explained that we need to correct our understanding of the relationship between humans and the environment. Although science has provided many benefits to humans, especially in the areas of energy and power use, progress in growth and development have come to be measured by the amount of energy possessed and the amount of consumption. In India for example progress has been made in terms of development but that both quantitative and qualitative points of view are necessary. Twenty percent of Indians live without electricity and millions do not have shelter and although development is clearly occurring, an uneven growth whereby 10 to 15% of the population is benefiting leaving 85 to 90% of the population behind. For example, 40% of the Indian farmers that contribute to the 2% of agricultural growth in the agriculture sector are landless. Poverty has many dimensions including powerlessness and a lack of representation and freedom. Food is of prime importance and global climate change is a major threat to food production and poverty. The magnitude of the problem is apparent and conservation is required rather than the notion of exploiting nature.

Mr. Keisuke Tachiyama, Graduate School of Global Environmental Studies, Kyoto University, Kyoto, Japan presented a paper “Inefficiencies in Aquaculture”. He began by explaining that aquaculture is becoming more linked to industrialized meat production on land because fishmeal is used in the pig (hog) and chicken sectors. Until the mid-1960s seafood was eaten primarily in the developing countries and the flow of seafood was oriented from the northern countries to the southern countries but afterwards the Japanese economic bubble transformed the flow of seafood. Beginning with a discussion of the natural fish stocks, Mr. Tachiyama described the collapse of the Canadian North Atlantic fisheries by 1992. Although the fisheries were thought to be “infinite” they collapsed in merely three decades and this prompted investment in aquaculture in the developing countries. However, more specifically, it prompted development of “high-value” aquaculture, that is, aquaculture that is geared toward the production of fish targeted for markets in the developed world, such as shrimp and salmon. Complete (shrimp and salmon) versus partial (tuna) aquaculture was discussed and the global flow of aquaculture products was presented.

Mr. Tachiyama pointed out that the feed for aquaculture are primarily obtained from other small fish and on average 2.4 pounds of fishmeal are required to produce 1 pound of salmon or shrimp. This continues because now only 25% of global seafood comes from aquaculture, however, this scenario is expected to change rapidly in the future. Additionally, there are various environmental costs to aquaculture, including destruction of mangroves, pollution of adjacent coastal waters, the forcing of local villagers to transform rice paddies into aquaculture sites, large-scale epidemic outbreaks and other issues. The risks of engaging in partial aquaculture of migratory species such as blue fin tuna and the need to revisit past ancient ways of aquaculture were also discussed.

The presentation titled, “Transfer of Energy Technologies” was given by Dr. Ayoub Abu-Dayyeh, Society of Energy Conservation and Sustainable Environment, Amman, Jordan. Dr. Abu-Dayyeh began his presentation by discussing global warming and the industrial revolution and referred to the fast pace by which technology is advancing and asked whether it was possible for humanity to also keep pace. Solar thermal technology was discussed from the point of view that it is indeed a renewable energy source but that a high degree of technology and money are required. Similarly it was shown that only those countries with large enough capital are currently using wind energy and this excludes the African and Latin

American countries. In terms of energy consumption, the countries of the north such as the United States and Australia are using the most energy per capita and the need for more energy by the developed countries is also related to wars in the Middle East for example. Investment in technologically-advanced but relatively small scale energy production technologies may be an appropriate method for developing countries to obtain and use energy efficiently and examples include solar cookers, thermal insulation and photovoltaic cells. In regard to technology transfer, Dr. Abu-Dayyeh concluded his presentation by considering the following points: control of privatization, debt relief restructuring, expansion of educational and cultural interactions and UN involvement.

Dr. Tatiana Gadda, UNU-IAS, Yokohama, Japan, presented “Multiple Scale Environmental Impacts of Tokyo's Meat Consumption”. The research focus of Dr. Gadda, originally from Brazil but working in Japan, included how consumption of ecosystem services by cities affects the environment and how changing consumption patterns are associated with changes in income and globalization. Consumption trends in Japan were explained in that Japan has been emphasizing a return to a traditional diet based on rice and fish, but more recently there has been an emphasis on food self sufficiency. In Tokyo in the late 1990s the consumption of meat overtook the consumption of seafood for the first time and since that time comparisons of consumption in Tokyo compared to the countryside indicate that both areas are now consuming similar amounts of meat. The greatest increases occurred in the pork sector but not in the horse and goat sectors. Additionally, mad cow disease issues have affected beef consumption at various points. Consolidation of the beef and pork industries in Japan was shown but also through imports, virtual water imports were greater than the water used for agricultural purposes. Overall, meat consumption in Tokyo and greater Japan has increased significantly and the consequences of this increase have yet to be determined.

There was a discussion of why Japanese persons were returning to meat consumption, with the suggestion by Dr. Mihaela Serbulea, Romania, that government policy incentives could also influence food type and consumption patterns. If the government insists on returning to traditional diets there may be a way to promote the health food industry. The prices of meat in health food stores, with more ethical treatment of animals, are higher. If fish is better for health then incentives could be given to consumers. There was also debate, as above, on the energy issues related to fish production. Although Tokyo has a very diverse fish stock, consumers are eating further down the trophic level than in the past. The irony of the dichotomy, fish or meat, and absence of plants was discussed. Dr. Tajima noted that the point has not been raised in Japanese society. There is a basic rule of economy, that we start with egg and milk, then chicken and pork, and then beef. As a child he reflected on the fact that school meals were mostly pork and whale and consisted of a small portion that was mainly fat with some meat attached. Eggs used to be expensive at 18 yen per egg in the 1960s. A new salaryman's salary was 18,000 yen per month and milk was luxury. 1991 was the turning point to open the Japanese beef market and until that time 60% of the Japanese beef market was dairy cattle. As a student in university he remembers beef was 1000yen for 100g. Pork was affordable. However, as Dr. Kanaly observed, nowadays we see 100yen hamburgers. There was a discussion of the influence of marketing on food consumption. Dr. Miyako Okada-Takagi noted that after World War II the US strategy was to make Japanese persons convert to eating bread and meat sandwiches to create a demand for imports of these products in Japan, and an export market. Mrs. Yoko Hoshino discussed advertisements for healthy food, for example to say that fish contains DHA that may be beneficial for one's brain.

In Session II, participants continued the active discussion of the end of the morning session, discussing various topics related to the objectives of the working group. The session began with emphasis on the importance of the interaction of cultures as raised by Dr. Nesy in reference to Dr. Abu-Dayyeh's morning presentation. Dr. Abu-Dayyeh agreed that cultural interactions were the most important issue for the purpose of people to understand each other and that the invention of a "contemporary culture" or "contemporary literature" may facilitate better communication among the people of the world. Mr. Arthur Wolf, Netherlands joined the discussion by offering that education on ethics may be the most important way to increase intercultural communication and yet allow people to retain their cultural identity or religion and that encouragement of critical thinking was essential. Dr. Kanaly expressed his agreement and offered that an educated, empowered citizenry is most important.

There was a discussion among all participants on why animals need to be raised in factory farms, and the balance of ethics and efficiency and economy. Marketing was also related to the consumption patterns, and the values of wealthy consumers who valued presentation and cleanliness of food over the cost was different in different cultures. There was also a discussion of cage size and animal rights, and antibiotic consumption.

Dr. Macer reminded the participants that the purpose of the working group is to (1) identify the values at stake in meat production and to identify them for a range of cultures, (2) to offer alternatives to the energy systems linked to industrialized meat production, and (3) to determine areas for future research and identify gaps that require future study. A draft report outline linked to the agreed upon meeting objectives would be developed.

Dr Macer also thanked the United Nations University, Institute of Advanced Studies for their cooperation in providing the room for the meeting, and for arranging the logistics for web casting the meeting.