

Vision 2030:
Making current approaches work for sustainable agriculture

How can agro-ecology and other approaches support farmers to feed the world sustainably by 2030?



**Agri
Pro
Focus**

Colophon

Report compiled by:

Wim Hiemstra (ETC Foundation)

Nathalie van Haren (Both Ends)

Nicole Metz (Agri-ProFocus)

Hilke Jansen (BBO)

With input from Christy van Beek and Marlies Sanders (WUR/Alterra), Peter Ton (Cordaid), Heleen Bos (RijkZwaan), Hedwig Bruggeman, and organisations that shared their cases.

Contact Information

Agri-Profocus The Netherlands

Visiting address

Agri-ProFocus
Jansbuitensingel 7
Arnhem

Postal address

Jansbuitensingel 7
6811 AA Arnhem

T: +31 (0)26 7600397

E: expertmeeting@agri-profococus.nl

Website:

www.agri-profococus.nl

Preface

The draft Sustainable Development Goals (SDGs) for 2015 - 2030 reaffirm the need to achieve sustainable development by promoting economic development, social inclusion, environmental sustainability, and good governance including peace and security. They are universal and apply to all countries, national and local governments, businesses, and civil society.

Early 2014, the Agri-ProFocus network policy group decided to foster a debate about the desired Dutch Food and Nutrition Security policy and practice in the context of the draft SDGs. The announcement that Minister Ploumen and Secretary of State Dijksma plan to submit a Joint Food Security policy note to Parliament on October 16th 2014 was an extra incentive for us to feed and animate that debate.

Agri-ProFocus is aware of the different perspectives and of the fact that various actors claim their favoured approach is the most effective solution to foster sustainable agriculture within planetary and climate boundaries. However, within its mandate of knowledge broker Agri-ProFocus will focus on identifying the common grounds and on complementarities to develop context specific proposals for action.

The first part of the briefing note gives a quick insight in the basics notions and concepts, a series of examples from farmers' and agri-business practice, and suggestions for further reading on the current sustainable agriculture approaches. The second part presents a set of possible policy options that will be put on the table during the expert meeting on the 12th of September. The briefing note in front of you and the expert meeting on the 12th of September are the first two steps to feed policy, which we intend to follow up with in-depth field based fact finding and consultation.

Agri-ProFocus expects that the initiated dialogue will contribute to a Dutch policy framework in support of sustainable agricultural approaches that will allow farmers families worldwide to earn a decent living and feed the world sustainable by 2030!. You are invited to joint that world!

With special thanks to all involved in the preparation of the expert meeting and the writing of the briefing note which in itself was a meeting of different views in the search for common grounds.

Hedwig Bruggeman

Managing director Agri-ProFocus

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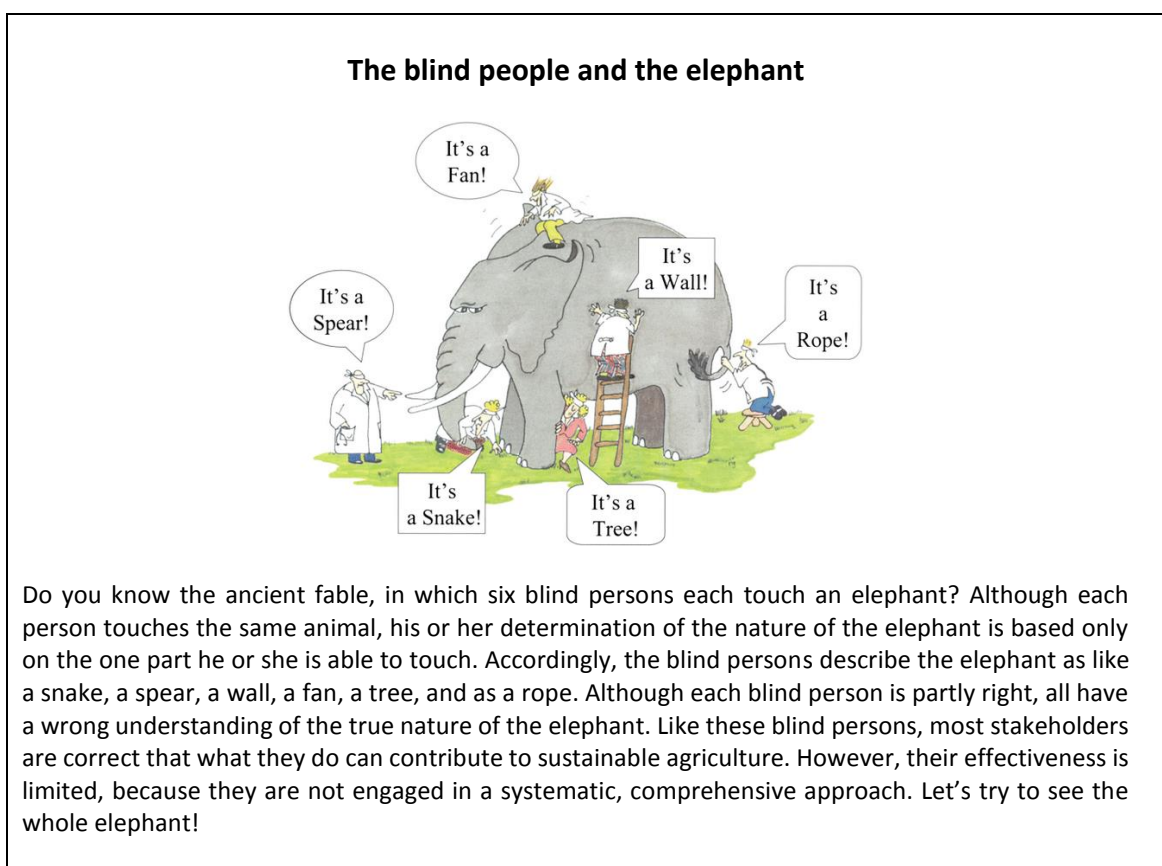
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1. Introduction

This briefing note is prepared to facilitate and introduce the dialogue during the Agri-ProFocus Expert meeting “Vision 2030: Making current approaches work for sustainable agriculture. How can agro-ecology and other approaches support farmers to feed the world sustainably by 2030?” which will take place on 12 September 2014. This expert meeting is organised to clarify different perspectives on agro-ecology and to discuss its potential to feed the world sustainably by 2030, in the context of many different other initiatives that promote sustainable agriculture worldwide. Key questions for the expert meeting are:

- How can sustainability aspects be integrated in food and farming systems and in agricultural value chains? Which business models work to make that happen?
- Which policy options can be reformulated as recommendations for Dutch policies?
- Which actions can be recommended for the Agri-ProFocus network; members, Agri-Hubs and support office ? Which actions can be recommended for other actors?

Agri-ProFocus invites all participants to share their experience and to foster the building of bridges between the perspectives of different stakeholders.



2. Greening agriculture for economic, ecological and social benefits

Approaches to promote the sustainability of agriculture, like agro-ecology, climate smart agriculture and the landscape approach, have recently gained more attention. Also, the Dutch Ministries of Foreign Affairs and Economic Affairs are preparing a joint policy note on food security and sustainable agriculture. The Dutch government intends to align its policies with the Zero Hunger challenge targets as defined by the UN and with the post-2015 Sustainable Development Goals (SDG) as they are now proposed by the Open Working Group, for further UN negotiations during 2014 and 2015¹.

- Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture
- Goal 12: Ensure sustainable consumption and production patterns
- Goal 13: Take urgent action to combat climate change and its impacts
- Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Building constructive complementarities

One of the challenges for Dutch stakeholders is to build constructive complementarities between agro-ecological approaches and other approaches such as Climate Smart Agriculture (CSA) and landscape approaches. Reaffirming what IIED (2014)² states, this briefing note acknowledges that: “some agro-ecological movements have biases against ‘conventional’ agriculture that often deter them from engaging more effectively with conventional farmers. Such biases can also mean they overlook opportunities for reaching farmers who are less radical, are willing to reduce expenses for purchasing inputs, want to employ different approaches on different parts of their farm or mix agro-ecological practices with other practices”. At the same time, “there is much prejudice at policy levels against agro-ecological practices and small-scale farmers, which means that there is a lack of investment and support”³. In parallel, the international attention for CSA also led to concerns which are still being debated, amongst others that the Global Alliance for CSA may undermine the adaptation to climate change.

This expert meeting will focus on complementarities, to develop context specific proposals for action that various stakeholders can be part of, without denying the differences in approach. Agri-ProFocus expects that this dialogue can contribute to an improved Dutch policy framework and subsequent practices in order to feed the world sustainably by 2030.

The following sections present various approaches to sustainable agriculture, which are relevant in the context of the Dutch policy debate. The description is illustrative of the variety of approaches, and does not claim to be exhaustive.

¹ Source: UN. <http://sustainabledevelopment.un.org/focussdgs.html>.

² Laura Silici, 2014. Agroecology: What it is and what it has to offer. IIED Issue Paper. IIED, London. (june 2014). <http://pubs.iied.org/pdfs/14629IIED.pdf>

³ Reference to UN special report Olivier de Schutter in <http://www.gaiafoundation.org/blog/un-special-rapporteur-agro-ecology-answer>.

Greening agriculture

To feed the world sustainably by 2030, business as usual (BAU) is not an option. We need managed transitions away from BAU in order to move forward⁴. And according to the UNEP Green Economy Report, green agriculture is capable of nourishing a growing and more demanding world population at higher nutrition levels up to 2050, as measured by calories per capita per day under the assumption that consumers adopt more sustainable dietary habits. Based on modelling, it is assumed that with an additional 0.16 per cent of global GDP invested in green agriculture per year (US\$ 198 billion) soil quality will be improved, yields increase, land and water requirements reduce, GDP growth and employment increases, nutrition is improved and energy consumption and CO2 emissions are reduced⁵.

Towards a green economy

		Year	2011	2030	2050		
		Scenario	Baseline	Green	BAU2	Green	BAU2
Agricultural sector variables	Unit						
Agricultural production	Bn US\$/Yr		1,921	2,421	2,268	2,852	2,559
Crop	Bn US\$/Yr		629	836	795	996	913
Livestock	Bn US\$/Yr		439	590	588	726	715
Fishery	Bn US\$/Yr		106	76	83	91	61
Employment	M people		1,075	1393	1,371	1,703	1,656
b) Soil quality	Dmnl		0.92	0.97	0.80	1.03	0.73
c) Agriculture water use	KM3/Yr		3,389	3,526	4276	3,207	4,878
Harvested land	Bn Ha		1.20	1.25	1.27	1.26	1.31
Deforestation	M Ha/Yr		16	7	15	7	15
Calories per capita per day (available for supply)	Kcal/P/D		2,787	3,093	3,050	3,382	3,273
Calories per capita per day (available for household consumption)	Kcal/P/D		2,081	2,305	2,315	2,524	2,476

Table 1. Towards a green economy. Results from the simulation model. Source: UNEP, 2011.

Both conventional and traditional agriculture generate substantial pressure on the environment, albeit in different ways. With very different starting positions, the pathways to greening agriculture will vary substantially and will have to be sensitive to local environmental, social, political and economic conditions. Industrial agriculture needs to lessen its reliance on fossil fuels, water and other inputs and restore biodiversity. Both large and small farms can benefit from more on-farm recycling of nutrients by reintegrating livestock, which provide manure, and the cultivation of green manures to improve and maintain soil fertility (see also Figure 1)⁶.

One of the key findings of the 2009 IAASTD report is that agriculture is multifunctional. Multifunctionality is used solely to express the inescapable interconnectedness of agriculture's different roles and functions. The concept of multifunctionality recognizes agriculture as a multi-output activity producing not only commodities (food, feed, fibres, agro-fuels, medicinal products and ornamentals), but also non-commodity outputs such as environmental services, landscape amenities and cultural heritages⁷ (see also Figure 2).

⁴ Source: IAASTD report Agriculture at a Crossroads, 2009.

⁵ Source: UNEP, 2011. Green Economy Report, chapter Agriculture, page 63.

⁶ IAASTD 2009.

⁷ IAASTD Agriculture at a Crossroads Summary for Decision Makers of the Global Report, page 4.

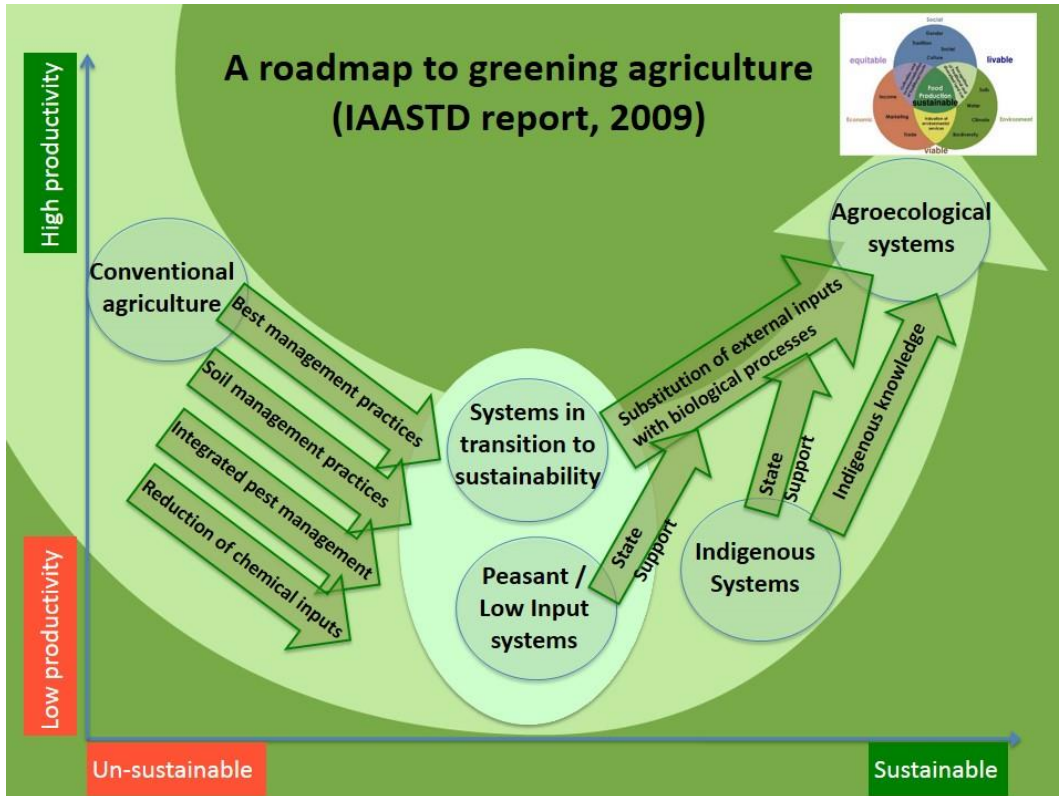


Figure 1. A roadmap to greening agriculture (IAASTD report, 2009)

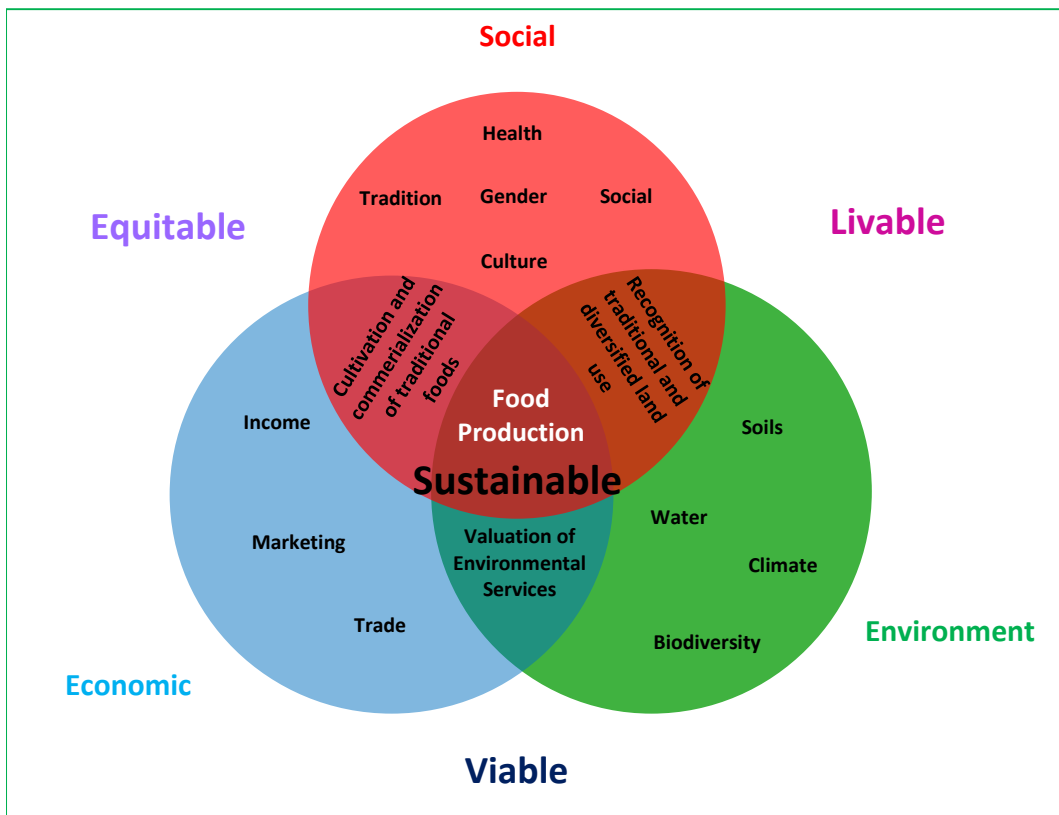


Figure 2. The different dimensions of sustainable food production. Source: IAASTD Agriculture at a Crossroads - Summary for Decision Makers of the Global Report, p. 12 (2009).

Climate Smart Agriculture

Climate-smart agriculture (CSA), as defined and presented by FAO at The Hague Conference on Agriculture, Food Security and Climate Change in 2010, contributes to the achievement of sustainable development goals. It integrates the three dimensions of sustainable development (economic, social and environmental) by jointly addressing food security and climate challenges. It is composed of three main pillars:

- sustainably increasing agricultural productivity and incomes;
- adapting and building resilience to climate change;
- reducing and/or removing greenhouse gases emissions, where possible.

CSA is an approach to developing the technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change⁸.

In the 2012 Annual report of the Ministry of Economic affairs, Climate Smart Agriculture is defined as “part of a broader sustainability agenda for agriculture and focuses on economic growth, poverty reduction and increased food security while at the same time maintaining and improving productivity and resilience of natural ecosystems”⁹.

The Minister of Foreign Trade and International Cooperation defines Climate Smart Agriculture as “a form of agricultural development which realizes a so-called triple-win: 1) Improved productivity 2) increased resilience to climate change and 3) reduced greenhouse gas emissions. The criteria for climate smart agriculture are high-productivity (ie high output per unit of input, such as land, water, labour), robust (ie, resistant against climate related extremes, such as drought or floods) and produces low emissions”¹⁰.

The Netherlands government recently hosted a Partner meeting of the Global Alliance on Climate Smart Agriculture as a preparation for the launch of this Global Alliance at the UN General Assembly in September 2014.

Over 60 Civil Society Organisations raised issues of concern at this meeting. Whereas they agree to the need for action to enable agriculture to adapt to climate change, they indicate that the Global Alliance for CSA may undermine the adaptation to climate change if the following elements are not addressed: environmental criteria, social safeguards, exclude carbon offsetting, transparency in governance of the alliance, Committee of Food Security frameworks such as Voluntary Guidelines on Responsible governance of Tenure of Land, Fisheries and Forests.

⁸ Source: FAO Climate Smart Agriculture Sourcebook, 2013

⁹ Kst-33605-XIII-1 JAARVERSLAG VAN HET MINISTERIE VAN ECONOMISCHE ZAKEN (XIII), May 2013

¹⁰ 33 625 Nr. 74 BRIEF VAN DE MINISTER VOOR BUITENLANDSE HANDEL EN ONTWIKKELINGSSAMENWERKING, February 2014

Landscape approach

The landscape approach is making its way from the scientific community to the policy discussions. WUR, CIFOR, ICRAF and Bioversity International have done progressive work on this. Various other stakeholders such as Hivos and IDH, also work with the approach.

CIFOR's principal scientist Terry Sunderland uses the following definition: A landscape approach is essentially managing complex landscapes in an integrated fashion, in a holistic fashion, incorporating all the different land uses within those landscapes in a single management process.¹¹ WUR CDI defines it as follows: the landscape approach seeks to link site-level actions at field or forest level to broader spatial units such as ecosystems or landscapes.¹²

The policies of the ministry of Foreign Affairs show a growing trend over the past decade towards more integrated land and water approaches, with increasing public-private collaboration and collective action at the local level in sourcing regions. These no longer perceive water, forestry, agriculture and others as separate fields of knowledge. A growing number of organizations have adopted the landscape thinking. Therefore, the Dutch government has supported a programme of IDH to boost the up-scaling and expansion of the landscape approach worldwide¹³.

What is agro-ecology?

Agroecology is a science, a practice and a movement. As a **science**, agro-ecology involves the holistic study of agro-ecosystems; as a **practice**, agro-ecology enhances the resilience and ecological, socio-economic and cultural sustainability of farming systems; and as a **movement**, it seeks a new way to link agriculture and with society. IIED (2014) presents agro-ecology as an evolving concept which started as a science and defines it as follows: *"The most commonly used definition of agro-ecology is 'the application of ecological concepts and principles to the design and management of sustainable agro-ecosystems'"*

As background, a few other definitions are listed below. The expert meeting uses the above IIED definition as its basis.

Wibbelman et al (2013)¹⁴ made a list of definitions of agro-ecology and concluded to use the following definition: *"Agro-ecology is a discipline that defines, classifies and studies agricultural systems from an ecological and socio-economic perspective, and applies ecological concepts and principles to the design and management of sustainable agro-ecosystems"*.

The All-Party Parliamentary Group on Agro-Ecology¹⁵ uses the following definition: *'Agro-ecology uses biological principles to increase farm productivity while conserving natural resources but also takes into account the wider social and economic context as it affects farmers and rural communities.'* Key components of agro-ecology are: biodiversity, animal welfare, low input, soil fertility, skilled jobs, food sovereignty, economic viability and healthy diets.

¹¹ <http://blog.cifor.org/19628/qa-scientist-terry-sunderland-describes-the-landscapes-approach#.U-oyBPm4U08> entered 12 august 2014.

¹² CDI Landscape functions and people - Applying strategic planning approaches for good natural resource governance, November 2012.

¹³ <http://www.idhsustainabletrade.com/sustainable-land-and-water-program>.

¹⁴ Wibbelmann, M., Schmutz, U., Wright, J., Udall, D., Rayns, F., Kneafsey, M., Trenchard, L., Bennett, J. and Lennartsson, M. (2013) *Mainstreaming Agroecology: Implications for Global Food and Farming Systems*. Centre for Agroecology and Food Security Discussion Paper. Coventry: Centre for Agroecology and Food Security. ISBN: 978-1-84600-0454.

¹⁵ Agroecology What it is and why we need it?, All-Party Parliamentary Group on Agro-Ecology.

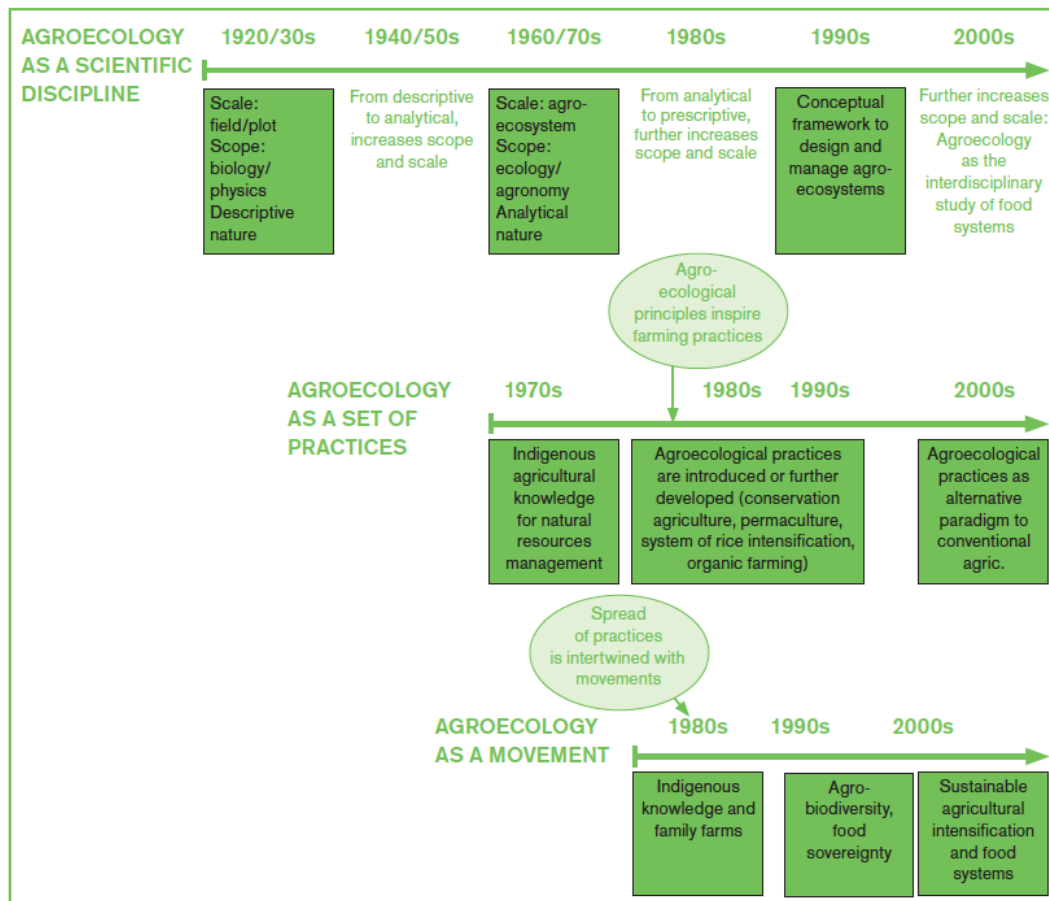


Figure 3. Agro-ecology, an evolving concept. Source: Agro-ecology: What it is and what it has to offer. IIED Issue Paper. IIED, London, June 2014.

Recent attention for agro-ecology, climate smart agriculture, and other approaches, a non-exhaustive list

The following list of publications, events, and international meetings related to greening agriculture, illustrates the growing international attention for the different approaches:

2009. Launch of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD)¹⁶ report. Major conclusion: Business as usual is not an option. The ecological footprint of industrial agriculture is already too large to be ignored and projected increases in future global environmental changes could make the footprint even larger.

2010. At the First Global Conference on Agriculture, Food Security and Climate Change in The Hague, the concept of climate-smart agriculture (CSA) was presented and defined as agriculture that “sustainably increases productivity, enhances resilience, reduces/removes greenhouse gas emissions, and enhances achievement of national food security and development goals”

February 2011. Start of the All-Party Parliamentary Group on Agro-Ecology in the UK. It is a cross-party initiative that gives a parliamentary focus for agro-ecological approaches to land management.

2011. The agricultural chapter of the Green Economy Report of UNEP makes a case for greening agriculture.

¹⁶ Agriculture at a Crossroads, International Assessment of Agricultural Knowledge, Science and Technology for Development Summary for Decision Makers of the Global Report This summary was approved in detail by Governments attending the IAASTD Intergovernmental Plenary in Johannesburg, South Africa (7-11 April 2008).

September 2012. Second Global Conference on Agriculture, Food Security and Climate Change in Hanoi

In **2013**, the Climate-Smart Agriculture Sourcebook was published and further advanced the concept with the intention of benefiting primarily smallholder farmers and vulnerable people in developing countries¹⁷.

September 2013. Trade and Environment review 2013 by UNCTAD: “Wake up before it is too late – make agriculture truly sustainable now for food security in a changing climate”¹⁸. One of the key messages is that there is a need for a two-track approach that drastically reduces the environmental impact of conventional agriculture, on the one hand, and broadens the scope for agro-ecological production methods, on the other.

17 October 2013. The Brazilian government launched a National Plan on Agro-ecology and Organic Production¹⁹. President Dilma Rousseff pledged to carry out the 8.8 billion-real (4 billion US dollars) Agro-ecology Plan by the end of her term in December 2014.

February 2014. CIRAD (French agricultural research organisation working for development in the South and the French overseas regions) and the FAO signed an agreement in Rome, aimed at ensuring increased coordination on subjects of importance for people in southern countries like: agro-ecology, family farming, climate change, nutrition.

February 2014. Food Otherwise conference in Wageningen attracts 800 participants, many of them being young, which demonstrates the growing movement for agro-ecology in the Netherlands.

March 2014. UN Special Rapporteur on the right to food Olivier De Schutter presented his final report ‘Agro-ecology and the right to food’ before the UN Human Rights Council. Based on an extensive review of recent scientific literature, the report argues that agro-ecology, if sufficiently supported, can double food production in entire regions within 10 years while mitigating climate change and alleviating rural poverty.

July 2014. Landscapes for people, food and nature in Africa Conference. Nairobi²⁰.

July 2014. Global Conference Climate Smart Agriculture, The Hague, organized by the Interim Secretariat of ACSA and hosted by the government of the Netherlands

18th to 19th September 2014. FAO hosts an International Symposium on Agroecology for Food Security and Nutrition to explore recent scientific research and knowledge and promote open dialogue while showcasing existing experiences and programs on Agroecology. The event brings together international experts in the field of Agroecology and within the new FAO Strategic Framework and Strategic Objective 2 to ‘Increase and improve provision of Goods and Services from Agriculture, Forestry, and Fisheries in a sustainable manner’.

23 September 2014. UN Secretary General’s Climate Summit, New York. Launch of Global Alliance on CSA.

¹⁷ Source: “Beyond climate-smart agriculture: toward safe operating spaces for global food systems” by Henry Neufeldt, Molly Jahn, Bruce M Campbell, John R Beddington, Fabrice DeClerck, Alessandro De Pinto, Jay Gullledge, Jonathan Hellin, Mario Herrero, Andy Jarvis, David LeZaks, Holger Meinke, Todd Rosenstock, Mary Scholes, Robert Scholes, Sonja Vermeulen, Eva Wollenberg and Robert Zougmore (2013) <http://www.agricultureandfoodsecurity.com/content/2/1/12#B1>.

¹⁸ Wake up before it is too late – make agriculture truly sustainable now for food security in a changing climate UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT TRADE AND ENVIRONMENT REVIEW 2013.

¹⁹ <https://www.embrapa.br/busca-de-noticias/-/noticia/1503075/plano-nacional-de-agroecologia-e-producao-organica-e-discutido-em-seminario-> entered 5 august 2014.

²⁰ See: <http://landscapes.ecoagriculture.org/events/nairobi2014>.

3. Greening agriculture: a farmers' and traders' business

This chapter describes six examples of how agro-ecological and other sustainable agriculture approaches are applied in practice, and one policy example. They offer a range of lessons learned on how to integrate sustainability in farming and business practice and are meant to feed the debate on what works and what does not work in practice.

Koppert Biological Systems: collaborating with growers to develop innovations

In 1967, cucumber grower Jan Koppert saw two things. One: the spider mite in his cucumber plants defended itself increasingly against chemical pesticides. Two: that these agents were not good for his own health. As a test, he ordered a box of predatory mites, the natural enemy of spider mites, at a laboratory in Switzerland. The experiment was so successful that it resulted in a company: Koppert Biological Systems, which in 2011 sold more than forty types of biological control agents (natural enemies, micro-organisms and pollinators) in more than eighty countries worldwide, with an annual turnover of 100 million euros. About 80 percent of this revenue comes from international sales, while the company expects further growth in BRIC countries. "In those countries, people are increasingly demanding sustainable production as well." Contact with local authorities is essential", says Henri Oosthoek, director Marketing and Sales. Especially when a product is exported for the first time. "Growers expect regulations for use from governments. Moreover, we need to get permission from authorities to sell our living products. "In August 2011, Koppert Biological Systems opened a plant in the U.S. state of Michigan. A plant? Oosthoek: "We simply call it production. We create the ideal climatic conditions and use materials to which the biological agents feel comfortable". Annually Koppert Biological Systems protrudes at least 7.5 percent of sales in innovation. The company has a thirty-head Research and Development department, which is supported by universities, but also by the farmers. For example, the new NatuGro range of biological agents is tested for several years with a select group of growers. "The agricultural sector is very conservative" explains Oosthoek. "Growers first want to see and experience innovations before they believe it." Koppert Biological Systems invites therefore potential customers (farmers) to see the biological agents replacing chemical inputs. Zeitgeist favours the company. Oosthoek: "Supermarkets and consumer demand fruit and vegetables without a lot of chemical residue. Thus, growers are looking for other alternatives, to our solutions. ²¹

Rijk Zwaan: build long-term partnerships with organic growers

As a vegetable breeding company, Rijk Zwaan stands at the beginning of the food chain with a focus to improve vegetables, to make them more appealing, tastier and more convenient. Within a world with a growing population while natural resources are getting exhausted, the breeders of Rijk Zwaan strive for higher yields and try to introduce varieties with new and improved resistances. The aim is production increase, with similar or lower levels of spraying and fertilizing, resulting in cleaner, healthier and more sustainable products.

Rijk Zwaan pays special attention to organic seeds. After all, organic farming demands specific varieties, with specific growing characteristics and sometimes other consumer preferences. That is why Rijk Zwaan breeders take the specific wishes of organic growers in their selection work into account and build long-term partnerships with them. Several demonstration fields and glasshouses are used for organic crops only, with extra attention for pest and disease resistance, robustness, taste and shelf life.

²¹ Source: <http://www.mt.nl/157/51163/magazine/hollands-glorie-koppert-biological-systems.html>.

Rijk Zwaan is a people-orientated organization and has a wealth of specific knowledge about plant breeding and growing. These elements are combined in development projects which are designed to increase the level of knowledge of growers in the South and in doing so contribute to fighting poverty. A special project is Rijk Zwaan Afrisem in Tanzania that aims to provide local African horticulture with improved varieties. These varieties are developed on the basis of local existing varieties and in close cooperation with farmers. The farmers constantly give feedback to Rijk Zwaan on the performance of the varieties in the field, which enables the company to meet farmers' needs and make varieties fit the local circumstances and production systems. Farmers need a good yield, crops that are resistant to pests and diseases, make efficient use of water and meet the wishes of the local market. By teaching and passing on knowledge to African farmers Rijk Zwaan intends to offer structural help to Africa and contribute to the development of horticulture in this continent, a case of creating shared value.²²

Rice Cultivation with Smart Fertilizer Value Chain in Bangladesh²³

The inundated cultivation practice of rice results in low uptake and high losses of nitrogen when the urea fertilizer is applied broadcast. Compressing the urea kernels to urea super granules (USG) and placing them individually at 7-10 cm below the soil surface in the center of 4 rice plants 1-7 days after transplanting, increases uptake and yield by 10-20% or about 0.5-1 t ha⁻¹, while reducing losses as 30-40% less urea is applied. Farmer's willingness to adopt the practice is high because it increases farm income and labor requirement is contained due to an applicator that facilitates deep placement of the USG and reduced weeds. An economically viable value chain is developed to enable the adoption by millions of farmers. Competing companies produce USG compressors and applicator at low price, trained agro-dealer incorporate the USG in their assortment, policy makers approved the USG to be traded as fertilizers, while trained extension workers train farmers. Currently 1.2 million farmers adopted the practice during the wet *Aman* season, reaching 2 million during the dry *Boro* season, and holds promise for higher adoption.

Boerengilde: 2 extra cents for 'biodiversity-rich' milk

The Dutch 'Boerengilde', or the farmers' guild, is initiated by a group of dairy farmers in the Dutch province of Fryslân living in an area with biodiversity hotspots for migratory birds. They see being a farmer as 'a way of life based on farm family values and craftsmanship'. They want to prove that generation old values can also be economically viable in modern times in the Netherlands and started the guild in 2014. Internationally, there are farmers' guilds in USA, where they present themselves as 'the newest wave of farmers, ranchers, and sustainable food system advocates (...) who collectively strive for the economic viability of agriculture as well as the social networks necessary to attract, cultivate and sustain a new generation ready to work the land'²⁴ The craftsmanship of the Frisian dairy farmers centres around grazing their cows annually at least half a year outside; maintaining up to 20% of the meadows for grasses and diverse herbs (which attract insects on which the chicks feed); creating wetlands and conservation areas; and using dung with straw. They aim at an increase in the age of the cows from 5,9 years (national average) to 7 years; an increased population of migratory birds and an increased nutrient use efficiency.

Many farmers are interested to support biodiversity and agro-ecology, but apart from organic farmers, the current economic system does not allow conventional farmers to make this a viable economic option at farm level. The Frisian Guild farmers have an agro-ecological business model in which they get 2 eurocents above the guaranteed price of FrieslandCampina farmers, which enables them to produce 'biodiversity-rich milk'. The farmers sell the milk as a children's drink (tjolk) in conventional supermarkets from September 2014 onwards at a slightly higher price than comparable milk drinks.

The Ministry of Economic Affairs is interested in this type of new agro-ecological business models and commissioned a theoretical modelling study to the LEI Agricultural Economic Institute to explore the

²² Source: Ton van Leeuwen, RijkZwaan, August 2014.

²³ Source: VFRC. For further reading: [http://www.ifdc.org/Expertise/Fertilizer-Deep-Placement-\(FDP\)/](http://www.ifdc.org/Expertise/Fertilizer-Deep-Placement-(FDP)/).

²⁴ Sources: www.farmersguild.org, www.boerengilde.nl.

conditions for farmers to engage in such models. The results will be presented in January 2015. Key stakeholders in Fryslân indicate that, in addition to the modelling study, an innovative participatory research is needed, involving pioneering farmers and marketing entrepreneurs, to address financial and practical bottlenecks for further upscaling of agro-ecological business models.

Heiveld Rooibos Cooperative: Production with pride, local incomes doubled

The Suid Bokkeveld in Western South Africa, 360 km north of Cape Town, is the home for the indigenous rooibos. Sheep and goat herding also contribute to people's livelihoods. During the apartheid era, rural services to the community were minimal, and poverty was widespread. Poor access to markets resulted in low prices for their products. In 1998, after the end of apartheid, the NGO Environmental Monitoring Group (EMG), a working partner of APF member Both ENDS, first made links to the Suid Bokkeveld community to support their efforts for improved livelihoods. The community had been split by a conflict over control of the resources made available by the Department of Agriculture. At this time rooibos tea prices had dropped as the market was deregulated.

At the same time, neighbouring communities had achieved successful livelihood development, one in collectively processing and marketing their rooibos tea and others started community based tourism initiatives. People from the Suid Bokkeveld wanted to find out if these were viable livelihood options for them.

In August 2000 EMG facilitated a visit of a group of representatives from the Suid Bokkeveld to these communities. On their return, the community collectively agreed to establish the Heiveld Cooperative for rooibos. As organic rooibos could result in better market prices, the members of the cooperative decided to change to organic farming. Following an inspection, they were all able to register as organic rooibos farmer by the end of 2000. A business plan was drawn up with aimed at marketing tea and social projects through expected profits. Employment was created for local community members, especially business initiatives of women for packaging. The fair trade partners provide a "fair trade premium" on Heiveld products. The premium has enabled the co-operative to invest in the further development of their business, including training of members and staff. The premium is also used to support local schools and disadvantaged members of the community.

And there was another opportunity, wild rooibos grows in the Suid Bokkeveld in undisturbed natural areas and used to be harvested by landless people. The Heiveld Cooperative worked with these harvesters and EMG to come to sustainable harvesting standards for wild rooibos. The Cooperative sells this high quality, biodiversity-friendly product for an even higher premium than organic rooibos. This provides an incentive for the community to protect the natural areas. Sustainable wild harvest standards are now being adopted in other areas as well. Recently after a severe drought, 80% of the cultivated rooibos died while the wild rooibos survived, it therefore, contributes to the resilience of the community. The Heiveld Cooperative has 64 members and an international reputation for reliable delivery of a high quality rooibos. It's annual production is 50-80 tonnes. It exports to Germany, United Kingdom, Switzerland, Italy, France, Belgium, USA, Canada, Japan, New Zealand, Australia. Revenue in 2013: 4.4 million ZAR (South African Rand) or 305.000 Euro.²⁵

Hivos and sustainable landscapes: building sustainable coffee based landscapes in East Africa

In recent years, production of coffee per hectare has declined in East Africa. As a result, smallholder coffee farmers struggle to maintain their business and sustain their living. For coffee traders, sustaining their coffee supply is crucial. Hivos has set up a public-private partnership with coffee trader ECOM and the Dutch Ministry of Foreign Affairs, to work towards Sustainable and Secure Smallholder Systems at Scale. The purpose of the programme is to allow the coffee sector in East Africa to regain its vitality and to offer long-term business opportunities for 2.4 million smallholder coffee farmers and 16 million people dependent on the sector. The programme sets out the five-year ambition to improve the skills and means of at least 90,000 East African small holder coffee farmers,

²⁵ Source: <http://www.heiveld.co.za/>.

to stabilize and increase their production. Triggers for change include a threefold increase of coffee-based income through viable market-based support services. In addition, the programme introduces diversification of income for men, women and youth by supporting dairy and horticulture production, while also introducing biogas digesters to secure a sustainable energy and fertilizer supply. A coffee-based landscape perspective will strengthen the outcomes at individual farm level as well as involving third parties to develop a shared vision on long-term requirements for sustainable supply chains, in which climate change, water scarcity and dwindling biodiversity will be explicitly dealt with.

An enabling policy environment: The Zero Hunger Programme in Brazil

The Zero Hunger Programme was developed by the federal government of Brazil as a public policy to eradicate hunger and tackle social exclusion. Started in 2003, it promoted a healthy diet and fair prices for local farmers. The Food and Nutrition Security Policy supports the Zero Hunger programme as a multi-sectoral policy, involving different governmental sectors such as the health, education, labour, agriculture, and environment sectors and involving actions designed to foster the production, trade, quality control, access and use of food products. The National Food Security Council (CONSEA) plays a leading role in implementing this policy, and both the PNAE (School Meals National Programme) and the PAA (Food Acquisition Programme) are members of this council. These two programmes offer incentives of a 30 per cent price increase to farmers who produce using agro-ecology-based methods. Brazil's National Plan for Agroecological and Organic Production (PLANAPO) was launched by president Dilma Rousseff in October 2013, with a budget of nearly 3 billion euro for 125 initiatives till end 2015, to further implement the Zero Hunger programme. It is a commitment from the State to support family farmers in the transition to agro-ecological production, among others through credits and supporting agro-ecological farmer organisations. It also calls for agro-ecological 'nuclei' in universities.

PLANAPO was launched after an intensive lobby by the social and agro-ecological movement which used real life agro-ecological experiences to convince policy makers. Some experiences were more than 25 years old. Whereas civil society organizations consider the PLANAPO a win and a stimulus for the agro-ecological movement in Brazil, they also consider it symbolic, mainly because institutional fragmentation hinders the integration between the social, economic, environmental and cultural dimensions of rural development dynamics. This integration is basic in an agro-ecological perspective.

As PLANAPO is still recent, an assessment of results cannot yet be expected. At present there are only data about the physical implementation of the targets set in the Plan. A qualitative evaluation based on the concrete results at field level has not yet been done. The Brazilian NGO AS-PTA participates in the monitoring and evaluation of the Plan and hopes to document the changes it enabled in farmers' lives, also to feed new proposals for the period 2016-2020.

Professor Irene Cardosa: *"As far as I know, in The Netherlands you have several agro-ecological practices. And maybe some science? But I do not know about any movement! If you want to go forward with agro-ecology, the movement has to be strong!"*²⁶

²⁶ Sources: Grisa, C., Schmitt, C.J., Mattei, L.F., Sérgio Maluf, O.R. and Pereira Leite, S. (2011) Brazil's PAA, Policy driven food systems, *Farming Matters*, 9/2011, 27.3; Ryan Nehring and Ben McKay (2014): Sustainable Agriculture: An Assessment of Brazil's Family Farm Programmes in Scaling up Agroecological Food Production, International Policy Centre for Inclusive Growth. March 2014; <http://www.ipc-undp.org/pub/IPCWorkingPaper123.pdf>. Additional information supplied by Paulo Petersen (AS-PTA) and professor Irene Cardosa, Federal University of Viçosa, Brasil.

4. Policy options for mainstreaming sustainability in farming systems and value chains.

The following policy options are meant as a kick off for the debate in the expert meeting. They concentrate on further mainstreaming sustainability aspects within different farming systems and value chains, and list interventions that could tackle the different obstacles farmers and value chain actors face today. All stakeholders - producers and their organisations and other civil society organisations, private sector, governments, knowledge institutions - play a role to realize the actions needed to implement these policies. Where applicable, we mention the particular stakeholders' roles. Overall, the discussion in the expert meeting is meant to formulate specific recommendations for the Dutch government's Food Security Policy note²⁷.

The policy options were developed by the Agri-ProFocus preparatory committee for this expert meeting.

During the expert meeting, the participants will deal with the questions whether these policy options are relevant for greening agriculture in the context of global food security by 2030, how they can be achieved, and which roles the stakeholders need to play to realize them.

Cluster I. MAKE MARKETS WORK FOR GREENING AGRICULTURE²⁸

The economic viability of agro-ecological and other green approaches is a major barrier to their wider uptake. The negative impacts of conventional farming on health and the environment are often externalised and paid by taxpayers. Because agro-ecological and other green approaches attempt to incorporate the costs of mitigating these impacts, economic viability in competition with conventional agriculture can be hard to achieve. Accounting for the value of and revenue from environmental services and the costs of stewardship or remediation is essential, because the economy as a whole may benefit from more widespread agro-ecological or green production. These benefits may even offset any investment and payment for public goods provided by agro-ecological or other green approaches. Pricing externalities and incorporating them into production costs means creating markets for environmental services.

Farmers, and especially those in LMICs, often lack access to appropriate inputs, tools and technical advice. Promoting local agro-ecological and other green business models for the production and commercialisation of appropriate inputs and technologies (such as light no-tillage planting machines, organic fertilisers, biological pesticides, seeds for cover crops) could encourage more farmers to engage with green approaches.

Agro-ecological and other green practices contribute to food security by encouraging diversity in production, in diets and by enhancing the nutritional value of crops. Promoting agro-ecological and other green enterprise models offers the potential to supply the increasing urban and peri-urban markets in developing countries with nutritious foods sourced locally, thereby reviving local food traditions. It is important to make agricultural stakeholders accountable for improving the amount as well as the diversity and quality of food available and accessible to poor households and individuals throughout the lifecycle, including in the first 1000 days of a child's life. An agro-ecological focus would give any nutrition sensitive agricultural programme a head start because of its natural inclusion of crop diversity. The selection of crop varieties based on nutritional value and not only on potential yields will further contribute to improved nutrition quality in production. Especially if this is implemented with consideration for cultural preferences and customs and integrated within a multidimensional nutrition policy.

²⁷ This Policy Note is currently developed by the Ministry of Foreign Affairs and the Ministry of Economic Affairs and will be sent to Parliament October 16th.

²⁸ The policy options use a few terms as umbrella concepts to encompass a range of different approaches to make farming and trading more sustainable: 'greening agriculture' as a process; and 'agro-ecological and other green approaches' to describe the possible range of approaches. See also the Glossary of this document.

Policy Option 1:

Provide adequate policy incentives and technical assistance to support small-scale farmers and small and medium-sized enterprises in the creation of local agro-ecological and other green business models, which can make appropriate inputs and nutritious food available in the market.

Interventions for discussion:

- *How to foster the opportunities for small-scale (or smallholder) farmers using agro-ecological or other green approaches to link independently with markets?*
- *What are the core elements for a successful business case for these small-scale farmers and SMEs ?*
- *What enabling environment is needed for these small scale farmers and SMEs?*
- *Which knowledge system do these farmers and SMEs need (see Cluster II)?*

Policy Option 2:

Diminish Dutch support for unsustainable agriculture and push incentives for agro-ecology and other green and nutrition-sensitive agriculture approaches.

Interventions for discussion:

- *Seek and endeavour international agreement on the valuation and incorporation of externalities in national and international markets. (all stakeholders)*
- *Develop a trade system for nutrients (all stakeholders)*
- *How could Dutch companies that provide inputs to markets in LMICs be encouraged to reorient towards delivering services and products supporting green and nutrition-sensitive agriculture approaches? (private sector)*
- *How could agricultural stakeholders be made more accountable for improving both the amount and the diversity and quality of food available and accessible to poor households and individuals?*
- *Assess the effectiveness of value chain approaches with criteria such as a/o: farmers' income; gender; soils; CO2 emissions; pesticide use. (all stakeholders)*
- *The Dutch government - in coordination with EU and other international bodies - should abandon subsidies and levies that push unsustainable practices, such as those generating high CO2 emissions, land degradation and biodiversity loss.*

Cluster II. DEVELOP KNOWLEDGE, SCIENCE AND PRACTICE FOR GREENING AGRICULTURE

One of the keys to feeding the world sustainably is supporting farmers to invest in optimisation and sustainability of existing local farming systems. Therefore, capacities for exchanging and transferring information, knowledge and expertise of all actors in agricultural and food systems (from production, to storage, transportation, processing and marketing) need to be strengthened. Farmers practising agro-ecological or other green farming approaches aim to minimise the use of external inputs and rely on internally produced or recycled inputs. The appropriate management of complex energy flows and internal resources requires large amounts of 'soft' inputs such as labour, management skills and knowledge.

Agro-ecology in particular is defined as an innovative, creative process of interactions among small-scale producers and their natural environments. Farmer-led joint research – in which farmers together with support agents investigate agro-ecological solutions - can go beyond field-based trials to include investigation of other questions, such as jointly exploring a value chain, trying out a different way of managing communal resources, institutional innovations and strengthen local experimentation and innovation processes.

The Ministry of Economic Affairs promotes 'Climate Smart Agriculture' with an emphasis on technological solutions (seeds, fertilizer, irrigation). A recent report indicates that (a/o.) the Agro-Food Top Sector policy relies too much on technological innovation, while 77% of successful innovation comes from social innovation: investing in people's skills, expertise and capacities, pushing flexible forms of cooperation, promoting entrepreneurial leadership, and bringing together companies, research institutions and civil society organizations in order to foster co-creation.²⁹

The Netherlands has a long history in combining the soft side, as new forms of cooperation, dialogue and networking with hardware, like technological solutions for natural resources: in the 11th century, water boards were being established to find solutions for washing water and which comprised of all water users. Therefore, the Netherlands can take a leading and distinctive role in social innovation and up-scaling of sustainable solutions through investing in agro-ecological and green agriculture knowledge development and cooperation between farmers organizations, civil society, researchers, private businesses, financial institutions and governments.

Policy Option 3:

Ensure that Dutch research priorities and funding are re-directed to strengthen research on agro-ecology and other green approaches, based on local innovation processes, and incorporate sustainability principles into agricultural science curricula and research.

Interventions for discussion:

- *How to develop an innovation agenda that balances around scarcity (natural resources) and abundance (people and labour)? (all stakeholders)*
- *What can be done to ensure that young agricultural professionals in all regions are developing the urgently needed professionalism to empower farming communities based on an attitude of co-learning and applying participatory skills? (knowledge institutions, farmers' organisations)*
- *Allocate sufficient Dutch funding to research in this area*

Policy Option 4:

Pursue a social innovation approach to generating and disseminating knowledge and best practice, which focuses on participatory approaches and local innovation.

Interventions for discussion:

- *How to better involve farmers, pastoralists and other land users, by participatory gender inclusive mechanisms in the identification of the problems and the formulation of solutions, as an integral part of research, development and implementation?*
- *How to support the decentralisation of public agricultural extension services (knowledge and means), as agriculture is ecosystem and region-specific?*
- *How to foster the exchange of experiences among entrepreneurs who practise agro-ecological and other green approaches in LMICs? And how to enable their Dutch colleagues from small and medium enterprises to share their experience and expertise with their colleagues in the LMICs?*
- *How could a story book of agro-ecological and other green agriculture practises in LMICs be composed and used?*

²⁹ Sociale innovatie doorslaggevend voor succes topsectoren: Topsectorenbeleid te eenzijdig gericht op technologische innovatie Rotterdam School of Management, Erasmus University (RSM) and Panteia / EIM (January 2014): http://www.rsm.nl/fileadmin/Images_NEW/News_Images/2014/ONDERZOEKSRAPPORT_TOPSECTOREN.pdf.

Cluster III. Support sustainable land use by and for farmers

When farmers have security about their land use rights, they will more likely invest in agro-ecological and other green farming practices such as contour agriculture, trees, diversification of crops, soil management, land restoration, etc. When land users are not secure about their land use rights, they will concentrate on short term activities; take all the opportunities that are there to give the highest short term returns instead of investing in long term returns. In many countries, land tenure and land (use) rights are considered highly political. Within the UN Committee on World Food Security, guidelines were developed for the responsible governance of tenure of land.

The Netherlands has a history of involving people in decision making over natural resources, in integrated water management and spatial planning processes. This experience can be utilised for the implementation of the tenure guidelines at local and national level in third countries.

The multi-annual experience of Dutch farmers' networks and other civil society organisations in working with farmers' networks in LMICs, is a valuable basis for further work.

When defining a sustainability agenda, together with different stakeholders, fundamental questions arise on how to define the desired impact, and which indicators to use to measure success. Multi-dimensional indicators and tools are needed, which not only measure yields, but also many other indicators of importance for a farming family's resilience. In the current (Dutch) debate, it is far from clear what is considered as 'productive', 'efficient' or 'sustainable'.

Policy Option 5:

Intensify policies and strengthen the capacity of institutions including farmers' groups and cooperatives to support small-scale farming by securing gender inclusive land tenure rights .

Interventions for discussion:

- *What policy and practices are missing to secure equitable rights of access and use for land, water, forests, common property resources and seeds?*
- *How can farmers' organisations and cooperatives in LMIC's take the driving seat of promoting agro-ecology and other green approaches, and how could their representatives participate in policy decision making and the monitoring of implementation of existing policy at all levels?*

Policy Option 6:

Develop a new set of indicators to measure the impact of policy and practice in the field of sustainable agriculture.

Interventions for discussion:

- *What steps need to be taken to promote a fundamental cultural and philosophical shift in the evaluation of what is regarded as 'productive' and 'efficient', not just by farmers, but by society as a whole. The emphasis should be on optimising rather than maximising production (and profits). (all stakeholders)*
- *Could there be a role for a Dutch multi-stakeholder initiative in developing a new set of indicators to measure the impact of policy and practice in the field of sustainable agriculture? And how could these be used to specify the exact policy ambitions? (e.g. what do we endeavour in the context of 'sustainable intensification'; how could the multi-functionality of agriculture be measured; how could the resilience needs of smallholders be measured)*

Cluster IV. AN ENABLING POLICY ENVIRONMENT

Food security is an important policy goal for the Dutch Ministries of Economic Affairs (MEA) and of Foreign Affairs (FA). The international policy of MEA elaborated the Top Sector policy, in which Climate Smart Agriculture is an important agenda.

The following policy options and related interventions are of a more general nature, and merit specific debate to foster an appropriate enabling policy environment.

Policy Option 7:

Dutch government is a key partner for partner countries and other LMICs that intend to foster further sustainability of food and farming systems and value chains.

Interventions for discussion:

- *How to support governments of partner countries in developing coordinated national plans for food and nutrition security based on a proper context analysis, which include fostering further sustainability of food and farming systems and value chains, increase resilience a/o to climate change, and reduce malnutrition.*
- *How to ensure sufficient development funding for interventions by public institutions of partner countries to realise the above.*
- *Commission an independent analysis of the contribution of Dutch policies to global food security, in the context of the upcoming post-2015 agenda.*

Policy Option 8:

Ensure policy coherence for food security between International Cooperation, Foreign Trade and Economic Affairs.

Interventions for discussion:

- *What is needed to achieve that all Dutch Ministries speak with one voice internationally, in the context of a/o. IPCC, the CSA Alliance, SDGs, Post-2015 development goals.*
- *How to better include Civil Society including farmer organisations, private sector, and knowledge institutions in the participation in the Dutch government's sustainability oriented initiatives such as on the Global Alliance for CSA.*
- *Develop a coherent Dutch agenda which facilitates the use of multiple concepts, based on the similarities between the concepts (Agro-ecology, Climate-Smart Agriculture, Landscape Approach, and other relevant approaches for sustainable agriculture), and foster the coordination between actors using the different approaches. Clarify the remaining differences, and address the negative consequences if appropriate.*

Glossary

- **Greening agriculture:** refers to the increasing use of farming practices and technologies that simultaneously maintain and increase farm productivity and profitability while ensuring the provision of food and ecosystem services on a sustainable basis; reduce negative externalities and gradually lead to positive ones; and rebuild ecological resources (i.e. soil, water, air and biodiversity natural capital assets) by reducing pollution and using resources more efficiently³⁰. (In this paper, we use the term as an umbrella concept for the range of different approaches below.)
- **Agro-ecology:** the application of ecological concepts and principles to the design and management of sustainable agro-ecosystems³¹. This includes enhancing functional biodiversity for pest and disease control, on-farm nutrient recycling, promoting key ecological processes and services, diversification of species and genetic resources at field and landscape level, local crop varieties and livestock breeds.
- **Sustainable intensification (SI):** Producing more food with less negative impact. It is about farming in ways that emphasise resource efficiency and nutrient recycling, harnessing the best of traditional and 'modern' knowledge, optimising the use of synthetic inputs where needed³².
- **Climate smart agriculture (CSA):** focuses on economic growth, poverty reduction and increased food security while at the same time maintaining and improving productivity and resilience of natural ecosystems. 'Sustainable intensification' (SI) and 'climate-smart agriculture' (CSA) are closely interlinked. The main difference is the focus in CSA on outcomes related to climate change adaptation and mitigation. SI contributes to adaptation: building ecosystem services, increasing farm incomes. SI is crucial for reduced emissions per unit of output, through lower direct emissions and less land cover change. CSA and SI are both seen as only part of a multi-pronged approach toward global food security³³.
- **Landscape approach:** managing complex landscapes in an integrated fashion, incorporating all the different land uses within those landscapes in a single management process.
- **Sustainable Development:** This is a broad concept, which has been extensively discussed recently by the Open Working Group on Sustainable Development Goals, which presented a proposal for the next generation of 'post-2015' development goals for the United Nations. The zero draft proposal for these SDGs includes amongst others the following goals: by 2030, end hunger and ensure that all people have access to adequate, safe, affordable and nutritious food all year round; by 2030, implement sustainable and resilient agricultural practices including for adaptation to climate change, extreme weather, drought and disasters, and progressively enhance soil quality³⁴. UN negotiations on the ambition level of the international community will continue until late 2015.

³⁰ Source: UNEP, 2011. Green Economy Report, chapter Agriculture, page 42.

³¹ Silici, L. Agroecology. What it is and what it has to offer. IIED Issue Paper, June 2014. Quoting Altieri, M.A. (1995).

³² Tara Garnett in <http://ccafs.cgiar.org/sustainable-intensification-tool-sustainable-food-system-toolbox> elaborated in Garnett, T. et al. Sustainable intensification in agriculture: premises and policies, Science, 5 July 2013.

³³ Sustainable intensification: What is its role in climate smart agriculture? Bruce M Campbell, Philip Thornton, Robert Zougmore, Piet van Asten and Leslie Lipper. Current Opinion in Environmental Sustainability Volume 8, June 2014, Pages 39–43.

³⁴ Source: UN. <http://sustainabledevelopment.un.org/focussdgs.html>.

Vision 2030 : Making current approaches work for sustainable agriculture
How can agro-ecology and other approaches support farmers to feed the world sustainably by 2030.

Agri Pro Focus

Contact

Agri-ProFocus

T: +31 (0)26 7600392

E: info@agri-profoc.us.nl

Postal Address

Jansbuitensingel 7

6811 AA Arnhem

Visiting address

Jansbuitensingel 7

Arnhem

The Netherlands

Website: www.agri-profoc.us.nl

