# Ethics assessment in different fields

## Agricultural Research

*Zuzanna Warso*
*Helsinki Foundation for Human Rights (Poland)*

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**Annex 2.c.8**
**Ethical Assessment of Research and Innovation: A Comparative Analysis of Practices and Institutions in the EU and selected other countries**
***Deliverable 1.1***

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## Contents

## 1. Agriculture – basic description and features

The production, transformation and distribution of food and other agricultural products, generally accepted as routine aspects of daily life around the world,[1] have a long history - the domestication of plants and animals began already 12,000 years ago in different parts of the world.[2] Since that time, in most parts, agricultural practices have undergone significant changes from simple cultivation of crops and rearing of livestock. Agriculture has become intertwined with technological advances.[3]

The following features characterising the field of agriculture which, at the same time, give rise to ethical concerns can be enumerated:

- the universal requirement of food, agriculture's major product (food is vital to human survival);
- agriculture's biological basis is assimilation. Accordingly, the use of extensive fertile land areas, fresh-water and essential nutrients is inevitable in agricultural production.
- the use of plants' and animals' biological growth and reproduction capacities;
- its dependency on stable environment and ecosystem (food production is an organic process, which depends on the exploitation of living resources);
- its foundational importance for national economies;
- farming is a way of life that contributes to cultural norms to an extent disproportionate to the numbers actively engaged in agriculture. It safeguards skills which might prove of inestimable value in the event of military or environmental crises.[4]

Agriculture is a key contributor to human livelihood. It was always closely intertwined with different aspects of religious, political and social life. A scholar points out that:

> [f]ood gets very close to people and it deeply touches them. Not only is it vital for the sustenance of our life, it also has a symbolic function: food is an important factor in the construction of our individual and social identity. The cultural distinction between the edible and non-edible, the role of meals in community forming, and the sacred and religious meaning of food, make all clear that eating is not just the intake of necessary nutrients.[5]

Experts agree that the impact of agriculture and agricultural products on human life is universal and vast. It requires cooperation at different, local, national and international level:

> [u]nlike most other industrial activities, agriculture's impact permeates our physical, social and cultural environment and is likely to do so in the foreseeable future. Hence, a social contract with respect to agriculture is essential to every society. (…) Since agriculture is

[1] FAO Ethics Series, "Ethical issues in food and agriculture", Food and Agriculture Organization of the United Nations, Rome, 2001. http://www.fao.org/3/a-x9601e/
[2] Council for Agricultural Science and Technology, "Agricultural Ethics", Issue Paper Number 29, February 2005. http://www.cast-science.org/download.cfm?PublicationID=2899&File=f0305d2ffd02e961471b33646e406f494718
[3] Fossey, A., "Research ethics and agricultural innovations". http://knowledge.cta.int/Dossiers/S-T-Policy/Ethics/Feature-articles/Research-ethics-and-agricultural-innovations
[4] Grimm, Herwig. "Ethical Issues in Agriculture, Interdisciplinary and sustainability issues in food and agriculture", in Olaf Christen (ed.), *Interdisciplinary and Sustainability Issues, Encyclopaedia of Life Support Systems* (developed under the Auspices of the UNESCO), Oxford 2005. http://www.eolss.net/sample-chapters/c10/e5-22-06.pdf
[5] Brom, F.W.A., "Food safety: science and ethics, Background paper for the FAO expert consultations on "Food safety: science and ethics", 14 June 2002. http://www.academia.edu/212807/Food_safety_science_and_ethics

> globally conceptualized and public policies are intervolving, policies and their consequences have to be thoroughly thought through not only at the national but also the international level. Agricultural ethics' role in this debate is not to determine such national and international policies but to serve as a means of assessing whether specific proposed policies are ethically acceptable.[6]

Bearing in mind the above, the expectations towards the field of food and agriculture are high. It should serve multiple goals:

> farmers should produce sufficient, safe, healthy and nutritional food. Changes in food production and nutrition habits cause additional demands. Agricultural products are expected to be durable but also tasty. In addition, farmers must treat their farm animals according to the animals' needs and according to ethical standards (or at least according to legal standards that are supposed to cover minimal ethical standards.) They should also take care of biodiversity, including agro-biodiversity. (…) Farmers are supposed to fulfill all these demands with harming the environment as little as possible: no degrading of fertile soil, no excessive use of water, no pollution of water and air, reducing use of non-renewable energy sources etc. And considering the spatial demands of an increasing population, agricultural production has to manage with decreasing agricultural land. (…) To fulfill all these demands at once is a challenge if not impossible. One idea to meet this challenge is the use of new technologies.[7]

## 2. Ethics in agriculture and in agricultural research

Ethical issues in the field of agriculture have gained prominence largely due to the fact that agriculture is characterised by practices that involve both social and ecological systems. According to experts, agriculture has become an issue of moral concern because of the mismatch between global food supplies and human nutritional needs, the impact of agribusiness on rural employment, the consequences of modern agricultural biotechnologies for human and animal welfare, and the effects of intensive production systems on the sustainability of the global environment.[8]

Agricultural ethics may be defined as the "systemic thinking about the values and norms associated with the food system – farming, resource management, food processing, distribution, trade and consumption. Agricultural ethics incorporates elements of philosophical ethical analysis with concerns that arise in connection with the food system."[9]

Other authors distinguish between *Ethics in Agriculture* and *Agricultural Ethics*. The first approach tends to follow the traditional concept of moral theory. It formulates moral principles and afterwards applies them to aspects of agriculture. As a result the object of investigation (here: agriculture) is subordinated to the abstract moral theory. Although *Ethics in Agriculture* "succeeds in identifying morally relevant issues by applying abstract concepts like justice, sustainability, responsibility and so forth, it fails to bring forward adequate solutions to identified problems. Its deficiencies are its abstract nature and the lack of

[6] Grimm op. cit., 2005.
[7] Rippe, K.P., A. Willemsen, "Survey of the current discussion, its specialties and the perspectives of agricultural ethics in the national context of Switzerland", *EurSafe News,* June 2007. http://www.eursafe.org/pdf/jun2007.pdf
[8] Grimm op. cit., 2005.
[9] Council for Agricultural Science and Technology, "Agricultural Ethics", Issue Paper Number 29, February 2005. http://www.cast-science.org/download.cfm?PublicationID=2899&File=f0305d2ffd02e961471b33646e406f494718

feasibility which leads to counterintuitive solutions when we try to face specific ethical challenges in complex societies and comprised systems like agriculture." [10]

The other approach (*Agricultural Ethics*), on the other hand, does not neglect the society's complexity and societal changes. It focuses on the object of investigation, which "is the investigation's center and it frames and conceptualizes the philosophical work". Agricultural ethics, according to this approach, should, principally, be concerned with topics involving public policy. Its aim "should be to devise a coherent and unified ethical framework, which is relevant to the formulation of public policy within the context of a social contract."[11] One example of such a framework is the Ethical Matrix, discussed in more details in further section. At the same time Agricultural Ethics' role is, however, not to determine the national and international policies but rather become a way of assessing if the specific proposed policies are ethically acceptable. The most popular concept/theory established at the intersection of agricultural ethics and public policy that directs the current debate seems to be the concept of *sustainable agriculture*:

> Sustainability and sustainable agriculture as a normative concept provides a reasonable starting point of ethical consideration (…). It encompasses vague moral intuitions such as intergenerational justice, sensible use of resources and so forth. Its importance stems from the exploitative use of resources on which agriculture depends, combined with the belief that the life and well-being of most human beings depends on agricultural production (…). Principally, a definition of sustainable agriculture can specify the purpose or goal of sustainability in the realm of agriculture. Furthermore, such a definition can specify the means to achieve sustainability in agriculture. The most unarguable goal of sustainable agriculture is to sustain the capacity to produce food, fiber, and other essential agricultural products which are required to satisfy essential needs and well-being of human population for an indefinitely long time. The ethical challenge is to argue for an obligation to achieve sustainable agriculture and to identify problems if this obligation conflicts with other moral obligations and resolve them accordingly.[12]

As regards the field of research, due to the role agriculture plays in society, agricultural research is often much more goal-oriented than research done in other fields. In the field of agriculture technological advances often come with "the promise of increased efficiency and productivity resulting from products and processes derived from research."[13] It seems to be agreed that research done in the field of agriculture should serve the public - while generally scientific research is justified in terms of its intrinsic value and the search for truth, agricultural research is expected to perform a public service.[14] As a result, while there exist controversies regarding issues of *how* the research is conducted (e.g. ethical concerns about biotechnology as a method or research), in the field of food and agriculture a considerable amount of attention is devoted to questions of what results the research will bring and what problems it will solve. According to one expert "the fact that agriculture is so intimately related to human health and well-being both at the individual and social level, means that agriculture research frequently 'aims' to improve the human condition, and the goal of improvement requires that some sort of normative standard is in mind that allows us to decide

[10] Grimm op. cit., 2005.
[11] Grimm op. cit., 2005.
[12] Grimm op. cit., 2005.
[13] Fossey, A., "Research ethics and agricultural innovations". http://knowledge.cta.int/Dossiers/S-T-Policy/Ethics/Feature-articles/Research-ethics-and-agricultural-innovations
[14] Thompson, P. B., "Ethics in Agricultural Research", *Journal of Agricultural Ethics*, Vol. 1, 1988, p. 13.

which changes in society are to count as better and which as worse".[15] As a result "agricultural researchers and their institutions may, in some cases, be held morally responsible for harmful consequences of research beyond those that would traditionally be associated with scientific research".[16]

A slightly different way of thinking about ethics in agricultural research is to hold that ethical issues concern the appropriate way that food consumers, citizens and other food system outsiders should have their values reflected in the development of agricultural production practices, especially as these practices are affected by new technology.[17]

## 3. Values and principles

*Utilitarianism*

There is an acknowledged tendency to apply utilitarian ethics in the approach to agriculture and natural resource policy - for a century agricultural research has been implicitly defined by the values of productivity and efficiency, values typical of the utilitarian model of moral responsibility.[18] Bearing in mind the fact that agricultural research is aimed at improving the human condition the principle of (social) utility has played a major role.

According to experts while a utilitarian approach constitutes a good starting point to understanding the moral imperatives of agricultural research, it has several deficiencies.[19] First of all, the utilitarian theory of moral responsibility is not concerned with the distribution of benefits and harms. In other words, the utilitarian principle has no mechanism of safeguarding their equitable division. Second deficiency has to do with the principle of sustainability – "[i]t is impossible to anticipate all the benefits and harms that may follow from an action, particularly when the action may have long-range impact upon methods of agricultural production."[20] Third group of concerns is linked to the question of autonomy: "technological advances create competitive advantages for those who use them; thus, one has no choice but to use them and to adjust one's life to the dictates of the technological imperative". Experts who acknowledge the deficiencies of the utilitarian principle postulate formulating a "checklist" of ethical concerns that are not covered by the utilitarian approach could be equity, sustainability and autonomy.[21]

*Human Rights*

According to a different approach the individual and their rights should be a starting point for any kind of moral consideration. This is the so-called "rights based approach" that stresses the importance of human rights. Respectively, a rights based approach to food holds that people have a fundamental right to be free from hunger. The right to adequate food is realized when every man, woman and child, alone or in community with others, has physical and economic

[15] Ibid., p. 11.
[16] Thompson, op. cit., p. 13.
[17] Council for Agricultural Science and Technology, "Agricultural Ethics", Issue paper, Number 29, February 2005, p. 8. http://www2.econ.iastate.edu/classes/econ362/hallam/Readings/AgEthicsCAST.pdf
[18] Thompson, P. B., "Ethics, Sustainable Agriculture, and Agroecology Research and Education", *New Directions in Agroecology Research and Education*, 2002, p. 2.
[19] Ibid., p. 4.
[20] Thompson, P. B. "Ethics in Agriculture", *Journal of Agricultural Ethics*, Volume 1, 1988, pp. 15-16.
[21] Ibid., p. 16.

access at all times to adequate food or means for its procurement.[22] This approach puts the primary responsibility on the state.[23]

The right to food is related to the concept of food security. According to the Rome Declaration of 1996 food security will exist when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Other principles based on fundamental rights and freedoms include those enshrined in the Charter of the Fundamental Rights of the European Union. These are: dignity, freedoms, equality, solidarity, citizen's rights, and justice.

*Other principles*

Other principles, important for the field of food and agriculture, are: the principle of sustainability and precaution, both referred to in the Rio Declaration on Environment and Development.

The ethical "checklist" established by Professor Ben Mepham, the so-called Ethical Matrix, relies on the following ethical values: wellbeing, autonomy and justice. (For a more detailed description of the matrix see below).

## 4. Issues

In 2001 FAO identified the following changes and trends that give rise to numerous ethical questions and controversies:

- human population growth and demographic shifts (the global population is increasing to unprecedented levels, posing challenges to food production and distribution);
- pressure on natural resources (in many areas of the world the renewable natural resources are being rapidly degraded)
- industrialisation of agriculture – (agriculture is increasingly large-scale business)
- concentration of economic power (while global production is reaching increasingly high levels, economic power is becoming more concentrated)
- globalisation – (globalisation of markets and technological developments have increased the interdependence between nations and cultures. Interdependence however does not imply equity or equality of opportunities.)
- human induced change (today many of the emergencies – famine, crop failure, floods, drought and war – are at least partially the result of human-induced change)
- new biotechnologies (given the trend of state withdrawal from agricultural research, most development come from the private sector; bearing in mind the restrictive intellectual property laws it may lead to a further concentration of power; moreover there are still controversies about the safety of biotechnological products)
- informatics (modern information communication and communication technologies have potential for wide and rapid knowledge sharing, however access to the new

[22] UN Committee on Economic, Social and Cultural Rights (CESCR), *General Comment No. 12: The Right to Adequate Food (Art. 11 of the Covenant)*, 12 May 1999. http://www.refworld.org/docid/4538838c11.html
[23] Food and Agriculture Organization of the United Nations (FAO), "The right to food". http://www.fao.org/worldfoodsummit/english/fsheets/food.pdf

information technologies is highly unequal; moreover, new technologies can intrude on the private lives of citizens)[24]

The issues most often discussed pertaining to the field of food and agriculture are:

*Persistent hunger and malnutrition*

It has been recognized that hunger is not primarily caused by a scarcity of food, but by the lack of access to food that exists or could be produced. According to the FAO famine is, to a large extent, caused by the marginalisation and impoverishment of rural populations as a result of inadequate institutions and policies. However, although this has been a well-known fact and even though states who are parties to the International Covenant on Economic, Social and Cultural Rights, which constitute a majority of the international community, are required to take whatever steps are necessary to ensure that everyone is free from hunger and can enjoy the right to adequate food, concrete ways to ensure adequate distribution of food still have not been established.

*Environmental degradation and climate change*

Renewable natural resources upon which human life depends are being rapidly degraded. This is both a result of desperation of poverty and a consequence of disincentives for producers to ensure conservation practices.[25]

The tremendous environmental impacts of agriculture can be categorized into three groups:

- agricultural practices can have toxic effects through organic wastes and chemical pollution,
- agricultural use of soil, water, and genetic resources can be wasteful;
- agriculture has a range of effects on wild organisms and natural ecosystems that goes beyond the direct effects of exposure to chemical toxins.[26]

There are two basic aspects of the relation between agriculture and climate change: first, the need to change farming practices in the face of climate change, second, the need to reduce agriculture's own carbon footprint.

The pressure on natural resources is intertwined with the problem of the ineffective guardianship of the global commons – resources, institutions and values - that societies commonly share, but which tend to be overexploited. FAO distinguished three aspects of guardianship that are of concern:

- Natural resources – ecosystems are being destroyed by human intervention,
- Cultural identity and diversity – there is an erosion of cultural diversity, technologies can undermine deeply held believes;
- Individual's and peoples' rights.

[24] FAO Ethics Series, "Ethical issues in food and agriculture, Food and Agriculture Organization of the United Nations, Rome, 2001. http://www.fao.org/3/a-x9601e/
[25] FAO Ethics Series, Ethical issues in food and agriculture, Food and Agriculture Organization of the United Nations, Rome, 2001. http://www.fao.org/3/a-x9601e/, p. 6.
[26] Council for Agricultural Science and Technology, "Agricultural Ethics", Issue Paper Number 29, February 2005. http://www.cast-science.org/download.cfm?PublicationID=2899&File=f0305d2ffd02e961471b33646e406f494718

*Challenges brought by new biotechnologies*

Biotechnology, defined as "any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use"[27] raises concerns for two reasons – it may be perceived as a "morally dubious" mode of production (intrinsic concerns), or it may be considered problematic because of its potential consequences (extrinsic concerns). The first group concerns genetic modification and could be summarized in the claim "it is unnatural to genetically engineer plants, animals and foods". There are three ways of forming this argument: "We should not be playing god", "Genetic modifications of animals break down natural species boundaries", "Animal biotechnology implies commodification of all life forms". The second group of concerns includes the concern about animal welfare, as well as the long-term impacts of animal biotechnology on human health and the environment. [28]

*Patenting and the "privatization" of research*

In the last three decades there have been considerable changes in the way research in agriculture is conducted - in the past it was universities and public institutions who were leaders in developing improved crops and livestock. They were responsible for knowledge and technology transfer. Currently is has been taken over by large corporations who are investing in agricultural research.[29] Moreover intellectual property rights have been extended to a wide range of information, materials and products relevant to food and agriculture.

The granting of IPRs in the field of food and agriculture raises numerous ethical concerns:

- IPRs protection may mean the lack of access to innovations for the poor;
- Consideration has to be given whether the possibility to patent "life", e.g. plant genetic resources and their components or life forms is acceptable, since conflicts between the granting of patents and morality are likely to occur – for some cultures the idea of appropriation of life forms is morally abhorrent.[30]
- IPR and the perspective of economic gain may induce innovation that is ethically unacceptable.
- There is the problem of "bio-piracy" – the misappropriation of knowledge, without the consent of those who developed or preserved that knowledge or without benefit sharing with them.
- Farmers' innovations generally remain outside the IPRs system, which is largely a result of the lack of the technical and financial resources necessary to acquire and enforce IPRs. One way of addressing this unbalance is through the concept of Farmers' Rights, incorporated into the International Treaty on Plant Genetic Resources for Food and Agriculture.[31]

[27] FAO, Statement on Biotechnology. http://www.fao.org/biotech/fao-statement-on-biotechnology/en/
[28] Kaiser, M., "Assessing ethics and animal welfare in animal biotechnology for farm production", *Rev. Sci. Tech. Off. Int. Epiz.,* 2005, 24 (1), pp. 75. http://goo.gl/pNRS0x
[29] Fossey, A., "Research ethics and agricultural innovations", 28 July 2008. http://knowledge.cta.int/Dossiers/S-T-Policy/Ethics/Feature-articles/Research-ethics-and-agricultural-innovations
[30] For example during the WTO discussions the African Group objected to the patenting of life forms, as allowed or required (in the case of micro-organisms) by the TRIPS agreement.
[31] FAO, *Report of the Panel of Eminent Experts on Ethics in Food and Agriculture*, Third session 14-16 September 2005, pp. 21-22. http://www.fao.org/docrep/010/a0697e/a0697e00.htm

*Bioenergy and food – food versus fuel battle*

Bioenergy can reduce the impact of burning fossil fuel on the climate and contribute to society's energy supply. At the same time growing energy crops compete for limited resources with food production and with nature[32]. This leads to the increase in food prices. The so-called food vs. fuel battle apart from resulting in the conversion of traditional agricultural land may cause that land used as a common-property resource (e.g. forests) becomes unavailable to communities.

Mass-production of biofuel brings also other have negative environmental consequences: there is evidence that biofuel production increases GHG emissions and as a result intensifies global warming, monoculture production is harmful to biodiversity, the production of biofuel causes competition for water and the pollution of remaining water resources, pesticides connected with biofuel production are reported to contaminate water resources and cause health problems.

*Animal ethics and the artificial meat*

The use of animals in agriculture raises many ethical issues that include the ethics of meat production and consumption, controversies surrounding animal biotechnology, and consequences of the intensification (and industrialization) of animal production. Depending on the adopted ethical approach or principle these questions may be raised in the context of resource use, environmental impacts, animal welfare and animal rights.[33]

The attempts to produce artificial meat touch upon an issue crucial for food ethics, namely the question whether it can be considered ethical to eat meat. There are different groups of objections to meat eating depending on whether one assumes that animals have rights and deserve moral consideration or not. Consumption of animals may be considered unethical also because of the detrimental impact of food production on the environment -18 per cent of greenhouse gas emissions come from meat production, moreover meat takes up about 70 per cent of arable land. The production of in vitro meat can be viewed as an ethical solution to those concerns. Moreover, according to proponents of the new technology, the production of in vitro meat undermines the assumption that we have to choose between a food system that is over-dependent on technology and one that is more in harmony with nature and that there is a distinct contrast between "natural" and "artificial" which lines up with the distinction between "good" and "bad". Arguments in favor of the production of artificial meat do not, however, convince all those fighting for animal rights, who claim that the production of artificial meat does not eliminate animal suffering.

Different categories of ethical issues are also associated with animal biotechnology. They concern the technology's impact on the animals themselves, the institutions and procedures that govern research and applications within the agri-food system, as well as the relationship between humans and other animals.[34]

[32] The Danish Council of Ethics, "Bioenergy, food and ethics in a globalized world", 2012, p. 3. http://www.etiskraad.dk/en/Nyhedsarkiv/2012/maj/~/media/bibliotek/rapporter/2012/Bioenergy-food-and-ethics-in-a-globalized-world-summary.ashx

[33]Council for Agricultural Science and Technology, Agricultural Ethics, Issue Paper Number 29, February 2005. http://www.cast-science.org/download.cfm?PublicationID=2899&File=f0305d2ffd02e961471b33646e406f494718

[34] Council for Agricultural Science and Technology, "Ethical Implications of Animal Biotechnology: Considerations for Animal Welfare Decision Making, Animal Agriculture's Future through Biotechnology",

Intensification of animal production leads to the mass commodification of animal life, which again raises ethical issues. Many aspects of intensification rely on scientific innovations, e.g. medical science has had a tremendous effect on industrialised animal agriculture, i.e., the invention and prolific use of antibiotics, vaccines, hormones and other medical technology has been an advantage for the intensification of product output and the intensification of housing systems. According to the recent report from the World Health Organization the excessive use of antibiotics in animal feed for livestock resulted in antibiotic resistance. Technological advances in machinery have replaced human labour, as a result of which animals are fed and monitored through the use of machines.[35]

## 5. Organisations

There are few organisations that explicitly focus or engage in ethical assessment of practices in the field of food and agriculture. However, due to the universality of ethical concerns linked with that field and the impact of developments in that particular area of everyday life of millions of people, issues related to the ethics of food and agriculture are in the focus of a number of international and non-governmental organisations**.**

The aim of reducing by half the proportion of people who suffer from hunger has been among the United Nations Millennium Development Goals. Tackling food insecurity and malnutrition is mentioned among targets and priority areas in the communication from the European Commission to the Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions entitled "A decent Life for all: from vision to collective action".

As already mentioned in 2000 FAO established the Panel of Eminent Experts on Ethics in Food and Agriculture was created. Its role was to advise FAO and raise public awareness.[36] The Panel held four sessions, each followed by a report with a list of recommendations. Other organisations that have interest in ethical issues involved in agriculture and food supply:

- The Global Forum on Agricultural Research[37]
- Agriculture, Food and Human Values Society[38]
- North American National Agricultural Biotechnology Council – a consortium of Canadian and U.S. non-profit institutions[39]
- Consultative Group on International Agricultural Research[40]
- European Society for Agricultural and Food Ethics, EurSafe[41]
- Council for Agriculture and Technology[42]
- International Food Policy Research Institute[43]

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Issue Paper, Part 9, p. 1. http://www.cast-science.org/publications/?ethical_implications_of_animal_biotechnology_considerations_for_animal_welfare_decision_making&show=product&productID=2952

[35] Harfeld, J. "Husbandry to industry: Animal Agriculture, Ethics and Public Policy", *Between Species*, Issue X, August 2010. http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1113&context=bts

[36] Ibid.

[37] http://www.egfar.org

[38] http://afhvs.org/

[39] http://nabc.cals.cornell.edu/

[40] http://www.cgiar.org

[41] http://www.eursafe.org

[42] http://www.cast-science.org

[43] http://www.ifpri.org/

- Food Ethics Council,[44] it is one of the few organisations that conducts ethical assessment of developments in the field of food and agriculture. It has established the Ethical Matrix specifically for that purpose.
- FoodFirst Information and Action Network[45]
- International Food Policy Research Institute.[46]

## 6. Institutionalisation

The ethics of food and agriculture seem to be gaining momentum: "after a half century of neglect, members of the public and specialists from many disciplines have turned their attention to the goals and ethical rationale behind production, distribution and consumption of food, as well as to non-food uses of cultivated biomass and the products of animal husbandry."[47]

In early 2000s ethics started to play a more prominent role in the activities of FAO. Ethical values (the value of food, enhanced well-being, human health, natural resources, and nature) are embedded in the preamble to the FAO's Constitution.[48] Starting in 2001 FAO released a publication series dedicated to ethics in food and agriculture.[49] As pointed out in the first publication:

> FAO is mandated by the international community to provide the instruments and mechanisms for an international forum in which to address and take action on the balancing of interests while aiming to protect and enhance global public goods that are relevant for food and agriculture (…). Moreover, FAO has an ethical obligation to ensure that its actions are responsible, transparent and accountable as well as to provide a forum for debate and dialogue on ethical issues and unethical behaviour with respect to food and agriculture. These instruments and mechanisms can be employed to build a more equitable, ethically-based food and agriculture system that addresses the issues and challenges described above.[50]

Following this claim ethics were designated as a priority area for interdisciplinary action in FAO. An internal FAO Committee on Ethics in Food and Agriculture was established to provide guidance and determine the scope of ethical issues relevant to FAO's mandate. Moreover in 2000 an independent Panel of Eminent Experts on Ethics in Food and Agriculture was created. Its role was to advise FAO and raise public awareness.[51] The Panel held four sessions, each followed by a report with a list of recommendations.

At the European Union level, the European Group on Ethics (EGE) published a number of opinions relevant to the ethics of food and agriculture, each consisting recommendations:[52]

[44] http://www.foodethicscouncil.org,
[45] http://www.fian.org
[46] http://www.ifpri.org
[47] Thompson, P. B., D.M. Kaplan (eds.), *Encyclopedia of Food and Agricultural Ethics,* http://link.springer.com/book/10.1007%2F978-94-007-6167-4
[48] FAO, "Constitution". http://www.fao.org/docrep/meeting/022/k8024e.pdf, p.3
[49] FAO, "Ethics in food and agriculture", New publication series. http:// www.fao.org/News/2001/010406-e.htm
[50] FAO Ethics Series, "Ethical issues in food and agriculture", Food and Agriculture Organization of the United Nations, Rome, 2001 http://www.fao.org/3/a-x9601e/
[51] Ibid.
[52] Opinions are available at: http://ec.europa.eu/bepa/european-group-ethics/publications/opinions/index_en.htm

- EGE Opinion No 1 of 12 March 1993 on the ethical implications of the use of performance-enhancers in agriculture and fisheries,
- EGE Opinion No 5 of 5 May 1995 on ethical aspects of the labeling of the food derived from modern biotechnology;
- Opinion n° 7 - 21/05/1996 - Ethical aspects of genetic modification of animals;
- Opinion n°23 - 16/01/2008 - Ethical aspects of animal cloning for food supply;
- Opinion n°24 - 17/12/2008 - Ethics of modern developments in agricultural technologies - ethical framework – the goals are: food security, food safety, sustainability. In this opinion EGE calls for the explicit embedding of ethical principles in agriculture policy and argues that respect for human dignity and justice, have to apply to production and distribution of food products.

While there seem to be little institutionalised ethics assessment, there are many institutional "set-ups" that may guide the process of ethics assessment in the field of food and agriculture. Below there are some examples of regulatory frameworks that should guide ethics assessment in respective areas.

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| *The right to food*<br><br>In November 2004 the FAO Council adopted voluntary guidelines to support the progressive realisation of the right to adequate food in the context of national food security. The document is supposed to provide practical guidance to governments to realize their right to adequate food.[53] The guidelines promote the principle of sustainability (guideline 8E), the need to protect biodiversity and sustainable use of genetic resources for food. |
| *Environment*<br><br>The 1996 Rio Declaration on Environment and Development encompasses in Principle 15 the precautionary approach. It promotes sustainable development.<br><br>The UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (the Aarhus Convention) establishes a number of rights of the public (individuals and their associations) with regard to the environment, e.g. the right to participate in environmental decision-making. |
| *Biotechnology*<br><br>There is a number of legal acts and recommendations on genetically modified food,[54] their production and release, some of which (e.g. Regulation 1829/2003[55] or Directive[56]) envisage consultations with ethics committees. |

[53] FAO, *Voluntary Guidelines to support the progressive realization of the right to adequate food in the context of national food security*, Adopted by the 127th Session of the FAO Council, November 2004. http://www.fao.org/docrep/009/y7937e/y7937e00.htm

[54] A list of most important legislation is available at: http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=1426

[55] Regulation (EC) No 1829/2003 of the European Parliament and of the Council of 22 September 2003 on genetically modified food and feed Article 33 Consultation with the European Group on Ethics in Science and New Technologies 1. The Commission, on its own initiative or at the request of a Member State, may consult the European Group on Ethics in Science and New Technologies or any other appropriate body it might establish, with a view to obtaining its opinion on ethical issues.

An interesting tool worth mentioning is the "International Assessment of Agricultural Knowledge, Science and Technology for Development", initiated in 2002 by the World Bank and the FAO as a global consultative process. Its objective was to assess the impacts of past, present and future agricultural knowledge, science and technology on the:

- reduction of hunger and poverty
- improvement of rural livelihood and human health, and
- equitable, socially, environmentally and economically sustainable development.

Although the consultations did not address explicitly ethics, the questions they raised were crucial from the ethical perspective.

There are also tools that evaluate the social impact of agricultural research, e.g. the Sustainable Livelihoods Approach framework that is used to investigate the impact of research on the poor. It encompasses some of the ethical principles listed above.[57]

## 7. International frameworks and protocols

Apart from the values encompassed in the FAO's constitution (see above) there seem to be no internationally recognised framework for ethics assessment dedicated solely to the field of food and agriculture. While there are attempts to assess the economic or social impact of research in food and agriculture, there seem to be no framework established exclusively for the purpose of ethics (impact) assessment.[58]

One, more widely recognised tool, is the "Ethical Matrix" established by Professor Ben Mempham for the Food Ethics Council. It is a "checklist of concerns, structured around established ethical theory." It uses a "principled" approach to ethics first developed by US medical ethicists, Beauchamp and Childress. The Ethical Matrix is based on three ethical principles: respect for wellbeing, for autonomy and for justice that form the columns of the matrix. The rows of the matrix consist of the "interest groups" affected by the issue in

[56] Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC - Commission Declaration, Article 29 Consultation of Committee(s) on Ethics1. Without prejudice to the competence of Member States as regards ethical issues, the Commission shall, on its own initiative or at the request of the European Parliament or the Council, consult any committee it has created with a view to obtaining its advice on the ethical implications of biotechnology, such as the European Group on Ethics in Science and New Technologies, on ethical issues of a general nature.

[57] See for example: Adato, M., R. Meinzen-Dick, "Assessing the impact of agricultural research on poverty using the sustainable livelihoods framework", International Food Research Institute, March 2002. http://www.ifpri.org/sites/default/files/publications/eptdp89.pdf

[58] See for example: Beekman, V. et al., "Ethical Bio-Technology Assessment Tools for Agriculture and Food Production", *Final Report Ethical Bio-TA Tools,* February 2006. http://estframe.net/ethical_bio_ta_tools_project/content_2/text_2c81d261-b7a8-43e8-8f1e-d724b43e2ba3/1346076907647/et1_final_report_binnenwerk_59p.pdf. The authors enumerate different assessment tools used in the field of food and agriculture, none of them, however, devoted exclusively to this area.

question.[59]

| Respect for | WELLBEING (Health & welfare) | AUTONOMY (Freedom & choice) | JUSTICE (Fairness) |
|---|---|---|---|
| PEOPLE IN THE FOOD INDUSTRY | Income and working conditions | Freedom of action | Fair trade laws & practices |
| CITIZENS | Food safety & quality of life | Democratic, informed choice | Availability of affordable food |
| FARM ANIMALS | Animal welfare | Behavioural freedom | Intrinsic value |
| THE LIVING ENVIRONMENT | Conservation | Maintenance of biodiversity | Sustainability |

**Fig. 1. Ethical Matrix. Source: www.foodethicscouncil.org/system/files/Ethical%20Matrix_1.pdf**

## 8. Papers, journals, conference series

Papers

Brom, Frans W.A., "Food safety: science and ethics", Background paper for the FAO expert consultation on "food safety: science and ethics", 2002. http://www.academia.edu/212807/Food_safety_science_and_ethics

Thompson, Paul B., "Ethics, Sustainable Agriculture, and Agroecology Research and Education", Background paper for the workshop "The Many Meanings and Potential of Agroecology Research and Teaching", 2002. http://www.agroecology.wisc.edu/downloads/thompson.pdf

Fossey, Annabel, "Research ethics and agricultural innovations", Knowledge for Development, 2008. http://knowledge.cta.int/Dossiers/S-T-Policy/Ethics/Feature-articles/Research-ethics-and-agricultural-innovations

Harfeld, Jes, "Husbandry to industry: Animal Agriculture, Ethics and Public Policy", *Between the Species*, Issue X, August 2010. http://digitalcommons.calpoly.edu/cgi/viewcontent.cgi?article=1113&context=bts

Thompson, Paul B., "Food and Agricultural Biotechnology: Ethical Issues Behind Research Policy Choices", Institute for Agriculture and Trade Policy, 2001. http://www.iatp.org/files/Food_and_Agricultural_Biotechnology_Ethical_Is.htm

Beekman, Volkert et al., "Ethical Bio-Technology Assessment Tools for Agriculture and Food Production", Final Report Ethical Bio-TA Tools, LEI, The Hague, 2006. http://estframe.net/ethical_bio_ta_tools_project/content_2/text_2c81d261-b7a8-43e8-8f1e-d724b43e2ba3/1346076907647/et1_final_report_binnenwerk_59p.pdf

[59] Food Ethics Council, "Ethical Matrix". http://www.foodethicscouncil.org/system/files/Ethical%20Matrix_1.pdf

Chrispeels, Maarten J., Dina F. Mandoli, "Agricultural Ethics", *Plant Physiology*, Vol. 132, No. 1, 2003, pp. 4-9. http://www.plantphysiol.org/content/132/1/4.full

Journals

- Journal of Agriculture and Environment Ethics: http://link.springer.com/journal/10806
- Agriculture and Human Values: www.springer.com/social+sciences/applied+ethics/journal/10460
- Environmental Ethics: www.pdcnet.org/enviroethics/Environmental-Ethics
- Environmental Philosophy: www.pdcnet.org/envirophil
- Environmental Values: http://www.erica.demon.co.uk/EV.html