

# Agriculture at a crossroads

## Why the international community must read the UN Agriculture Assessment

### Introduction

#### **Business-as-usual is not an option**

In April 2008 representatives from 58 governments concluded the most authoritative assessment of past, present and future challenges of agricultural production, consumption, knowledge, research and development ever conducted on an intergovernmental level, the International Assessment on Agricultural Knowledge, Science and Technology for Development (IAASTD). The assessment was designed to address the overarching question:

*How can we reduce hunger and poverty, improve rural livelihoods, and facilitate equitable, environmentally, socially and economically sustainable development through the generation, access to, and use of agricultural knowledge, science and technology?*

The final report comprises more than 2000 pages in one global and five sub-global assessments and was prepared by over 400 independent scientists and experts from 86 countries, representing all disciplines and perspectives. They had been selected by a multi-stakeholder bureau, consisting of representatives from governments, international agencies and all realms of civil society and were guided by international consultations and two rounds of public peer reviews.

Greenpeace participated in this unique process and believes that ***its results must now be a starting point for an urgently needed thorough and radical overhaul of present international and national agricultural policies, including continued collaboration and discussion among all the stakeholders involved.*** The IAASTD findings are a challenge to farmers, industry, NGOs, academia, government agencies and international institutions alike.

While humankind has never before produced as much food, feed and other agricultural produce on this planet, the number of people going to bed hungry tonight has also never been as high as today. Food production is an important contributor to climate change and at the same time is acutely threatened by its consequences.

The paradigm of agricultural policies, research and development over the past 50 years had been that more production and higher productivity per hectare and per worker in the field was needed to fight hunger and to keep pace with an ever growing world population. By the same token, expansion of agricultural land and intensification of production through increased inputs of energy, chemicals – mostly toxic – and irrigation were the prime means to accomplish this goal.

We have come to realise that this strategy is no longer a valid path. Industrialisation of agriculture with its monocultural approach, neglect of the ecological and social multifunctionality of agriculture, and commodification of food on a global level will not only fail to guarantee the survival of 9 billion people on this planet, expected for 2050. ***It is about to destroy the basis of our food supply and threatens the web of life upon we all depend.***

As Professor Robert T. Watson, Director of the IAASTD, put it:

***“If we do persist with business as usual, the world's people cannot be fed over the next half-century. It will mean more environmental degradation, and the gap between the haves and have-nots will expand. We have an opportunity now to marshal our intellectual resources to avoid that sort of future. Otherwise we face a world nobody would want to inhabit.”***

In this briefing, Greenpeace aims to extract key facts, concepts and messages from the IAASTD that we believe must serve as a basis for the discussions of the G8 agricultural ministers meeting in Treviso Italy, 18-20 April 2009.

## 1. Hunger is a matter of political choice – not of increased production

The fact that one-seventh of the world population suffer from hunger, and five million children die from hunger every year, is probably the worst global assault on human rights and dignity. It is also a threat to peace and a source of national instability, displacement, migration and violent conflict and the most important impediment to social progress in the regions affected. The number of hungry has steeply increased over the past three years and reached an historic peak of about one billion victims. Never before have so many people suffered from hunger. Commitments of the World Food Summit in 1996 to halve the number of undernourished (then only 830 million, but now estimated at over one billion<sup>1</sup>) by 2015 sound preposterous in the light of these developments.

Sufficient levels of production are a prerequisite to ensure the right to food. However, from a global perspective, lack of food supply is not the cause of hunger. At present, global agricultural production is more than sufficient to provide all citizens of the world with sufficient and healthy food. Most hungry people today actually live in countries that are leading exporters of agricultural goods and products.

The explosion of food prices in 2007/2008 has been attributed to a large extent to increased agro-fuel demand under detrimental harvest conditions, exacerbated by global market speculation impacts. Such price volatility has an immediate bearing on the prevalence of hunger but also on the conversion of land for cash-crop production, competing with food production. The poorest food importing countries dramatically felt the impact of their dependency on global food prices and oil price developments.

**Strategies to fight hunger and poverty**, while maintaining and restoring the natural resources upon which all of our livelihoods depend and stimulating sustainable economic development, **need to shift efforts from increasing overall bulk commodity production and global trade to improving local availability of food and sustainable productivity where it is needed.**

## 2. Food first

*A new component in the food security debate is increasing malnutrition in agricultural areas where cash crops, including biofuel crops, replace local food crops.<sup>2</sup>*

A constantly increasing share of cereal production is no longer used as food but absorbed as animal feed and for industrial purposes, namely agro-fuels. In addition, the share of agricultural land devoted to oil seed production (especially soybean) and sugar cane have expanded substantially at the expense of forests as well as land devoted to grazing and food production.

**Less than half of global cereal production (not including oilseed where the ratio is even lower) is being used as food in 2008. As a consequence, predicted increase of cereal production of 5.3% for this year will result in only 0.1% increase in food availability per capita.<sup>3</sup>**

The challenges ahead no longer allow for an increasing distraction of agriculture from its primary duty to produce enough and healthy food for everyone in systems that do not use more resources than can be replenished.

## 3. Recognising the multifunctionality of agriculture is a matter of survival

Agriculture is the most important business in the world, both with respect to its economic and social role and as regards the maintenance of the world's surface, natural resources and myriads of ecosystems. Agriculture accounts for a major part of the livelihood of 60% of the world's population. More than half of the earth's surface is intensively used for agricultural purposes. The quantity and quality of food production and consumption are the most important drivers of public health, with respect to under-nutrition, over-nutrition and various forms of malnutrition.

1 Blas, Javier. "Number of chronically hungry tops 1bn," Financial Times, 29 March 2009.

2 International assessment of agricultural knowledge, science and technology for development (IAASTD): Global report, chapter 2, p 10.

3 Adapted from FAO Food Outlook, Global market analysis, November 2008. <http://www.fao.org/docrep/011/ai474e/ai474e01.htm>

*Agriculture... fulfills a series of additional goals besides food production. ... Last but by no means least, agriculture ensures the delivery of a range of ecosystem services. In view of a globally sustainable form of development, the importance of this role may increase and become central for human survival on this planet.*<sup>4</sup>

In a world governed from cities and in a global economy driven by urban activities, decision makers tend to overlook the unique and pivotal role of agriculture not only providing the very basis of our lives, food, but also managing the lifelines of our macro- and micro-systems of survival. **Overcoming this neglect and ignorance at the level of policy, economic investments, research and development, culture, media and public discourse is imperative to address the environmental and economic challenges ahead. It is certainly indispensable for any meaningful action to combat hunger and poverty.**

The concept of multifunctionality acknowledges public services provided by farmers, especially small-scale farmers to their communities, nations and humankind. These services must be properly rewarded and have to be subject to fair and equitable negotiations and tradeoffs, involving all their providers and beneficiaries. Agricultural products are traded and have a market price. Most of the other services are public goods, for which there is no market. This does not imply that they were less valuable, especially not where they cannot be easily replaced and replenished. But it makes them vulnerable to neglect, destructive exploitation and unregulated appropriation.

*Successfully meeting development and sustainability goals and responding to new priorities and changing circumstances will require widespread recognition of a paradigm shift that ... accords increased importance to the multiple functions of agriculture.*<sup>5</sup>

#### 4. Agriculture is an important contributor to climate change

Direct greenhouse gas (GHG) emissions from agricultural production accounts for about one-seventh of total global emissions. However, when combining these direct emissions with emissions from deforestation caused by agricultural expansion and emissions from processing, packaging, distribution, transport, waste and other activities related to food production and consumption, total greenhouse gas emissions that could be linked to agriculture and food consumption could amount to more than 40% of total greenhouse gas emissions. The direct and indirect emissions of the complete cycle of global meat production alone accounts for about 18%.<sup>6</sup>

*Farming and food systems (FFS) in North America and Europe (NAE) are energy intensive. Even though farming in general accounts for only about 5% of total energy consumption in the most of the NAE region, this share increases to over 20% of total energy use once food processing, packaging and distribution are included. At the farm scale, about 85% energy inputs in NAE farming systems are carbon fossil based... 50% of farm energy relates to agrochemicals, mainly nitrogen fertiliser.*

**There are strong arguments for investing an important part of the enormous sums of public spending to fight the present global economic depression in the change of agricultural practices; especially in regions and in livelihoods which do not have the economic strength to invest in any additional measures beyond the short term satisfaction of basic needs.** The potential GHG reduction achievable through rewarding small farmers would be an effective contribution to both immediate and long-term climate mitigation.

At the same time, even relatively small amounts of additional financial income in rural communities would not only be one of the best short term measures to overcome extreme poverty and hunger but could also serve as seed investment in economically sustainable development especially in areas badly affected by the present financial turmoil.

There is a wide range of mitigation opportunities at all levels of agricultural production, processing and transport, which also may contribute to the resilience of agro-ecosystems in the face of a changing climate. The IAASTD outlines, among others, the following options:

4 IAASTD: Global report, chapter 2, p 15.

5 International assessment of agricultural knowledge, science and technology for development (IAASTD) : North America and Europe (NAE) report, chapter 6, p 209.

6 Steinfeld, H., et al. 2006. Livestock's Long Shadow: environmental issues and options. Rome, Italy: FAO. <http://www.fao.org/docrep/010/a0701e/a0701e00.htm>

7 IAASTD: NAE report, chapter 6, p 230.

- Lower levels of methane or nitrous oxide emissions through matching manure and fertiliser application to crop needs, and recycling agricultural and forestry residues to produce biofuels.
- Support ecological farming methods that rely on renewable sources of energy and fertility, instead of external, fossil-fuel-based inputs.
- Improve soil carbon retention by promoting biodiversity as a tool for climate mitigation and adaptation.<sup>8</sup>

### **Most agricultural systems will have to adapt to climate change**

Agriculture, in certain regions, is already substantially affected by the current warming of 0.8°C above pre-industrial levels, and will have to adapt to changes that are predicted to affect two-thirds of agricultural land world-wide. While a temperature increase of even 1.5°C could lead to irreversible impacts such as the melting of the Greenland ice sheet, the predicted impacts on agriculture would be mixed for different regions of the world, with some gains in higher latitude regions and losses in tropical and arid regions. Any temperature increase above 2°C will severely distress agricultural production on a global scale. Regions such as Sub-Saharan Africa and South-East Asia, which are under severe hunger stress today and whose societies are among the lowest per capita contributors to GHG emissions will probably be among the first and most severely affected.

*To address expected climate change challenges and impacts, a major role for AKST [agricultural knowledge, science and technology] is needed to increase adaptive capacity and enhance resilience through purposeful biodiversity management.<sup>9</sup>*

There is abundant scientific evidence that crop biodiversity has an important role to play in the adaptation to our changing environment. While oversimplified farming systems, such as monoculture, would not be able to cope with a changing climate, increasing the biodiversity of an agro-ecosystem can help maintain its long-term productivity and contribute significantly to food security and reduce risks of crop failure.<sup>10</sup>

## **5. High input industrial farming is a dead-end road**

Doubling cereal production over the past 40 years has been accomplished by quadrupling the use of artificial fertilisers and of water extraction as well as tripling the use of pesticides. This pathway has reached and in some cases and regions already exceeded the physical limits of basic resources, including water. At the same time this path has suffered from decreasing efficiency (fertiliser and pesticides) and causes levels of pollution threatening the functioning of ecosystems of entire regions. Certain pollutants (such as persistent organic pollutants, POPs) are being dispersed globally with massive long term impacts far from their sources of emission.

Industrialisation of agriculture has been successfully aiming at reducing the required input of labour per unit as a prime means to reduce production costs and increase competitiveness. This strategy, massively promoted and subsidised in industrialised countries and also boosted in certain areas of developing countries (Latin America and parts of Asia) has resulted in enormous disparities of per capita labour productivity.

The downside of this strategy is a massive loss of livelihoods in rural areas, including cultural and social traditions as well as locally adapted, resilient and diversified agro-ecological knowledge and resource management and loss of nutritionally diverse and healthy local diets. It has destroyed forests, depleted soil fertility and water resources at an unprecedented level. It has resulted in massive destruction of biodiversity and agro-biodiversity, and of agricultural options to react to challenges of climate change. In addition, it came at the expense of a steep increase of fossil fuel input and dependency.

<sup>8</sup> International assessment of agricultural knowledge, science and technology for development (IAASTD): Synthesis report with executive summary: a synthesis of the global and sub-global IAASTD reports, p 51.

<sup>9</sup> IAASTD Summary for decision makers of the global report, p 24.

<sup>10</sup> Cotter, J. and R. Tirado. 2008. Food Security and Climate Change: the answer is biodiversity. Amsterdam, Netherlands: Greenpeace International. <http://www.greenpeace.org/raw/content/international/press/reports/food-security-and-climate-change.pdf>

*[...] the advancement of industrial models in agriculture has promoted the simplification of agro-ecosystems, with reductions in the number of and variability within species. Increased specialisation at the field, farm, and landscape levels produces monocultures that potentially increase environmental risks because they reduce biodiversity, ecosystem functions and ecological resilience, and they may be highly vulnerable to climate change. [...] While industrial production systems yield large volumes of agricultural commodities with relatively small amounts of labour, they are often costly in terms of human health (Antle et al., 1998; Cole et al., 2002; Wesseling et al., 1997), have additional negative environmental impacts, and are frequently inefficient in terms of energy use. Run-off and seepage of synthetic fertilisers and concentrated sources of livestock waste damage aquifers, rivers, lakes, and even oceans – with costly effects on drinking water quality, fish habitat, safety of aquatic food, and recreational amenities.<sup>11</sup>*

**This industrial farming model, which dominates the international market as well as private and public research and development investments and extension, requires an urgent and globalised revision and locally adapted modernisation in order to prevent major breakdowns of the international food system.**

Technological solutions presented as silver bullets to solve hunger and poverty, such as genetic engineering, shift the focus away from the real solutions and hide the real causes of hunger which derive from social and environmental problems. Genetic engineering, and the industrial farming model it supports, increases dependence on expensive chemicals, promotes the development of export-driven monocultures harming local communities, contaminates the environment, decreases agricultural diversity, and provides private companies patenting their technologies with a direct control over food.

*In developing countries especially, instruments such as patents may drive up costs, restrict experimentation by the individual farmer or public researcher while also potentially undermining local practices that enhance food security and economic sustainability. [...] There is particular concern about present IPR [Intellectual Property Rights] instruments eventually inhibiting seed-saving, exchange, sale and access to proprietary materials necessary for the independent research community to conduct analyses and long term experimentation on impacts.<sup>12</sup>*

## 6. Small farmers and ecological farming systems are the keys to change

**Ecological farming ensures healthy farming and healthy food for today and tomorrow by protecting soil, water and climate; promotes biodiversity; and does not contaminate the environment with chemical inputs or genetic engineering.**

About 2.6 billion farmers are producing the majority of food as well as all other products and services of agriculture throughout the world on small farms with less than two hectares. While the proportion of rural compared to urban population has decreased over recent decades, their absolute number is still increasing. More than 70% of people suffering from hunger live in rural areas.

Investment in rural development, from infrastructure to education has been utterly neglected by national governments and international institutions as well as the private sector.

*Though the productivity per unit of land and per unit of energy use is much higher in ... small and diversified farms than the large intensive farming systems in irrigated areas, they continue to be neglected by formal AKST [agricultural knowledge, science and technology].<sup>13</sup>*

**A large body of evidence clearly proves the enormous productive and innovative potential of small farmers, especially women, and their will and ability to overcome disadvantages with often minimal input of support and based on minimal standards of security, human rights and enablement.** Access to basic resources, knowledge, technologies, credit and markets usually have an immediate and substantial impact, leading to self-sufficiency and active development of local economic and social wealth. Participatory development of community strategies, combining traditional knowledge and improved technological means of adaptation to new

11 IAASTD: Global report, chapter 1, p 10.

12 IAASTD: Synthesis report, p 8.

13 IAASTD: Synthesis report, p 22.

ecological and economic challenges, has resulted in thousands of shining examples of liberation from the downward spiral of hunger and poverty.

*A specific lesson-learning exercise covering 286 resource-conserving agricultural interventions in 57 poor countries (Pretty et al., 2006) offers an illustration of the potential of implementing more sustainable approaches to agriculture with existing strategies and technologies. In a study covering 3% of the cultivated land in developing countries (37 million ha), increased productivity occurred on 12.6 million farms, with an average increase in crop yield of 79%. Under these interventions, all crops showed gains in water use efficiency, especially in rainfed crops and 77% of projects with pesticide data showed a 71% decline in pesticide use. Carbon sequestration amounted to 0.35 tonnes C ha<sup>-1</sup>y<sup>-1</sup>.<sup>14</sup>*

## 7. Conclusions

While Greenpeace applauds the decision by many governments to greatly increase funding for agricultural research and development, an **emphasis on production to the exclusion of humans and the environment is a recipe for disaster**. Fighting hunger and poverty, mitigating and adapting to climate change, and sustainably managing natural resources depends on participatory and enabling strategies to be developed with the large majority of farmers around the world, including their traditional and local knowledge. The following are essential policy directions, which follow from the findings of the IAASTD, to ensure food security for all in the 21st century.

1. Agricultural research and development should be increased and systematically redirected towards ecological farming systems which can alleviate poverty by improving the local availability of food and can increase productivity in a sustainable manner by lessening the environmental impacts of agriculture. Special emphasis should be placed on reducing the reliance of agriculture and the food chain on fossil fuels (for agrochemicals, machinery, transport and distribution).
2. Governments should put an end to public subsidies promoting unsustainable input-intensive industrial agriculture and export-oriented farming models. Governments should also halt funding for the development of genetically engineered crops, which support and endorse unsustainable industrial farming practices.
3. Domestic agricultural policies and international trade regimes should encourage the internalisation of environmental externalities, including policies rewarding ecosystem services and imposing taxes on carbon emissions, agrochemical use and water pollution.
4. Agricultural research, development, trade and financial support should be directed towards ecological farming practices that mitigate greenhouse gas emissions from agriculture (for example, by increasing carbon sinks) and enhance the resilience and adaptation capacity of agricultural systems (for instance, by increasing biodiversity in farming and water-holding capacity of soils).
5. Special attention must be given to the knowledge, capacity and needs of the world's small farmers, especially women. Fighting hunger and poverty as well as environmental destruction depends upon their access to land, water, knowledge, markets, capital and basic human rights. As recently proposed by UNEP, small-scale farmers should be supported through a global fund for micro-finance in developing diversified and resilient ecological farming systems.<sup>15</sup>
6. Continuing discussions on the Global Partnership for Agriculture and Food Security must incorporate the findings of the IAASTD in their analysis, and should follow the organisational model of the IAASTD which engaged all stakeholders in defining effective policies. **Greenpeace calls on the international community to give the IAASTD a permanent status. Only the IAASTD, with its multi-stakeholder structure and the wide range of scientific expertise it represents, is capable of addressing current social, environmental and economic challenges in agriculture by guaranteeing a proper assessment and monitoring of all the different aspects of agriculture, food production and consumption.**

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<sup>14</sup> IAASTD: Global report, chapter 3, p 225.

<sup>15</sup> Nellemann, C. et al. 2008. The Environmental Food Crisis: the environment's role in averting future food crises. Nairobi, Kenya: United Nations Environment Programme. [http://www.unep.org/pdf/FoodCrisis\\_lores.pdf](http://www.unep.org/pdf/FoodCrisis_lores.pdf)