

GAOD Book Series // Book 2 // Covid-19 and Organic Agriculture Organic food consumption- a step forward for sustainability

Global Alliance for Organic Districts (GAOD) as models and living laboratories
for the process of transformation towards sustainable food systems



GAOD Book Series
Book 2
Covid-19 and Organic Agriculture
Organic food consumption- a step forward for sustainability

Published in Conjunction with the
the 6th ALGOA Summit on “Building Alliances Beyond Asia”
& Inaugural GAOD Summit
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The **GAOD Book Series** is published in November 2020 as part of the 1st GAOD Summit, successfully hosted under the generous financial support of Goesan County, South Korea. The Founding Partners of GAOD such as the Asian Local Governments for Organic Agriculture (ALGOA), International Network of Eco-Regions (IN.N.E.R.), Regeneration International, the Organic Food Systems Programme (OFSP), etc have worked together to make the 6th ALGOA Summit “Build Alliances Beyond Asia” and the Inaugural GAOD Summit, a successful and rewarding event, with the support and assist from their global partners.

The **GAOD Book Series** contains all the exchanges on the latest research, experiences, and best practices during the event. Five books are created to allow these valuable inputs during the Summit go beyond the 6th ALGOA Summit and the Inaugural GAOD Summit to benefit more people.



The GAOD Book Series

Book 1 **Introductory Phase - Pathways for Cooperation**
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Book 2 **Covid-19 and Organic Agriculture**
Organic food consumption - a step forward for sustainability

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GAOD Book Series

Book 2

Covid-19 and Organic Agriculture

Organic food consumption- a step forward for sustainability

About Book 2

Book 2 continues from Book 1 of the **GAOD Book Series** with special contributions from representatives of international organisations such as United Nations Environmental Programme (UNEP). This book contains various contributions that show the ways of implementations to transform into more sustainable and organic food systems.

Book 2 also contains some of the most interesting examples of how different stakeholders responded to the current COVID-19 pandemic.

Book 2 also shows how local governments promote organic food consumption through public procurement for school meal programs, and work with multi stakeholders to provide safe and healthy food to the next generations.

The contents of Book 2 are derived from the presentations of the 6th ALGOA Summit and the Inaugural GAOD Summit held in virtual sessions from Oct 12 to 16th, 2020.

GAOD has been launched with the participation of diverse stakeholders in the organic sector from all the major five continents on October 12th, 2020. It is supported by IFOAM-Organics International and its regional bodies, IFOAM-Organics Europe, and IFOAM-Organics Asia.

GAOD would like to express its heartfelt gratitude to Goesan County for its loyal support for the establishment of the Alliance and for the publication of all **Five Books** in November 2020.

Table of Contents

About Book 2	2
Keynote Presentation	4
Collaborative Framework for Food Systems Transformations	4
Thematic Contributions	6
1) Paul Luu, 4pour100	8
2) André Leu, Regeneration International	10
3) Ecological Economics - from a mechanistic to an organic world view	12
4) The European Green Deal	19
5) Food Quality and Health - Organic may lead the way in the transformation needed	27
Keynote Presentation	34
Introduction	34
Data and database development	36
Main findings	45
References	49
Special Session on “COVID-19 & Organic Agriculture”	53
(Case of South Korea) Pregnant Women and New Mothers Organic Food Scheme	54
(Case of South Korea) “Consumers Trust Organic”	56
(Case Study of India) “PGS Groups’ Response to COVID-19”	61
Special Session on “School Meals and Public Procurement”	67
(Case of Japan) Organic school meals in Japan	68
(Case of South Korea) Goesan School Meal Program	73
(Case of New Taipei City)	77
Speech by Wen Lee, Commissioner of the Agriculture Bureau, New Taipei City	77
(Case of France) Mouans-Sartoux, France – the future we want	79
(Case of Portugal) Sustainable Food School Programme of the Municipality of Torres Vedras	84
(Case of Sweden) Diet for a Green Planet: Swedish experience of promoting high quality and healthy school meals	92

Keynote Presentation

Collaborative Framework for Food Systems Transformations

By Marina Bortoletti, United Nations Environmental Programme (UNEP)

COVID has exposed the vulnerability of our food systems – there is a need to protect the environment and safeguard a healthy and sustainable food systems for all. Food systems put pressure on our natural resources and greenhouse emissions from agricultural production, which is projected to increase, driven by population growth, urbanization and change in food consumption patterns. Urban dwellers consume up to 70% of food supply in countries with large populations. Cities consume 70% of our natural resources and produce 60% in greenhouse gases emissions and waste.

Between 2010 and 2016, global food loss and waste accounted for 8-10% of greenhouse gas emissions from food systems and cost about 1 Trillion Dollars per year. Similarly, food systems have been associated with several non-communicable diseases – diabetes, heart diseases, hypertension, including cancer. People with these diseases have been the most vulnerable to COVID. These diseases are caused by many factors, but many of these are environmental. These include not only indoor and outdoor pollution, but also pollution in our food, soil and water. According to the World Economic Forum, governments provide over \$500 Billion USD in subsidies to farmers every year, but only 15% of these subsidies support public goods and sustainability.

To bring the vision of a truly sustainable food systems, we need to transform the way we produce and consume food. We need food systems that will catalyze sustainable grown food that protect and restore the ecosystem while creating shorter supply chains, increase overall efficiency and resiliency of the system including reducing climate change impact. The food systems must also support systems for people to eat better. We need more diversified diets, more nutritious, less resource intensive with minimal wastes. We need to understand the impact of food consumption behavior on the environment, health and to society as a whole.

The call for food systems transformation has never been more evident and stronger. There is currently a momentum. During COVID-19, people began to rethink their relationship with nature, particularly in the food that they eat – what they are eating, where do their food come from, is it sustainable? Is it organic? The call for change comes from the scientific community and many global networks such as ALGOA and movements such as youth and women movements. The Food Systems Summit which will be convened by the UN Secretary General next year in 2021 will provide a unique opportunity for us to enhance our global commitments and actions to transform our food systems from farm to fork.

The page features a light green background with stylized green foliage in the corners. The top-left and bottom-left corners have large, solid green leaf shapes. The top-right and bottom-right corners feature more detailed leaf illustrations with visible veins and smaller leaflets. The text is centered on the right side of the page.

Thematic Contributions

1) Paul Luu, 4pour1000

Recently, GAOD, ALGOA and IN.N.E.R. became members of the 4per1000 Initiative. This is an important and strong signal to local authorities to encourage and promote carbon sequestration in soils through appropriate agriculture and forestry practices. Agroecology will remain a mere concept if no farmer or forester implement appropriate practices in their fields or forests.

If local authorities do not work to create an enabling environment for such practices. This is why the work done by your organizations is so important for all forms of agriculture that are beneficial to soil health, such as organic, conservation, and regenerative agriculture. In addition, local authorities can facilitate a circular economy and short supply chains from producer to consumer. In this context, the recycling of organic waste produced by households in urban areas in the form of compost that is redistributed in the rural surrounding areas is a practice that must be developed in order to close the carbon cycle between production and consumption areas.



By joining the 4per1000 Initiative, precisely in this second half of 2020, your organizations will have the opportunity to participate in a particularly constructive exercise for the future actions of the Initiative and its members. I am referring to the implementation of the Strategic Plan 2050, with its six goals broken down into twenty-four objectives, each of which will benefit from a task force in charge of taking stock of the situation at all levels - international, national, regional, and local. In terms of the actions carried out and developing plans of action and activities for the years to come.

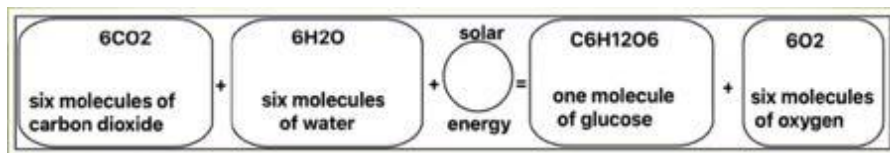
I, therefore, encourage you to register for the three or four task forces that are in line with your organization's actions in order to fully take part in this exchange and consultation exercise, that will take place on our collaborative web platform.

By showing the way forward, GAOD, ALGOA, and IN.N.E.R in Asia and in Europe and now more internationally are paving the way for local authorities, not only by encouraging them to join the Initiative but also by promoting good practices in favor of soil health.

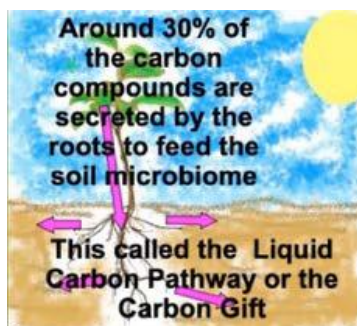
2) André Leu, Regeneration International

Regeneration International specializes in agricultural systems that regenerate the soil by taking carbon dioxide out of the atmosphere through photosynthesis and stored in the soil as soil organic matter. How does agriculture help reverse climate change? Photosynthesis in leaves produce glucose, and glucose is the basic molecule of life. Every living creature use glucose as a main fuel source. Without glucose, living organisms will die. All glucose in the planet is produced through photosynthesis where plants combining carbon dioxide and water through sunlight or solar energy.

Glucose is the basis of the food system for most life. It is used for other molecules as well.



Six molecules of Carbon dioxide plus six molecules of water, with solar energy produces one molecule of glucose and six molecules of oxygen. All the oxygen we breath in the atmosphere comes from hundreds of millions of years of photosynthesis. Before photosynthesis, the air was toxic and cannot support life. Through it, we have an atmosphere that we can breathe.



Between 95% and 98% of a plant's biomass come from water and carbon dioxide using the energy from photosynthesis to make glucose. In the leaves of plants, they take glucose and transform it into other types of molecules. Glucose is a sugar and they can combine to make other sugars such as sucrose which is the common sugar, lactose which is milk sugar or fructose which is fruit sugar. Plants can also change glucose slightly to make

carbohydrates or they can add a little bit of nitrogen, sometimes sulfur and make amino acids. All of the molecules that we are made of need glucose or start from glucose, which is the basic molecule of life and it comes from photosynthesis.

When we grow plants, around 30% of the carbon compounds that they make through photosynthesis, goes through the soil. This is called the Liquid Carbon Pathway or the Carbon Gift. This feeds the life in the soil, the soil microbiome. Through this process, we can take the carbon dioxide out of the atmosphere, store into the soil, and make a significant difference to reverse climate change.

3) Ecological Economics - from a mechanistic to an organic world view

By Ove D. Jakobsen

Professor Dr. Oecon. Center for ecological economics and ethics, Nord University Business School in Norway

Crises linked to finance, food, nature such as loss of biodiversity, water shortage, resource scarcity and climate chaos, mass migration, terrorism, and financial oligarchies show that we have entered a time of dramatic change and instability where the need of a profound personal, societal, and global renewal have never been more real. Capra and Luici point out that there are solutions to the great challenges of our time, and some of them are very simple but they require: "A radical shift in our perceptions, our thinking, our values" (Capra and Luici 2014, p. iii) and many clear indications are available to show that fundamental change is about to happen. It is not just about changing the individual mindset; it is also, increasingly, about deep structural changes. From these contributions it can be concluded that the convergence of crises is a birth crisis that leads towards a utopian future as being the future we really want.

Connecting theory and practice

Ecological Economics represents a transdisciplinary research strategy that crosses many disciplinary boundaries to create a holistic approach. An emerging field of ecological economics has shifted the focus from limits of physical growth to sustainable qualitative development. Transdisciplinarity represents integrated learning based on collaboration across disciplines. It makes connections across disciplines, creating an opportunity for greater depth and complexity.

Transdisciplinarity connects theory and practice, or more precise, connects scholars to practitioners. The goal of transdisciplinarity is to develop knowledge about the complex connections between humans and the rest of nature, and to use that understanding to develop guidelines that will lead to societies which is both ecologically sustainable and

has a fair distribution of resources between humans and between humans and other species. Art has a central place in the expressing dynamic and holistic knowledge in a transdisciplinary way.

Below is a short introduction to the new pathways of change offered by Ecological Economics.



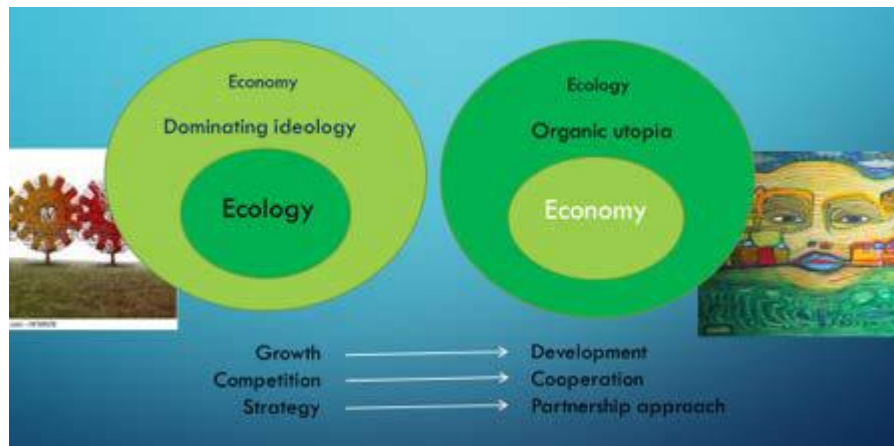
(Figure 1. Deep changes are necessary on different levels)

In order to encourage a far deeper change any ecological economic research program (utopia) includes changes on different levels; worldview, system level, practice and human consciousness.

Worldview

On worldview level it is a question of change from a mechanistic to an organic world view and one fundamental consequence of this change is that economics immediately becomes subordinate to ecology. To adapt economics to the limits of ecosystems, organic knowledge and understanding is essential. The ancient idea that natural science's role is to provide knowledge that gives man power over nature has to be replaced by an approach in which the goal is to learn from nature and develop knowledge that teaches us how we can best work with nature to fulfil human needs and improve quality of life. The implication of this reasoning is that economic activity is not an end in itself but rather

a means to strengthen the life processes in nature and society. The only valid purpose of economics is as a servant of life processes in all kinds of social and ecological systems. In an organic perspective, the global ecosystems and social systems are comprised of closely interacting and interdependent subsystems based upon dissipated structures. The earth itself and all its living and non-living components are interrelated, the human being is a member of this integrated community and must find a proper role in it. Every system is connected to and depends on all the others in continually evolving processes. Ecological economics, as a heterodox tradition, "accepts the transformative power of human agency with emergent properties arising from a dynamic interconnected process of multi-layered social interactions" (Spash, 2012, p. 44).



(Figure 2. Change from mechanistic to organic worldview)

Efforts to facilitate a sustainable future are not covered well enough by the existing scientific tradition of objective disciplinary approaches. In order to appreciate the interconnections between nature and society, ecological economics is based on a transdisciplinary approach. To meet the sustainability challenges, locally, nationally and globally, we need integrated knowledge based on transdisciplinary research in which a

disciplinary cross-fertilization makes the borders between the different sciences more transparent, and practice and culture become integrated.

The English/American economist and peace researcher Kenneth Boulding, one of the most influential contributors to ecological economics, once said; "the pursuit of any problem of economics draws me into some other science before I can catch it" (Kerman, 1974, p. 6). This is the search for connections between different fields of knowledge, for the threads of theory that would tie together nature, society and economy on the system, business and individual levels.

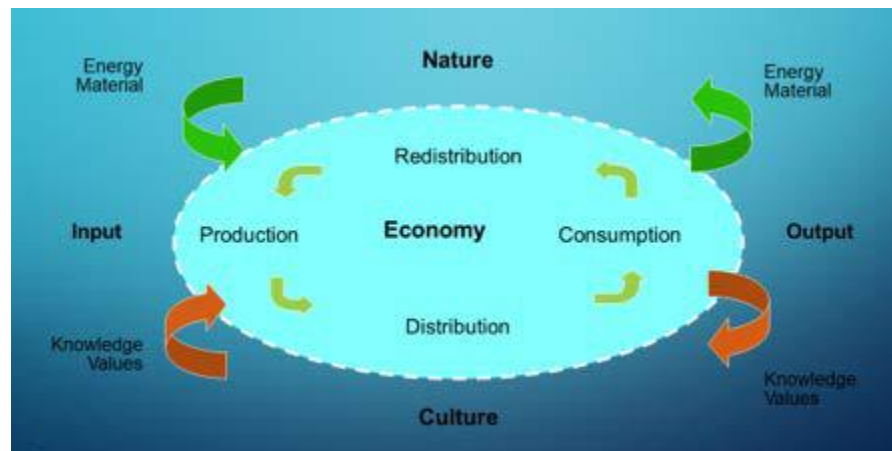
Today, the transdisciplinary approach is being rediscovered, unveiled, and utilized rapidly to meet the unprecedented challenges of our troubled world. In its search to understand life as life, the transdisciplinary field of ecological economics examines the relationships between ecosystems, social systems and economic systems in the broadest sense. Because ecological economics develops theory and practice that initiates constructive interplay with the surrounding cultural and natural conditions the practical solutions will be different depending on time and place. Future solutions will not be exactly similar to suggested solutions today, and solutions will differ depending on geographical and cultural circumstances.

Systems level

On the systems level the hard-core principle of the dominating economy which claims that the market is made up of autonomous competing actors is replaced by a view of the market as an integrated network of interdependent co-operating actors. The focus shifts away from objects toward relationships. Since the individual has to respect broad public values, a transition is required away from the egocentric economic man towards the "I-We" understanding. Although local production for local markets is the ideal, it is of course necessary to open up co-operation through international networks as well.

Ecological Economics as part of the Web of Life

Ecological economics, inspired by natural growth curves, (increasing rapidly at first then stabilizing), makes it possible to initiate the continuous development of quality of life without increasing the consumption of natural resources. The focus on qualitative development points to major changes in business; many companies and, indeed, whole industries will disappear, and new ones, more in line with ecological principles and humanist values, will take over.

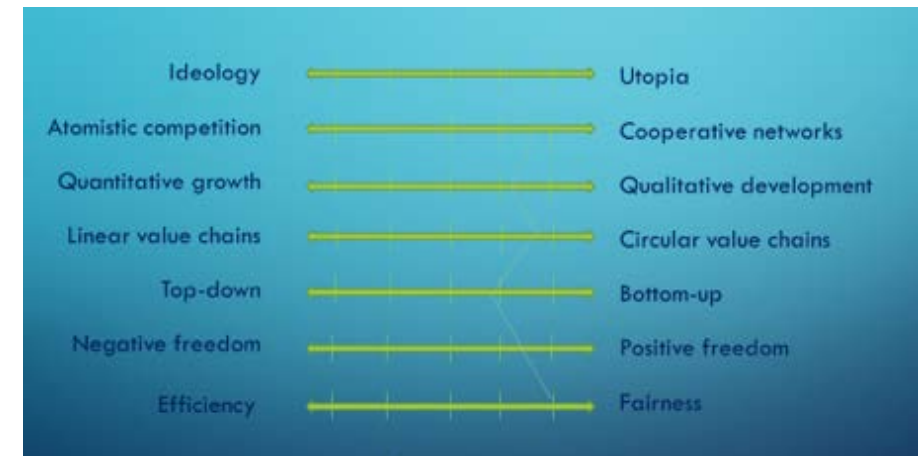


Practice level

On the practice level strategic planning is replaced by a partnership approach founded on dialogue and network based co-operation. Free competition on the world market ensures that small producers in poor countries are the losers compared to powerful multinational corporations. Poor countries are forced to accept free trade in order to gain entry to the markets and the result is that the big companies gain increasingly larger proportions of the global markets. The consequence is that poor countries have to receive aid for the system to work. This results in a vicious cycle where quality of life deteriorates both

among those who have too little, and among those who have too high consumption. Today the resources are distributed in such a way that the gap between rich and poor constantly increases.

Dimensions in the deep change



In network based co-operation organisations and enterprises have a close connection to their local culture, and, by integrating in dynamic processes, culture becomes the source of inspiration and the glue that connects. The network includes different sectors, i.e. businesses, practitioners, artisans and research and education institutions. A network of creative actors has better access to information when it comes to making oneself visible both locally and internationally. Development of mutual principles for peaceful co-existence between actors locally and globally, helps actors to be free to develop their own solutions based on their own situational and cultural knowledge.

To reach the common good as result of co-operation based on mutual respect and trust, it is of great importance to make room for regular reflective meetings and create arenas for communicative action based on collaboration. When the hierarchical structures are flattened by a combination of bottom-up and top-down processes, developing an economy integrated with nature and culture are of vital importance.

Ecological economics indicates that businesses have to include ecological and social

values in the decision making process. Humans are part of the ecosystem and the ecosystem is a part of humans. By including social values business helps to create (optimal) conditions for quality of life. As it is not possible to transform the different values into a monetary scale, policymakers have to be able to handle the three different values simultaneously.

Individual level



On the individual level, ecological economics has significant implications for the definition of the economic actor. Instead of focusing solely on increasing profits and utility (the economic man), the economic actors put more weight on the natural and social implications of production processes as well as products (the ecological man).

A practical consequence is that market communication must include information about the working conditions for the workers in the entire production process and the extent to which the production process meets environmental requirements, requirements for animal welfare, and health implications for all involved, the consumer included. As regards ethics, a good and moral life, according to virtue ethics, is a life responsive to the demands of the world. Central concepts are: good judgement, justice, courage and self-control. To possess a virtue is to be a person with a given complex mindset. 'The most significant aspect of this mind-set is the wholehearted acceptance of a certain range of considerations as reasons for action' (Stanford Encyclopedia of Philosophy 2012). Virtue ethics focuses on the moral person's character characterized by the ability to be aware of, to identify and to handle, moral dilemmas in real-life situations.

4) The European Green Deal

By Eduardo Cuoco, Executive Director of IFOAM-Organics Europe

The European Green Deal (EGD) was unveiled by the European Commission in December 2019 and aims for Europe to become the first carbon-neutral continent. It is a "new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use".

The EGD comprises several strategies, including the Farm to Fork (F2F) strategy and the EU Biodiversity strategy, unveiled on 20 May 2020.

According to the F2F communication, the Farm to Fork strategy is at the heart of the European Green Deal. It "addresses the challenges of sustainable food systems in a comprehensive way, recognising the inextricable links between healthy people, healthy societies and a healthy planet". The integrated approach of the F2F is mentioned several times.

The F2F strategy is composed of the main communication and an annex, serving as an action plan for the F2F strategy. The strategy recognizes that food systems are responsible for approximately 29% of the world's greenhouse gas (GHG) emissions and that nearly 70% of all agricultural GHG emissions come from the animal sector. It explicitly states that "there is an urgent need to reduce dependency on pesticides and antimicrobials, reduce the use of fertilisers, increase organic farming, improve animal welfare, and reverse biodiversity loss". The F2F is meant to lead a global transition towards competitive sustainability from farm to fork.

The goals of the F2F are therefore to:

- Ensure that food production, transport, distribution, marketing, and consumption have a neutral or positive environmental impact,
- Preserve and restore the land and sea-based resources,
- Mitigate climate change,
- Reverse the loss of biodiversity,
- Ensure food security, nutrition, and public health.

How to enable this transition in Europe and globally? The strategy states the following and further details this on pp 15-18 of the strategy:

- The Commission has devised several R&I programmes and other funding mechanisms that support the objectives of the Green Deal,
- The Commission will therefore effective Agricultural Knowledge and Innovation Systems (AKIS),
- The Commission will ensure that tailored solutions help SMEs.
- The Commission published its Farm to Fork strategy on 20 May 2020. It is available on the Commission's website.

Farm to Fork strategy (F2F) & Organic Agriculture**Organic farming gets a prominent place in the Farm to Fork strategy as shown below:**

- Reach the objective of at least 25% of the EU's agricultural land under organic farming by 2030 and a significant increase in organic aquaculture.
- Determine the best modalities for setting minimum mandatory criteria for sustainable food procurement to promote healthy and sustainable diets, including organic products, in schools and public institutions (indicative timetable: Q3 2021).
- The Commission will take measures to facilitate the registration of seed varieties, including for organic farming, and to ensure easier market access for traditional and locally adapted varieties.
- The Commission will put forward an Action Plan on organic farming.
- Review of the EU promotion programme for agricultural and food products with a view to enhancing its contribution to sustainable production and consumption (indicative timetable: Q4 2020).

F2F & the European Common Agriculture Policy**For us as European organic movement it is important to closely link the Farm to Fork strategy and the reform of the Common Agricultural Policy. The strategy says the following about that:**

- The new 'eco-schemes' will offer a major stream of funding to boost sustainable practices, such as precision agriculture, agroecology (including organic farming), carbon farming and agroforestry. Member States and the Commission will have to ensure that they are appropriately resourced and implemented in the Strategic Plans. The Commission will support the introduction of a minimum ring-fencing budget for eco-schemes.
- The Commission will also make recommendations to each Member State on the nine specific objectives of the CAP, before they formally submit the draft Strategic Plans. The Commission will pay particular attention to addressing the Green Deal targets, and those

stemming from this strategy and the Biodiversity Strategy for 2030. It will ask Member States to set explicit national values for those targets.

- Agricultural practices that reduce the use of pesticides through the CAP will be of paramount importance and the Strategic Plans should reflect this transition and promote access to advice.

F2F & pesticides / fertilisers

- The Commission will take additional action to reduce the overall use and risk of chemical pesticide by 50% and the use of more hazardous pesticides by 50% by 2030.
- The Commission will revise the Sustainable Use of Pesticides Directive (indicative timeline: Q1 2022), enhance provisions on integrated pest management (IPM) and promote greater use of safe alternative ways of protecting harvests from pests and diseases.
- Agricultural practices that reduce the use of pesticides through the CAP will be of paramount importance and the Strategic Plans should reflect this transition and promote access to advice.
- Revision of the relevant implementing Regulations under the Plant Protection Products framework to facilitate placing on the market of plant protection products containing biological active substances (indicative timeline: Q4 2021).
- Proposal for a revision of the pesticides statistics Regulation to overcome data gaps and reinforce evidence-based policy making (indicative timeline: 2023).
- The Commission will act to reduce nutrient losses by at least 50%, while ensuring that there is no deterioration in soil fertility. This will reduce the use of fertilisers by at least 20% by 2030.
- F2F & sustainable food systems
- The Commission will propose a legislative initiative for a framework for a sustainable food system before the end of 2023. The Commission will consider establishing common

definitions and general food sustainability principles that will guide broader policy and legislative developments in the future.

- Combined with labelling on the sustainability performance of food products or other incentives, the framework will provide a concrete means for operators to benefit from sustainability practices and will gradually raise sustainability standards.
- The Commission will also examine ways to harmonise voluntary green claims and to create a sustainable labelling framework that covers, in synergy with other relevant initiatives, the nutritional, climate, environmental and social aspects of food products.

F2F & new innovative techniques

- New innovative techniques, including biotechnology and the development of bio-based products, may play a role in increasing sustainability, provided they are safe for consumers and the environment while bringing benefits for society as a whole. In response to the request of Member States, the Commission is carrying out a study which will look amongst others at the potential of new genomic techniques to improve sustainability along the food supply chain.

F2F & competition

- The Commission will clarify the competition rules for collective initiatives promoting sustainability in supply chains and will help farmers and fishers strengthen their position in the supply chain (indicative timeline: Q3 2022).
- The Commission will closely monitor the implementation of the Unfair Trading Practices Directive by Member States.
- The Commission will work with co-legislators to improve agricultural rules that strengthen the position of farmers (e.g. producers of geographical indications), their cooperatives, collectives and producer organisations in the food supply chain (indicative timeline: 2021-2022).

Other areas relevant to organic agriculture

- The Commission will therefore take action to reduce overall EU sales of antimicrobials for farmed animals and in aquaculture by 50% by 2030. The Commission will revise the animal welfare legislation (indicative timeline: Q4 2023), including on animal transport and the slaughter of animals, to align it with the latest scientific evidence, broaden its scope, make it easier to enforce and ultimately ensure a higher level of animal welfare, also supported by the CAP Strategic Plans. The Commission will consider options for animal welfare labelling.
- Enhance coordination to enforce single market rules and tackle Food Fraud, including by considering a reinforced use of the European Anti-Fraud Office (OLAF) investigative capacities.
- Tax incentives can also encourage consumers to opt for sustainable and healthy diets. The Commission's proposal on VAT rates (currently under discussion in the Council) could allow Member States to make more targeted use of rates in this respect. The Commission's proposal on VAT rates could allow Member States to make more targeted use of rates, for instance to support organic fruit and vegetables.
- The Commission will develop an EU code of conduct for responsible business and marketing practice and a monitoring framework (indicative timeline: Q2 2021).
- Develop a contingency plan for ensuring food supply and food security (indicative timeline: Q4 2021).
- A new EU carbon farming initiative under the Climate Pact will promote this new business model, which provides farmers with a new source of income and helps other sectors to decarbonise the food chain. The Commission will develop a regulatory framework for certifying carbon removals based on robust and transparent carbon accounting to monitor and verify the authenticity of carbon removals
- The Commission will facilitate the placing on the market of sustainable and innovative feed additives. It will examine EU rules to reduce the dependency on critical feed materials

by fostering EU-grown plant proteins as well as alternative feed materials. Proposal for a revision of the feed additive.

- Regulation to reduce the environmental impact of livestock farming (indicative timeline: Q4 2021).
- The Commission is committed to halving per capita food waste at retail and consumer levels by 2030.
- The Commission will step up efforts to bring fish stocks to sustainable levels via the common fisheries policy (CFP) where implementation gaps remain, strengthen fisheries management in the Mediterranean in cooperation with all coastal states and re-assess, by 2022, how the CFP addresses the risks triggered by climate change.

Nutrition & Consumers

- The Commission will set up nutrient profiles restricting the promotion (via nutrition or health claims) of foods high in fat, sugars and salt (Indicative timeline: Q4 2022).
- Proposal for a harmonised mandatory front-of-pack nutrition labelling to enable consumers to make health conscious food choices (Indicative timeline: Q4 2022).
- Launch initiatives to stimulate reformulation of processed food, including the setting of maximum levels for certain nutrients (indicative timeline: Q4 2021)

Packaging

- The Commission will revise the food contact materials legislation to improve food safety and public health, support the use of innovative and sustainable packaging solutions using environmentally-friendly, re-usable and recyclable materials, and contribute to food waste reduction (indicative timeline: Q4 2022).
- The Commission will work on a legislative initiative on re-use in food services to substitute single-use food packaging and cutlery.

Sources

- The European Green Deal https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
- Farm to fork strategy for a fair, healthy and environmentally-friendly food system https://ec.europa.eu/food/farm2fork_en

5) Food Quality and Health - Organic may lead the way in the transformation needed

By Ewa Rembiałkowska¹, Susanne Bugel² and Flavio Paoletti³

Introduction

The globally-observed diet transition, driven by the population growth, rising urbanisation and incomes, results in an increased demand for resource-intensive foods. This dietary shift is having considerable effects on environment (GHG emissions, natural resources and biodiversity depletion,) and human health (increasing incidence of non-communicable diseases) worldwide.¹

It is currently widely recognized that this increasing consumption of resource-intensive foods significantly contributes to determine the shape of the global food production system². Therefore, the urgently needed global transformation of the food system towards sustainability can be achieved only through a change of the food consumption patterns and the wide adoption of healthy diets, such as the Mediterranean Diet (MD) and the New Nordic Diet (NND) or the universal healthy reference diet recently proposed by the EAT-Lancet Commission³.

These healthy diets are considered as models of sustainable diets because they provide major health benefits while limiting the negative effects on the environment. They largely consist of vegetables, fruits, whole grain, legumes, nuts and unsaturated oils, include a low to moderate amount of seafood and poultry and include no or low quantities of red meat, processed meat, added sugar, refined grains.

In the EAT-Lancet report, sustainable intensification is recommended as a method for increasing agricultural yields within existing land use and environmental boundaries. However, no clear stand is taken about the existing alternatives for food production. Organic agriculture may lead the way in the transformation needed.

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Organic agriculture in Europe, based on the legal framework of the Council Regulation (EC) No. 834/2007⁴ and Commission Regulation (EC) No. 889/2008⁵ excludes synthetic soil fertilizers and synthetic pesticides, as well as GM organisms and their products. Only natural fertilizers such as animal manure, compost or green manure are used; plant protection is based on biological methods. Such production system is influencing the composition of the produced crops. They contain less residues of harmful synthetic pesticides, less cadmium and nitrates / nitrites, on the other hand more bioactive compounds, such as polyphenols and some nutrients, than their conventional counterparts⁶. The quality of animal products is also influenced by the raising methods. According to the meta-analyses of Średnicka-Tober et al.^{7,8} milk and meat from organically raised cows contain significantly more total polyunsaturated fatty acids (PUFA) and n-3 PUFA than conventionally produced products.

Compared with the conventional agriculture, organic farming has, in many cases, lower yields. However, it has proven to perform better for several indicators of sustainability: minimization of pesticide residues, reduced exposure of workers to pesticides, higher profitability, minimization of energy use, better soil quality, higher biodiversity, minimization of water pollution, ecosystem services⁹

Unique results from studies of organic consumers

In France, consumer attitudes, frequency of use of organic foods, share of organic food in the diet, impacts on nutrition and health as well as on resources and GHGs were assessed in a large sample (several ten thousands) of adult participants in the national Nutrinet-Santé cohort (the BioNutrinet project).

Based on 12 published original scientific studies^{10,11}, the key observations made can be summarized as follows : regular consumers of organic products (compared to no) exhibit specific socio-demographic characteristics (higher education level, more physical activity, less smoking; less low income), with a healthier dietary pattern (more plant food-based, better fitting food-based and nutritional recommendations. They are markedly less (after adjustments on confounding factors) overweight and obese (men & women: - 31%/-

50%), have a significantly reduced probability of cardiovascular risk (metabolic syndrome : - 31%) and cancers (-25%). They consume much less pesticides-contaminated foods and have significantly less pesticide residues in urines. Finally, they have less impact to produce diet on natural resources (land use: -23%; energy demand: - 25%) and GHEs (-37%).

Similarly, in a large representative German cohort, results showed that organic food consumers are more educated, more physically active, eat more plant foods, have less overweight and obesity¹². A representative study in the USA observed 20-24% less type 2 diabetes prevalence in organic food purchasers¹³ (Sun et al, 2018). Finally, a cohort follow-up in the female organic consumers in Great-Britain showed a reduction in some cancer (lymphomas: -20%)¹⁴

Thus, it can be concluded from available studies that regular organic food consumers show a better compliance with the sustainable diet concept (better nutrition, safer diet, better health, less impacts on ecosystems) as stated by FAO definition¹⁵.

Impact

The necessity of sustainable food production and consumption has gained broad acceptance and are being adopted in more and more UN reports and National dietary guidelines (UN and FENS paper). In only a few cases, consumption of organic food is included in the Dietary guidelines. Both the MD and NND recommends the consumption of eco-friendly/organic food along with traditional, local and biodiverse products^{16,17}. In France, the newly updated food-based dietary guidelines (2019)¹⁸ recommend a diet with more plant-foods (fruits, vegetables, legumes, unrefined cereals, tree nuts), preferably as organic ones, and notably reduced animal foods (red meat, processed meat, dairies and cheeses). This recommended pattern improves nutritional quality and reduce pesticide exposure, with less impact on resources (land, energy) and GHGe, at overall constant monetary cost¹⁸.

Indeed, all these data support the concept that the Organic Food Systems firmly supports the development of sustainable food systems all over the planet¹⁹.

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Keynote Presentation

"Consumption of organic foods, description, determinants, relationship to health and the environment"- key findings of the BioNutriNet project

By Denis Lairon⁴, Emmanuelle Kesse-Guyot⁵ and Julia Baudry⁶

Introduction

In 2016, 39.5 million of deaths from non-communicable diseases were recorded in the world, including 17.6 million from cardiovascular diseases and 8.9 million from cancer (1). Current westernized diets, rich in fat, salt, sugar and highly-processed foods, are implicated in the aetiology of these chronic diseases which represent major issues for healthcare systems (2). These dietary patterns are also developing in emergent countries. As a modifiable factor, diet is a key lever for public health strategies. More broadly, food systems raise major health and environmental concerns in developed countries where they are characterised by too high energy intake while other parts of the world are still undernourished, illustrating social and economic disparities implicated in conflicts and migrations (3–5).

In addition, food system-related activities, from production to consumption, have been characterized by strong intensification over the last decades aiming to increase yields and profits. The overall food system accounts for 20 to 30% of total annual greenhouse gas emissions (GHGEs), significantly contributing to climate change (6) and the energy supply for the agri-food chain contributes for an additional GHGEs of 10% (7). A large part of food-related GHGE is due to livestock production. In addition, the whole food system also jeopardizes natural resources and biodiversity, leads to deforestation and requires high fossil energy consumption (3,8).

In that context, the United Nations adopted in 2015 a new sustainable development program defining 17 overall objectives, with most of them focusing on food related issues, to achieve by 2030 (9). However, research so far remains focused on production, processing or consumption behaviours separately. The whole food chain from "farm to fork" has been rarely considered and the diversity of production methods (e.g., organic or conventional), with different environmental pressures and sanitary impacts, is often omitted in the existing researches (3). Indeed, in the current scientific literature as well as in guidelines from non-governmental organization, the characterization of diets, their changes and impacts on health and the environment mostly consider a sole agricultural system, namely the widely developed current intensive system, mainly because data were scarce (impacts related to production) or inexistent (consumption data from different production systems).

Yet, alternative agricultural practices may offer some benefits for the environment, by limiting pollution, impacts on climate change, preserving biodiversity or by reducing exposure to synthetic phytosanitary products, and human health.

Therefore, in order to implement appropriate and targeted measures, there is an urgent need to design new innovative and ambitious researches using multi-criteria approaches that allow accurate quantitative analysis of the links between food systems, health and the environment, accounting for the different farming practices and consumer diets. Indeed, environmental benefits of organic farming are relatively well-documented. Example of potential benefits derived from organic food systems may include biodiversity preservation, the non-use of synthetic fertilizers and pesticides limiting pollution, the diversification of crops and livestock and the improvement of the soil composition via compost and manures (10,11). Surprisingly, the potential health benefits for consumers have been very little studied (12,13). Furthermore, linking the assessment on environment and health, assessing the risk and benefits of the system has never been fully explored.

It is this challenge that the BioNutriNet project has taken up using the organic farming system as a model of alternative production in order to assess - within a single multicriteria analysis - the effects of organic farming on both the environment and human health.

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Data and database development

The NutriNet-Santé study

Data used are based on the NutriNet-Santé study. The NutriNet-Santé study is an ongoing web-based prospective observational cohort study launched in France in May 2009 with a scheduled follow-up of 10 years (<https://www.etude-nutrinet-sante.fr>). It aims to investigate the relationship between nutrition and chronic disease risk, as well as the determinants of dietary behaviour and nutritional status. The study was implemented in the general French population (adult internet-using volunteers). The rationale, design and methodology of the study have been fully described elsewhere (19).

Included participants have to complete a baseline set of self-administered, web-based questionnaires assessing dietary intake, physical activity, anthropometric characteristics, lifestyle, socioeconomic conditions and health status. As part of the follow-up, participants are requested to complete the same set of questionnaires each year. Moreover, on a monthly basis, participants are invited by e-mail to fill in optional questionnaires related to dietary behaviours, their determinants, nutritional and health status. The study is conducted according to the guidelines in the Declaration of Helsinki, and all procedures were approved by the Institutional Review Board of the French Institute for Health and Medical Research (IRB Inserm n° 0000388FWA00005831) and the Commission Nationale de l'Informatique et des Libertés (CNIL n° 908450 and n° 909216). All participants provided informed consent with an electronic signature. This study is registered in EudraCT (n°2013-000929-31).

Methodological works have been conducted to validate questionnaires and tools (20).

Sociodemographic, economic, lifestyle, motives and place of purchase data

Concerning individual characteristics, data on sex, date of birth, BMI, educational level, occupational category, employment status and income, household composition, geographic and living area, smoking status, physical activity were collected. Specific questionnaires were also used to assess usual consumption of alcoholic beverages.

In a specific questionnaire, participants were asked to declare primary and secondary place of purchase for different organic and conventional food groups, including supermarkets, discount stores, markets, associations supporting small producers, box schemes (AMAP), retail stores (e.g., bakeries, fisheries, butcheries), grocery stores, farms, self-production and specialized organic food stores.

Health data

Participants self-declared health events through the yearly health status questionnaire, through a specific check-up questionnaire for health events (every 3 months) or at any time through a specific interface on the study website. For cancer and cardiovascular diseases, following the declaration, participants are invited to provide their medical records (report, diagnosis, hospitalization, etc.) and, if necessary, the study medical doctors contact the participants' physician or the hospital to collect additional information. All the collected data are reviewed by a physician expert committee to validate the major health events. Diverse questionnaires also inquire specific health disorders such as CES-D inquiring depressive symptom, McNair questionnaire inquiring cognitive complaint.

The vital status and causes of death are thoroughly monitored and obtained according to the procedure described in Decree 98-37 authorizing access to the CépiDc database of Inserm (National mortality register).

Moreover, the participants were invited in 2011-2014 to attend a visit for biological sampling and clinical examination in one of the local centres throughout France. This

check-up was proposed on a voluntary basis, thus about 20,000 participants were examined. Electronic and paper written informed consents were obtained from all participants. All procedures were approved by the 'Consultation Committee for the Protection of Participants in Biomedical Research' (C09-42 on May 5th 2010) and the CNIL (n° 1460707). During the clinical examination, blood pressure and anthropometrics were measured by trained personnel using standardised procedures. Weight was measured once using an electronic scale and height was measured once with a wall-mounted measuring rod. Body mass index (BMI in kg/m²) was calculated. Waist circumference was measured as the circumference midway between the lower ribs and iliac crests.

Dietary data

Food consumption were assessed in 2014 through a validated self-administered semi-quantitative food frequency questionnaire (FFQ) (14) including generic food items. Additional questions about frequencies of consumption of organic foods were added to obtain and Org-FFQ aiming to add information about food production systems of the food consumed (organic or conventional). The Org-FFQ has been described in details elsewhere (15). It included 264 food and beverage items. For each food item, participants were asked to provide their consumption frequency over the past year (in yearly, monthly, weekly or daily units) and the quantities consumed. Consumed portion sizes were determined by the use of specified serving sizes or photographs for specific categories. In addition, the frequency of organic food consumption was assessed using the following question: 'How often was the product of organic origin?'. Answers modalities were assessed by a 5 frequency-categories scale with modalities from 'never' to 'always' (never, rarely, half of time, often and always).

Modalities of frequencies of organic food consumption were translated into quantitative data by attributing a weight of 0, 0.25, 0.5, 0.75 and 1 to the respective following categories: 'never', 'rarely', 'half the time', 'often' and 'always'. The proportion of organic food, in the whole diet and by food group, was calculated by dividing the organic food consumption (g/day) out of the total consumption without water (g/day).

Furthermore, at inclusion and yearly after, daily food consumptions were also collected using repeated 24h records randomly allocated over a two-weeks period, including two weeks days and one weekend day. Participants reported all foods and beverages consumed at each eating occasion using a web-based tool objectively validated against biomarkers (22;23). Portion sizes were either estimated with the help of photographs, derived from a validated picture booklet (24). This method allows in particular to classify the participants according to the level of consumption of processed food. Prior to the BioNutriNet project, in a preliminary work, frequency of use of 18 organic products was also assessed (16).

Nutrient intakes were assessed using a generic food composition database (independent of the food production - organic or conventional), specifically developed for the items of the Org-FFQ, which was based on the NutriNet-Santé original food composition database that includes more than 3000 items (25).

Two dietary indexes reflecting adherence to food-based guidelines (mPNNs-GS) and nutrient-based guidelines (PANDiet) were also computed (Figure 1).

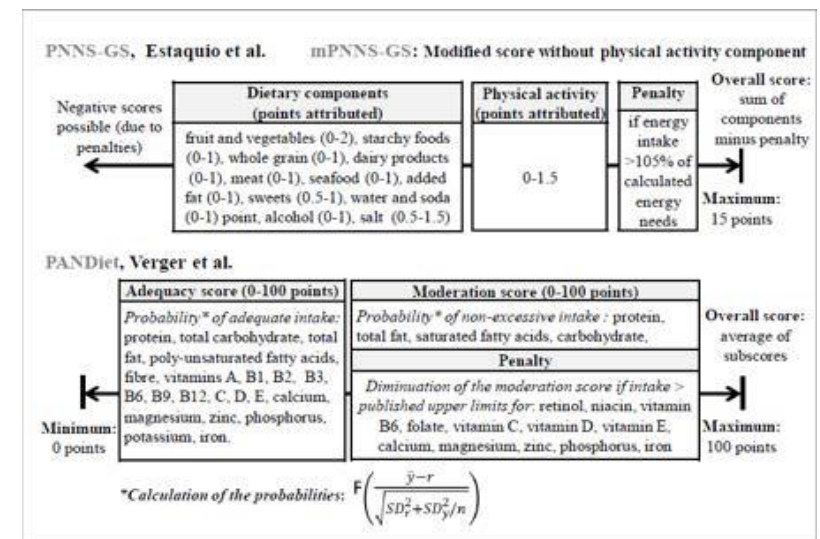


Figure 1 Computation of the two dietary scores used in the BioNutriNet project and related studies

Information on anteriority of organic food consumption was collected via a questionnaire pertaining to attitudes towards organic food administered in July 2014.

Cost of the diet

A cost database has been built by compiling a list of prices of the 264 items of the Org-FFQ, while accounting for the place of purchase (as explained above) and the mode of food production (organic vs. conventional). Data were mainly derived from the 2012 KANTAR database which includes prices from supermarkets. Additional data for short supply chains (e.g., local markets or associations supporting small farming (AMAPs)) were collected by members of the Bioconsom'acteurs association who collected 1100 prices in autumn 2014 and 862 prices in spring 2015 in nine French metropolitan departments. The cost of individual diet (overall, from conventional foods and from organic foods) was calculated by combining food consumption, place of purchases, farming practices and individual price (average of the available datapoint).

Environmental data

Environmental data were obtained from the diagnostic tool DIALECTE which is a comprehensive tool developed by SOLAGRO and whose aim is to assess environmental performance of farms using a global approach at farm scale. Currently (2017), DIALECTE database includes information from 2086 French farms with various agricultural production systems, in particular organic farms represents almost 50% of the farms evaluated.

Information collected by DIALECTE, using the Life Cycle Assessment method (LCA), has allowed to estimate the environmental impacts at the farm level of 62 raw agricultural products constituting ingredient of the 264 food items of the Org-FFQ. The LCA calculation is limited to the agricultural perimeter. Thus, conditioning, transport, processing, storage and recycling were excluded from the analysis. The DIALECTE database exhibits a great diversity of data from all types of farming systems allowing to provide environmental impacts of organic and conventional products according to

numerous criteria for most of agricultural products. Economic allocations accounting for co-products and edible coefficients were used to estimate the environmental impact of each food item. The indicators were then obtained at the individual level by combining consumption and environmental data.

Estimated pesticide residue data

Similar to the environmental data, a contamination dataset was developed using the database built by the CVUA Stuttgart, European reference laboratory for the analysis of residues in plant products. For each of 442 ingredients constituting the 264 items of the dietary questionnaire, the mean pesticide residue concentration of a list of compounds has been calculated from more than 6 billion datapoints collected between 2012 and 2015 and covering about 180 plant food from 88 countries and accounting for farming practices. Different scenarios (optimistic and pessimistic) were used to estimate the pesticide exposure as recommended by WHO.

Measure of contaminant (>40) exposure was calculated by kg of weight for each individual combining food consumption, pesticide residue data, farming practices and individual weight after applying edible coefficients for cooking and peeling. Pesticides studied included for instance chlorpyrifos, dichlorvos, glyphosate, malathion, phosmet, pyrethrin, spinosad and tebuconazole.

Table 1 : (non-exhaustive) list of available indicators to assess diet sustainability

Indicator	Sustainability dimension measured by the indicator	Data sources	Aim/Definition	Determination of the indicator
Sociodemographic data	Cultural dimension	questionnaire	Characterization of the socioeconomic profiles (gender, age, education, employment, etc.)	Individual data
Lifestyle data	Cultural dimension	questionnaire	Characterization of tobacco status, physical activity, alcohol consumption	Individual data

Indicator	Sustainability dimension measured by the indicator	Data sources	Aim/Definition	Determination of the indicator
Health data	Health dimension	questionnaire/ medical committee	Health events and scale (chronic diseases, symptoms and disorders)	Individual data
Purchase motives	Cultural dimension	questionnaire	Measure of the motives during the purchase for 9 dimensions: 1) absence of contaminants, 2) environmental limitations, 3) ethics and environment, 4) taste, 5) innovation, 6) local and traditional production, 7) price, 8) health and 9) convenience	Calculation at the consumer level
Dietary intakes	Nutrition-related dimension	FFQ	Measure of the absolute and relative intakes of main relevant food and nutrients	Calculation at the consumer level (using a single food composition database)
Dietary scores	Nutrition-related dimension	FFQ database / composition table	Measure of the consumption of a wide variety of foods and of the overall nutritional diet quality (including adequacy to French nutritional guidelines and reference values)	Calculation at the consumer level (using a single food composition database)
BMI	Nutritional anthropometry dimension	questionnaire	Measure of underweight or different levels of overweight	Individual data

Indicator	Sustainability dimension measured by the indicator	Data sources	Aim/Definition	Determination of the indicator
GHGE	Environment-related dimension	Mostly DIALECTE database partially completed by data available in the literature	Measure of climate change	Computation of the indicator at the farm level taking into account the food production systems (organic vs. conventional) and further allocation of mass, cooking and edibility factors to obtain impact at the consumer level
Primary energy consumption	Environment-related dimension	Mostly DIALECTE database partially completed by data available in the literature for 442 ingredients	Partial reflection of natural resource depletion	
Land use	Eco-friendly food dimension	Mostly DIALECTE database partially completed by data available in the literature for 442 ingredients		

Indicator	Sustainability dimension measured by the indicator	Data sources	Aim/Definition	Determination of the indicator
Diet costs	Economic-related dimension	Kantar-World panel purchase database (2012) completed by ~2000 prices collected from short supply chains by Bioconsom'acteurs' members (Autumn 2014 and Spring 2015)	Assessment of the budget devoted to diet	Computation of the indicators taking into account the place of purchase of main food categories as well as the food production systems (organic vs. conventional) and further allocation of an edibility factor to obtain impact at the consumer level
Dietary pesticide exposure	Safety-related dimension	CVUA Stuttgart database (2012-2015) European reference laboratory for the development of methods for the analysis of residues on plant products	Measure of the exposure from plant-derived products to >40 pesticides through two scenarios (optimistic and pessimistic)	Assessment of the exposure based on 180 vegetable ingredients taking into account the food production systems (organic vs. conventional)

Table 2 : (non-exhaustive) list of available indicators to assess diet sustainability

Main findings

Dietary patterns of French organic food consumers

In 2013, the first paper about dietary patterns of French organic consumers reported in a very large sample was published (16). Consumer attitude and frequency of use of 18 organic products were assessed in 54,311 adult participants in the Nutrinet-Santé cohort. Multiple correspondence analysis and cluster analysis were performed to identify behaviours associated with organic product consumption. Five clusters were identified: 3 clusters of non-consumers whose reasons differed, occasional (51%) and regular (14%) organic product consumers. Regular organic food consumers were more highly educated and physically active than other clusters.

They also exhibited dietary patterns rich in plant-based foods and poor in sweet and alcoholic beverages, processed meat or milk and dairy products. Their nutrient intake profiles (fatty acids, most minerals and vitamins, fibres) were healthier and they more closely adhered to national dietary guidelines. They showed also a markedly lower probability of overweight (excluding obesity) and obesity (-36% and -62% in men and -42% and -48% in women, respectively). Occasional organic food consumers generally showed intermediate figures.

In another work, using the detailed questionnaire about dietary consumption in conventional and organic, participants were ranked into five groups (18) according to the proportion of organic foods in their diet (from 0 to 72% of total food) accounting for weighting to improve representativeness of the population (19).

Intakes of foods of plant origin increased along with the contribution of organic foods to the diet while a reverse trend was identified for meat and processed meat, dairy products, cookies, fast foods and soda. Overall, high organic food consumers exhibited better diet quality, as reflected by higher dietary scores (mPNNS-GS and PANDiet)

Organic food and pesticide residues

In line with other studies (20–22), significant reductions in median urinary concentrations (23)– ranging from 17% to 55%– were observed for DETP, DMTP, DAP (organophosphate pesticides metabolites) and free 3- PBA (pyrethroids pesticides metabolites) in most frequent organic consumers (organic foods constituting >50% of the diet) compared to very low organic consumers (<5 or 10%), based on 2 x 150 matched for all traits including dietary patterns Nutrinet-santé adult participants (23)

Dietary pesticide exposure to various pesticides was also estimated in around 30,000 participants. Overall, high organic food consumers exhibited lower exposure to synthetic pesticide residues, despite their high plant-based intakes (24).

Health status of organic food consumers

Data from 62,224 adults of the NutriNet-Santé cohort (78% women, mean age =45 years) with information on consumption frequency of organic foods, dietary intake and repeated anthropometric data were analysed as regards weight outcomes (25). For 16 products, participants reported their consumption frequency of labelled organic foods (never, occasionally, most of the time) and an organic score with a maximum of 32 points was computed. After a follow-up on average of 3.1 years, a lower BMI increase was observed when increasing the organic score. Also, an increase in the organic score was associated with a lower risk of overweight (- 23%) and obesity (- 31%), among non-overweight and non-obese participants at inclusion. This study supports a protective role of consumption frequency of organic foods with regard to the risk of overweight and obesity that depends on overall dietary quality.

The metabolic syndrome (MetS), a multicomponent condition, is a cardiovascular disease predictor. A cross-sectional association between organic food consumption and MetS was investigated in 8,174 French adults with available measurements at clinical visit from the NutriNet-Santé study (26).

Higher organic food consumption was negatively associated with the prevalence of MetS (while adjusting for potential confounders) with a lower probability to have MetS – 31% when comparing the highest and lowest proportion of organic food in the diet. Higher consumption of organic plant-based foods was also related to a lower probability of having MetS and most of its components. When considering lifestyle factors (nutritional quality of the diet, smoking status, and physical activity), a significant negative association was detected in each subgroup except among smokers.

The association between organic food consumption and the risk of type 2 diabetes was investigated in 33,256 participants (mean age 53 years (SD=14)) from the NutriNet-Santé cohort (2014-2018) (28). Many confounding factors were also collected.

During the follow-up (mean=4.01 years (SD=1.02)), 293 new cases of diabetes occurred. After adjustment for the main confounding factors, organic food consumption (Q5 vs. Q1) was associated with a 35% reduction in the risk of type 2 diabetes (95% CI=0.43-0.97), p tendency = 0.02); a 3% risk reduction ($P=0.002$) in 5% increments of the organic portion of the diet was observed. The association was observed in women but not in men. Concerning the share of organic food for plant products, the HRQ5 vs. Q1 was 0.77 (95% CI= 0.53-1.12, p tendency = 0.01). On the other hand, the organic share of animal products was not associated with the risk of type 2 diabetes. Sensitivity and subgroup (modulating factors) analyses were conducted to test the robustness of these results.

The association between the level of organic food consumption and the risk of developing cancers was investigated among 69,000 participants of the NutriNet-Santé cohort (27). The level of organic food consumption was computed as an organic score. After a 4.6 years mean follow-up, the risk of cancers was 25% less for consumers with a diet rich in organic foods compared to those with low organic food consumption frequency. The risk reduction was particularly marked for postmenopausal breast cancer and for total lymphomas, a type of cancer consistently observed among farmers. This was observed after adjustments for potential confounders. One possible major explanation for the negative association observed between organic food frequency and cancer risk is that the prohibition of synthetic chemical pesticides in organic farming leads to a lower frequency

or absence of contamination in organic foods as compared to conventional foods and results in significant reductions in pesticide levels in urine. Another potential impact of organic foods could be the highest content in foods of various antioxidants and protective fatty acids that are not accounted for in the present calculations due to the lack of a specific composition database. However, the magnitude of this effect is probably low. More studies are warranted to confirm these results.

Sustainable values of organic diets

The role of organic agricultural model in the environmental pressures has been evaluated in several papers, as well as the assessment of the overall sustainability of food patterns differentiating production systems. For instance, conventional and organic food intakes of 29,210 French adults included in the NutriNet-Santé cohort were assessed. Organic food consumers exhibited a high consumption of plant food and a healthier overall diet quality (24). The cost of their diet was however higher. A decrease in GHGe was observed with increase of organic food in the diet and similar findings were observed for primary energy consumption and land use. Breakdown scenarios were used to disentangle the role of dietary patterns from that of different production systems. It was observed that for GHGe and land use, the diet composition was mostly responsible for the observed association; whereas for primary energy consumption for food production, the farming practices were also, but to a lesser extent, a lever. Conversely, the production system (here the organic food system) was responsible for the increase in the diet cost. Finally, dietary exposure to synthetic phytosanitary products was drastically reduced among high organic consumers (as mentioned above), thanks to their lower intake of pesticide-contaminated products. Figure 2 summarizes the key findings from the BioNutriNet project as of November 2020.

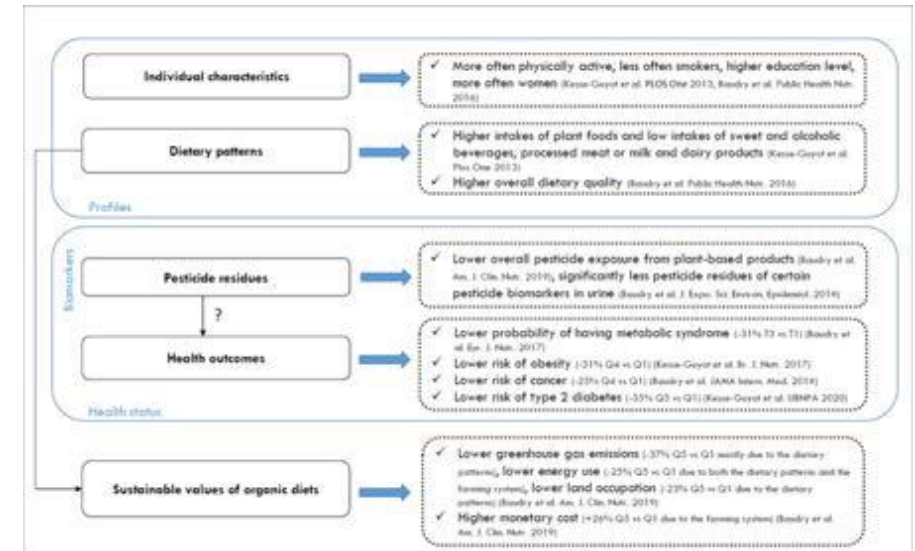


Figure 2 : Overview of the characteristics of organic food consumers compared to non-organic food consumers in the NutriNet-Santé study

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Special Session on "COVID-19 & Organic Agriculture"

(Case of South Korea) Pregnant Women and New Mothers Organic Food Scheme

By Jack Choi (Goesan County) & Jennifer Chang (ALGOA)

Introduction

In 2019, the South Korean organic movements in partnership with the Ministry of Agriculture, Food and Rural Affairs submitted a proposal to the Ministry of Economy and Finance for the provision of environmentally friendly food⁷ to pregnant women and new mothers.

The proposal has been submitted as part of the "citizen participation budget" scheme through which the public can submit proposals for new projects. It is an open and transparent process and the public are asked to vote on the proposals submitted. Hence, the more popular proposals get budget allocation and implementation from the central and local governments.

Unique Approach

The proposal called for the delivery of a box of local environmentally friendly food to pregnant women and new mothers, twice a month. The aim was to target forty-thousand women in 2020 with the purpose of safeguarding the health of pregnant women and new mothers, and newly born babies. The other purpose was to expand the sales of environmentally friendly food and uphold the values of ecological services and organic farming. The method is direct e-commerce linking up the women with the local farmers.

The project started from January 1st, 2020 with the aim of providing environmentally friendly food to 45,000 pregnant women and new mothers. But with the onset of the COVID-19 pandemic, the number has been extended to 80,000 beneficiaries. The areas under project implementation are two cities, one province and twenty-three other local governments throughout South Korea.

The project is implemented through online orders in specific websites set up by the local government authorities. The beneficiaries can go online to do the one of the following:

1. Put in orders for individual items of food,
2. Put in orders for a box of food (no individual selection),
3. Choose a food package that automatically delivers food from 3 months to 12 months (no further selection needed throughout the year)

Impact

The beneficiaries can order food up to 480,000 Korean won (360 euros) annually. 20% of the costs are self- paid while the rest of the costs are supported by the central and local governments.

This project has received a very good favourable response from the Korean public especially in this COVID-19 pandemic and is a good example of the government taking a pro-active approach to help the local farmers and provide safe, and nutritious local food to its people.



Source

Ministry of Food, Agriculture and Rural Affairs, South Korea.

7. The "Environmentally-Friendly Promotion Law" of South Korea, "environmentally-friendly food includes both organic and pesticide-free food.

(Case of South Korea) "Consumers Trust Organic"

By Ji-Young Moon, Manager, Hansalim

A New Paradigm of Sustainability – the Beginnings in the 1980s



Towards the late 1980s, the South Korean agriculture was facing a crisis due to the decline in the local markets and rural communities caused by trade liberalization policies, urbanization and environmental destruction resulting from

conventional farming. A new paradigm shift was needed for sustainability – to guarantee the "right price" for farmers, to provide safe and wholesome food for consumers and to re-establish the peaceful and harmonious "co-existence of human and nature." To overcome this situation, the farmers' movements realized that a new alternative was needed, and the so-called Hansalim movement started to take root. It started out as a humble grain store selling organic grain to consumers in Seoul, the capital city.

Principles and Values of Hansalim

Hansalim is based on the principle of mutual trust and common responsibility between farmers and consumers. Consumers regularly visit the farms and the food "comes with a face"- that of the farmers who produce them. Consumers are willing to pay the premium for their organic food -food produced based on good social values and which guarantee the "right price" for their farmers.

Building Urban-Rural Linkages

Hansalim implements direct sales of organic food working with its own farmers' communities and its consumer cooperatives. Farmers connect directly to urban consumers through contract farming and are guaranteed on average a 76% in profits. There are no agents or middle-persons involved in the transactions.

Current Status of Hansalim

As of September 2020, Hansalim has grown into a federation consisting of both organic farmers' and consumers' cooperatives with over 728,585 households as members, with 232 offline shops managed by 23 consumer cooperatives.

Impacts of COVID-19

Increase in Sales

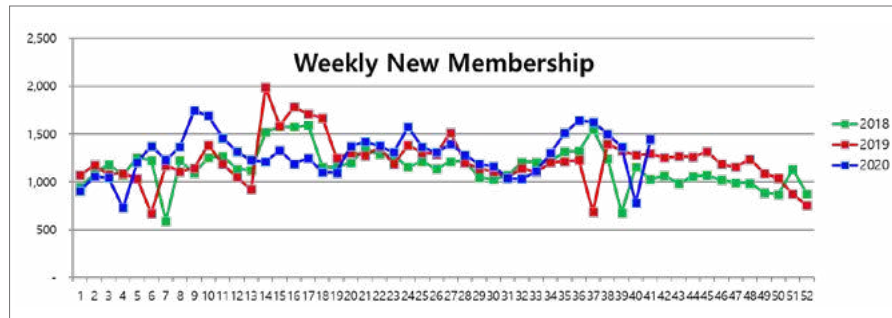
As the people grew more concern about eating safe and nutritious food protect themselves from the COVID-19 virus, sales in Hansalim increased on average by 16.3% by the 41st week of 2020 compared to 2019 of the same period. This is very significant as in 2019 when compared to the same period in 2018, the increase was only 0.9%.

It is noteworthy that internet orders took up 36.5% of the increase in 2020.



Increase in Membership.

Membership has increased by 1,283 persons every week in 2020. By the first week of October 2020, a total of 52,623 households joined as new members of Hansalim.



Supporting Social Solidarity Economy



(Posters of the "Co-Existence Market")

Hansalim started handling items to assist social enterprises who were facing difficulties due to the COVID-19 pandemic. Through the so-called "co-existence markets", Hansalim sold 21 items including shoes.

Advocacy Campaigns

Hansalim consumers organized special promotion events in their shops to assist organic farms who were facing difficulties due to the closure of schools. Many organic farms provide their products to schools as part of the national school lunch program and were seriously affected.



Press Conferences

Hansalim consumers took to the streets outside the government offices calling on the government to provide assistance to farmers who were seriously affected by the COVID-19 pandemic.

They joined together with the organic farming movements calling on the government to provide environmentally-friendly food packages for people in quarantine and to deliver the unused organic food for school lunches directly to the homes of school children.

As a result, the central and local governments created 18,000 food packages and provided 6,861 people under self-quarantine with environmentally-friendly farm produce. Furthermore, over 5.77 million households with school children received home deliveries of environmentally-friendly food packages.



(Case Study of India) "PGS Groups' Response to COVID-19"

By Participatory Guarantee Systems Organic Council (PGSOC)

What is the PGSOC?

In April 2011, it was formally registered as a society in Goa as Participatory Guarantee Systems Organic Council (PGSOC) with 16 organizations as Founding Members.

PGSOC has evolved to become a cause-driven social organization dedicated to bring about an inclusive platform for small and marginal organic producers to collaborate and flourish in the domestic market through a process based on verifiable trust. Best practices and indigenous knowledge systems of the member farmer collectives are distilled as common standards and processes to ensure safe and healthy food for all. Today we have close to 6000 farmers and 450 local groups following the PGSOC.



Vision of PGSOC

PGSOC envision a future of socially, ecologically and economically just food systems guaranteed by trust and participation, driven by traditional ecological knowledge systems and co-owned and controlled by communities adhering to principles of co-operation.

Activities of PGSOC

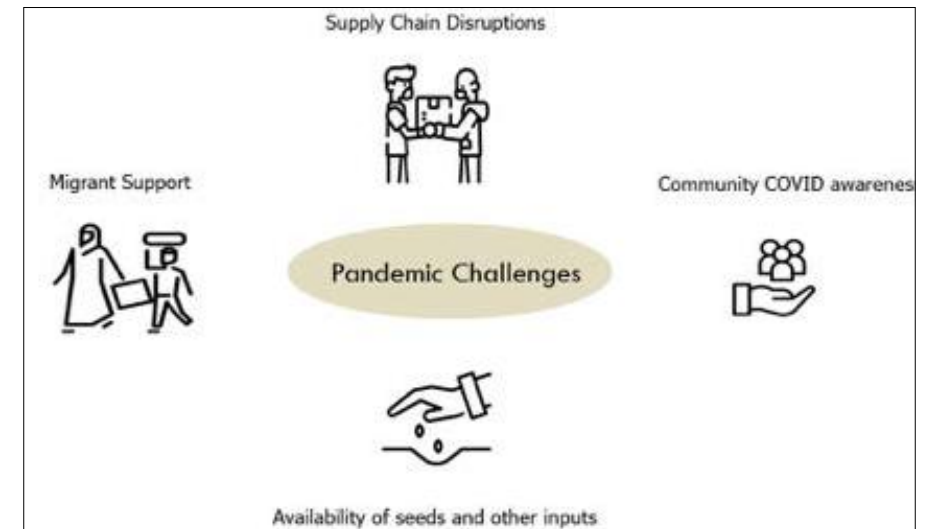
Certification Process

The PGSOC guarantee system is derived by homogenizing the common values from the diverse social and cultural control systems and mechanisms existing in communities locally. Participation of all stakeholders, verifiable trust, shared vision, horizontality, transparency and knowledge sharing forms the pillars of this guarantee system. PGSOC have adopted the NSOP of Government of India as a minimum requirement for establishment of organic integrity.

Promotion of PGS

PGSOC has around two decades of experience in the practice and implementation of PGS in various agro ecological zones of India. PGSOC also participates in various forums to promote PGS and also conducts trainings to farmers and civil society organisations. PGSOC is also engaging with local governments in India for developing a framework for local government enabled PGS. PGSOC leverages this expertise for promoting PGS among more farmers in India as well as across the globe. The founding members of PGSOC have also played an active part in spearheading PGS globally. PGSOC was also actively involved in promoting PGS in Sri Lanka, Bangladesh, and Bhutan.

The Challenges brought by COVID-19



During the pandemic, the PGSOC was coordinating with all its members on how each member was coping up with various issues brought about by the COVID-19 virus, especially those members in tribal areas such as Keystone Foundation.

India is a vast country, and the members are spread all across the country. During the lockdown, the major cities with the most consumers such as Bangalore and Chennai were completely shut off and so reaching out to the farmers and consumers was a big challenge. The situation was the same across the country. Everyone was completely caught unprepared for the pandemic. Because of the lockdown, supply chains were disrupted, and it was difficult to move products from one place to another, including the availability of seeds and other inputs.

PGSOC started a community COVID awareness-info alert to dispel the dis-information that created fear and nervousness in the community. Hence PGSOC helped in providing the right information to better equip the people on the things that need to be done during the pandemic.

One of the biggest challenges that happened during the first few months of the lockdown was the effect on the migrant communities. People from the big cities and other places were forced to go back to their respective homes but were stuck in various points across the country, providing problems of all sorts.

The Responses to COVID-19



Photo by Vishalakshi Padmanabhan

The photos above show some actions that PGSOC initiated at the height of the pandemic. Cars were used to sell farm products, bringing them directly to the affected consumers. There was wide community support for land preparation and distribution of surplus and relief kits.

As shown in the table below, several activities were made to minimize the effects of pandemic, which has greatly affected the lives of the farmers, consumers, and everyone in between.

The Responses of PGSOC to COVID-19	Strengthening of the Local Markets
	Distribution of kitchen garden kits within communities
	Supply chain support from urban consumers
	Distribution of seeds and seedlings
	Facilitation of farm credit
	Community support for land preparation.
	Distribution of surplus and relief kits to landless migrants
	COVID-19 awareness with help from primary health centers
	Facilitating public distribution systems
	Mobilizing volunteer teams for distribution of ration and market connect

Here are specific response coming from some PGS groups:

Photo by Vishalakshi Padmanabhan	"We have mobilized both financial support as well as input support like seeds to our PGS farmers for land preparation and cultivation for the upcoming cropping season as access to these were limited during the lockdown."
Photo by Vishalakshi Padmanabhan	"Some PGS groups have initiated sale of vegetables via hiring of cars and are calling this initiative 'Farm on Wheels' due of disruptions in markets during lock down. This is also done to make healthy foods accessible to consumers and to meet the needs of diverse markets for PGS groups."
Photo by Vishalakshi Padmanabhan	"Our PGS women farmers are showing strong resilience and are adopting innovative marketing strategies. They have invited customers to become "Friends of Umang" by depositing money in-advance and purchasing their products later. They have also given incremental discount for the consumers."

The Lessons Learned and Challenges Ahead for PGS

There were many lessons that were learned during the pandemic:

- **The lockdown has highlighted the threat to food security and nutrition and the resilient community- based safe food producers have built over time.**
- **The importance of local markets and the mutual support between the producers and during such dire situations was an eye opener in many communities.**
- **The stakeholders involved in the PGS have been extremely helpful in taking on additional responsibilities like COVID-19 awareness, volunteering and even relief work in their localities.**
- **Community-based enterprises have been game changers in managing the disruption caused in the supply chains during the lockdowns**

As COVID-19 will still be prevalent in the coming months, restricted movement can adversely affect the growth of PGS since it is largely dependent on community mobilization. Production and PGS will have to be reimagined to include for example, landless laborers in programs of food security. Urban markets are reorienting themselves to the needs of social distancing and are shifting to the usage of technology for transactions, something which small and marginal farmers could find challenging. PGSOC acknowledges these challenges and will continue to find ways to get everyone to adjust to the new normal. Regardless of what may come ahead, the PGS community, through PGSOC will weather the effect of the pandemic and continue to assist and uplift the lives of millions of farmers and consumers in the country.

Special Session on “School Meals and Public Procurement”

(Case of Japan) Organic school meals in Japan

By Miyoshi Satoko (Vice-President, IFOAM Asia)

There are several great examples of Organic School Meals in many places for years. Recently this movement seems flow into the mainstream, as the Ministry of Agriculture, Forestry and Fishery stated to support providing organic foods to school meal, people started to pay more attention to this topic.

Examples from Chiba prefecture

Isumi city is located east east of Chiba prefecture, has about 38,000 population with 2,300 students (elementary and junior high school) and they provide 42 tons of organic rice per year for their school meal.



(Photo Credit Miyoshi Satoko / Mayor Ohta and farmer with school students)

Mayor Hiroshi Ohta has been concerning about the decrease of farmer's income. Low income results abandonment of farmland, and these idle paddle field attracts wild boars and deers then eventually people moved from that community.

Rice is main crop in Isumi city, therefore when Isumi city together with NGOs and other local members established the association to tackle with these issues, promoting organic rice production was one of the main action plan.

Mayor Ohta always says "Balancing our environment and the economy is the key" and has shown great support for activities to enhance biodiversity in the city.

In 2013, three farmers converted to organic rice production. That year due to the lack of knowledge, they struggled with heavy weeding tasks and with poor harvest. However, they found there was no serious pest damage, and realized their paddies had become rich in biodiversity.



(Photo Credit: Miyoshi Satoko / Mr. Sameda teaches students how to use rice threshing machine)

In the following year, Isumi city officer Mr. Sameda asked Mitsukuni Inaba (President of Civil Institute of Organic Rice Cultivation) to teach and train farmers.

It was such a learning process, not only techniques of rice production, but also farmers learnt about issues on farming and food. For example, how neonicotinoid pesticide effects to loss of biodiversity, children's health related foods, our food sovereignty and so on.

In the fall of 2014 Mr. Sameda asked the farmers how they want to sell their 4 tons of organic rice, the farmers said "The best way is to provide to our children".

Mayor Ohta and City council had agreed to use this organically grown rice to the school meal. From 2017, 100% of rice is provided to schools in Isumi city was locally grown organic.

Now, twenty-three farmers have joined in the production of organic rice, and the harvest has amounted to about 100 tons. Isumi city had started providing organic vegetable as well.

"When we want to educate students about foods and agriculture, Organic is the only way. Otherwise it does not make sense to the children" said Mr. Sameda who often bring students to the fields. Organic agriculture enhances the pride of the locals, which create a bright future for the agriculture community. Isumi city became very famous because of this organic rice school meal projects, now many young families are moving to Isumi city.

Example from Kisarazu city (ALGOA member)

It has been 5 years since Kisarazu city has declared to be an Organic City. It is in its second phase of their Organic City Plan. Three pillars of this phase are:

- **Economy/Boost local economy by foods and agriculture.**
- **Environment/De-carbonize project.**
- **Society/Disaster prevention project.**

The plan focused on supporting food education, expanding local consumption, promoting Organic Agriculture and enhancing start-ups and local business. Organic school meal project is one of the main projects. The officer from Kisarazu city, Mr. Nomura communicated with Mr. Sameda of the neighbouring Isumi city to learn from the city's experience.

In 2019, it was only four farmers who joined the program and produced three tons of organic rice. In 2020, the number of farmers was doubled, and harvest was tripled. One of the farmer Mr. Sugiyama said "I produce vegetable and fruits but never tried to

produce rice. This year I agreed to join the Kisarazu city's mission to support children and environment, so I tried to farm rice organically". Mr Inaba also gave lectures and training at Kisarazu city and supported these farmers to convert to organic practices.

Kisarazu city purchased a rice planting machine, so farmers can share it without any additional financial burden. "This is now a movement, not just a policy or implementation of plan from a local government" said Mr. Nomura.



(Photo Credit: Miyoshi Satoko / Mr. Inaba gave lectures to farmers. The person in the center is Mayor Watanabe of Kisarazu city)

Local communities sometimes struggle with the decreasing population and the number of children is rapidly dropping in Japan. However, the COVID 19 pandemic has pressured people in the city to move out and they are looking for more sustainable and natural lifestyle. This is especially true among parents with small children who are concerned about the environment, and who are willing to give their children more opportunities to have experiences with nature.

Farming and foods from the farms are perfect tools for children to learn what is the core of our life. And for this purpose, "Organic" can make sense to them since harmony with nature is center of organic farming and food.



(Photo Credit: Miyoshi Satoko / School students enjoy day class at an organic rice paddy field)

(Case of South Korea) Goesan School Meal Program

By Han-Giun Choi, Jack Choi (Goesan County), Jennifer Chang (ALGOA)

School Meal Movement in South Korea

In 2002, a national citizens' network of farmers' groups and consumer cooperatives was formed to amend the existing legislation for school meals, calling for the provision of free meals, direct catering (moving away from the indirect vendor system of catering), and the use of organic ingredients to ensure healthy and safe food to the nation's children. It also called for government support of school meals as a component of compulsory education.

The national movement actively campaigned for direct sales between the farmers and the schools so that low-cost, safe and high quality food can be made available to school children and one of the most successful outcome of the campaign was the establishment of School Meal Support Centers nationwide.

The School Meal Support Centers are divided into operation centers which monitor and undertake research, education, training, and policy advocacy; and distribution centers which facilitate direct sales, collective purchasing, contract farming and delivery between farmers and schools. Farmers were freed from the hassle of submitting tenders or going through intermediaries to supply their products to schools and schools did not have to go through the complicated process of finding good distributors.

Due to the Centers, local food became more accessible and constructive networking between local farmers and schools i.e. "one-school-one-village movement" - have also been successfully formed. Farmers in a village who provide to a nearby school are now contributing to the building of school farms and gardens; and for the children, the food that they eat comes "with a face" as farmer-traceability of food is a key factor involved.

Increase in Organic and Pesticide-free Food

Since then, sales of organic and pesticide-free food to schools take up almost 39%⁸ of the environmentally-friendly food market since it is one of priorities of the Centers to purchase local and organic food from farmers in their localities. In 2010, the central government started the provision of free school lunches nationwide. In 2018, 66% of schools in Seoul City had lunch programs - with 60% of the food ingredients being organic and pesticide-free.⁹

Current Status

The school meal program supports 5.5 million students in 11,835 schools nationwide. The total budget for school meals for 2020 is US\$5.8 billion and 23.6% of the total budget is supported by the local governments. 71,268 jobs have been created (nutritionists, cooks in school kitchens, etc).¹⁰

The objectives of the school meal program are as follows:

- Increase in the efficient management of school lunches
- Guaranteeing food safety and proper sanitary measures
- Using safe and good ingredients
- Nutrition management
- Provision of free meals (supported by central and local governments)

8. Jung, Seung-taek, et al. Korea Rural Economics Institute, 2018

9. Seoul City Government, 2018

10. Ministry of Education

School Meal Program of Goesan County (Schools)

In Goesan county, 1,794 students from twenty-four schools are supported with the budget of US\$790,000 – of which US\$600,000 is from the local government and US\$188,000 is from the Education Office.

School Meal Program of Goesan County (Childcare Centers)

Also, 2,665 children in fifty-one childcare facilities, kindergartens and schools are supported with the eco-friendly ingredients. The total budget is US\$266,000 and it is fully supported by the local government. Supported products are organic rice, millets, red pepper powder, and non-antibiotic beef. With this support, Goesan county has seen both increases in income of local organic farms and in the health of local children.



COVID-19 Crisis

In 2020, the onset of COVID-19 led to the closure of schools and the cessation of school meals, seriously affecting farmers and the "Environmentally-Friendly Agriculture Countermeasures Committee for COVID-19" was established to overcome the crisis. The central and local governments created 18,000 food packages and provided 6,861 people under self-quarantine with environmentally-friendly farm produce. Organic cooperatives and more than eleven large scale retail food outlets like Nonghup, E-Mart, etc assisted in

the sales of over US\$2.8 million. Furthermore, over 5.77 million households with school children received home deliveries of environmentally-friendly food packages.¹¹

Goesan County’s Response to COVID-19



(Photo Credit: Goesan County)

As the school were closed and e-learning became the norm, the unused school meal ingredients were delivered to the homes of local students through the ‘Environmentally-friendly Food Package Scheme’. With the budget of US\$ 88,000, about 2,070 children from twenty-six schools in the county were provided with food packages.¹²

The cooperation of the local government, the local education offices, and schools is crucial for the efficiency and improvement of the school meal program.

Through the success of the program, we can achieve both goals – income of farm increase and health of children simultaneously.

11. 2019 Statistics on Organic Food. National Agriculture Products Quality Management Service, March 2020.
Press Release, Aug 26, 2019, on the Amendment of the Definition of Environmentally-Friendly Promotion Act, Ministry of Agriculture, Food and Rural Affairs

12. Goesan County

(Case of New Taipei City)

Speech by Wen Lee, Commissioner of the Agriculture Bureau, New Taipei City

Start of the Program in 2011

I would like to start by giving you the whole picture about the school lunch program which New Taipei City started in the year of 2011 with only three schools. However, a month later, one of these three schools dropped off, because they did not like the look of the organic vegetables, such as, worm holes even though, no worms were found. There were many challenges faced but we did not give up and constantly amended and improved to make our program better. As such, gradually, more and more schools joined this program.

Full Expansion in 2013

In the year of 2013, all the public primary and middle schools in New Taipei City, became part of the program. This meant that all schools provided organic vegetables to the students at least once a week.

The year 2018 was a tipping point in the program as all major cities in the country adopted their own school organic meals programs. The program was further boosted when the central government adopted this the for all students in Taiwan.

Impacts – Huge Increase in the Market, Farmers and Farmland

Compared to the year 2011, today we estimate that the market of organic vegetables in the country has grown more than 15 times. This is a huge increase.

New Taipei City which is the largest city in the country in terms of the population, has seen the increase in the number of farmers and the area of organic lands also by three times.

For individual organic farmers who have contracts with our school organic lunch programs, their annual income is between 31 thousand to almost 40 thousand US dollars. Compared to the national wide annual income, they have 50% more than average.

So, this program is not only successful for schools – it has also become very successful for our organic farmers and farms as well.



(Photo Credit: Vic Tagupa / Members of the Asian Organic Youth Forum / Visiting Facilities Providing to School Meals)

(Case of France) Mouans-Sartoux, France – the future we want

By: Gilles PEROLE, Deputy Mayor, Mouans-Sartoux, Lea Sturton and Thibaud Lalanne, MEAD coordinators



Our story and achievements

At the center of the triple agglomeration of Cannes-Grasses-Antibes (530 000 inhabitants), on the French Riviera, lies the city of Mouans-Sartoux (MS), 10 000 inhabitants.

In 1998, the elected representatives became aware of the link between food, health and environmental issues. Due to the mad cow episode, organic beef was introduced in the school meals. Then, they engaged in a collective school catering project in order to impulse an agri-food territorial policy. In 2005, the city became member of the National Nutrition Health Program (PNNS: 9 official nutritional recommendations for a balanced diet) active cities, and has therefore introduced more fruits, vegetables and whole grains in school meals. However, adding more vegetables in the meal portions also meant increasing pesticides doses. This is one of the reasons why the city decided to turn to organic food. Since 2012, 100% of the food is organic in the canteens of MS. But as it did not make sense to buy organic products from the other side of the world, the city shifted its public procurement rules so that local producers could answer. Facing a lack of local offer, a municipal farm was created in 2010, and 2 farmers hired to grow organic

vegetables for the canteens. It now provides 96% of the needs of the 3 schools canteens, representing over 1.000 meals/day. Changing procurement to organic goods did not cause additional costs raise, because they were balanced by the municipal farm production (for vegetables), but also by financial savings thanks to a reorientation of public procurement rules, joint management of the 3 canteens, and dramatic reduction of food waste (80%). Food waste minimization started in 2010. Nowadays in MS canteens, only 40g per meal are wasted instead of 150g (national average). Whereas the average cost of ingredients of a normal meal served in French canteens is between 1.5 € and 2 €, the fully organic and local meal served in Mouans-Sartoux costs 2.11 € (in 2019). Parents pay between 2 € and 6.8 € depending on their income. The total price of a meal (including staff) is 8.39 € without animation staff. Since 2013, the 3 kitchens of the schools of MS are labelled by Ecocert with the highest distinction of 3 carrots. The canteens serve vegetarian meals twice a week and MS is currently the only town in France to offer 100% organic meals for nurseries to middleschool.



An integrated sustainable community

But Mouans-Sartoux is more than a great organic and affordable canteen practice. Indeed the city shows an integrated sustainable and responsible ecosystem from which the organic canteens scheme is both a strong enabler of and the result of.

Economically, the city has historically been connected with the perfume makers of Grasse and has had extensive perfume plant farming. Being on the French Riviera and due to intense geographical constraints (urbanization, tourism...), the pressure on the city is high for it to further develop the triple agglomeration. Urban sprawl is also a constant threat. Forest and land conservation are pressured, agriculture has been pushed away from the area. In order to address this, in 2012, the local urban planning strategy (PLU) was modified in order to triple the farming area of Mouans-Sartoux (from 42 to 112ha).

The city also defined an Agenda 21, which is a strong driver for local sustainable orientations and actions (related to management of the urbanization, sustainable transport and mobility, associative life, protection of natural resources...) as well as for establishing the goal of achieving food self-sufficiency capacity within the city. These have been jointly followed together with the vision of achieving 100% organic and local food served for lunch meals in the canteens of Mouans-Sartoux schools and with the development of a sustainable territorial agri-food sector as part of the city strategy. Finally, the Local Educational Program (PEL) of the city of Mouans-Sartoux contains 5 axes and 70 actions as well for a participative approach to leading actions on education at the city level, which aims to listen to children and youth needs, but also to promote healthy and sustainable food habits.

The strong city leadership through more than 45 years of political engagement led to the establishment of a consistent food territorial management (and a PAT Plan d'Alimentation Territoriale – Food Territorial Plan – for which Mouans-Sartoux was recognized). In concrete terms, it led, in October 2016, to the creation of the MEAD, Maison de l'Éducation à l'Alimentation Durable (the Centre for Sustainable Food and Education) a municipal service whose actions aim to provide and enable access to safe and healthy food to all. Those goals are met by two kinds of strategies: at first, by taking action at local level, tackling issues such as developing local organic agriculture production and

consumption or raising awareness to sustainable food and agricultural. Secondly, by sharing MS's experience to other locations in France or elsewhere in the world, by offering capacity building workshops, tools, trainings or accompanying territories during a couple of years to implement their own food project. A key factor to the success of the project is the empowerment of the population. Citizens are following and nourishing the project and undertaking actions leading to the same vision of sustainable development.



The future we want

"The 112 ha of land classified as agricultural in the town are being harvested; the city has helped farmers to settle and created agricultural hamlets so they can take part at the local life. A transformation laboratory has been created and is running at full speed for local farmers. The farmers supply the canteen in addition to the agricultural farm. All the restaurants and hotels in the city serve organic and local food, the food offer to employees in private companies has followed the same path. Companies and restaurants are certified by the sustainable food brand, created by the city, according to the level of their commitment and progress. All the inhabitants of the cities have equal access to sustainable food. The MEAD has set its offices on the 3 levels of the house of the Haute Combe estate, the reinforced team is well settled and the place welcomes citizens, researchers, children, other likeminded people and students.

An organic and local farmers' market takes place every Thursday evening allowing people who work during the day to shop there. Citizens participate in feeding the city through self-production and help supply in organic vegetables and egg the social grocery store.

Restaurant owners and food shops have also integrated this circuit by donating their left-overs and unsold food. The social grocery store has become a place where access to sustainable food is possible and open to all but where everyone pays according to their resources. Citizens and local actors joined the steering committee alongside with representatives of the city, associations and institutional partners, within a local food council; a health study carried out with local medical partners confirmed that the "Mouans-Sartoux plate" contributes to the well-being of the entire population.

In short, an organic and sustainable city, united and happy, which has defined its food sovereignty, which is autonomous in food production at more than 50%. We no longer need to share our project by training, support and visits in France and Europe, because at last, all the territories are engaging and living their transition towards more resilience, but we all keep sharing ideas and practices in the middle of poppies! "

One day this utopia will be realized....

"Utopia is not about the impossible, what is really impossible is to carry on as we are."
Ruth Levitas (2013): Utopia as Method, The Imaginary Reconstruction of Society, Basingstoke, UK, Palgrave Macmillan



<http://mead-mouans-sartoux.fr/en/>

(Case of Portugal) Sustainable Food School Programme of the Municipality of Torres Vedras

By *Laura Rodrigues (Vice-mayor Municipality of Torres Vedras) & Paula Mota Rodrigues (Education Department, Municipality of Torre Vedras)*

Introduction

The Sustainable School Food Programme set up by the Municipality of Torres Vedras (Portugal) in 2014, aims to provide healthy school meals in a social, ecological and sustainable way by, for instance, taking into account the products freshness, territorial development and job creation. The Programme is based on 4 pillars:

1. **Production Pillar:** the programme promotes the direct contact with the vegetable cultivation process consistent with organic farming techniques, through school gardens and study visits to organic farms managed by the Education Division of the Municipality ("Programa BioHorta Escolar") and with a support of the Environmental Education Centre with an initiative of vegetable gardens in small boxes for some schools. "BioHorta" currently reaches an estimate of 1.200 students enrolled at pre-school as well as in primary school.
2. **Acquisition Pillar:** the programme exclusively purchases high quality and fresh raw food materials, preferably from local small and medium producers and suppliers, demanding bulk products (when applicable – the product boxes' are always collected by its suppliers on the day after, promoting the reusing of the materials and avoiding waste, thus contributing to a lower ecological footprint), thereby promoting territorial development by increasing the turnover for this sector in the region, as well as increasing the net job creation. For this to be possible, the Municipality divides the products into lots generating multiple tenders, specific for which one of them. This represents lower tenders' values and, though, less will on large companies to be interested in providing raw food materials, representing a promotion of the small and medium suppliers.

3. **Cooking Pillar:** the Municipality has two central kitchens which supply around 1.300 meals/day (number in the 2019-2020 school year) and developed a network strategy which delegates the competences to the 12 local county authorities, which, themselves contract local private social institutions for the management (cooking and distribution) of the school meals (around 2.700 meals/day in 2019-2020). The menus are carefully prepared with the support of a nutritionist, respecting the nutritional balance, taking into account anthropometric values and favouring local seasonal foods, traditional dishes or the most appreciated in each location, according to the Mediterranean Diet. The municipal kitchens work as "laboratory kitchens" creating the guidelines for the private social institutions' ones.

For the future school years, it's aimed to reach about the double of meals number at the council.

Consumption & Healthy Eating Habits Pillar: parallel programmes for the development of healthy food and the promotion of physical activity:

- the European program 'school fruit and vegetables' and 'school milk' - free distribution of fruit and vegetables to the kindergarten and primary school students (twice a week) and dailymilk distribution;
- the 'Lunch With Me in my Birthday' set up by the Municipality - which consists of inviting families to have lunch at school on their children's birthday, with a view to raising awareness of healthy eating practices, also allowing them to be able to evaluate and provide suggestions for daily meals through an anonymous survey. This programme allows to integrate the families in the food theme, approaching the parents to school and their role on food;
- the Active School - promotion of correct eating habits and increase physical activity to combat childhood obesity, with periodic monitoring of body mass index in school by Physical Education teachers of the 1st cycle of basic education;
- the Food Waste Separation after the meal – Children can play an active part in sorting out food leftovers, which are then monitored and weighed on a daily basis in order to adapt menus and ensure significant food waste reduction. Sensitize the youngest for the impacts of the food waste in natural resources, is another important goal of this action.

October – The Food Month



October is annually the "Food Month", where several events related to Food are promoted, focused especially on schools, but with some actions for the population. The month agenda is dynamic, so every year is improved. Some examples of developed actions:

For schools: awareness actions of healthy food, salt and sugar, good snacks to bring to school, sustainable and organic food; games related with the promotion of food knowledge; tasting activities; study visits to the Municipal Market and to organic farms; the beginning of school gardens new cultivations; special activities related with robotics (for example by programming robots to choose healthy instead of not healthy food) and science experiences on food; special thematic lunches; shows on cooking, etc.

For the general population:

- Awareness actions on Organic Farming/Organic Food; Dedicated sessions for parents on Food theme, integrated into the "Conversas com Pais" - monthly evening event dedicated to parents, where several themes are discussed and presented, counting always with some external reference speakers;
- Dedicated awareness actions of healthy food for the 'Women Gipsy Community' because of the high level of obesity in this population class, etc

Impacts

a. Social

- We can say that almost all the entire Torres Vedras' population is included in this programme. Starting with the students from kindergartens and primary schools, their families, the school staff and teachers, local agro-industrial sector and market, and non-profit organizations as the private social institutions. Also, we can absolutely assume that, indirectly, all the users of the social services provided by the non-profit organizations are benefited with this Programme;
- Job creation by promoting the employability of the inhabitants of the counties of the Municipality. Presently it represents about 60 effective employment in the private social institutions;
- Development of the local economy, by buying food raw-materials at local level;
- At the present time, a partnership with a private social institution (a non-profit organization), responsible for training young people with mental disabilities for job integration, which have an organic certified farm, is being created. This social farm will be able to provide some fresh vegetables and fruits to 3 other institutions, themselves responsible to manage the meals of 4 rural schools. This is also considered as environmental and nutritional impacts.

b. Environmental

- Stimulating Agri-Food Short Chains and the Circular Economy, by purchasing from small and medium producers and suppliers requiring (where feasible) the delivery of bulk products, usually by daily deliver, resulting in a lower ecological footprint;
- Freshness guarantee, not only by the daily provision, but also by the valorisation of suppliers with a less food time transport (from production/storage to the central kitchens), representing less CO₂ emissions and, consequently, another lower ecological footprint measure;
- Integration of two specific lots of organic products in the meals (fruits and vegetables),

- Food waste management by specific daily cooked quantities according to the number of meals and the technical sheets of each daily dish in the menu map, representing residual food waste at kitchen level, and also a very significant reduction of costs in the meals' production.

C. Nutritional

- Seasonal and cultural menus;
- Increase of the quantity of organic products, as also to introduce them in all schools of the county;
- The nutritional calculation and mapping of allergens allowed to establish weight balance of the macronutrients taking into account the age groups, and the provision of safer meals;
- Notions of cultivation according to organic farming principles through the Pedagogical Gardens which in turn, are complemented by extracurricular programmes aimed at instilling healthy eating habits and practice of sport that allow the measurement of the results' evolution.

Objectives

This Programme aims to achieve the following:

- a Sustainable Kitchen and Food Waste Management,
- a Healthy Food Education and Sustainable Behaviour Change,
- a Sustainable Urban Planning and Agricultural Land Use,
- a Food-Related Local Economy and Job Creation,
- and a Sustainable Integrated Governance.

Alignment with the SDGs

The good practice is aligned with the Sustainable Development Goals of the Agenda 2030, reaching 10 of the 17 goals as, for example, the Goal 9 'Build resilient infrastructure, promote sustainable industrialization and foster innovation', specifically targeting 9.3 because the practices increase the access of small-scale industrial and other enterprises, and integrates them into value chains and markets.

Networks connections/distinctions (Timeline)

- In 2015, the Municipality signed the Milan Urban Food Policy Pact.
- In 2016, it was distinguished by the Food Nutrition Awards.
- In 2018, it joined the CityFood Network and became a partner of the URBACT BioCanteens Transfer Network. - In 2019 it has been distinguished with the European Commission recognition as 'Best practice to help reach the Sustainable Development Goals', in the 'Healthy and Sustainable Food Systems' category.
- In 2019, it has been recognised in the shortlist of 5 candidates for the '2019 Procura+ Awards' of the ICLEI network, in the category of 'Sustainable Procurement of the Year'.

Lessons learned

The system implemented depends on the strategic vision and the political commitment of the municipal executive, resulting in a budget increase for the school meals. Public procurement imposes several restrictions which must have to study at the local level to adapt them to the specific needs.

The food production of Torres Vedras' territory allows the promotion of the food short chains by local producers and/or local suppliers. By introducing organic vegetables (and fruits), an adaptation of menus was needed, according to the seasonality of the products and by introducing new vegetables that weren't contemplated before. In spite of it,

the quantity and variety of organic products are not enough in the region (for example, there is a lack of livestock products). The Municipality is working directly with organic local farmers to managed production plans, according to the canteens' needs. It is also evaluating parallel options to improve organic farming in the territory.



Sources

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- The European Commission recognition as 'Best practice to help reach the Sustainable Development Goals': <https://webgate.ec.europa.eu/dyna/bp-portal/practice.cfm?id=344>
- The '2019 Procura+ Awards': <https://procuraplus.org/awards/>

(Case of Sweden) Diet for a Green Planet: Swedish experience of promoting high quality and healthy schoolmeals

By Sara Jervfors, Head of the Diet Unit, Södertälje municipality, Sweden

(Transcript of the speech presented at the GAOD Summit)

The Diet Unit in Södertälje



The implementation of the Diet for a Green Planet concept was made in all the canteens in the municipality that were organized under a unit called the Diet Unit. The Diet Unit is responsible for the canteens in kindergartens, primary and secondary schools, and also the canteens in the municipality's elderly care centres and kitchens that prepare and deliver meals home to elderly people that are not able to prepare food for themselves.

The Diet Unit serves approximately thirteen thousand portions every school day and the food purchase amounts to about 9 Million Euros per year. The Unit also handles the procurement of food for six other municipalities, bringing the Unit's total amount of purchase to about 13 Million Euros per year.

Background of the Diet for a Green Planet

In 2001, the governing politicians made a decision that the canteens in the municipality were to purchase environmentally friendly food. They also wanted to educate the children and young adults in the municipal schools to recognize the significance of the decision, which would contribute to sustainable food production and consumption in the long run.

Milks, eggs, potatoes, and crispbreads were converted from conventional to organically

produced. The Diet Unit organized big scale central kitchens, and a manager was hired to run the unit. The canteen staffs were educated about organic food certification.

Between 2006-2010, the diet policy was developed – a document that would serve as a framework of what the canteens should focus on with the meals. The policy focuses on the areas of nutrition, quality, and sustainability. The process of creating the diet policy for the municipality took 3 years.

One point in the policy that had a great impact on the success of the Diet for a Green Planet concept was the decision to make a building which has fully equipped kitchens in each school instead of a large scale central and delivery kitchen. Today approximately 95% of all schools have their own fully equipped kitchens.

From 2010 to 2013, the municipality was engaged in the EU-project under the implementation of BERAS. The Diet for a Green Planet concept was further improved, and the concept was implemented in the municipality's eighty canteens.

Organizational Changes

In order to make the implementation successful, there were several internal adjustments. Before, the delivery kitchens and all kitchens within the preschools were under the supervision of headmasters. A decision was made to organize all the canteens under the Diet Unit.

The combination of centralizing the governance of the canteens and at the same time decentralizing the creation of the menus and preparation of the meals to each school in fully equipped kitchens has been one of the strongest success factors behind the implementation of Diet for a Green Planet concept.

During the implementation process, measurable goals were setup and great efforts were made to ensure that these goals were met. The Diet unit hired trained chefs who had vast experience in cooking food from raw materials on large scales and also trained the

existing staff in the criteria of the Diet for a Green Planet concept. The Diet Unit made an inventory of all the kitchens and established routines for a good systematic work environment to ensure that employees would have the right conditions both physically and mentally to work with the concept while at the same time enjoying their jobs.

Activities in the municipality

Aside from serving sustainable and healthy meals, the municipality has been involved in a number of municipality-wide projects over the years. Food production in Södertälje and the surrounding areas is very low compared to the number of citizens in the municipality. Hence, it has partnered with other projects in the municipality to address this problem and ensure a local sustainable food system. This includes the LEADER project:

- Södertälje Locally Grown in 2011 - 2014,
- The URBACT Project: Diet for a Green Planet - Best Practice Transfer in 2014-2015,
- The European Regional Development Fund project: MatLust in 2015 -2021,
- Municipal farming strategy & URBACT Project Agri-Urban in 2016 – 2018
- and the Municipal Food Supply Strategy in 2018 -2020.

Information about these projects is available at www.dietforagreenplanet.se.

Diet for a Green Planet in Practice: The Five Criteria

There are five criteria for Diet for a Green Planet – tasty and healthy, Organic, preferably from Ecological Regenerative Agriculture, less animal products and more vegetables, legumes and whole grains, and locally produced in a season and with reduced Waste.

The first criterion, tasty and healthy food is one of the biggest challenges. Cooking healthy and sustainable food is not a problem. However, cooking healthy and sustainable food

Diet for a Green Planet – Five Criteria

1. Tasty and healthy
2. Organic, preferably from Ecological Regenerative Agriculture
3. Less animal products, more vegetables, legumes and whole grains
4. Locally produced in season
5. Reduced waste

Diet for a Green Planet • dietforagreenplanet.se

that school children appreciate is quite challenging.

The second criterion on the purchase of organic food, is something where the Diet Unit has been successful. The purchase of organic products that the Diet Unit buy is over 60%. Decreasing the amount of meat being served has been successful. This is achieved by offering vegetarian alternatives to a higher extent and replacing some of the meat with more vegetables and legumes.

Locally produced in a season is another criterion that has been challenging for the Unit. It is difficult to find locally produced products in large quantities for a municipality like Södertälje which serves thousands of meals each day. There is a constant search for products that are locally produced. Reducing food wastes is not a problem, as there is very low amount of wastes left in the kitchens.

Challenges and Solutions



To make students appreciate sustainable and healthy food, the most important measure is to build relationships with them. If you have a relationship with the person who is

When it comes to procurement from local producers, there are a few deals with local suppliers which provide fantastic food ingredients – but this is during a short period of the season and constitutes a pretty small part of the project’s total purchases. The Unit is in constant search for products that can be produced in Sweden.

Lastly, the seasonal pyramids tool was developed to help the kitchens better understand what is in season and when. In the pyramids, there is information on which food one can eat a lot, which to eat in moderation and which for one should rarely eat depending on the season. Above is an example of the seasonal food pyramids.

For more information on Diet for a Green Planet, please visit www.dietforagreenplanet.se.