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Organic Farming as A Development Strategy:

Who are Interested and Who are not?

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Abstract

Much evidence shows that implementation of organic farming (OF) increases productivity in the Global South, and that it will be possible to feed a growing world population with food produced in OF systems. OF is explored, analysed and discussed in relation to the principles of Ecology, Health, Care and Fairness as enunciated by IFOAM, as a developmental strategy.

Major financial powers are involved in the agro-related industries. A number of civil society-based organisations point to the major negative side effects of the trade with and use of agro-chemical products environmentally and in the further deepening of the gaps between rich and poor. The MDGs target the environmental sustainability explicitly, and OF is regarded as being a relevant strategy to meet many goals. A global development strategy is needed that explicitly includes future generations, ecosystems, biodiversity and plant and animal species threatened by eradication.

Keywords: Organic farming principles, Health, Care, Fairness, Ecology, Development strategy, Millennium Development Goals (MDGs), Food security

1. Introduction: Organic and agro-ecological agriculture can feed the world – if we want to

Organic and agro-ecological farming methods are based on the key principles of Health, Ecology, Fairness and Care enunciated by IFOAM (IFOAM, 2005; see Table 1). These principles are implemented in various sets of standards, legislation and guidelines in different countries, and are valued by the consumers and citizens of those countries for different reasons, such as that they guarantee healthy food production, assure environmental protection and emphasise local resources and food systems.

In the Global South, the meaning of 'organic farming' very often becomes confused with 'farming with no chemical inputs,' 'traditional farming' or 'certified organic farming for export'. In this article, organic farming refers to farming according to the four basic principles mentioned above, a concept which does not necessarily imply certification. Organic farming following the principles in practice enhances soil fertility and biodiversity (Note 1), while minimising land degradation, erosion, poisoning and other negative side effects of chemical or industrialised agricultural activities. In the following, the use of the term 'agro-ecological' will be used in relation to the specific methods which contribute to this kind of farming. Agro-ecological farming methods include, for instance, inter-cropping, mulching, use of compost, crop rotation and non-chemical pest and disease prevention.

During recent years, a number of inter-related crises have caused concern, such as the so-called 'global food crisis' (although a 'food crisis' is not a new phenomenon [Sen 1999; Halberg, *et al.*, 2009]) the financial crisis, and the climatic crisis. The attention has mostly been on trying to protect those most vulnerable to food insecurity, primarily by creating long term strategies to ensure food for increasing number of chronically hungry people (now estimated to be close to 1 billion), and to prevent crises for future generations In this context of crisis, the main concern raised has been how we can produce food enough on a global level for a growing population, and with the use of chemical inputs and genetically modified and high yielding varieties of crops being promoted as the solution; whereas organic farming has been regarded as 'low-yield' and unproductive, and even as a luxury production for the few people who can afford to pay extra for products which are grown in ways and under circumstances which do not fully use the capacity of the land. Halberg, *et al.,* (2009) explain that this view is raised when limiting the understanding of 'organic' to, *e.g.,* an export production of certified organic products, such as, for example, fruit, coffee or cotton, from the global South to the wealthy North and West. Farnworth and Hutchings (2009) point to certified organic farming as predominately

driven and supported by political, cultural, economic and social structures that are located within western ideologies and practices, while Halberg *et al.,* (2009) note that organic certified production of a cash crop does not necessarily lead to introduction of the organic principles on the farm level as a whole. When organic farming is understood to conform to the principles mentioned above, the misperception of 'organic' as 'extensive and non-productive' can arise. There are several pieces of evidence, however, that prove that this is a false perception, in particular when talking about tropical agricultural systems. Halberg, *et al*., (2006) conclude on basis of evidence from projects and modelling that organic agriculture does not increase food security problems, but on the contrary, presents solutions to them both in terms of increased productivity and of improved access to food. Where the yield often drops when converting chemical farming systems to organic production (as is e.g. shown in Europe), several studies show that yields often more than double when converting from traditional farming systems or through consciously building up soil fertility using purely non-chemical methods (Badgley, *et al.,* 2007; Halberg, *et al.,* 2006; Funes-Monzote, 2008; IAASTD, 2008; Pretty & Hine, 2001; Pretty et al., 2006). Furthermore, use of farming methods can maintain or even increase the fertility of the soil, while producing healthy, diverse food locally for people (Altieri, 2002; Pretty, 2006): Much evidence exists showing that farming systems can be organised in ways which maintain a high yield for the present population without degrading the land (eco-functional intensification, as described by e.g. Halberg et al., 2009), and in systems which become increasingly resilient in response to change. One concrete example is given in Box 1 to illustrate the contribution of a conscious agro-ecological approach to farming in a vulnerable and partly degraded local area in Ethiopia.

The organic principles of Fairness and Care contribute to the idea of a farming and food system that is sustainable, meaning one which can be defined as 'meeting the needs of the present generation without compromising the possibilities of the future generations to meet their needs' (Note 2). Organic farming is *per se* sustainable, but the term 'sustainable farming' will not be used in the following, because it is overly broad and, in some contexts, does not exclude non-organic elements, *e.g*., the use of chemical inputs. In relation to the discussion of the Fairness principle, I will discuss the current generation's equal rights to food, goods and the sharing of responsibilities, decisions and work. I will also discuss future generations' same rights, which we may choose to disrupt or try to ensure through our current farming and food system practices. Moreover, aspects of the maintenance of ecosystems can both relate to the principle of Ecology and also to the principle of Fairness, viewing species of animals, plants and eco-systems as having their own right to exist.

In a fairly recent report by the UNCTAD-UNEP Capacity-Building Task Force on Trade, Environment and Development (CBTF), it was stated that '*the evidence presented in this study supports the argument that organic agriculture can be more conducive to food security in Africa than most conventional production systems, and that it is more likely to be sustainable in the long term. This is in line with the findings of the Food and Agricultural Organization of the United Nations (FAO) International Conference on Organic Agriculture and Food Security, held in May 2007. Therefore we encourage policymakers and development cooperation partners in Africa and around the world to take a new look at this promising production system with fresh eyes. It offers not only improved food security, but also an array of other economic, environmental, health and social benefits'* [signed by Supachai Panitchpakdi, Secretary-General of UNCTAD and Achim Steiner, Executive Director of UNEP]' (UNCTAD-UNEP, 2009). Thus, with particular reference to Africa and more specifically East Africa, the group behind this report emphasised the potentials not only for food security in relation to organic farming, but also a number of other aspects, which partially will be explored in the following.

Agro-ecological methods build primarily on local resources and rely on interactions with natural systems, and there are no patents or major trade systems involved. Since these methods do not use industrially produced inputs, they are not connected to economic interests. No patent rights exist on 'working with nature' methods of farming. Very often, they are quite labour-intensive farming systems, managing many types of crops and products. Furthermore, the methods require knowledge, awareness and an ability to reflect and be innovative. These farming methods are therefore owned by the people who practice them. In this understanding, organic farming also contributes to the enhancement of food sovereignty (Note 3). This concept will only be mentioned in the discussion of the Fairness principles, but will not be treated in depth in this article.

The aim of this article is to explore, discuss and analyse organic agriculture in relation to the four principles of Ecology, Health, Care and Fairness, as a development strategy in relation to food security for current and future generations with specific focus on sub-Saharan Africa. This includes a review of existing goals and strategies for development as expressed in the Paris Declaration and the Millennium Development Goals (MDG), and with reference to actors, who express interest for or against organic farming as a future global development strategy.

2. Food security in terms of stability, availability and access

Food security 'exists 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' (FAO, 2003, with reference to the

World Food Summit, 1996). Table 2 gives an overview of different dimensions of food security, and the current global food system seems to fail to address all dimensions of food security. This is not only due to the lack of food and productivity. Nærstad and co-authors (2007) point to the fact that Africa can feed itself, and that unfair distribution is a main reason for food insecurity. A highly distorted pattern of distribution can be described by contrasting priorities both in the industrialised part of the world and in the so-called developing world. The production of pork in Denmark (approx. 25 mill. pigs produced per year, a figure which is 5 times that of the country's population) means that approx. 70% of field crops in Denmark are used solely for animal feed, in addition to import of feedstuffs. Much of the produced meat is exported, and the average Danish consumer eats huge amounts of meat. In contrast to this, India is an example of a country with a huge number of chronically hungry people. More than 200 million people are food insecure, and the net export of agricultural products over the last decades have been between US$1,000-US$6,000 million annually (Chakravarty & Dand, 2005), or e.g. in 2006/2007, there was a net export of rice at 4 million tonnes (MAP, 2008). These and many other examples and cases lead to serious questioning about our priorities and real interest in solving the major problems with food insecurity for the world's poor, and the food sovereignty principles seem to answer the call for food systems which are in accordance with the organic principles (note 3).

Despite the drop in international food prices, local food prices remain high in many countries, and especially the prices of basic stable food in the Global South. The solution to the so-called 'Food Crisis' is clearly not to export cheap food to African or other developing countries. The dumping of cheap food and low world market food prices have proved to disrupt the local food systems and survival possibilities of poor African and Asian farmers, who cannot sell their crops because of swamping of the market by heavily subsidised, cheap and industrially produced food from, *e.g.,* EU or USA (Sen, 1999, p. 207). In addition, low world market prices and dumping of cheap wheat and other agricultural products mean that poor farmers in developing countries cannot compete and receive sufficient prices for their products, leading to increased poverty.

3. The principle of Ecology: Enhancing resilient agricultural systems through the use of agro-ecological farming methods

An apparently increasing international consensus seems to have been created, focusing on resilience in agricultural systems as a response to food crises and climatic changes (FAO, 2008; United Nations, 2008). United Nations (2008) recommends that '*the likely increase in extreme events, such as droughts, floods and pest outbreaks (which are not considered in these projections) suggests that it would be a risky strategy to focus the response to climate change exclusively on adaptation'.* Resilience can be understood as diminishing vulnerability through a focus on increasing the adaptive capacity of the people as well as the ecosystems in which they depend (Adger, 2003). This needs to build on farmer knowledge and capacity building, soil and water resource management and enhanced biodiversity. As illustrated in Table 1 above, the organic principles and the use of agro-ecological agricultural methods will contribute significantly to the creation of resilient farming systems.

As illustrated above (Box 1 and Introduction), the use of agro-ecological methods leads to increased soil fertility and many other features of resilient farming systems. The development of resilient farming builds on local knowledge and necessarily will interact with local eco-systems and conditions. The world – and especially the Global South – is covered by many vulnerable ecosystems, *e.g.,* drylands, which cover approximately 40% of the surface of the land on Earth (and 65% of this is rangeland, of which approx. 40% can be cultivated despite low soil moisture). The Earth's drylands are inhabited by approx. a third of the global population, and 90% of these people live in developing countries (United Nations, 2008). The lowest GDP and the highest child mortality rates are seen in drylands, which are ecologically vulnerable and are particularly dependent on fragile ecosystems. Fresh-water systems are also under great pressure and are threatened, while eco-systems in a broader sense have undergone dramatic changes over the last decades, with many of these changes possibly connected to farming and unsustainable agricultural methods. As pointed to by Sarukhán & Whyte (2005; page 95): '*Because many ecosystems services are not traded in markets, markets fail to provide appropriate signals that might otherwise contribute to the efficient allocation and sustainable use of the service. Even if people are aware of the services provided by an ecosystem, they are neither compensated for providing these services nor penalized for reducing them. In addition, the people harmed by the degradation of ecosystem services are often not the ones who benefit from the actions leading to their degradation, and so those costs are not factored into management decisions'.*

Sarukhán & Whyte (2005) additionally give a state of the art of biodiversity in ecosystems on a global level, on the basis of which they conclude that humans significantly, and to some extent irreversibly, change life on Earth, with most of the changes relating to biodiversity, that is to say, that genetic diversity has declined significantly globally, mostly among cultivated species. The number of species on the planet is declining, and at the moment 10% to 30% of species are estimated to be threatened with extinction, especially in freshwater ecosystems. Thrupp (2000) also notes the link between the vulnerability of crops and the severe reduction of varieties, as, for example, in Sri Lanka, where the number

of rice varieties has decreased from 2,000 in 1950s to fewer than 100 in 2000. Much of the literature emphasises the need for local seed banks and a focus on local breeds (both plants and animals).

One can point to many elements of solutions to address the sustainable management of ecosystems, elements including the overcoming barriers such as inappropriate institutional and governance arrangements, including the presence of corruption and weak systems of regulation and accountability. In conclusion, many of these potential partial solutions point to a need and relevance of combining efforts toward the development of organic and sustainable agricultural systems with efforts to ensure environmental care and relevant, appropriate and effective eco-system management. Agricultural actors can therefore relevantly work together with actors from the environmental protection sectors.

4. The principle of Health in farming systems not involving chemicals

The principle of Health covers many facets of organic agriculture in tropical countries and elsewhere,--*e.g.*, animal health promotion and management and the relationship of human health to a bio-diverse production allowing a well-balanced and nutritious diet. Nevertheless, the health aspect of merely avoiding use of chemicals for current and future generations will be the focus in the following.

Current farming practices involving use of mineral fertilizers and chemical synthetic pesticides have huge negative side effects, both in terms of poisonous effects on living organisms (Pretty, 2005) and of long term effects on ecosystems (Pretty, 2005). Through the stimulation of systems relying on mono-cropping, which cause land degradation through decreasing humus layer, severe long terms negative health effects are created. Bad side effects for the current generations of high-chemical-input farming were clearly demonstrated through the so-called Green Revolution in India, where the country reached a point of productivity where they could export food, but where severe negative side-effects on the ecosystems were created, and where many smallholder farmers were bypassed, while the number of hungry people remained over 200 million. The bad side effects are, if possible, even more critical to a number of 'silent actors': the eco-systems, biodiversity, and the yet-unborn future generations, who must suffer from irreversible poisonings of the environment. Africa is the continent least affected so far by chemical inputs (FAO, 2006), which really should increase awareness and motivate existing smallholder systems to become conscious of sustainable organic farming with use of those agricultural methods which do not create hazards for the environment or jeopardize the health of soil, plants, animals, humans and ecosystems.

5. The organic principle of Care with social capital in local communities as example

The principle of Care is also reflected in ecosystem management and is related to animal welfare and other issues linked to organic farming practices. With inspiration from the statement in the UNCTAD-UNEP (2008) CBTF-report on social capital as one of the major benefits of organic farming, this social capital will be the focus in this article's discussion about the principle of Care. Social capital is built up through--and at the same time stimulates—the interaction of marketing groups, civil society actors, associations, and NGO networks. Scialabba and Hattam (2002) also emphasise the potential of organic farming to strengthen human as well as social capital.

Social capital can be defined in various ways. Bordieu (1986, p. 51) defines social capital as '*the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition – or in other words, to membership in a group – which provides each of its members with the backing of the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word'*. Bordieu's perspective is very much connected with his work about the connection of power relations to social conflicts and deprivation. This perspective seems relevant when addressing food distribution and access, on the levels of family, community and society. Bordieu sees social capital as a resource linked to social struggle. Munene and co-authors (2004) work with social capital from the point of view that the individual sacrifices something to the group or a network in order to gain on a long term basis to his/her own benefit. Munene *et al.* (2004) based their analysis on studies in Uganda with smallholder farmers in local communities, which showed how the building of social capital strengthened the local community and thereby benefitted all members in terms of food security. They emphasised the need for continuous stimulation from outside in order to develop both human and social capital in the local community, when they have exchanged and built on what is already in the group. When examining the relationship between social capital (as defined by Munene and co-authors) and organic farming, a mutual dependency seems to exist, because, on one hand, the group and the common effort can contribute to mutual experience exchanges, common learning and collaboration and perhaps can reach the level where advocacy is possible. On the other hand, it is in some cases necessary to collaborate and find common solutions when working with organic methods, as, for example, in the case of non-poisonous handling of certain endemic/epidemic diseases of organic livestock in the tropics, which successfully can be managed with a collected community effort (Vaarst *et al.*, 2005). Land-shaping, fighting certain plant pests and prevention of earth erosion also calls for a community effort rather than an individual effort. Agro-ecological methods and resilient farming rely on innovation and are knowledge intensive, and, consequently, the building of social capital as organic farming develops in a local community is absolutely necessary. In order to have effect, the network needs to overcome class, caste, gender and other traditional societal gaps.

6. The principle of Fairness guiding development and consolidation of organic farming and food systems

Where organic principles of Ecology and Health suggest a strong link to environmental policies, the principle of Fairness in particular links strongly with organisation of farming and food policies, social policies and trade systems throughout the whole food chain. Two – partly interrelated - aspects of fairness related to organic farming, namely the gender issues, and general trading policies which, among other things, deal with income generating organic production, will be treated in the following.

6.1 Gender aspects of organic farming practices

A recent report by Farnworth and Hutchings (2009) has analysed several aspects of gender issues and women's empowerment related to organic agriculture based on literature and case studies. Since agro-ecological farming practices are work-intensive, and since many women are heavily engaged in smallholder farming, it is important to target gender equality, especially in relation to traditional perceptions that certain responsibilities and types of work, decisions, privileges and assets are linked to each sex. They point to an important link between rural masculinity and especially conventional farming in the North, as shown in farm fairs and learning spaces, where the exclusion of women indicates male domination. Women are often linked to family food production and largely un-mechanised work, and they point especially to the knowledge of indigenous women, which is valuable in relation to sustainable agriculture development, and the fact that women often bring new and exciting understandings of sustainability, as well as they show different ways of interactions with societies and ecologies. Women generally operate small scale farms, where men take care of cash crop (including the money earned unless agreed otherwise). These aspects clearly need to be addressed when, for example, stimulating the development of networks, training, Farmer Field Schools (FFS), and common marketing initiatives. Farnworth and Hutchings (2009) further address women's agency (Note 4), which is not automatically gained through mere representation in groups, boards, positions, or having resources. Being supported, rather than dominated, by men will improve women's agency, and training, education and spaces for development will be necessary to create gender equity. How it should be organised – whether in purely female or in mixed groups – is context-specific, and both advantages and disadvantages are described for all models. Finally, Farnworth and Hutchings point to the fact that male actors dominate the whole chain of trade, which is a big challenge for the organic movement. Cash crop-focused farming is often more large scale, mono-cultural, mechanised and industrialised and therefore is often perceived to be closer to the male identity, but the advisors, traders and other external partners are also men, who mostly consider working exclusively with male farmers: '*A consistent and clear message was that the structure that organic farming operates within continues to privilege and give priority to relationships with men over relationships with women (page 4)'*. This issue of gender equality urgently needs to be efficiently targeted, because it is clearly linked to the basic principles of organic farming.

6.2 Trading and marketing organic agriculture products

Food security in the rural areas in Africa also includes income-generating activities. Rural households are still predominantly dependent on informal sources for their financial needs (United Nations, 2008), and, in general, access to credit has proved to have a positive impact on poverty reduction on long term basis. Various 'innovative finance possibilities' exist in rural areas, such as mobile banking, links between financial institutions and organisations, and weather-index-based insurance for agriculture (United Nations, 2008, p.16). Non-farm income generally represents a significant and increasing share of rural income in developing countries, in average up to 40% in Africa (Haggblade *et al*., 2007).

Gura (2008a) points to the threat of corporate livestock farming as a means of displacing smallholders. This is because such farming leads to socio-economic, genetic and environmental damage, thereby posing a long term threat to food security. Contract farming is the most common approach to livestock industrialisation, and it can sound like a win-win situation, because this model keeps many people in their jobs and looks well-organised and efficient, but the principles emphasised in the food sovereignty concept are violated and the control over the food systems may be owned by people from outside the area. Gura (2008b) stresses that contract farming systems often are non-transparent, *e.g.*, because market risks are not shared equally between the contracted and the contracting farmers, so smallholders often loose in case of poor market situations (Gura, 2008b)-.Furthermore, they often include mass culling of local breeds and genetic uniformity and lead to environmental damage and export contracts, which does not improve the food security situation in a given local area (Gura, 2008 a&b).

When dealing with international trade in organic products, there is considerable work remaining to be done related to the Fairness principle, in particular the issue of certification of organic products for import--*e.g.*, the EU, where certification is 'owned' by European companies who inspect in accordance with EU regulations, and Ugocert, the East African certification system, is not fully acknowledged, although living up to the international standards. From 2003 to 2008, a task force organised by UNCTAD, FAO and IFOAM has tried to reach harmonization and equality among the various systems of certification of organic products worldwide (UNCTAD-FAO-IFOAM, 2008).

7. The interest of 'silent actors' in organic farming

The actors who probably will be intensely interested in the development of organic food and farming systems are future generations, who clearly do not have a voice yet. To meet future generations' need for healthy food, we need to maintain healthy soil and a food chain which enables fair distribution of food. The environmental sustainability of organic farming as compared to both conventional and many traditional farming systems--*e.g.,* traditional systems relying on slash-and-burn-systems--is beyond question. A huge number of environmental benefits of organic agro-ecological farming practices exist, such as improving soil fertility, bio-diversity, prevention of earth erosion, farming in accordance with local conditions, water management and emphasis on local breeds (both seeds and animals). The organic agro-ecological farming practices enhance sustainability to the benefit of the future generations. The other 'silent actors' mentioned above, namely eco-systems, biodiversity and a number of species of plants and animals, can also be claimed to have an intrinsic value and therefore a moral right to survive and exist and not be destroyed and eradicated (Vilkka, 1997), although taking an eco-centric position and expressing the value of ecosystems may – and in some cases does – include humans as part of the ecosystems (Curry, 2006). Alrøe *et al.* (2006) discuss ecological justice and ethics and point to the possible link between ecological and environmental ethics, which considers the extension of moral consideration beyond humans. A conscious inclusion of future generations and ecosystems into our development policies and strategies can be considered to be the present generations' agency and voice in order to prevent crisis on long term basis. The relevant question is whether our development policies consider future generations' and other silent actors' ability to survive.

8. A new green revolution in Africa involves actors who express interests against organic farming as a development strategy

'Alliance for a Green Revolution in Africa' (AGRA) is an initiative started in 2007 with the goals of reducing food insecurity by 50% in at least 20 countries, increasing income for 20 million people and putting at least 30 countries on track for an African green revolution. Bill and Melinda Gates Foundation and Rockefeller Foundation are among the donors for this initiative, which build on among others '*a steady flow of improved farming practices and new crop varieties developed to thrive in local climates and meet local needs' (*quote from their webpage (2009) http://www.agra-alliance.org/). In this initiative, the term 'sustainability' is also mentioned several times, although it seems to mean something different than in other sources, *e.g*., as defined in the Brundtland report, since the use of so-called improved seeds, chemical fertilizers and chemical pesticides seems to be involved. An example cited from Tanzania tells that AGRA's partnership has changed the lives of smallholder farmers by selling 'improved seeds, fertilizer, pesticides and other farm inputs to hundreds of small-scale farmers' from two successful shops (AGRA, 2009 p.9). One motivation and justification is the reference to the traditional slash-and-burn farming method, and it is clearly said, for example, that improving soil alone through use of organic matter is not enough, and in their strategy papers, organic or agro-ecological farming is not mentioned once.

Mittal (introduction of Mittal & Moore, 2009) analyses the rationale behind the AGRA initiative, and in this connection points to the heavy financial and other involvement from agro-industries, in particular the seed and breeding industries. Beyond a number of connections between agro-industries and the AGRA-initiative, Mittal (2009) points to the fact that investment in agriculture in general has declined over the past 3 decades, both from African governments and from donors. Even more seriously, she notes a growing uncompetitive and financially unstable initiative to introduce a flood of heavily subsidised cheap farm inputs, in addition to the way that markets have been opened to commodities being dumped from industrialised countries to African markets below their cost of production. This takes away the countries' ability to govern the inflow of these products, and the fact that any countries rely on export of few products (*e.g*., coffee and cocoa) increases their dependency on imports from industrialised countries, while simultaneously displacing their own small farmers. Mittal & Moore (2009) contain 15 contributions from different African countries raising a voice against the new green revolution for several reasons, including the loss of knowledge about indigenous farming methods, loss of biodiversity, food sovereignty, and one cited by Kabusimbi in the contribution simply entitled 'Hands off our food!': '*90% of the population in the majority of Sub-saharan African countries are peasant farmers with holdings averaging 2 hectares who use self regenerating planting materials, as opposed to state managed food production. Our method, giving the grassroots peasant farmers control of production of food for their own consumption, is the first defence against hunger'* (Mittal & Moore, p. 37). The dependence on wealthy countries' products in combination with the loss of biodiversity in terms of hundreds of varieties of each crop are major threats, especially in the time of climatic changes. Organic farming is based on local farming and food systems relying on local seeds and breeds, and local, often nature based, resources in harmony with the surrounding ecosystem. The many existing varieties have proved to fit the climatic conditions under which they have developed for centuries, and furthermore they are also much more likely to cope with climatic changes rather than hybrids developed under laboratory and growth conditions very far from Africa. The so-called New Green Revolution depends on predictable framework of inputs, weather and markets (Anonymous, 2008), and Holt-Gimenez *et al.* (2006) point to the critical issue of not addressing structural inequities in the market and political systems, relying on high input technologies and private sector initiatives.

Organic agriculture stays outside the global agro-chemical and seed industry (and other industries), emphasises local stability in food production, resilient farming systems and minimum reliance on food import (including dumped products), and thereby stays relatively independent of the world market prices. This means that the whole organic sector is less interesting for and attractive to actors who are key players within these areas of traded inputs for farming. For instance, most agro-chemical products and GM crops are produced almost exclusively in the Northern and Western hemispheres (industrialised countries) and are interrelated since more than 75% of the existing developed GM crops are characterised by nothing other than herbicide resistance [GMO Compass 2009].

9. Current development strategies

How are future generations and environment/ecosystems addressed in present development strategies, and how can OF contribute to reaching the goals? I have chosen to focus on two documents which create a basis for formulation and evaluation of current development strategies and projects among others in Denmark, namely the Millennium Development Goals (MDG) and the Paris Declaration, see Table 3.

Most of the MDGs can claim to target future generations through an assumption that when these goals are reached for the present generation, the situation will remain for the future generations. Goal 7, including the four sub-goals, explicitly targets what this article calls the silent actors, namely future generations and ecosystems, biodiversity and species and varieties threatened with eradication.

The strategies expressed in the Paris Declaration both are based on and target collaboration between countries and the forms in which development is brought about. All aid initiatives must build on the recipient countries' own strategies, policies and ownership of the processes. There is no explicit mention of future generations or the environment in terms of threatened species or vulnerable ecosystems. This leads to a conclusion that implementation of development strategies where the interests of the silent actors are included presupposes existing strategies and policies that include these interests in national and regional strategies. It furthermore raises the important question: Who is responsible for raising a voice for sustainability--in the meaning of the word expressed in the Brundtland report--and embracing the voiceless and those with no present power or financial interests?

Properly implemented organic farming based on the four principles seems to create a basis for a fair farming and food system, one which both meets the needs of the present and builds a framework which enables future generations to meet their needs in terms of food security, social capital and fair trading systems.

10. Conclusion: Organic agro-ecological farming: Are we interested?

Global organic food systems in accordance with the organic principles of Health, Ecology, Fairness and Care have the potential to contribute significantly to future food security and sovereignty relying on integrated, robust, resilient, productive and ecologically intensified systems, which are owned by the people practicing these methods in their daily life. The avoidance of chemical pesticides creates a healthy environment for all living organisms. The principles also include future generations and the silent actors--eco-systems, bio-diversity and wild as well as cultivated plant and animal species threatened with eradication. Capacity and knowledge building, education and strengthened social capital are necessary when using OF as development strategies, which stimulate empowerment and gender equity, as well as equality. The principle of Fairness points to an organisation of organic farming and food systems that emphasises gender equality throughout the sector, as well as within the trade system of national, regional and international markets.

Major financial powers are involved in the agro-related industries. The so-called Alliance for a new Green Revolution in Africa e.g. promotes subsidised agro-chemicals and GMO products in research and development initiatives for development of African farming. A number of civil society based organisations and movements illustrate the major negative possible side effects within this alliance, both in environmental terms and in the further deepening of the gaps between rich and poor.

The MDG explicitly target environmental sustainability and regards OF as a relevant strategy for meeting many of the goals. The Paris Declaration forms a basis for development strategies among others in Denmark, and deals primarily with forms of collaboration and partnerships. The Paris Declaration does therefore not give a basis for a development strategy on a global level explicitly addressing the interests of future generations, ecosystems, biodiversity or plant and animal species threatened by eradication.

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Notes

Note 1. In this article, biodiversity has two meanings, one being the number of varieties of a given species, *e.g.*, that there are 2000 varieties of rice, and the other being the number of different varieties, types and species in a given area, *e.g.*, a forest with a huge number of different plants, or a farm with a lot of different crops and/or animals.

Note 2. The term 'sustainability' is broad, used and understood in many ways, and has several dimensions as e.g. discussed by Halberg et al. (2006b), where the authors discuss sustainability based on economic, ecological and justice perspectives, or Spangenberg (2004) who includes economic, environmental, social and institutional aspects into the sustainability concept. Here, I use the rather simple definition of the Brundtland report: *Our Common Future: Report of the World Commission on Environment and Development*, 1987, web-version: http://www.worldinbalance.net/agreements/1987-brundtland.php

Note 3. Food sovereignty does not have an international definition but was defined by IAASTD (2008) as the right of peoples and sovereign states to democratically determine their own agricultural and food policies. The international movement Via Campesina defines Food Sovereignty by 7 principles: 1) Food: A basic human right, 2) Agrarian reform (especially targeting womens' right to own land), 3) Protecting natural resources, 4) Reorganising Food Trade, 5) Ending the Globalization of hunger, 6) Social peace, 7) Democratic control.

Note 4. Sen (1999, p. 19) defines agency 'as someone who acts and brings about change, and whose achievements can be judged in terms of her own values and objectives, whether or not we assess them in terms of some external criteria as well'.

Table 1. Keywords for the four IFOAM principles for organic farming, emphasising that many keywords cover more than one principle.

Organic principle as enunciated by IFOAM	**Keywords for understanding the importance of the organic principles for development of food system with emphasis on food security and food sovereignty for current and future generations**
Health Organic Agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible	- The health of ecosystems inseparable from the health of individuals - Wholeness and integrity of living systems - Immunity, resilience and ability to regenerate are key features
Ecology Organic Agriculture should be based on living ecological systems and cycles, work with them, emulate them and help sustain them	- Living ecological systems - OF, pastoral and wild harvest systems fit to cycles of ecology - Recycling - Maintenance of diversity
Fairness Organic Agriculture should build on relationships that ensure fairness with regard to the common environment and life opportunities	- Equity and mutual respect - Justice and stewardship of the shared world (humans and other living beings) - The whole food chain - Food sovereignty - Natural behaviour and well being of animals - Natural resource management - Social and ecological justice
Care Organic Agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment	- No risk of jeopardizing health and well-being - Care of animals by building up humane farming systems - Precaution - Responsible management and development - Rejection of unpredictable technologies - Transparency

The four organic principles as enunciated by IFOAM and their possible relations to aspects of food security for current and future generations

Box 1. An example of agro-ecological methods improving the ecological sustainability of land.

The main aim of the Tigray project was to find out whether a community-based approach to rehabilitating the land and improving crop production, based on ecological principles, can improve the livelihoods of poor smallholder farmers. The project was initiated in 1996 and run by the Regional State bureaus, the Institute for Sustainable Development (ISD) and local communities, experts and administrators.

Tigray is regarded as one of the most degraded areas in Ethiopia, with a population density of 80 to 131 persons per square kilometre (depending on zone), and less than 1 hectare per household and afflicted with serious soil erosion and low yield. Chemical fertilizers were introduced in 1960s, and subsidies were withdrawn from 1998, which, in combination with decreasing farm gate prices, left many farmers in extreme poverty and food insecurity.

The project was based solely on methods including composting, restricted grazing for animals, trench bunds for water and soil, ponds, gullies and using by-laws to control fair use of local biological resources. Farmers were also selecting own seed varieties rather than buying HYV seed. The author of the report concluded to have huge positive impact both on food security both for the families and for rehabilitation of the land.

The project was extended in 1998, when the regional government adopted the key elements of the project as part of the food security development plan for the region, and in the following years, several steps were taken including exchange visits, training and education of trainers within the farmer communities.

Many households were headed by women because of many years of civil war. Issues like womens' dependency on male relatives to do the ploughing because this was not a woman's job were targeted. Therefore, much effort was put into improving their farms. Targeting such issues proved to be extremely challenging. Throughout the project, the role and work of women was worked with, and women were encouraged to form cooperatives.

The effect of the implementation of agro-ecological methods was very encouraging. Productivity was increased of both crops and livestock. It was concluded (p.43) that '*Use of ecologically sound organic principles can have very quick positive impacts on the productivity and well-being of smallholder farmers, so that they do not necessarily have to face a conversion period of reduced yields while changing from chemical to organic production'.*

The example of the project titled 'Sustainable Development and Ecological Land Management with Farming Communities in Tigray' (Araya & Edwards, 2006), where application of agro-ecological methods was demonstrated to lead to improved soil fertility and better chances for future food security

Table 2. Four dimensions of food security linked to the four IFOAM principles for organic farming

Four dimensions of food security	**Possible contributions from organic farming in terms of practical use of agro-ecological methods and referring to the four IFOAM principles of Health, Ecology, Care and Fairness**
Food availability - *referring to having sufficient quantities of food of appropriate quality supplied through domestic production or inputs, food aid and net imports.*	- 'Ecology': productive systems - 'Care': precautionary principles and responsible management - Focus on food crops in on-farm diverse systems - Intensified land use / intercropping - Increasing yields
Food access - *access, by individuals, to adequate resources and entitlements for acquiring appropriate foods for a nutritious diet.*	- 'Fairness': justice, equity and food sovereignty - More home production, diverse cropping systems - Local resource use and circulation - No premium price
Food Stability - *access at all times and with no risk for losing access to food as a consequence of shocks or cyclical events.*	- 'Ecology' through building up sustainable systems - Improved soil fertility, water conservation, reduced risk for earth erosion - Increased focus on 'Fairness' through building up sustainable food systems, including fair trading and distribution systems
Food Utilisation - *refers to ways in which food contributes to adequate diet, clean water, sanitation and health care, and in turn, to a state of nutritional well-being, where all physiological needs are met.*	- 'Health' : - Diverse food crops - Emphasis on healthy food incl. vitamins, minerals and crop diversity

Four dimensions of food security as used by FAO and given by Scialabba & Hattam (2002) and Scialabba, 2007, and suggestions to how they potentially relate to organic farming, with an emphasis on the implementation of agro-ecological practices. Scialabba (2007) emphasises the potential contribution of organic farming in terms of improved and increased household intake, transitional food emergency situations, healthy diets, local food provision, as well asprovision of global environmental services.

Table 3. The potential contributions and challenges of organic farming in relation to the MDGs 2015 and the Paris Declaration

Millenium Development Goals 2015 (MDG 2015)	**Potential contributions and challenges related to Organic Farming (OF)**
1. Eradicate extreme poverty and hunger	OF increases productivity based on available resources, no inputs
2. Achieve universal primary education	OF is knowledge intensive; knowledge is owned by users, not connected to products.
3. Promote gender equality and empower women	Majority of smallholders are female farmers – emphasis on gender equity
4. Reduce child mortality 5. Improve maternal health 6. Combat HIV/AIDS, malaria and other diseases	Diverse and well-balanced food rations, conscious gender equality and social capital building
7. Ensure environmental sustainability A: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources, B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss, C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation, D: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers.	OF builds on biodiversity maintenance, improvement of soil fertility through improved humus layer, recycling, planning and use of intercropping and crop rotation systems, interaction with natural environments and ecosystems.
8. Develop a global partnership for development	Fair conditions for development, trade and knowledge exchange
Paris Declaration – principles	
Deals with the ways of creating mutual relationships and collaboration between donors and partner countries emphasising: 1. Ownership 2. Alignment 3. Harmonisation 4. Managing for results 5. Mutual accountability	Voices for environmental sustainability and the interests of future generations and other silent actors must be raised by national governments if taken into account in development strategies.

Goals and strategies as expressed in MDG and the Paris Declaration, in combination with keywords (right column) regarding potential contributions of Organic Farming (OF), as well as challenges which should be targeted.