Netherlands Commission for
Environmental Assessment
Dutch Sustainability Unit

Towards Climate Proof Food and Nutrition Security

THE NETHERLANDS

20 January 2016

Netherlands Commission for Environmental Assessment
Dutch Sustainability Unit

Advisory Report by the Dutch Sustainability Unit

Subject: Towards Climate Proof Food and Nutrition Security

To: Mr Jeroen Rijniers
The Netherlands Ministry of Foreign Affairs (MFA)

From: The Netherlands Commission for Environmental Assessment, the Dutch Sustainability Unit

DSU Technical Secretary: Mr Reinoud Post

DSU Quality Control: Mr Sibout Nooteboom, Mr Rob Verheem

Experts: Ms Maja Slingerland, Mr Thom Achterbosch, Mr Jan Verhagen

Reference: SU01-54

The Dutch Sustainability Unit (DSU) is hosted by the Netherlands Commission for Environmental Assessment (NCEA) at the request of the Ministry of Foreign Affairs. The views expressed in this publication are those of the DSU and do not necessarily reflect the views and policies of the Netherlands Government.

Contact:
W: www.dsu.eia.nl
T: +31 (0) 30 2347653
E: vfortes@eia.nl

Table of Contents

1. Introduction

1.1 Rationale

As a result of the Pitch & Bid climate change workshop for IGG- Food programmes (dd. 17 June 2014) it was concluded that IGG wants to know:

- how it can assess and improve the climate smartness of this category of programmes and the Food and Nutrition Security portfolio as a whole;
- whether and how climate change impact should have implications for Dutch policy on food and nutrition security (composition of the program portfolio, geographic focus, scope of the new programmes, etc.).

To deal with these two issues DSU started a process in three steps:

- an analysis on how climate change (CC) relates to food and nutrition security (FNS);
- translation of this relation into a 'CC-lens for FNS', enabling a climate scan of FNS programmes;
- application of that lens to current portfolio, leading to observations and conclusions on the climate smartness of this portfolio.

The results of the proposed process should guide the way on how, in the coming years, new food and nutrition security programmes will be formulated and the FNS portfolio will be composed. The results of the process will contribute to achieve the long term objectives the Dutch government with regard to FNS: to increase productivity and climate resilience of smallholder agriculture, while reducing GHG emissions as a co-benefit (with reference to the five zero hunger goals of the UN).

1.2 Request

The request that the DGIS made to the Dutch Sustainability Unit is as follows:
'Aware that the Netherlands, including its private sector, is a big player in the field of worldwide food security: Is our policy and our centrally managed programme portfolio on food security and food production such that they anticipate in the right way the consequences of climate change and the role that the Netherlands (including the BV Netherlands) can play in the field of climate smart food production.'

In more detail: does the Dutch government

- focus on the right continents/regions/countries;
- focus on the right target groups;
- focus on the right food chains;
- promote the right production systems;
- apply the right approach / strategy.

10th of April 2015, the ToR were rephrased as follows: 'From the analysis of the existing portfolio, the DSU will formulate a number of strategic notions that can inspire the formulation of future FNS programs.'

1.3 Approach

To respond to this assignment, the DSU applied the following approach:

1. Develop a climate lens for looking at FNS programs: an expert-judgement based checklist of points of attentions for climate smart FNS programs. This lens is presented in chapter 2.
2. Apply this lens to the current central (The Hague managed) portfolio of FNS programs, leading to observations and recommendations on the questions put forward in the Terms of Reference for the assignment. Observations and recommendations are given in chapter 3.

Insights developed in discussions held at the presentation of the draft results of this assignment have led to the decision to add a second phase to the assignment that will go into creating focus (geographical, strategic, thematic) for a strategy on Climate Change and Food and Nutrition security in sub-Sahara Africa.

2. The climate lens

The 'lens' is a series of points of attention, presented along a matrix of the three Dutch food and nutrition policy objectives[1], subdivided according to the four pillars of food security, when relevant further subdivided along themes. and three aspects in which food and nutrition security is related to climate change.

The policy objectives are:

- eradication of hunger and malnutrition;
- inclusive sustainable growth in agriculture;
- ecologically sustainable food chains.

The pillars of food and nutrittion security are:

- food availability
- access to food
- utilisation of food
- stability of food and nutrition

The aspects in which food and nutrition security is related to climate change are:

- GHG emissions,
- Incremental adaptation (to e.g changes in temperature and rainfall, slow price changes)
- Resilience against shocks (droughts, floods, hurricanes, sudden price peaks).

(The latter two are not mutually exclusive and context specific.)

Apart from looking at programs in the present portfolio of centrally managed FNS programmes, this lens might be usefull[2] in formulating future programs in that portfolio.

[1] Letter of the minister of Foreign Affairs and the minister of Economic Affairs of 18 November 2014

[2] To this end, the DSU has developed a user friendly version (interactive pdf).

The ‘lens’ is presented in Table 1 hereafter. The background to the lens can be found in the WUR report: *Climate change lens on donor policies and programs for improving food and nutrition security* of May 1, 2015

Table 1. A lens for looking for climate smart options in Dutch FNS programs

Programs aiming at:		Points of attention related to:		
Pillars of FNS programs	**Themes within pillars**	**GHG emission and mitigation**	**Incremental adaptation**	**Resilience against shocks**
FNS programs with objective 1: Eradicate existing hunger and malnutrition				
1.1. Availability pillar (from local production or from imports)		- no points of attention		
1.2. Access pillar (Through income or other sources of livelihood)	hunger	- trade and transport to provide food everywhere may increase GHG emissions but logistics and ICT can avoid unnecessary transport and transport related GHG emissions are less than those emitted during climate-inefficient production close-by (in green houses, on degraded soils)	- investments in rural infrastructure (roads, ICT, markets), in food logistics and in regional trade relations, - investments in early warning systems regarding local or regional crop failures	- early warning systems and disaster risk reduction measures in place, - food storage for disasters, - price policy to avoid that food becomes excessively expensive in times after shock
1.3. Utilisation pillar (Adequate nutrient intake and uptake [health and hygiene])	energy sources	- energy sources for cooking (wood, charcoal) increase GHG emissions--> promote use of cleaner renewable energy (solar, wind, biogas, biodiesel, bioethanol)	- when climate change leads to less trees --> gradual change to cleaner renewable energy sources needed, also for reducing workload for fuel collection (competing with time for care, food preparation)	- no points of attention

Programs aiming at:		Points of attention related to:		
Pillars of FNS programs	**Themes within pillars**	**GHG emission and mitigation**	**Incremental adaptation**	**Resilience against shocks**
	water and sanitation	- sufficient and accessible clean water and sanitation for cooking and hygiene needed	- when climate change negatively affects access to sufficient and clean water and sanitation for cooking and hygiene --> additional activities needed to guarantee clean water to avoid diseases and to avoid workload of women fetching water (competing with care, food preparation & income generation)	- adequate health care, - water and nutrition interventions e.g. to intervene with micronutrient and protein supplements AND clean water next to staple foods in case of food handouts or food for work programmes during and after disasters.
	dietary composition	- Higher consumption especially of animal products expected--> promote diets without excessive use of animal protein (as animal production is related to high GHG emissions)	- Dietary composition may follow crop adaptation. Attention is needed for nutrition content of new climate adapted staple crop species and varieties	- adequate health care, - water and nutrition interventions e.g. to intervene with micronutrient and protein supplements AND clean water next to staple foods in case of food handouts or food for work programmes during and after disasters. Capacity building of individuals and communities to cope with and recover from shocks.
	crop choice	- no points of attention	- Climate change induced shifts in cropping patterns (gender and age-related) may lead to intra-household (gender,	- no points of attention

Programs aiming at:		Points of attention related to:		
Pillars of FNS programs	**Themes within pillars**	**GHG emission and mitigation**	**Incremental adaptation**	**Resilience against shocks**
			age) dietary shifts--> attention for dietary quality of new crops	
1.4. Stability pillar (Available and accessible for all at all times)		- no points of attention	- no points of attention	- food storage for times of disaster, safety nets or insurances to avoid that people loose productive assets, programmes to rebuild assets (food for work etc.) - capacity building of individuals and communities to cope with and recover from shocks. Women empowerment to cope with and recover from disasters.
FNS programs with objective 2: Promote inclusive and sustainable growth in the agricultural sector				
2.1. Availability pillar	crop production	- avoid or counterbalance land use change due to agricultural expansion leading to GHG emissions (especially peat, rainforest) - avoid or counterbalance increase in energy use (mechanisation, agrochemicals, pumps for irrigation or drainage) leading to GHG emissions: Higher yield/ha with high	- choice of crop species/variety resistant or tolerant against drought, high temperatures, NEW pests & diseases, salt - irrigation in case of water shortage; drainage in case of temporary flooding	- crop diversification on farm to spread risks, insurances

Programs aiming at:		Points of attention related to:		
Pillars of FNS programs	**Themes within pillars**	**GHG emission and mitigation**	**Incremental adaptation**	**Resilience against shocks**
		resource use efficiency on existing land leads to lowest GHG emissions per kg product		
	cultivation practice	- no points of attention	- adapt cultivation practices (sowing time, soil tillage for water conservation, etc.), include legume crops where possible	- governmental policy of price stabilisation and early warning measures and disaster risk reduction measures regarding extreme weather events to decrease negative impact of shocks
	food losses	- by decreasing food waste, emissions for production are avoided	- chain logistics, consumer awareness programmes, add value to side streams and waste streams, bio- based economy	- no points of attention
2.2. Access pillar	income	- economic growth means higher energy use--> joint development of clean renewable energy (solar, water, biogas, biodiesel, bioethanol)	- diverse income sources (in agriculture and where possible off-farm--> MKB) in case of climate change induced yield decreases	- safety nets to avoid that people loose productive assets
	diets	- economic growth means higher meat consumption--> develop low carbon emission diets; mitigate or reduce GHG emissions from livestock production	- gradual decrease of animal products in diets in societies with affluent diet and gradual increase in LDC with poor diets	- no points of attention

Programs aiming at:		Points of attention related to:		
Pillars of FNS programs	**Themes within pillars**	**GHG emission and mitigation**	**Incremental adaptation**	**Resilience against shocks**
	logistics	- more production normally means more transport → good logistics can avoid unnecessary transport	- build flood resistant roads or ones that are easily reparable after flood, and that remain accessible during floods	- in case shocks are expected to destroy infrastructure prohibiting marketing of produce provide possibilities for local food processing and storage; early warning systems and disaster risk reduction measures
2.3. Utilization pillar		- no points of attention		
2.4. Stability pillar	government action	- no points of attention	- no points of attention	- policy to stabilise prices in case of collapse or peak of local or world market prices (consumer and producer interests)
	individual action	- no points of attention	- no points of attention	- systematically carry over surpluses of good years to years of scarcity (storage of grain at farm or national level, or storage of money in a bank), insurances
	collective action	- higher energy use--> develop and use clean renewable energy sources - climate change induced scarcity of fertile land with adequate water supply may lead to agriculture on unsuitable lands and clearing of nature areas --> undesirable as	- increase investment in collective action to increase capacities of smallholders to connect to value chains and to increase adaptive capacity of individuals and communities by pooling resources - design climate-proof food value chains and develop climate change risk sharing	- invest in collective action and good governance as this is crucial to rebuild a society after a shock

Programs aiming at:		Points of attention related to:		
Pillars of FNS programs	**Themes within pillars**	**GHG emission and mitigation**	**Incremental adaptation**	**Resilience against shocks**
		it will lead to more GHG emissions per kg product	along food value chains to protect smallholders as weakest link. - assist smallholders to provide sufficient quantity and quality of products for processing by SMEs. Processing can increase storage ability which is important in climate change situations. - train smallholders and poorest of society in communication, organization and negotiation skills to prevent that they become marginalised in the ownership, access and use of natural resources (fertile land, forest and clean water) Invest in land tenure, land titling, and land planning	- insurance schemes (insuring crop, farm and income in cases of climate shocks), - food storage for times of disaster may need some processing, insurance of food stocks and credit for new processing installations - install national fund compensating individuals or communities for loss of economic value of natural resources due to climate change shocks. Provide for alternative income earning activities or migration options to alternative cropping areas for farmers living in areas that become permanently unsuitable for agriculture.
FNS programs with objective 3: Create ecologically sustainable food systems				
3.1. Availability pillar	food production	- avoid or counterbalance increase in energy use (mechanisation, agrochemicals, pumps for irrigation or drainage) leading to GHG emissions: Higher yield/ha with high resource use efficiency on existing land	- sustainable intensification-> increase yield per hectare by increasing resource use efficiency	- no points of attention

Programs aiming at:		Points of attention related to:		
Pillars of FNS programs	**Themes within pillars**	**GHG emission and mitigation**	**Incremental adaptation**	**Resilience against shocks**
		leads to lowest GHG emissions per kg product		
	fresh water	- no points of attention	- water use efficient cropping; proper management of inputs preventing leaching and run-off to water bodies	- policies on water use, water pricing
	biodiversity	- no points of attention	- gradual introduction or fostering of species in landscape that are adapted to climate change, control or even removal of invasive destructive species that outcompete to many others; Integrated pest management (IPM) and integrated soil fertility management (ISFM) in crop production	- biodiversity restoration programmes in case of disaster because they are the basis for biological pest control and other ecosystem services (e.g. mangrove planting after tsunami to protect the shore)
	resource base (depletion, pollution)	- no points of attention	- invest in soil quality by adequate soil fertility management (organic and inorganic fertilisers) and anti-erosion measures (soil cover, contour planting, tillage, stone bunds, trees, etc)	- restoration of degraded soils, land slide areas
	animal production	- land clearing for fodder and feed production or grazing is undesired	- alternative sources of animal feed e.g. waste streams (animals are less land and location dependent)	- animal mobility (and marketing) or feed storage plans in case of serious droughts or floods in grazing areas, Insurances

Programs aiming at:		Points of attention related to:		
Pillars of FNS programs	**Themes within pillars**	**GHG emission and mitigation**	**Incremental adaptation**	**Resilience against shocks**
		- manure and urine disposal must be carefully managed - high temperature humidity indexes reduce animals production capacity/animal/day hence increases GHG emissions per kg of product - Higher yield/animal generally leads to lowest GHG emissions/kg product	- strict regulations for confined animals, recycling manure and urine nutrients to cropping - sufficient water supply for drinking and cooling; night grazing; adapted housing - veterinary care against new diseases	- adequate veterinary care in case of outbreaks, insurances
3.2. Access pillar		- no points of attention		
3.3. Utilization pillar		- no points of attention		
3.4. Stability pillar		- no points of attention		

3. Applying the lens to the current FNS portfolio

In this chapter, the DSU answers the questions of the DGIS (see paragraph 1.2), applying the lens to the current FNS portfolio (28 programs).

Observations

Applying the lens to 28 programmes in the portfolio leads to the following observations[3]:

- the portfolio as a whole has very limited explicit attention for CC-effects on FNS;
- some programmes in the portfolio link smallholders to agri-business and supply chains and, in this way, implicitly contribute to CC-adaptation. Only one programme in the portfolio does explicitly refer to off farm income opportunities;
- many programmes target reduction of farmers vulnerability (a.o. through striving for land titles/rights) and thus contribute to farmers resilience to CC;
- some programmes portray CC-mitigation as opportunity (REDD+ payments), leaving CC-adaption opportunities undiscussed. Intensification programmes do not make explicit their contribution to mitigation and adaptation;
- many programmes in the portfolio talk about disasters but do not deal with them (insurances, early warning, disaster risk reduction);
- several programmes deal with water for production but fail to deal with water availability under changing climates;
- none of the programmes linked international CC-knowledge to local agrarian knowledge and innovation systems;
- none of the programmes has a vision on a term, long enough to enable CC-sensitiveness.

Analysing this current FNS portfolio, DSU does not find evidence of a focus in the portfolio on continents, regions, countries or food chains. Hence, there can be no answer to the question if 'the right focus is applied'. The same is true for the question if the 'right strategy underlying the policy and portfolio is applied' The DSU could not find such a strategy.

Recommendations

Having given the answers to the questions of the ToR for this assignment in chapter 3, the DSU now reflects on the questions about what would be the right focus of Dutch government in light of climate change.

What should be the focus as to continents?

Context factors (numbers of mouths to feed, available arable land, potential yield growth and adequacy of governance), however, will lead to different strategies for tackling CC effects on FNS in Africa than in Asia, that will differ again for Latin America. FNS in Asia may be least vulnerable for climate change as its yields can still be doubled and governance allows this, as it is relatively adequate. FNS in Africa is relatively vulnerable for climate change because governance is less adequate, and many African countries may be expected to have difficulty to

[3] For background see chapter 6.2 of the WUR report: *Climate change lens on donor policies and programs for improving food and nutrition security* of May 1, 2015

increase yields to levels that would reduce vulnerability (even though there is still a lot of land available and, technically , per hectare production can more than triple). FNS vulnerability for CC in Latin America is somewhere in between these two extremes.

The choice on which continent to focus is at least partly political in nature and depends on the objectives and criteria of the entity that must make the choice. Providing information that will be helpful in making the choices is the objective of the second phase of the FNS-lens assignment.

What should be the focus as to target group?

Climate change effects should motivate an extension of options to strengthen the resilience of vulnerable communities (smallholders and urban poor with special attention for women and children). DSU recommends vulnerable communities to remain the main target group for Dutch FNS programs.

Focus on production systems

The present focus of the Dutch FNS policy is on increasing productiveness and efficiency, especially of smallholder production. The DSU recommends to where needed prepare for the need of transformation (in cases that severe climate change effects push food systems out of production) and, in addition, figure out the production systems that are capable of feeding the future urban centers.

Focus on regions

Focus of the Dutch development aid on the poor and smallholders will inherently imply a focus on the large poor regions in the world. The second phase of the FNS-lens assignment will provide information on the basis of which can be decided whether additional focus within regions is needed.

Focus on countries

Like the choice on which continent to focus, also the choice on which country to focus is at least partly political in nature and depends on the objectives and criteria of the entity that must make the choice. It is the objective of the second phase of the FNS-Climate change lens to provide information that will be helpful in making the choice.

Focus on food chains

With regard to focus on food chains: the DSU acknowledges that certain food chains (e.g. certain production systems for animal proteins) contribute more to climate change and use more resources than other food chains (e.g. staples) and that this might call for further research, mitigation and, eventually, policy choices.

The FNS strategy

The DSU recommends to develop an inclusive view on climate smart food and nutrition security and to base the FNS strategy on this inclusive view (the view and strategy that DFID has developed could serve as an example). The expected results of the second phase of the 'lens' will provide information for rethinking the strategy (including the focus of the FNS portfolio).

The FNS policy can deduct from the strategy those interventions that suit the Dutch development aid priorities and work out these interventions in the FNS program portfolio. The individual programs in the portfolio can apply the lens for their climate proofing.