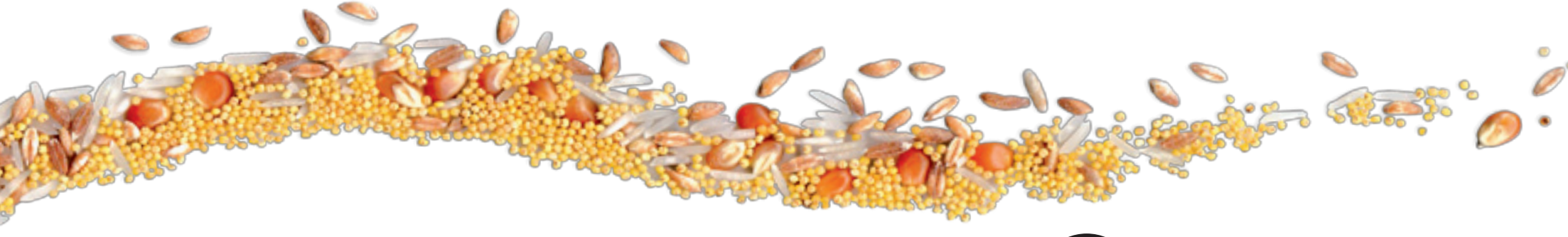
GREENING THE ECONOMY | ECOSYSTEM SERVICES | LOCAL PROCUREMENT | SMALLHOLDERS | URBAN CONSUMERS | YOUTH | LIVESTOCK | MOUNTAINS | BIOENERGY | SUSTAINABILITY ASSESSMENT | FOOD WASTAGE | DEVELOPMENT GOALS

SUSTAINABILITY PATHWAYS

SELECTED TOPICS OF INTEREST TO SUSTAINABLE FOOD AND AGRICULTURE



Food and Agriculture Organization of the United Nations

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GREENING THE ECONOMY WITH AGRICULTURE

DID YOU KNOW?

GOVERNANCE

The food price crisis increased the number of hungry by 75 million in 2008 and a further 70 million people were pushed into extreme poverty in 2010-11.
In 2011, 900 million people were undernourished in the world, although enough food is produced for the Earth's population.

SOCIAL

Nutrition-related diseases such as cancer, cardio-vascular and liver diseases are on the rise, with today, 1 billion people overweight and almost half of them classified as obese. In particular, Type 2 diabetes will double in developing countries by 2030 and triple in North America by 2050, resulting in challenging heath care and societal costs.

ECONOMY

The financial and economic crisis resulted in 18-51 million more people unemployed and the poor increased by at least 110 million in 2008; today, economic stagnation continues.

ENVIRONMENT

The most severe environmental crisis of our modern times is climate change, representing a global security issue due to displacements and turbulence. It also puts food systems at risk by worsening growing natural resources scarcity and price volatility.

"Greening the Economy with Agriculture (GEA) refers to ensuring the right to adequate food, as well as food and nutrition security – in terms of food availability, access, stability and utilization – and contributing to the quality of rural livelihoods, while efficiently managing natural resources and improving resilience and equity throughout the food supply chain, taking into account countries' individual circumstances. GEA can be achieved by applying an ecosystem approach to agriculture, forestry and fisheries management in a manner that addresses the multiplicity of societal needs and desires, without jeopardizing the options for future generations to benefit from the full range of goods and services provided by terrestrial, aquatic and marine ecosystems. Therefore, GEA strives to:

- Achieve food and nutrition security through an appropriate balance between domestic production and trade;
- Contribute to achieving the right to adequate food for all;
- Ensure decent rural livelihoods;
- Use traditional and scientific knowledge to maintain healthy ecosystems that integrate food production and respect natural resource constraints."

FAO Council, 2011

WHY DOES GEA MATTER FOR SUSTAINABILITY?

- Due to the multiple environmental, economic and social crisis, policy-makers wordwide are searching for sustainable development pathways. One solution proposed is the green economy. There are different interpretations of the green economy but overall it is about achieving more (socio-economic development) with less (ecological impact).
- Any green economy action is bound to consider the food and agriculture sector, as this sector employs most of the planet natural and human resources. Croplands, pastures and forests occupy 60 percent of terrestrial land, agriculture uses 70 percent of globally withdrawn freshwater, and the sector as a whole provides livelihoods for 40 percent of the world's population.
- The food and agriculture sector is threatened by climate change, resource degradation and poverty – the same problems that the green economy is designed to tackle. The sector has also the largest environmental footprint, with negative impacts outweighing the entire sector earnings. However, the food and agricultural sector can become an engine for sustainable development, with the creation of millions of green jobs and livelihoods and of landscapes that can mitigate climate change.

FOR EACH OF THE FOOD SECURITY PILLARS, GEA CONSIDERS THE CHALLENGES AHEAD

AVAILABILITY
From resource scarcity to equitable distribution of food and inputs

ACCESS
From conflicts and marginalization to a human rights-based approach to access to natural resources, decent jobs and knowledge

STABILITY
From macro-economics shocks and climate-change risks to safety nets for the vulnerable

UTILIZATION
From loss and waste to sustainable diets and cycling back nutrients into the whole production system, from field to fork

THE GEA MODEL TARGETS KEY ACTION AREAS FOR EACH SUSTAINABILITY PILLAR

ENVIRONMENT
Adoption of an ecosystem approach for both large and small holdings, with equitable support to sustainable systems

SOCIAL
Creation of green jobs for smallholders through diversification and sustainable diets

ECONOMY
Accounting for environmental and social impacts through full-cost pricing of food

GOVERNANCE
Inclusive implementation through cross-sectorial cooperation and full local community participation

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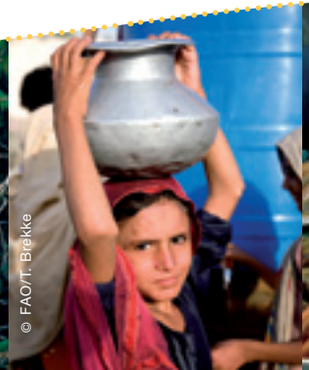

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HIGHLIGHT

REHABILITATION OF THE TIGRAY AREA (ETHIOPIA) FOR MORE CLIMATE RESILIENT LANDSCAPES AND COMMUNITIES

The Tigray Region of North Ethiopia is highly mountainous and hence degraded, posing difficult challenges to farmers. The degraded environment contributes to low agricultural production, in turn exacerbating rural poverty. The Tigray Project started in 1996 in four local communities: by 2011 it was being taken up in 50 percent of the mixed crop growing areas of the country. Through a watershed management plan, main activities include: gully rehabilitation and soil conservation through terracing and agroforestry; compost making and use including monitoring impacts on crop yields; restricting free range grazing and feeding animals from cut grass and branches of woody plants; making community ponds, small hand-dug wells, dams and river diversions to catch and hold water for use in the dry season; promoting and encouraging innovator farmers in water harvesting; bee keeping and use of biopesticides based on indigenous knowledge; supporting women-headed and elderly families through supplying seeds of spices and training in raising fruit and forage tree seedlings for sale to their neighbours; training unemployed girls who complete formal schooling to equip them with skills for earning an income; experience sharing through cross visits; and supporting the use of new and easy to manage technologies such as treadle pumps, and changing from broadcasting to row planting of field crops for easier timely pest and weed control.

The Tigray Project has demonstrated that ecological intensification practices can bring benefits to poor farmers, particularly to women-headed families and market-marginalized communities. Among the benefits demonstrated are: doubling of yields of most crops; an improved hydrological cycle with raised water tables and permanent springs; improved soil fertility and soil carbon sequestration; increased biodiversity for food and fodder/forage usage for domestic animals and honey bees; and adaptation to climate change.

The project is an initiative of the Institute for Sustainable Development in partnership with the Environmental Protection Authority and the Tigray Agricultural Development Bureau that deploys over 3 000 extension officers in the area. The project has been community-led and built on local technologies, knowledge and labour. Notably, each adult community member starting in 2011 now offers 40 days of free labour a year to assist in water and soil conservation, gully rehabilitation and improving community infrastructure.

The success of the project has led to its expansion to include the majority of communities in the Tigray Region as well as in the main crop growing areas of Amhara, Oromia and Southern Nations, Nationalities and Peoples Regions because the government has adopted the approach used by the project as its main strategy for combating land degradation and for eradicating poverty from Ethiopia. In particular, the Extension Directorate of the Ministry includes training in making and using compost in its main extension programme. By 2011, about 6 million of the around 12 million smallholder farming households had started to benefit from this project, giving a total of over 50 million beneficiaries working to maintain over 6 million ha of rehabilitated formerly degraded lands. While the Tigray population suffered hunger in the early '80s, nowadays they are rapidly approaching household and regional food security.

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HOW CAN YOU HELP?

PRODUCERS

- Celebrate native crop/animal species and food values and practice ecological intensification and off-farm diversification.
- Encourage rural-urban food networks through farm open-days and farmers' markets.
- Engage in agri-tourism activities to increase basic understanding of where food comes, while generating rural livelihood opportunities.

CONSUMERS

- Create sustainable demand patterns through healthier diets (e.g. diverse, seasonal and less processed) and selection of products according to their place of origin and process of production.
- Recycle organic households wastes for composting.
- Engage into community-supported agriculture, box schemes and other short supply chains.

FOOD INDUSTRY

- Decrease the production of foods with high sugar and fat contents during processing.
- Communicate sustainable practices through transparent labeling.
- Promote greener products through payments for environmental services projects.

POLICY-MAKERS

- Maintain tenure systems that are secure and fair, especially for women.
- Increase public investment in research and training on greener production methods and prioritize smallholders' requirements, including labour-centred intensification in employment-scarce settings.
- Procure green foods for the use of public institutions (e.g. schools) to encourage sustainable supply and lifestyles.
- Seek policy coherence through cross-sectoral cooperation (e.g. food, energy, climate, trade) and commit to a long-term vision.

RESEARCH REQUIREMENTS

- The technological innovations for GEA require both environmental science (e.g. agroecology, multi-trophic aquaculture and marine multi-species dynamics) and green inputs, meaning safe, environment-benign substances designed to maximize energy efficiency and minimize waste disposal.
- Technologies readily available to vulnerable populations through farmer-led research for plant varieties and animal breeds adapted to climate change.
- Methodological approaches that assess the nutritional content of foods produced according to different methods (e.g. seed type, fertilization, input intensity) and that measure farming performance according to both quantity (kg) and quality (nutritional index) per unit area.

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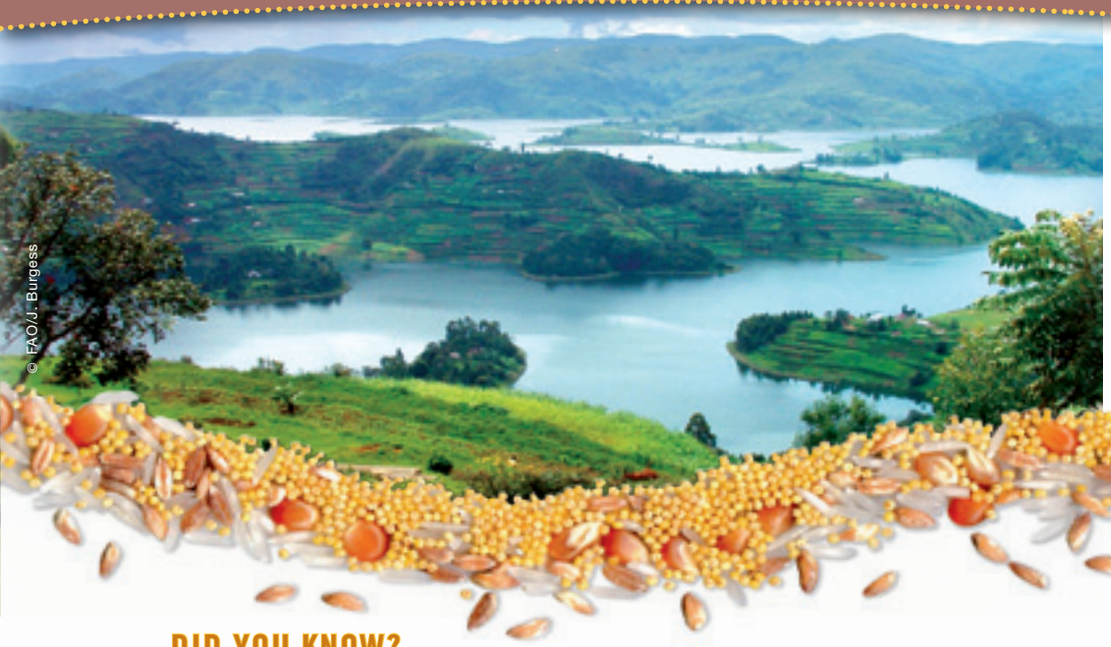
The Greening the Economy with Agriculture (GEA) initiative analyzes the opportunities and constraints between the green economy and the food and agriculture sector. By bridging the agriculture and environment divide and considering the multiplicity of actors, GEA seeks to strengthen the overall resilience of countries to exogenous shocks.

For more details: http://www.fao.org/nr/sustainability/greening-the-economy-with-agriculture-gea



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PAYMENTS FOR ECOSYSTEM SERVICES

DID YOU KNOW?

ENVIRONMENT

Healthy ecosystems provide a variety of vital goods and services that contribute directly or indirectly to human well-being. The food and agriculture sector provides multiple ecosystem services, including:

- Provisioning services such as food and energy resources;
- Regulating services vital to healthy ecosystems;
- Cultural services such as traditional land use, landscapes and recreation;
- Supporting services such as soil formation and nutrient recycling.

ECONOMY

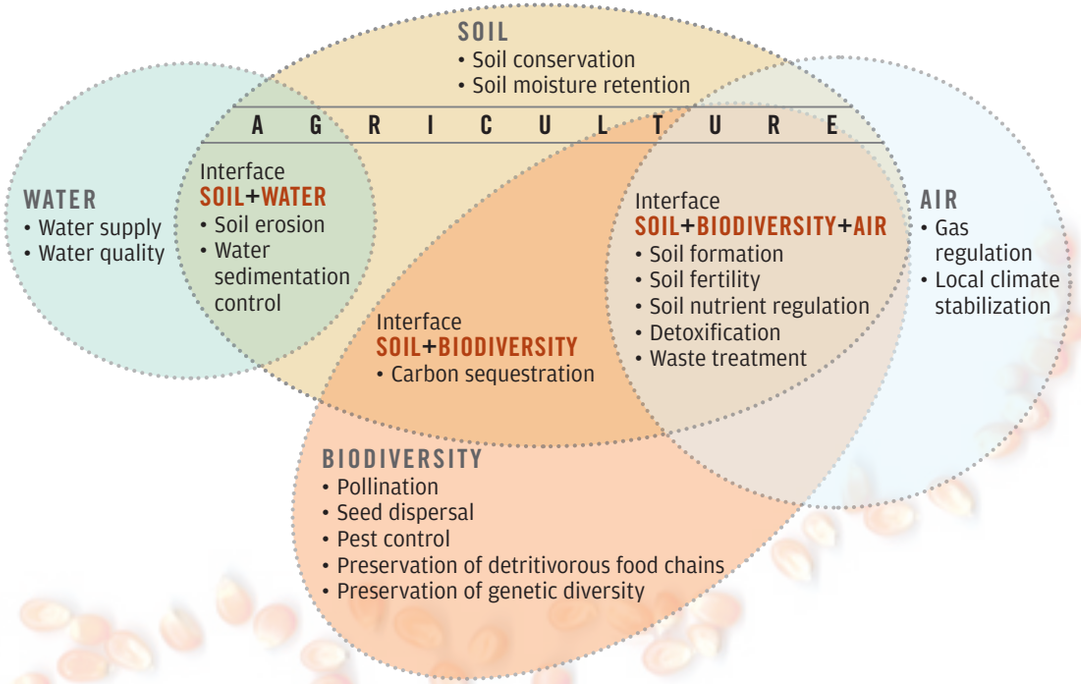
These ecosystems services have an immense but under-estimated economic value, estimated to USD 16-54 trillion in 1997:

- USD 200 billion, or 9.5 percent of world agricultural output in 2005, is generated by insect pollination.
- USD 3.7 trillion of climate-induced damage could be avoided by halving deforestation rates by 2030.
- USD 50 billion is lost annually from global income derived from marine fisheries, compared to a more sustainable fishing, due to fish stocks over-exploitation.
- 47 to 89 percent of the total sources of livelihoods of rural and poor forest-dwellers in some large developing countries come from ecosystem services and other non-marketed natural goods.

SOCIAL

Greener landscapes and green purchasing choices are increasingly on demand by consumers and policy-makers, offering major business opportunities. The market size for organic products was already USD 60 billion in 2011.

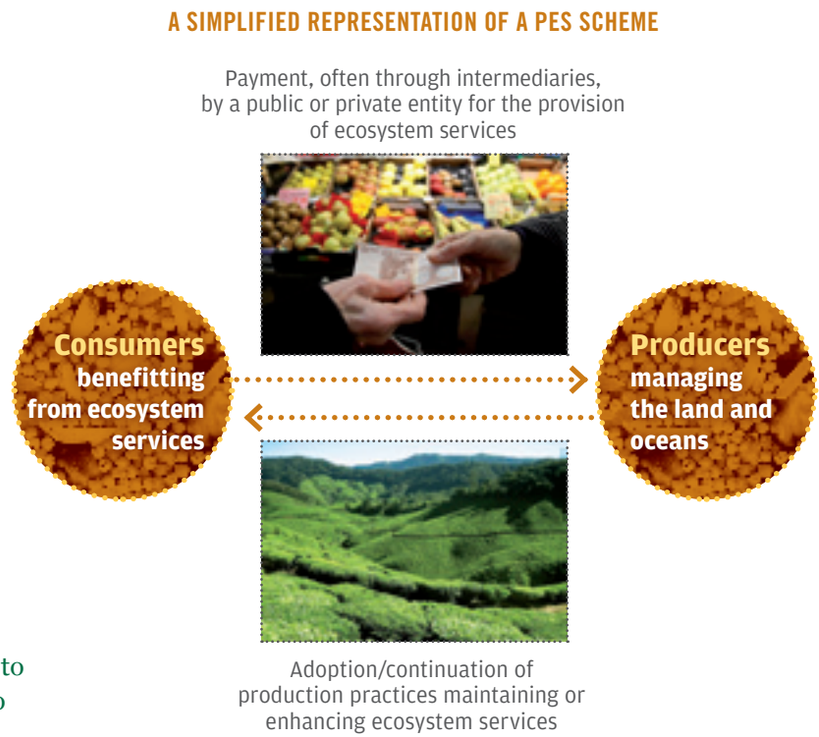
SOME ECOSYSTEM SERVICES RENDERED BY AGRICULTURE



WHY DOES PES MATTER TO SUSTAINABILITY?

- Unsustainable land use caused irreversible biodiversity loss, affecting 15 of the 24 ecosystem services examined by the Millennium Ecosystem Assessment, with impacts on fresh water, capture fisheries, air and water purification, climate regulation, natural hazards and pest outbreaks.
- Understanding the full economic value of ecosystems and biodiversity to those who benefit from them can encourage investment in their protection and enhancement. Payments for Ecosystem Services (PES) value ecosystem services conservation and increase income generation in rural areas, food security and sustainable development.
- PES schemes can be found in all continents. Most PES schemes revolve around three groups of ecosystem services: water and soil-related services; climate stabilization; and biodiversity conservation. Although PES schemes may be focused on the enhancement of one ecosystem service, interventions have multiple benefits; reforestation may target carbon sequestration but it will also produce positive impacts on water quality and biodiversity. Thus, there is need to develop PES schemes that address bundled ecosystem services.

A SIMPLIFIED REPRESENTATION OF A PES SCHEME



FROM PES TO RPE

PES benefits go hand-in-hand with decent livelihoods of those who manage ecosystem services. In order to effectively bridge the environment-development divide, the PES concept has been expanded to also include social benefits arising from agricultural production activities that are often not taken into account in economic transactions, such as rural employment, community cohesion and avoidance of rural migration. Rethinking PES with specific and additional investment in socio-economic co-benefits is defined as Remuneration of Positive Externalities (RPE). Therefore, RPE moves beyond environmental concerns in the strict sense in order to cover all sustainability dimensions.

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HIGHLIGHT

PES IN THE RUVU WATERSHED OF THE ULUGURU MOUNTAINS, TANZANIA

The Uluguru Mountains are a range in eastern Tanzania that blocks the moisture coming from the Indian Ocean. Consequently, they are characterized by wet slopes with overall annual precipitation exceeding 2 000 mm. Rainfall is captured in a complex network of streams that join to form the Ruvu River, which supplies water to over four million people in Dar-es-Salaam and to the major industries of Tanzania. About 150 000 people live in the Uluguru Mountains in about 50 villages situated on the edge of the forested areas.

In 2007, a hydrological assessment by CARE-WWF revealed an overall decrease of water quality with a dramatic increase in sediment loading into the river and significant fluctuations in the annual volume flow of the river. As a consequence, downstream water treatments are needed due to high level of siltation and often downstream water supply needs to be rationed. The restoration of the Ruvu's hydrologic services is mainly linked to improved upstream land use management, which is strictly linked to poverty alleviation and livelihood improvements of the people inhabiting this region with a very high population density.

A joint CARE-WWF Programme promoted a PES scheme between the downstream buyers (the industrial Water Supply and Sewerage Corporation [DAWASCO] and Coca Cola Kwanza Ltd.) and the upstream sellers from various villages. Farmers received payment for the adoption of agricultural practices aimed at controlling runoff and soil erosion, while improving their crop production.

A combined approach has been implemented that includes structural (bench terraces and fanya terraces), vegetative (reforestation, agroforestry and grass strips) and agronomic measures (intercropping crops with fruit trees, mulching and fertilizing with animal manure) to limit runoff, combat soil erosion, and increase soil moisture and productivity. Payments are allocated according to how many hectares of land are converted and the type of agricultural and/or land-use practices adopted.

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HOW CAN YOU HELP?

PRODUCERS

- Adopt farming practices that increase soil fertility, water retention, biodiversity and enhance carbon sequestration or any other ecosystem service.
- Estimate the ecosystem services you are able to provide and engage with potential buyers of these services through a PES/RPE scheme.
- Share knowledge with other producers' organizations and help each other in implementing PES schemes.

CONSUMERS

- Encourage the involvement of local and national governments in PES/RPE programmes.
- Convince your community to initiate PES/RPE schemes.
- Choose, where possible, food products coming from producers involved in PES/RPE schemes.

FOOD INDUSTRY

- Engage in PES/RPE schemes, discussing with providers the payment of specific ecosystem services, supporting involved producers or buying their products.
- Ask your suppliers to enhance ecosystems services on their farms.
- Label your products as part of PES/RPE programmes.

POLICY MAKERS

- Create economic incentives that encourage PES/RPE schemes, including environmental taxes and subsidies, transferable discharge permits and environmental labeling.
- Develop specific PES/RPE projects with farmers, foresters and/or fisher folks in their region, or their watershed.
- Provide incentives for the private sector to engage in PES/RPE schemes.

RESEARCH REQUIREMENTS

- Analyze on-going PES projects and programmes in order to identify difficulties and bottlenecks with a particular attention to pro-poor systems.
- Consolidate a methodology for Rapid Appraisal of PES/RPE Feasibility to identify opportunities to establish payment agreements, including on how to engage private-sector.
- Development of the EX-ACT Model (Ex-Ante Appraisal Carbon-balance Tool) as a tool for preparation of new PES/RPE projects.

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As a contribution to sustainable agriculture and rural development, FAO has launched a project on Remuneration of Positive Externalities in order to expand PES schemes and establish the basis for informed decision-making by public and private actors on ecosystem services and food security.

For more details: http://www.fao.org/fsnforum/sites/default/files/files/88_PES/NRD_PESflyer_v2.pdf

SUSTAINABLE LOCAL PROCUREMENT

DID YOU KNOW?

GOVERNANCE

The development of local food systems takes a people-centered approach because they depend on the contribution of many from the community, rather than the control of a few. This promotes participatory governance of food systems and also the ecosystems used for production. Participatory governance means having a diverse range of citizens engaged in local food systems which enables more voices to be heard when deciding how best to manage community resources.

SOCIAL

Local procurement is generally focused on whole food products which are better for the health and well-being of communities because they are fresher, more nutritious and tastier because of their seasonality. Also, local procurement provides an opportunity to increase domestic food self-sufficiency, as well as to strengthen communities by increasing the accountability and transparency between consumers and producers. Additionally, local procurement can be an effective option for protecting traditional food cultures and native species, both of which can be essential resources for sustainability.

ECONOMY

The economic benefits of local procurement can include farmer retention on farmlands, greater income generation at the community level, employment growth and import substitution. Additionally, local food channels, such as farmers' markets, can further stimulate business activity by providing small producers with greater access to consumers. The tremendous growth in recent years of farmers' markets and other community-supported agriculture schemes demonstrates the value being found in local procurement and the potential for further inclusion of this option to help create more sustainable local economies.

ENVIRONMENT

Local procurement can reduce the negative environmental impacts associated with the transportation of food over long distances. This includes reduced greenhouse gas emissions and other pollutants which are harmful to the environment and human health. It can also help reduce the demand on congested infrastructure, such as roads and airports. Local procurement can also be an effective option for supporting local agriculture and production which, if managed sustainably, can increase the resilience of ecosystems. More resilient ecosystems can be beneficial for mitigating the impacts of extreme weather events, such as droughts and floods.

Interchangeable terms such as "local food," "local food system" and "(re) localization" refer to food that is produced near its point of consumption. The term "sustainable local procurement" means that in addition to food produced near its point of consumption, other sustainability themes are also considered such as: food sovereignty, fair pricing and environmental conservation. At the heart of the local food movement, is the goal to establish healthy communities and sustainable regional agricultural economies. It can take various forms such as, farmers' markets, community supported agriculture, local food box delivery schemes, local food procurement programmes by public institutions and support for local products in supermarkets.

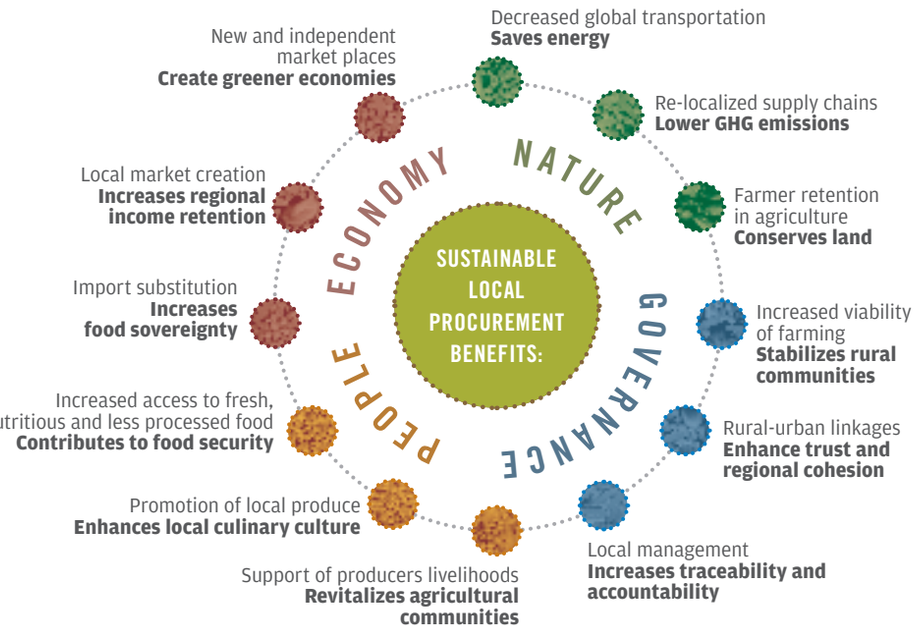
WHY DOES LOCAL PROCUREMENT MATTER FOR SUSTAINABILITY?

For local procurement, proximity between production and consumption ranges from:

- direct transactions between producers and consumers – such as sales on-farm, fish landing sites, food processing operations; through
- sophisticated short supply chains – such as internet orders and home delivery (e.g. organic foods in Denmark is the second most extended national distribution network after the post office); to
- regional product marketing; in the definition adopted by the 2008 US Farm Act, the total distance that a product can be transported and still be considered a "locally or regionally produced agricultural food product" is less than 400 miles from its origin, or within the state in which it is produced.

A major component of the local food movement is direct sales. Direct sales and community-supported agriculture present a unique opportunity for entrepreneurial small farms to connect with urban consumers. Studies in Northern America and Europe have shown that engaging in direct sales may serve as a catalyst for greater economic sustainability, bringing consumers to the farm who may also be interested in rural hospitality, agritourism, value-added on-farm products, custom orders or connecting to larger buyers, such as restaurants and institutions. Other common local food selling channels, such as cooperatives, represent greater social inclusion and economic access to local and organic food systems through their member-based ownership and governance. Furthermore, local products can often be distinguished by certain characteristics and qualities, resulting from their geographic origin. These characteristics (i.e. native food species, traditional production), not only provide a unique selling point in competitive markets, but may also provide important resources for local environmental and social sustainability, in terms of being well adapted to soil and climate conditions.

Local procurement matters for sustainability because it can contribute to the mitigation of a variety of sustainability challenges. While local food is commonly perceived as opposing imported food, it is important to note that the two may be difficult to separate (e.g. locally baked bread made using imported grain) and that "local" is not synonymous with "sustainable" (e.g. when local production may be overexploiting natural resources). This highlights the point that when evaluating the costs and benefits of different food chain options, performance in all four dimensions of sustainability should be assessed to determine the most sustainable procurement options.



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HIGHLIGHTS

PUBLIC FOOD PROCUREMENT IN BRAZIL

The Brazilian Government developed a new approach to simultaneously support both national food production and food access through a local public procurement scheme (Programa de Aquisição de Alimentos, PAA). PPA is a strategic part of the country's wider food security policy framework known as *Zero Hunger*, which aims to ensure that populations suffering from food and nutritional insecurity have access to food. PPA helps to achieve Zero Hunger because it connects food products coming from smallholder or family farmers with local public institutions, such as community associations, day-care centres and hospitals. Products are bought without a bidding process, providing the farmer with greater access to buyers in an otherwise highly competitive market. In 2008, around 120 000 farmers were selling products through the scheme to local institutions, which were distributing the food to 16.8 million people. The programme has led to multiple benefits for the farmers, such as increases in productivity and product quality. In addition to the security of financial support and the ability to reinvest in capabilities, the improved quality of the food has also been attributed to the "farmers committed to deliver good food products to the local beneficiaries". PPA has also encouraged the production and consumption of neglected native food species, such as cassava.

LOCAL INGREDIENTS FOR UK SCHOOLS

In the UK, the Public Sector Food Procurement Initiative was launched in August 2003, as part of the government's *Strategy for Sustainable Farming and Food*. While competition law prevents caterers from setting "local" as a criteria in tendering for supplies for public sector food, stipulations around quality, frequency of delivery and support for small business, has enabled the development of local suppliers networks for public schools. For example, in Nottinghamshire, spending for school meals locally was calculated to generate over USD 7.5 million in value each year. The total amount of money circulating in the local economy from this source has increased substantially, from USD 282 540 dollars in 2004 to USD 5 960 066 in 2011. For every USD 1.56 spent initially from the Nottinghamshire school meals budget on seasonal, local ingredients, a further USD 1.85 of economic activity is being generated. A local meat wholesaler provides meat which is 90-95 per cent local (within 80 km); 50-55 per cent is from within 48 km: staples, such as potatoes, onions and cabbage are 100 per cent locally provided; 40 per cent of the fruit and vegetables is local; the milk and eggs are 100 per cent local. This focus on local produce has allowed primary producers to benefit all year round from the school meals contract because menus are changed according to seasonality.

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HOW CAN YOU HELP?

PRODUCERS

- Engage in direct selling and rural-urban networks.
- Advocate for local varieties and local produce.
- Coordinate local business strategies.

CONSUMERS

- Favour purchasing of local produce in different market outlets.
- Pressure university and other institutions with canteens to source sustainable local ingredients.
- Be informed about where food originates.

FOOD INDUSTRY

- Express support for increased local procurement.
- Develop business plans that target local production.
- Promote labeling that informs consumers on product origin.

POLICY-MAKERS

- Establish policies and practices that support local food procurement.
- Revise regulations that hinder local food procurement.
- Establish targets for local food procurement in public institutions.

FURTHER RESEARCH AREAS

- Undertake holistic sustainability assessment of existing local procurement schemes, with a view to identify hotspots and improve.
- Identify the barriers to implementing/extending sustainable local procurement options.
- Develop strategies to educate about the benefits of sustainable local procurement

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The sustainability of local procurement options can be assessed using the FAO Guidelines for the Sustainability Assessment of Food and Agriculture systems (SAFA). SAFA provides an assessment framework and supporting IT Tool that can be used to compare the performance of different food chain options. For information on food quality linked to geographical origin (though not necessarily consumed locally) see **www.fao.org/food-quality-origin**

For more details: http://www.fao.org/nr/sustainability/sustainability-assessments-safa

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SMALLHOLDERS AND FAMILY FARMERS

Smallholders are small-scale farmers, pastoralists, forest keepers, fishers who manage areas varying from less than one hectare to 10 hectares. Smallholders are characterized by family-focused motives such as favouring the stability of the farm household system, using mainly family labour for production and using part of the produce for family consumption.

DID YOU KNOW?

ENVIRONMENT

Eighty percent of the farmland in sub-Saharan Africa and Asia is managed by smallholders (working on up to 10 hectares). While 75 percent of the world's food is generated from only 12 plants and 5 animal species, making the global food system highly vulnerable to shocks, biodiversity is key to smallholder systems who keep many rustic and climate-resilient varieties and breeds alive.

ECONOMY

Out of the 2.5 billion people in poor countries living directly from the food and agriculture sector, 1.5 billion people live in smallholder households. Many of those households are extremely poor: overall, the highest incidence of workers living with their families below the poverty line is associated with employment in agriculture.

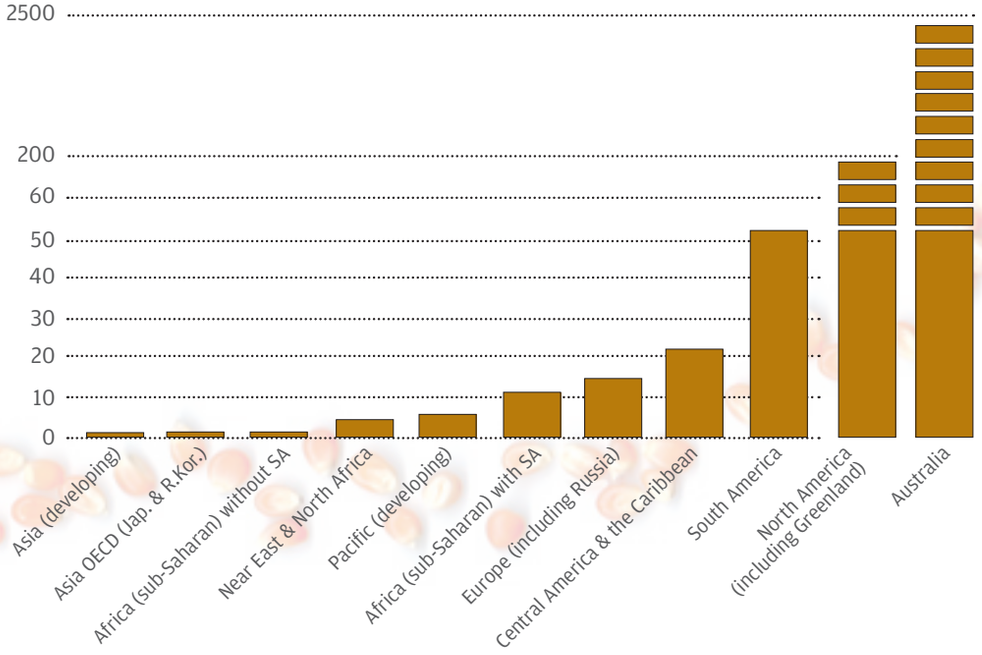
SOCIAL

Women comprise an average of 43 percent of the agricultural labour force of developing countries up to almost 50 percent in Eastern and Southeastern Asia and sub-Saharan Africa. Should women farmers have the same access to productive resources as men, they could increase yields on their farms by 20-30 percent, lifting 100-150 million people out of hunger. Women are the quiet drivers of change towards more sustainable production systems and a more varied and healthier diet.

GOVERNANCE

Smallholders provide up to 80 percent of the food supply in Asian and sub-Saharan Africa. Their economic viability and contributions to diversified landscape and culture is threatened by competitive pressure from globalization and integration into common economic areas; their fate is either to disappear and become purely self-subsistence producers, or to grow into larger units that can compete with large industrialized farms.

AVERAGE SIZE OF AGRICULTURAL HOLDINGS (ha)



WHY DO SMALLHOLDERS MATTER FOR SUSTAINABILITY?

- Unlike widespread perceptions, sustainable smallholders can be really productive. A large study examining smallholder agriculture covering 286 projects, over 37 million hectares in 57 developing countries, found that when sustainable agriculture was adopted, average crop yields increased by 79 percent. Also, sustainable systems were found more diversified, with yields often composed of more than a dozen crops and various animal products, generating higher yields per ha. Higher yields mean increased household food security and higher household income, especially when money was saved through less fertilizer and pesticide use (Pretty *et al*, 2008).
- Furthermore, an analysis of 15 case studies in Africa demonstrated that organic agriculture brings multiple benefits to the community including more nutritious diet and health, reduced occupational hazards through decreased exposure to pesticides and job creation. In Brazil, each 8 hectares cultivated by small farmers using mixed cropping generates one job, while large-scale mechanized monocultures generate 1 job per 67 hectares. When associated to improved working standards and rights (e.g. occupational safety and health), sustainable smallholder agriculture can represent a key driver for decent rural jobs.
- Well-managed smallholder systems invest in building soil biomass and soil vegetative cover, which improves water filtration in case of floods and moisture retention in case of droughts. Through reduced fossil fuels dependency and energy requirements, as compared to large mechanized and inputs dependant farms, smallholders traditional practices also mitigate climate change through reduced emissions and enhanced soil carbon sequestration.

Small-scale fisheries contribute to 46 percent of global marine and inland fish catches. ln developing countries, this share grows to 54 percent. When considering catches destined for direct human consumption, the share contributed by small-scale fisheries increases to two-thirds.

Small-scale fisheries employ over 90 percent of the world's 35 million capture fishers and support another estimated 85 million people employed in associated processing, distribution and marketing.

About half of the people employed in small-scale fisheries are women. In addition to the large number of full and part time fishers and fish workers, seasonal or occasional fishing often provide vital supplements to other livelihood activities, in times of difficulties or as a recurrent side-line activity.

Small-scale fisheries generate income, provide food for local markets and make important contributions to nutrition. They also represent a diversity and cultural richness that is of global significance.

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HIGHLIGHTS

THE MULTIPLE BENEFITS OF SUSTAINABLE AGRICULTURE IN INDIA

Sukomol and Alpana Mondal live with their two sons on a 0.7 hectare farm in India. Due to health issues, they went into debt and were in crisis. In 2006, the Mondals decided to make a switch to an integrated farming system. With local training support, coordinated by DRCSC, a Christian Aid partner, the Mondals constructed a pond and a new drainage system consisting of a main channel through the rice field with smaller channels around the perimeter linking to the pond. The earth was used to raise the level of several of their plots. A gradual transition was made to organic paddy cultivation using Sustainable Rice Intensification methods. Native species of carp and catfish were introduced in the pond and channels, and crops such as cowpea and bitter gourd grown on trellises over the water. The water from the pond is used to irrigate a winter paddy crop as well as the vegetable plot. The effects of flooding and water-logging (major problems in this region) are lessened by the use of raised beds.

More than 20 different crops are now being grown, including various spices, vegetables, oilseeds and pulses. 'Live fences' of mango, banana and coconut trees were also planted around the farm's edge. The Mondals also introduced vermi-composting, began to save more seeds, and increased the number of livestock they kept. This diversified system make them more resistant to external shock. Five years on, the Mondals' situation has been transformed. They have managed to pay off two thirds of their debt. Their income has increased due to surplus vegetables, spices, fruits, seeds and seedlings. They no longer use chemical inputs, which has lowered production costs. In the first two years, there was a decrease in rice yields but production is now back up to pre-transition levels. The family diet has improved due to steady supply of rice, fruit, fish and vegetables throughout the year.

THE MULTIPLE BENEFITS OF SUSTAINABLE FISHERIES IN VIETNAM

Initially an open-access resource, the clam fishery of Ben Tre province in Vietnam faced increased pressures towards the end of the 20th century. In 1995, the government began to create cooperatives to protect the natural resource and delineate fishing areas for management. However, fishers themselves were unrestricted, and further stock declines led to the establishment of area rights to restrict fishing in 2006.

These further efforts proved successful, and the fishery was Marine Stewardship Council (MSC) certified in 2009. The certification brought significant benefits to the fishery, both social and economic. Eight months after full assessment, the price of the clams increased by 20-30 percent. "Before, I would collect clams and work from morning to late afternoon I would fill two baskets. Yet there was a limited market, and if I was unable to sell the clams I would have to return them to the sea" explains Vo Thi Binh, a local clam fisher from the Rang Dong cooperative. "Since the cooperative has been established, the harvest is planned according to contracts with the processing plants, so every day that I go to work I get paid and I don't have to worry about selling the clams." Wages have increased five-fold since 2007.

Because of these economic benefits, 13 000 households are now supported by the fishery, compared to less than 9 000 in 2007. As a result, more people are now able to pay for their children's school fees, and support them through vocational training, boosting their chances of a better future. This has been one of the lasting benefits of transitioning this fishery to sustainability.

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PRODUCERS

- Create and/or develop smallholders' organizations to strengthen agro-ecological practices knowledge and representativeness in decision-making instances with buyers.
- Share knowledge and experience in order to better market products at local and national level and to organize joint procurement of all kinds of inputs and services.

CONSUMERS

- Take time to inform yourself about the origins of the food you purchase.
- Buy local to help smallholders stay in business.

HOW CAN YOU HELP?

FOOD INDUSTRY

- Include smallholder family farmers, through inclusive business models, and promote their products.
- Provide financial help to smallholders in sharing and disseminating knowledge on agro-ecological practices.
- Promote sustainability standards of production along the value chain.

POLICY-MAKERS

- Develop national plans to scale-up support to sustainable smallholder farmers, develop their entrepreneurial capacities and create viable livelihoods in the rural areas, with special focus on women and youth, including allocation of adequate resources.
- Ensure smallholder farmers' access and control over natural resources, mainly land, water, forests and seeds and promote culturally adapted short food chains. Women and youth should be targeted given the significant discriminations they face.
- Adopt and implement the Voluntary Guidelines on the Governance of Tenure of Land, Fisheries and Forests.

FURTHER RESEARCH AREAS

- Evaluate the multiple impacts (economic, social and environmental) coming from sustainable smallholder agriculture, with a special focus on women and youth.
- Develop technology and research that blends traditional knowledge and modern science, adapted to sustainable small-scale producers.
- Rehabilitate local seeds for biodiversity and save local races close to extinction, for both self-reliance and climate adaptation purposes.

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The publication "Enduring farms: climate change, smallholders and traditional farming communities" demonstrates how smallholder farmers have developed strategies to increase their resilience to external shocks while maintaining ecosystem goods and services.

For more details: http://www.fao.org/family-farming-2014

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URBAN CONSUMERS

DID YOU KNOW?

SOCIAL

People living in cities have outnumbered people living in rural areas since 2007. While in the 50's, over 70 percent of the world population still lived in rural areas, 70 percent of the forecasted nine billion world population is expected to be living in urban areas in 2050, mostly in low-income countries and transition countries.

ECONOMY

By 2020, the proportion of the urban population living in poverty could reach 45 percent, or 1.4 billion people. By then, 85 percent of poor people in Latin America, and almost half of those in Africa and Asia, will be living in towns and cities. Food and nutrition security for urban dwellers is at stake. It is estimated that about two-third of the urban slum population is comprised of people who come from rural areas in search of better livelihoods.

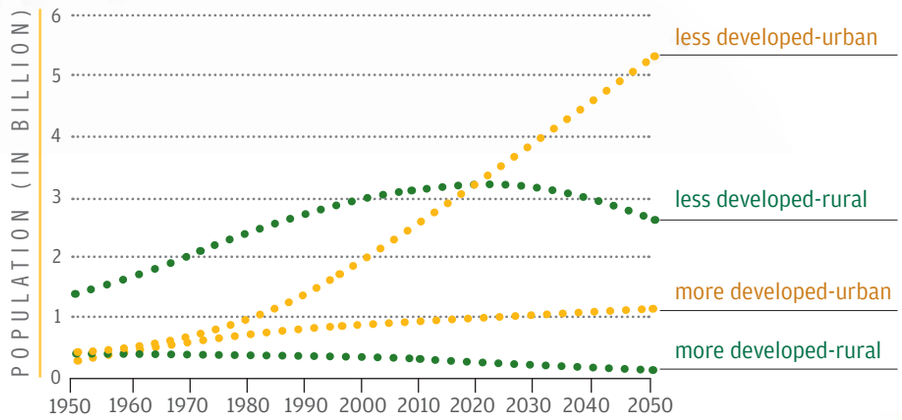
ENVIRONMENT

With rapid urbanization and increasing urban food and agricultural activities, urban food systems have become a nexus that addresses many issues simultaneously. Every year, 19.5 million hectares of agricultural land is converted to spreading urban centers and industrial developments, but urban space used for food production contributes to growing greener cities.

GOVERNANCE

In the late 1990s, at least 800 million urban dwellers were said to produce some of their own food, including 200 million urban families that sold their produce in local markets. A diverse range of food production activities can be accomplished within cities, ranging from micro-farming on rooftops, through community backyard gardening, to small-scale commercial agriculture, livestock, forestry and aquatic farming, processing and marketing enterprises. These enterprises differ in their characteristics, locations, motives, products, scales of operation, technologies and organizational modalities.

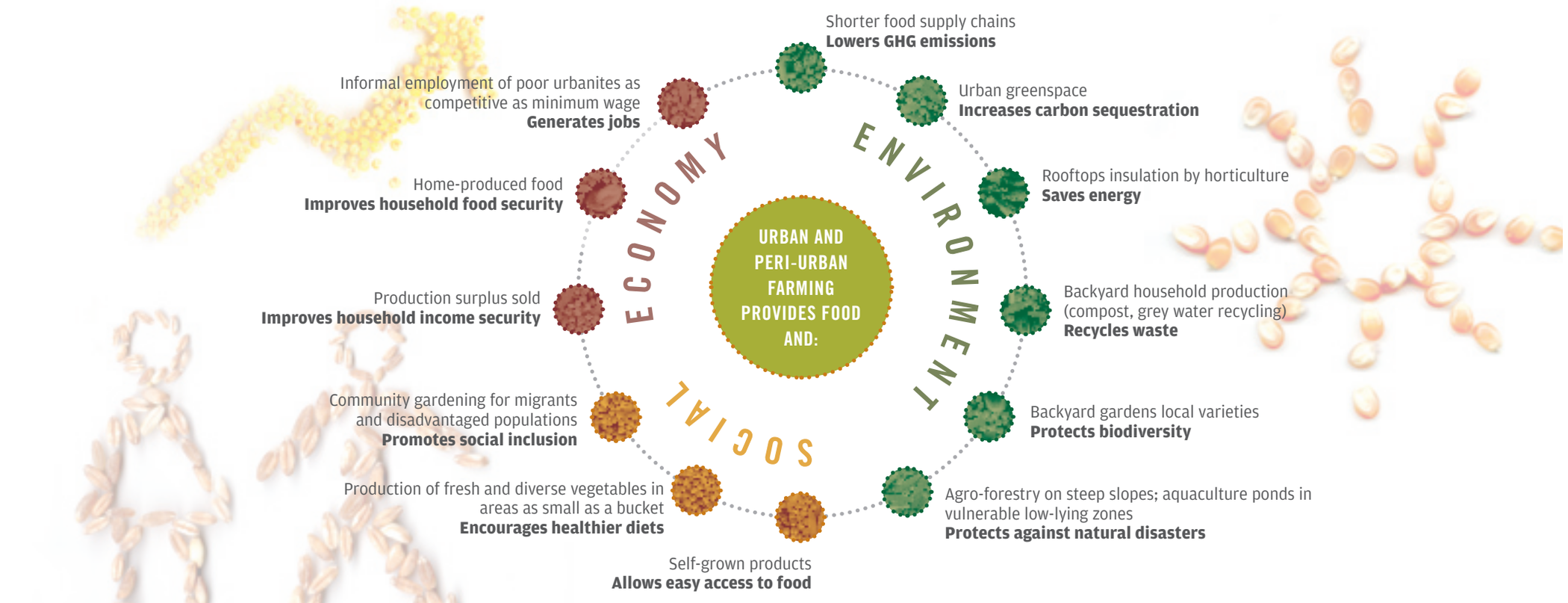
A GROWING URBAN POPULATION



RURAL AND URBAN FOOD PRODUCTION

WHY DO URBANITES MATTER FOR SUSTAINABILITY?

With a growing urban population and related decline in the environmental health of cities (e.g. air quality, waste), as well as the increasingly hindered access to food by poor urban dwellers, home-grown food has become an important aspect of sustainability.



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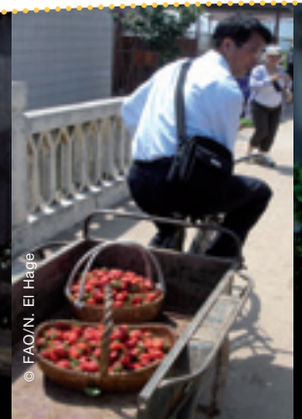
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HIGHLIGHT

PROGRAMME FOR URBAN AND PERI-URBAN HORTICULTURE (UPH) IN THE DEMOCRATIC REPUBLIC OF CONGO

In the Democratic Republic of the Congo, FAO advised on measures that regularized titles to 1 600 ha of garden areas operated by some 20 000 full-time growers in five cities. The project introduced improved vegetable varieties and installed or upgraded 40 irrigation structures, which extended water availability throughout the year. To ensure the quality and safety of produce, 450 growers' associations were trained in good agricultural practices, including the use of organic fertilizer and bio-pesticides.

Market gardens in the capital, Kinshasa, now produce an estimated 75 000 to 85 000 tonnes of vegetables a year, or 65 percent of the city's supply. This UPH programme in the Democratic Republic of the Congo has created about 40 jobs for every hectare cultivated, or 66 000 jobs, benefiting indirectly some 330 000 people.

In Lubumbashi, 6 000 female gardeners used loans to buy inputs and equipment. On average, annual income of each farmer has increased from around USD 500 in 2004 to USD 2 000 in 2010.

As their incomes grew, they invested savings in small-scale livestock, vegetable processing and dressmaking. The children of Lubumbashi market gardeners now eat on average three meals a day, compared to "less than two" before the project began. This programme has also increased per capita daily intake of micronutrients from different types of greens, tomatoes, potatoes, carrots and other vegetables, and as such is an enormous help in the fight against malnutrition, especially amongst children and breast-feeding women in cities.

The Democratic Republic of the Congo has created an effective institutional structure for national UPH development. Municipal committees chaired by city mayors manage the process of regularizing titles to land for horticulture and integrating UPH into urban planning, while the country's national UPH support service provides technical advice to growers through a network of offices in 11 provincial capitals.

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HOW CAN YOU HELP?

PRODUCERS

- Demonstrate innovative models of urban food production.
- Advocate for urban greenspace and the creation of municipal food policy councils.
- Develop urban producers organizations and networks to enable sharing materials, coordinating business strategies and liaising with local governments on supportive policies and programmes.

CONSUMERS

- Become informed about where food can be locally grown and purchased.
- Engage in community potlucks to share healthy food products and traditions.
- Grow food in small-spaces such as community gardens and window boxes.

FOOD INDUSTRY

- Identify opportunities for innovative processing for local ingredients and regional foods.
- Link food processors with local farmers, ranchers and fishers.
- Unify labeling that informs consumers of product origin.

POLICY-MAKERS

- Undertake strategic city planning to ensure necessary land and water resources for urban and peri-urban agriculture, including allocation of vacant plots to family and community farming activities.
- Convert non-constructed areas within and around cities to food production areas for the poorest residents, especially vulnerable female-headed households.
- Promote urban farmers' market development and community-based food networks.

RESEARCH REQUIREMENTS

- Develop sustainable agricultural inputs (e.g. compost, natural pest control, quality seed and planting material) adapted to urban farming and safety of urbanites.
- Create task forces to identify local food assets, including available land, innovative enterprises, local knowledge and infrastructure.
- Identify priorities for the implementation of improved rural to urban linkages and partnerships for sustainable food and nutrition security across the rural, peri-urban and urban landscapes.

FOOD FOR THE CITIES

GROWING GREENER CITIES

FAO's Programme for Urban and Peri-urban Horticulture

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The "Food for Cities" multidisciplinary initiative contributes to advocacy, information sharing and project development regarding urban issues and challenges. It includes a network that brings together global and local actors around main issues and policies. The "Growing Greener Cities" programme promotes urban and peri-urban horticulture.

For more details: www.fao.org/fcit

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YUNGA FOR YOUTH

DID YOU KNOW?

SOCIAL

People under the age of 25 make up 43 percent of the world's 7 billion population. Currently, approximately 18 percent of the world's population, or 1.2 billion, are 10 to 19 years old.

ECONOMY

Eighty-Seven percent of the world's youth live in developing countries, of which 62 percent in Asia and 17 percent in Africa. Half of the world's youth living in developing countries work in the agricultural sector, while many of them are unemployed or working in the informal economy under poor conditions.

ENVIRONMENT

Youth are the future managers of the planet, they are active agents of change in local communities, the drivers of innovative practices which support sustainable development and the champions of environmental causes.

GOVERNANCE

Through education, children and young people can be enabled to raise their awareness, gain knowledge, skills and values and most of all be inspired to actively participate in finding solutions to the environmental, social and economic challenges.

The Youth and United Nations Global Alliance (YUNGA) was created in 2009 to educate youth on environmental matters. YUNGA works on a number of thematic areas including agriculture, biodiversity, climate change, energy, forests, food security, hunger, nutrition, oceans, water, and the Millennium Development Goals. Activities range from educational policy, awareness-raising, capacity building programmes, education materials, resource packs, international competitions, challenge badges and other programmes intended to inspire active participation. The Challenge Badge series, especially designed for children and young people on a range of thematic areas, is intended as a way to educate and motivate young people to change their behaviour and encourage them to undertake local action.

WHY DOES YOUTH MATTER TO SUSTAINABILITY?

- Young people are key actors in influencing the social norm among their communities. They are concerned, thoughtful citizens capable of participating in and changing society and have an important role to play in addressing and affecting the issues of our world. Targeting youth, especially in rural areas, can have a significant impact on poverty alleviation and social integration, as they can be champion of advocating gender equality, fighting injustice and poverty and promoting innovative solutions.
- Instilling environmental awareness at a young age is the best way to protect the environment and meet the challenge of climate change. Agriculture is one of the sectors where the impacts of climate change can be most clearly appreciated. Learning about ecosystems and earth's limited resources can make youth translate policies into changes in behaviour, lifestyles and community actions. By reducing pollution, saving water and energy and reducing their carbon footprint, young people can bring a change towards a sustainable future for all.
- Investing in young people makes smart economics. The lack of rural livelihood opportunities and profitable on- and off-farm employment for rural youth is a major issue contributing to migration, urbanization, abandonment of agriculture and a perpetuation of poverty and hunger. When young people can claim their rights to health, education, access to land, adequate shelter and decent working conditions, they become a powerful force for economic development and positive change in their communities.

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HIGHLIGHT

GIRL GUIDES IMPROVE FOOD SECURITY IN THE SLUMS AT HAWKERS MARKET GIRLS CENTRE, NAIROBI, KENYA

This project brought together FAO, the Youth and United Nations Global Alliance (YUNGA) and the World Association of Girl Guides and Girl Scouts in a YUNGA mini-grant funded community garden. It involved 30 Girl Guides training slum community members on how to improve food security for themselves and others around them.

The slum conditions are of extreme poverty: no infrastructure, no electrical power, no running water or secure access to food. The local Guide group trained others on environmentally efficient self-subsistence methods: growing food, making briquettes, using a solar cooker and harvesting rainwater, activities set out in the *Food Security and Climate Change Challenge Badge*. The girls managed to create a garden area around the Hawkers Girls Centre, complete with a lawn, herbs and 'shambas' (plots) where most of the produce is now grown.

The project increased food production and nutrition has been achieved for the whole community. Also, sustainable practices have been adopted, for example crops were maintained by self-produced fertilizer and protected from drought and floods through drip irrigation methods and plot rotation.

The use of alternative energy sources, such as solar cookers and briquettes, reflected the environmentally friendly and fuel-efficient nature of the skills learnt, including improved packaging and recycling techniques. Finally, the food grown provided a source of income as any excess produce has been sold at the local market. Consequently, the Guides also gained accounting skills and became familiar with banking transactions.

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HOW CAN YOU HELP?

PRODUCERS

- Run a school gardening club to produce food for school lunches and encourage children to engage in learning about agriculture and production patterns.
- Create opportunities for young people to become involved and trained in green production, processing and marketing.
- Find out what are the key concerns in your local communities, country or at the international level, get youth involved and empower them to make things happen.

CONSUMERS

- Undertake one of the challenge badges (e.g. on sustainable diets) and involve your children, their schools and others to participate.
- If you are teacher, investigate what other schools and organizations are doing to educate their students on environmental issues, exchange ideas and create links.
- Start a Sustainability Club to design and finance projects that will contribute towards the school's green profile, including school gardens, tree planting and bike repair workshops.

FOOD INDUSTRY

- Self-regulate advertising to limit negative impacts on children and young people on issues related to health and the environment, such as obesity and excess packaging.
- Through private foundations, support initiatives which empower young people to promote positive change in their local communities.
- Provide green jobs to youth and invest in improving their skills through educational programmes and scholarships.

POLICY-MAKERS

- Recognize the immense potential of youth and integrate them into policy-making process, so that they can discuss their needs and share their ideas and solutions to today's challenges.
- Provide the required educational and job opportunities for young people for them to become active agents of change. For example, develop a set of credits in school curricula that reward sustainability initiatives of youth.
- Promote scaling-up of best practices and successful education and youth programmes and strengthen sustainability concepts into national curricula.

FURTHER RESEARCH AREAS

- Develop educational resources for agriculture and support and expand Junior Farmer-Field-and Life-Schools to meet the challenges young people face when engaging in agriculture.
- Develop educational resources leading to socially and environmentally friendly choices; YUNGA develops challenge badges on sustainable lifestyles.
- Research most appropriate vehicles for changing practitioners' behavior; YUNGA reviews research on formal, non-formal and informal educational practices in order to assess the most effective way to achieve that change.

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The Youth and United Nations Global Alliance (YUNGA) was created with funding from the Swedish Government to generate collaborative initiatives between United Nations agencies and other organizations, government institutions, NGOs, networks and groups working with children and young people.

For more details: www.yunga-un.org

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MOUNTAIN ENVIRONMENTS

DID YOU KNOW?

SOCIAL

Mountains cover 24 percent of the world's surface and 12 percent of the world's population in 120 countries. They are also hotspots of cultural diversity and cultural heritage. In the Hindu Kush Himalaya region alone, it is estimated that people speak over 1000 different languages and dialects.

ENVIRONMENT

Mountains are also important water reservoirs, storing water in the form of glaciers (which are shrinking in most regions), snow, wetlands, lakes and sub-surface deposits. Supplying about 50 percent of all fresh water, mountains are of strategic importance for agriculture, food security and biodiversity. Mountains are also very biodiverse, as just climbing a 100 meters mountain slope can offer a climatic variety equal to travelling 100 km across a flat terrain.

ECONOMY

Mountain tourism accounts for 15-20 percent of the world's tourism industry, amounting up to an estimated USD 70 to 90 billion per year.

GOVERNANCE

Since 2002, the 11th of December has been officially designated as International Mountain Day (IMD), addressing a different theme each year. In 2012, on the occasion of the 10th anniversary of the International Year of Mountains 2002, the theme of IMD will be sustainable mountain development.

11 December

International MOUNTAIN DAY 2012

SUSTAINABLE MOUNTAIN DEVELOPMENT

The International Mountain Day is an opportunity to create awareness about the importance of mountains to life, to highlight the opportunities and constraints in mountain development and to build partnerships that will bring positive change to the world's mountains and highlands. The International Mountain Day builds on the efforts of national committees in 78 countries and alliances such as the International Partnership for Sustainable Development in Mountain Regions, known as the Mountain Partnership. Currently, 50 countries, 16 intergovernmental organizations and 130 Major Groups are members of the Mountain Partnership. FAO is mandated to lead observance of the International Mountain Day.

WHY DO MOUNTAINS MATTER FOR SUSTAINABILITY?

- More than half of the world's population, from mountains to downstream population, relies on freshwater coming from mountains for drinking, cooking and washing, irrigation, hydropower, industry and transportation.
- One way to reduce the number of hungry people living in mountain areas - 80 percent live below the poverty line and an estimated 300 million are food insecure - is to empower them to protect mountain ecosystems and to promote stability in mountain regions.
- Mountain products are vital for reducing poverty. For example, tea has been one of the main mountain export items for many developing countries, such as Sri Lanka, India, China, Kenya and Turkey. In addition to cultivation, tea-picking and processing have provided job opportunities to millions of people in tea-growing countries. The same applies to coffee, saffron, rice, berries, medicinal plants and other products.
- Billions of people depend upon mountain food crop and medicinal and aromatic plant diversity for survival. Such diversity is particularly important today, as rare seed collected from the mountains, from once-forgotten crops, could help us adapt to climate-stressed times.

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HIGHLIGHT

MULTIPLE BENEFITS OF PROTECTING LOCAL MOUNTAIN FORESTS IN NEPAL

In 2009, the Forest Carbon Trust Fund (FCTF) was established to improve governance for Reducing Emissions from Deforestation and Forest Degradation (REDD+) at the community level. The pilot project has conceived and established a payment system for sequestering carbon in Nepal's community-managed forests. Carried-out in three watershed districts of Nepal, the project covered an area of over 10 000 hectares, involved 105 community-managed forests and provided benefits to 18 000 households. The participating districts were chosen in part because of their conservation work and in part for the inclusion of women, victims of caste-based discrimination, indigenous communities and other disadvantaged groups in community forestry user groups.

To protect local mountain forests and increase forest carbon stocks, the project has:

- introduced alternative energy technologies, such as biogas and improved cooking stoves;
- supported the plantation of tree seedlings in the community and on private forest lands; and
- established improved grazing and forest fire management systems.

Calculations made by the community forestry user groups on changes in forest carbon stocks over two years indicated that a total of nearly eight million tonnes of carbon had been sequestered. The FCTF has distributed USD 100 000 among the participating communities on the basis of their performance.

The FCTF is an initiative by the International Centre for Integrated Mountain Development (ICIMOD), collaborating with the Federation of Community Forest Users, Nepal (FECOFUN) and the Asian Network for Sustainable Agriculture and Bioresources (ANSAB). It is partly supported by the Norwegian Agency for Development Cooperation's Climate and Forest Initiative.

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PRODUCERS

- Help re-green mountains, choosing indigenous plants that preserve biodiversity and expand forests.
- Enhance irrigation efficiency and prefer traditional crops that produce more using less water.
- Choose mountain crops to buy carbon credits; these can be resold on the global market to benefit the community.

CONSUMERS

- Eat nutritious, locally grown food when visiting mountains.
- Opt for ecotourism when travelling and respect the environment.
- Purchase organically grown mountain products, such as coffee and rice.

HOW CAN YOU HELP?

FOOD INDUSTRY

- Source and process more mountain products, as they add a healthy offer to the food basket.
- Promote mountain products and services as a brand of choice for environmentally-aware consumers.
- Engage into development projects rewarding mountain people for their stewardship services.

POLICY-MAKERS

- Facilitate public-private partnerships for mountain protection, including clean energy, sustainable forest management, environmentally-sound agriculture, sustainable tourism and floods and natural hazards' mitigation.
- Create an enabling environment for the promotion of high-quality natural products from mountain areas and facilitate small producers direct access to markets.
- Trigger international funding mechanisms and private sector participation into sustainable mountain development at the global, regional, national and community levels.

RESEARCH REQUIREMENTS

- Improve understanding of the drivers of change affecting mountain regions.
- Promote the collection of disaggregated data from mountain areas as the basis for informed decision and policy-making.
- In the context of climate change, increase efforts to monitor glaciers and runoff patterns in mountain areas, in order to assess future water availability and impacts on lowland areas.

Mountain Partnership Rio+20

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The Mountain Partnership is a voluntary alliance of partners dedicated to improving the lives of mountain people and protecting mountain environments around the world. It addresses the challenges facing mountain regions by tapping the diversity of resources, knowledge, information and expertise, in order to stimulate concrete initiatives at all levels.

For more details: www.mountainpartnership.org

BIOENERGY AND BIOFUELS

DID YOU KNOW?

SOCIAL

Bioenergy accounted for roughly ten percent of the world total primary energy supply in 2009. Most of this is consumed in developing countries, where between two and three billion people rely on solid biomass (wood, charcoal, agricultural residues and animal waste) for cooking and heating, often in open fireplaces or traditional cook stoves. This causes nearly two million premature deaths per year due to indoor air pollution.

ECONOMY

Global production of liquid biofuels for transport increased from 16 billion litres in 2000 to more than 100 billion litres in 2011. Today, biofuels provide around three percent of total road transport fuel globally (on an energy basis), with considerably higher shares in certain countries (e.g. about 23 percent in Brazil in 2009). In 2010, biomass generated 1.5 percent of global world electricity and 8 EJ of biomass-based heat were used in the industry sector. According to the International Energy Agency, by 2050: biofuels could provide up to 27 percent of total transport fuel worldwide; biomass could provide 7.5 percent of total electricity generation; and heat from bioenergy could provide, respectively, 15 and 24 percent of the final energy consumption for the industry and building sectors.

ENVIRONMENT

Traditional use of biomass for heating and cooking can exert significant pressure on forest resources. On the other hand, the International Energy Agency estimates that transport biofuels in 2050 could potentially lead to an almost five percent reduction in energy-related CO_2 emissions, compared to 2005 levels. Further GHG emission reductions could potentially be brought by increased electricity and heat generation from bioenergy, especially by the industry and building sectors. However, the production of bioenergy feedstock can also have negative impacts on biodiversity and water balances, especially in the case of large-scale cultivation for biofuel or woody bioenergy production purposes.

GOVERNANCE

The food and energy nexus presents several challenges, ranging from conflicting use of natural resources to price surges. While bioenergy is key to energy security in rural areas, large-scale bioenergy production for commercial purposes could pose equity concerns. Depending on governance structures, bioenergy activities could yield beneficial or negative outcomes to the environment and society. Good governance and inclusive decision-making is therefore essential to sustainabe bioenergy development.

Biomass
refers to non-fossil material of biological origin, such as energy crops, agricultural and forestry wastes and by-products, manure or microbial biomass.

Biofuel
is fuel produced directly or indirectly from biomass such as fuelwood, charcoal, bioethanol, biodiesel, biogas (methane) or biohydrogen. However, most people associate biofuel with liquid biofuels (bioethanol, biodiesel and straight vegetable oil). In this note the term ”biofuels” refers to liquid biofuels used for transport.

Bioenergy
is energy derived from biofuels.

Modern bioenergy
does not include the use of biomass for cooking or heating in open stoves or fires with no chimney or hood.

WHY DOES BIOENERGY MATTERS TO SUSTAINABILITY?

- Modern bioenergy can provide new opportunities for modernisation of agriculture and the rural economy. It can improve access to modern energy services for billions of people in developing countries if used in a sustainable way. If techno-economically viable, bioenergy can also contribute to energy security, by diversifying a country's energy mix, broadening sources of supply and reducing energy import bills where nationally produced bioenergy substitutes for imported fossil fuel.
- Compared to fossil fuels, bioenergy has the potential to reduce greenhouse gas emissions because the carbon released during fuel combustion can be recaptured during plant growth. However, actual emission reductions depend on the type of bioenergy production and processing processes, and more importantly, on the location where the feedstock for bioenergy is produced. Converting carbon-rich land (such as natural forests or peat land) to produce bioenergy feedstocks - or to produce other crops displaced by feedstock production - can release more greenhouse gases than the annual emission reductions provided by many years of bioenergy feedstock production on that land.
- In 2008-2010, almost two percent of global arable land was used to produce biofuel feedstocks and 11 percent of the global production of both coarse grains and vegetable oils was used to produce biofuels. The share of arable land and biomass used to produce biofuels is expected to increase in the coming years to five-eight percent. The rising demand for liquid biofuels can put pressure on land (including forests, wetlands and peatlands), water and other natural resources. Biofuel demand is also one of several factors driving up commodity and food prices. Higher food prices particularly affect the poorest segments of the population that spend a large share of their income on food.
- Bioenergy offers opportunities to increase income and employment in rural areas, especially if appropriate measures are put in place to foster smallholder inclusion in bioenergy markets. The increase in agricultural investments driven by the growing demand for biofuels can also stimulate sustainable agricultural development through the development of dual purpose crop, integrated food energy systems and clarification of tenure, should good practices be implemented.

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HIGHLIGHT

BIOGAS PROGRAMME IN VIET NAM, AN INTEGRATED FOOD-ENERGY SYSTEM

Following the socio-economic reform or "Doi Moi" in 1986 and the resulting land redistributed to peasant households, the Vietnamese Gardener's Association (VACVINA) was mandated with the responsibility to promote low-capital, high-efficiency, small-scale integrated farm management systems, in which vegetables and fruit production, fish ponds and livestock are closely integrated with biogas production.

In VACVINA households, some products from the garden are used to feed the fish, while the fish pond provides water, mud and slime to irrigate and fertilize the garden. Fish waste is given to animals as feed and animal manure is used as fertilizer for plant and food for fish, as well as for biogas production. Meat, milk, fish and vegetable from the garden are used for household consumption and the surplus sold on the local market. Biogas digesters using animal manure as input generate enough daily fuel for cooking and lighting, and the resultant slurry used as a fertilizer to improve soil quality for vegetable production. Latrines can also be added to the system to enable human waste to be used for energy.

As a financial incentive to purchase a biogas digester, VACVINA offers an earlybird discount which reduces the original price by up to 30 percent. On top of this, a household saves on firewood and synthetic fertilizer, breaking even after ten years. The biogas produced displaces the use of firewood estimated at 2 500 kg per household per year for which families spend between USD5 and USD10 per month. The application of the organic fertilizer reduces the application of synthetic fertilizers by about 50 percent.

Apart from these financial benefits, the farmers' standard of living increases significantly. Long hours formerly needed to collect firewood can be saved, and respiratory and eye diseases related to smoke decrease significantly. The unpleasant odour of unhygienic pig and manure operations, and the pollution of nearby waterways, vanishes, which does not only serve the farmer but also the environment.

At the same time, integrated agricultural practices increase the capacity to adapt to climate change by increasing farmers'resilience by making him/her more self-sufficient in terms energy and agricultural inputs, and through income diversification (e.g. if they sell the compost generated through biogas production, or the biogas itself).

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PRODUCERS

- Foster smallholders' participation in bioenergy business models.
- Minimize negative environmental impacts (on biodiversity, soil quality, water availability and quality) and ensure that operations effectively mitigate climate change.
- Consult with local communities on provision of energy for local use, in order to ensure that modern bioenergy production fosters both food and energy security.

CONSUMERS

- Consider efficient small-scale bioenergy applications for household energy needs.
- Purchase heat and electricity produced from sustainable biomass sources.
- Lobby governments for strict sustainability requirements for bioenergy, including for heat and power production.

HOW CAN YOU HELP?

FOOD INDUSTRY

- Make sure that waste residues are used for bioenergy production.
- Ensure that the use of biomass for energy production does not compete with food and/or feed production and the use of agriculture residues for soil fertility.
- Use bioenergy to power operations and recycle local agricultural residues.

POLICY-MAKERS

- Develop bioenergy policies and strategies based on a thorough assessment of the environmental and socio-economic implications of different bioenergy development pathways.
- Providing incentives for 'good' practices and disincentives for 'bad' practices for modern bioenergy development.
- Appraise proposed bioenergy projects through an assessment of the main environmental and socio-economic effects associated with such investments/projects.

RESEARCH REQUIREMENTS

- Examine the indirect effects associated with increased biofuel demand, especially in terms of land use change and food security.
- Assess the techno-economic viability and the environmental and social sustainability of integrated food-energy systems.
- Research, develop and deploy advanced (i.e. not first generation) biofuels, including alternative feedstocks and innovative processing technologies.

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In order to help countries understand and manage both risks and opportunities associated with bioenergy development, and design and implement sustainable bioenergy policies and strategies, the FAO developed the 'Support Package for Decision-Making for Sustainable Bioenergy: Making Bioenergy Work for Climate, Energy and Food Security'.

For more details: www.fao.org/bioenergy/28392-0a61de8f511d0a4d08b2137bc929214a7.pdf

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SAFA FOR SUSTAINABILITY ASSESSMENT

DID YOU KNOW?

ECONOMY

Markets for sustainable products are growing at rates far beyond the growth of markets for conventional products.

	Share of sustainable supply in global sales in 2009 (%)	Sales growth of sustainable supply 2005-09 (%)
Coffee	17	433
Tea	7.7	2000
Cocoa	1.2	248
Banana	20	(2007-09) 63

Source: The SSI Review on Sustainability and Transparency (2010)

GOVERNANCE

More than 100 countries have established national sustainable development strategies and related sustainability reporting. Hundreds of sustainability frameworks have been developed in the last decade by universities, civil society and national and international institutions, ranging from environmental and social standards to corporate social responsibility and codes of good practices that apply either to operational units (e.g. farms) or to specific supply chains (e.g. fish, coffee, cotton, palm oil), with or without labeling.

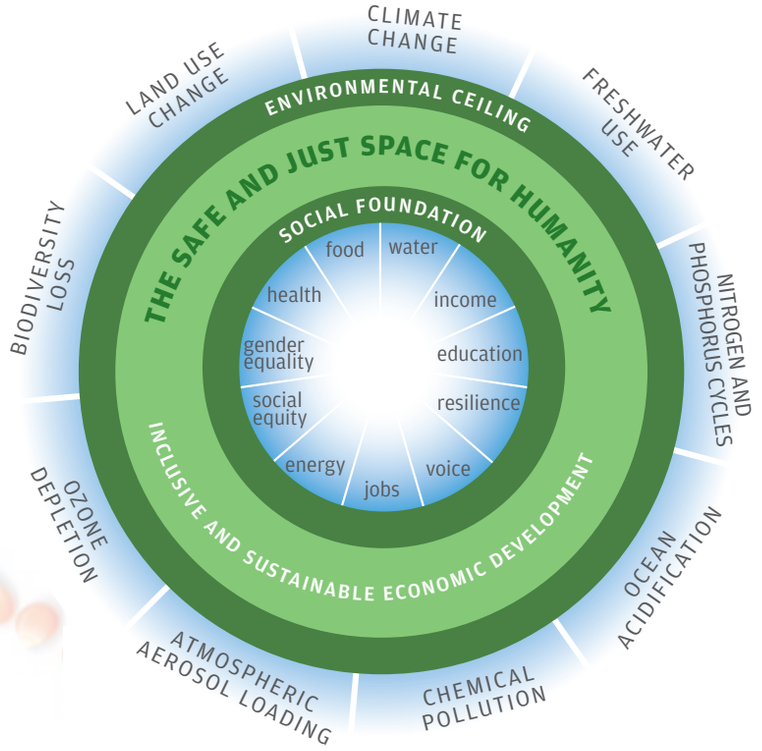
ENVIRONMENT

Most voluntary sustainability initiatives, which could include either environmental and/or social claims, have: predominant environmental criteria; social criteria related mostly to health, safety and employment conditions; and economic criteria limited to product quality and minimum wage requirements, or no economic criteria.

SOCIAL

The expansion of sustainability tools and various claims place a burden on producers and traders and frustrate consumers in the market place. A tool that supports harmonization can help connect all those seeking to deliver sustainability.

CAN WE LIVE INSIDE THE DOUGHNUT? WHY WE NEED PLANETARY AND SOCIAL BOUNDARIES.



Adapted from Kate Raworth, OXFAM 2012

WHY DOES SAFA MATTER TO SUSTAINABILITY?

- Sustainable development has numerous definitions and its environmental, economic and social principles received universal agreement at the 1992 Earth Summit; all definitions have in common the interdependence between nature, people and the economy and the concept of equity among and between generations. However, developing and implementing an integrated approach to analyzing all sustainability dimensions as a coherent whole and integrating them into business or development strategies remains a major challenge.
- Sustainability cannot be achieved without due attention to all environmental, social and economic aspects, as well as governance systems that enable their implementation.
- None of the existing approaches in food and agriculture simultaneously covers all dimensions of sustainability and the whole supply chain, including production, processing, transportation and marketing.
- There is a need for a universally accepted definition that provides a fair playing field for food and agriculture producers, manufacturers and retailers who wish to substantiate their sustainability claims.
- The numerous sustainability approaches have been brought together into a coherent whole and through an open and participatory process through the FAO Guidelines for Sustainability Assessment of Food and Agriculture systems (SAFA).

Sustainable development is defined as *"the management and conservation of the natural base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in agriculture, forestry and fisheries) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable."* (FAO Council, 1989)

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HIGHLIGHT

WHAT IS SAFA?

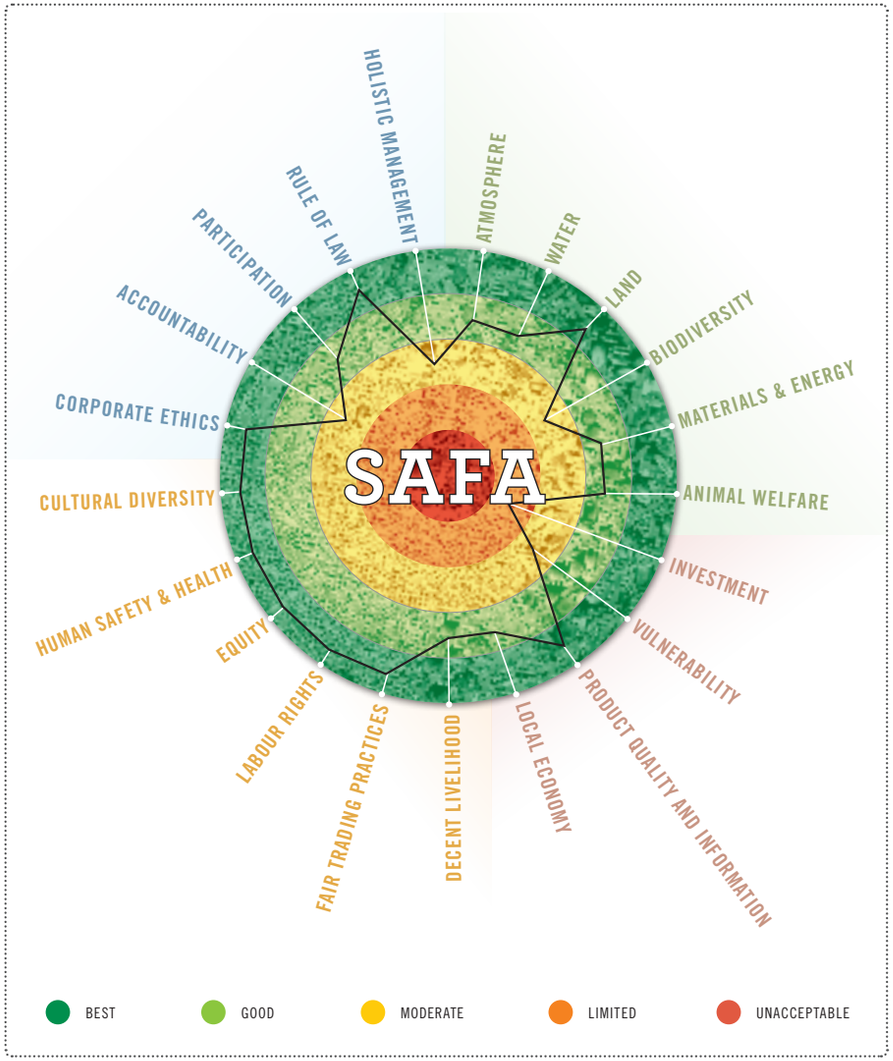
The FAO Guidelines: Sustainability Assessment of Food and Agriculture systems (SAFA), provide an international reference for sustainable management, monitoring and reporting in food and agriculture at all levels of the supply chain. SAFA is not a sustainability index, nor a sustainability standard, nor a labelling tool. SAFA:

- defines what sustainable food and agriculture systems are, including environmental integrity, economic resilience, social well-being and good governance;
- outlines a procedure for an integrated analysis of all dimensions of sustainability, including the selection of appropriate indicators and rating of sustainability performance (best, good, moderate, limited, unacceptable); and
- describes sustainability themes, sub-themes, goals and indicators.

A SAFA is an assessment of the sustainability performance of one or several entities forming part of a value chain rooted in agriculture, forestry, fisheries or aquaculture. It can address all entities from the site of primary production to that of final sales to the consumer. SAFA can take the form of a self-evaluation for the use by primary producers, food manufacturers and retailers in every part of the world.

Running a SAFA results in a "sustainability polygone" that presents the performance of each of the 21 issues that are crucial to the environmental, social, economic and governance dimensions of sustainability. This "traffic light" representation highlights where an activity performance is unacceptable (red), limited (orange), moderate (yellow), good (light green) or at best (dark green). The thick black line connects the scores between the sustainability issues, unlocking areas of weaknesses. Thanks to this representation, an entity can quickly understand where it stands in the sustainability landscape and where it may need to forge partnerships to improve its performance.

EXAMPLE VISUALIZATION OF THE SAFA CATEGORY SCORES OF A COMPANY



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HOW CAN YOU HELP?

PRODUCERS

- Improve sustainability performance by taking measures to use natural resources more efficiently, team-up with peers and share resources.
- Communicate your sustainability performance to your buyers.
- Engage in SAFA assessments and other sustainability initiatives.

CONSUMERS

- Seek information about the products to purchase.
- Choose items that clearly contribute to enhanced environmental and socio-economic performance.
- Ask food retailers and companies to provide data on their socioeconomic and environmental performances.

FOOD INDUSTRY

- Publicly commit to improved sustainability targets.
- Provide incentives for suppliers to improve their sustainability performance.
- Develop partnerships to enhance sustainability performance.

POLICY-MAKERS

- Promote full-cost pricing of environmental and socio-economic externalities.
- Include, in the national sustainable development strategies, commitments and targets for sustainable food and agriculture and allocate the corresponding capacity-building budget.
- Require that food companies and their suppliers regularly publish data on social, economic, environmental and governance performance.

RESEARCH REQUIREMENTS

- The continuous improvement of SAFA will need the participation of producers, manufacturers and retailers in SAFA self-assessments and capacity building.
- More comprehensive knowledge is needed on the sustainability of food and agriculture systems, and in particular of whole supply chains.
- Practical experience concerning the efficiency of different approaches in enhancing the overall sustainability of supply chains, as well as the impact of different sustainability initiatives and approaches on market trends, need to be exchanged and compiled through a common neutral platform.

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FAO has been building on existing efforts in order to develop the SAFA Guidelines for value chain analysis, based on sets of indicators primarily targeting manufacturers and retailers. SAFA, which has evolved in the last four years in a participatory process through expert meetings and E-forums, has now completed its pilot phase and the Guidelines are being finalized.

For more details: http://www.fao.org/nr/sustainability/sustainability-assessments-safa

FOOD WASTAGE FOOTPRINTS

DID YOU KNOW?

SOCIAL

Today, there are 900 million hungry people worldwide and one billion people overfed. Under the current production and consumption trends, global food production will need to increase by 60 percent by 2050.

ECONOMY

The global economic cost of food wastage, based on 2009 producer prices, is USD750 billion, approximately the 2011 GDP of Turkey or Switzerland. The lost grain in sub-Saharan Africa only could meet the minimum annual food requirement of 48 million people.

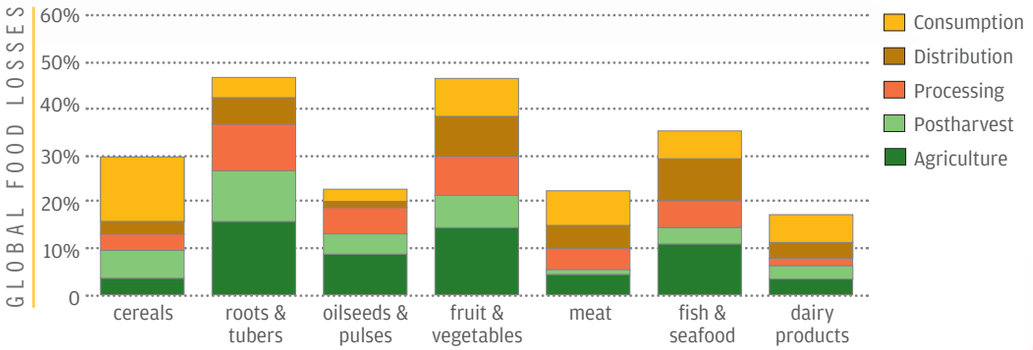
ENVIRONMENT

Lost and wasted food represents a missed opportunity to feed the growing world population. It also comes at a steep environmental price, as land quality, water quantity, biodiversity are adversely affected. Wasted food also has a strong impact on global climate change.

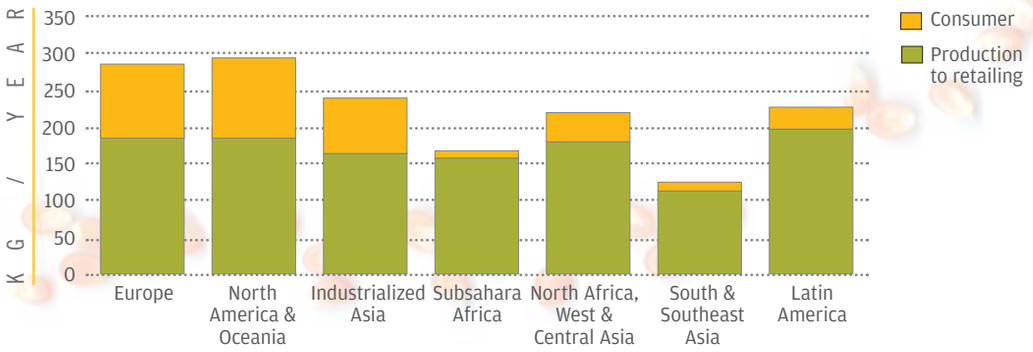
GOVERNANCE

Food lost after harvest and food wasted along the distribution and consumption chain, or food wastage, has a dual negative environmental impact: undue pressure on natural resources and ecosystem services and pollution through food discards. Within the global context of increasingly scarce natural resources, more than one-third of the food produced today is not eaten, which is about 1.3 billion tonnes per year.

PART OF THE INITIAL GLOBAL PRODUCTION LOST OR WASTED



PER CAPITA FOOD LOSSES AND WASTE, AT CONSUMPTION AND PRE-CONSUMPTION STAGES



WHY DOES FOOD WASTAGE MATTER FOR SUSTAINABILITY?

LAND

Intensive farming, without allowing fields to lie fallow and replenish, diminishes soil fertility. Not using roughly one-third of the food produced globally means that soil is unnecessarily pressured. Decreased soil quality leads to further use of synthetic inputs that cause pollution and eventually, loss of arable land.

- In 2007, almost 1.4 billion hectares of land were used to produce food not consumed. This represent a surface larger than Canada and India together.
- Major contributors to land occupation of food wastage are meat and milk, with 78 percent of the total surface, whereas their contribution to total food wastage is 11 percent.

WATER

Agriculture already uses 70 percent of the global freshwater withdrawal and any increased production will likely mean more water use. Water will be a key constraint to global security and when food is wasted, the water is squandered.

- In 2007, the global blue water footprint for the agricultural production of food wastage was about 250 km^3; 3.6 times the blue water footprint of total USA consumption. In terms of volume, it represents almost 3 times the volume of Lake Geneva, or the annual water discharge of the Volga River.
- Cereals, fruits and meat are major contributors to the blue water footprint of food wastage.

CLIMATE CHANGE

Food and agriculture systems heavily depend on fossil-fuel energy. Petroleum is used in almost every aspect of food production, from creating fertilizers, to mechanized planting and harvesting, irrigation, cooling and transportation. Furthermore, when food is discarded in a landfill and decomposes anaerobically, it yields methane emissions, a gas more than 25 times as potent as carbon dioxide at trapping heat.

- In 2007, the global carbon footprint, excluding land use change, of food waste has been estimated at 3.3 Gtonnes of CO_2eq. This amount is more than twice the total GHG emissions of all USA road transportation in 2010.
- If integrated into a country ranking of top emitters, food wastage would appear third, after USA and China, according to the latest data available.
- Food is the primary source of landfill gas and the largest component of materials sent to landfills. In USA, landfill gas is responsible for 17 percent of USA methane emissions.

BIODIVERSITY

The food not eaten is one of several factors that contributes to biodiversity loss through habitat change, overexploitation, pollution and climate change.

- Prompted in part by global food production inefficiency, 9.7 million hectares are deforested annually to grow food; this represent 74 percent of total annual deforestation.
- Food wastage contributes to agricultural expansion into wild areas and increased fishing efforts that unduly overexploit forest and marine habitats. This results in loss of wildlife, including mammals, birds, fishes and amphibians.
- Up to 70 percent of all fish caught by certain types of trawling is discarded.

© Mirra Fine

HIGHLIGHT

SAINSBURY'S ZERO FOOD-WASTE-TO-LANDFILL POLICY

In 2011, Sainsbury's became the first British supermarket to send no food waste to the landfill. The majority of the retailer's excess food is now used to create energy via anaerobic digestion. As of 2011, Sainsbury's was the largest British retail anaerobic digestion user after signing a three-year agreement with Biffa waste management. The grocer made its zero-food-waste-to-landfill pledge in 2009. With this policy, Sainsbury's helps Britain fulfill the EU Landfill Directive mandating reduction of biodegradable waste to landfill to 50 percent of 1995 levels by 2013.

Sainsbury's has also made efforts to reduce its food waste through better inventory control and sales forecasting and by donating edible but unsellable food to the hungry through charities like FareShare. The grocer has been working with the charity for more than 17 years and provided millions of meals.

In addition to reducing their in-store waste, Sainsbury's also helps customers trim their home waste. The chain provides advice on how to properly store produce and launched a Love Your Leftovers campaign, which includes a page on their web site providing recipes and ideas on how to utilize leftover food.

Sainsbury's also unveiled new labeling on its food items advising shoppers on how to use their freezers to extend the life of their food.

© Jonathan Bloom

© Jonathan Bloom

HOW CAN YOU HELP?

PRODUCERS

- Harvest all that is grown, at the optimal time.
- Invest in better storage technology.
- Compost/mulch unavoidable organic waste.

CONSUMERS

- Don't buy more food than what is necessary, by planning meals, creating a detailed shopping list and shopping more frequently, buying less each time.
- Store food properly, whether in air-tight containers or in refrigerators.
- Understand expiration dates and treat them as a suggestion, not the law.

FOOD INDUSTRY

- Allow consumers to customize the amount of food they buy.
- Donate unsellable, edible food.
- Expand definition of acceptable food and sell imperfect items at a discount.

POLICY MAKERS

- Set binding food wastage reduction goal.
- Discourage sending food waste to landfill and enable growers to harvest all they grow.
- Fund or create an awareness campaign to reduce food waste.

RESEARCH REQUIREMENTS

- Improve the calculation of footprints related to food wastage, mostly those occurring in non-agricultural phases.
- Full cost accounting of the global environmental and social impact of food wastage.
- Calculate the opportunity cost of food wastage mitigation measures taking into consideration environmental and social costs.

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Building on FAO's long experience on post-harvest food losses and the assessment of global food loss and waste, the results of Phase 1 of the Food Wastage Footprint model, focusing on the carbon, water, land and biodiversity footprints, have been published in 2013 together with an online database and a Toolkit on reducing the food wastage footprint. A Phase 2 is currently underway defining methods for the economic valuation of the environmental and social costs of food wastage.

For more details: www.fao.org/nr/sustainability/food-loss-and-waste

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SUSTAINABILE DEVELOPMENT OF NATIONS

DID YOU KNOW?

SOCIAL

One-sixth of the world's population goes to bed hungry. In addition, one billion people lack the essential micronutrients they need to lead healthy lives and another billion adults are overweight, of which almost half are obese. Millions of productive life years are lost due to premature death, disease and disabilities caused by malnutrition, placing intolerable burden not only on individuals and national health systems, but on the entire cultural, social and economic fabric of nations. This represents one of the greatest – and most preventable – impediments to the fulfillment of human potential.

ECONOMY

Today, the food and agriculture sector provides livelihoods for 40 percent of the world population. 75 percent of the world's poor are found in rural areas and many directly depend on agriculture or draw a large share of their incomes from agriculture related activities. Econometric analysis suggests that GDP growth arising in agriculture is almost twice as effective in reducing poverty as GDP originating outside the sector.

ENVIRONMENT

Agriculture, forestry and fisheries are highly dependent on natural resources. In fact, croplands, pastures and forest occupy 60 percent of terrestrial land, agriculture uses 70 percent of globally withdrawn freshwater, and fisheries impact every marine area of the world. While careless practices cause environmental harm, such as contributing to over one third of global greenhouse emission, good management practices can simultaneously deliver the dual objective of food and energy supply and environmental conservation.

GOVERNANCE

The functioning of food and agriculture systems is dependent on governance variables, such as policy coherence (namely between food, energy and trade) and market transparency. These variables have contributed to distortions, financial speculations and volatility of food markets. Since 2008, food price spikes have had a major impact on people, forcing them to cut-down on their dietary, health and education expenses. Price shocks, market disruptions, macro-economic instability and food insecurity are likely to intensify in the absence of good governance.

"Agriculture is at the centre of a transition to a resource-efficient, low-carbon green economy,"

said UNEP Executive Director Achim Steiner

"the challenge is to feed a growing global population without pushing humanity's footprint beyond planetary boundaries."

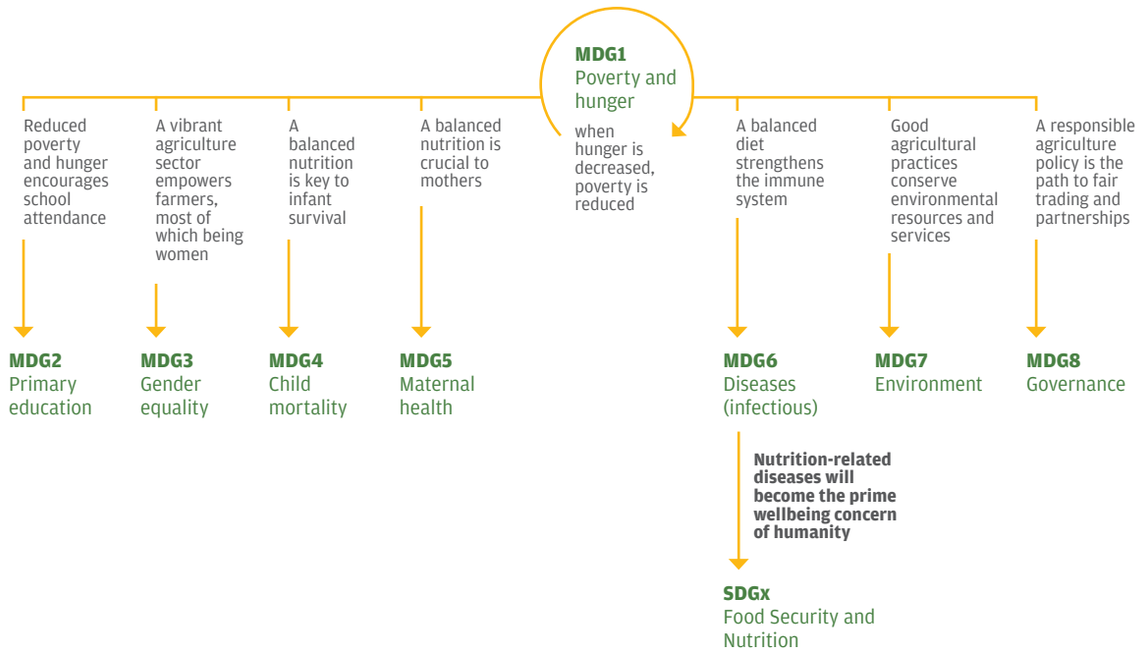
NATIONAL SUSTAINABLE DEVELOPMENT STRATEGIES AND FOOD AND AGRICULTURE

The 1992 Earth Summit called for National Sustainable Development Strategies (NSDS). As of 2009, 106 countries were implementing a NSDS. Developing NSDS does not mean adding an environmental goal to pre-existing socio-economic ones; rather, it is about taking a holistic view of development by looking at inter-dependencies between sectors, in order to maximize synergies and minimize trade-offs among the social, economic, environmental and governance spheres. Agriculture's central role to sustainable development is recognized mainly by developing countries, as indicated by the NSDS of Bhutan, Burkina Faso, Madagascar, Philippines and others. As described in their national strategies, countries are at different stages of development, from strategy definition to pilot implementation.

National Sustainable Development Strategies feature the following common issues:

- **Lack of a globally accepted definition of sustainability:** for instance, Madagascar developed a gridline including 7 sustainability pillars and 24 thematic areas for assessing strength and weaknesses, while Philippines chose to focus on 5 different pillars to do the same exercise.
- **Lack of effective implementation:** the lack of clear goals, targets, timeframes and indicators, against which progress could be measured, has not allowed sustainable development strategies to effectively be put in practice.
- **Difficulty of integration:** incorporating environmental considerations into economic planning remains a challenge, especially because the "value" of the natural capital is not reflected in production and consumption costs.
- **Lack of coherence:** national preparations for Rio+20 underscored the need for more coherent decision-making at and between the national, subnational and local levels of government, as well as across thematic sectors; evidence shows that few countries have a well-functioning coordination mechanism to address multi-sectoral national objectives.

FOOD AND AGRICULTURE SYSTEMS AT THE CENTER OF NATIONAL DEVELOPMENT GOALS



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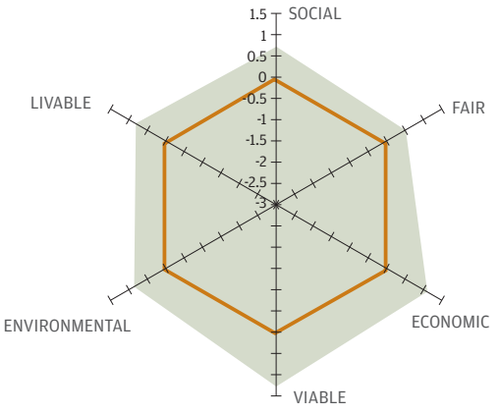
HIGHLIGHTS

AGRICULTURAL SUSTAINABILITY ASSESSMENT IN MADAGASCAR

In its National Sustainable Development Strategy, Madagascar explains its sustainability assessment process and shows the sustainability profile of some its key activity sectors, including agriculture. This exercise allowed Madagascar to understand the strengths and weaknesses of its agriculture sector for a sustainable future.

Sustainable development pillars and areas:

- **Governance dimension:** Orientation; Legitimacy and voice; Institutional mechanism; Evaluation, follow-up and final outcome, performance; Accountability / Responsibility.
- **Social dimension:** Social links; Solidarity; Cultural identity / Subsidiarity / Legitimacy; Social impact.
- **Fairness interface:** Accessibility; Inter-generational equity, justice/impartiality; Wealth sharing; Damage compensation.
- **Economic dimension:** Economic coherence; Economic dynamic; Total cost; Financial impact.
- **Viability interface:** Adaptability; Precaution-prevention; Robustness of choices.
- **Environmental dimension:** Natural dynamic; Efficient management of natural resources; Environmental impact; Environmental practices.
- **"Livability" interface:** Living environment; Health and security effects, precautionary principle; Public acceptance; Lifestyle.



The analysis of Madagascar's agricultural sector gives the following results (see graph).

The Philippines did a similar exercise using different sustainability criteria. Such exercises are useful to highlight areas for potential progress towards sustainability.

DASHBOARDS OF SUSTAINABILITY

The United Nations Commission on Sustainable Development (CSD) has developed 60 indicators of national sustainable development for the implementation of Agenda 21. These indicators relate to the four SD pillars: economic, social, environmental and institutional. This indicator set has been translated into a Dashboard of Sustainability application, presented to the 2002 Johannesburg World Summit on Sustainable Development. The Dashboard puts heterogeneous indicator sets into a meaningful tree structure, aggregates their scores in a simple, transparent way, and displays them in a user-friendly "traffic light colours" format. In addition, it allows users to drill down to the deepest level of detail.

After the 2000 Millennium Summit, the Dashboard of Sustainability featured the Millennium Development Goal (MDG) indicators for over 200 countries. The 60 MDG indicators set is clearly less focused on environmental issues than the CSD indicator set. The Dashboard software has a flexible structure and browser interfaces between the different indicator sets. Currently, attempts are made to translate most of Eurostat's sustainable development and structural indicators into the Dashboard format, using the four main sustainability pillars of Agenda 21, accommodating 196 indicators. The aim is to study possible options for going "Beyond GDP" with an adequately detailed "societal progress indicator".

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HOW CAN YOU HELP?

PRODUCERS

- Engage into projects demonstrating the multifunctionality of sustainable agriculture.
- Raise your voice for having agriculture recognized as pivotal to sustainable development.

CONSUMERS

- Show your support to sustainability initiatives by participating in them and/or consuming the goods they deliver (e.g. local deliveries of sustainably produced food).
- Vote for pro-sustainability representatives ready to support concrete sustainable initiatives.

FOOD INDUSTRY

- Implement sustainable food and agriculture practices throughout the supply chain.
- Support sustainability assessment to improve your own supply system.

POLICY-MAKERS

- Mainstream the food and agriculture sector within sustainable development strategies.
- Bridge food and agriculture with employment, health, climate, trade and other policies.

RESEARCH REQUIREMENTS

- Develop sustainability indicators for the food and agriculture sector adapted to national level specificities. For example, The Sustainability Assessment of Food and Agriculture System Guidelines (SAFA) provides a useful framework, including 21 sustainability themes along four pillars; good governance, environmental integrity, economic resilience and social well-being. However, SAFA sub-themes and indicators need to be developed for national policy purposes.

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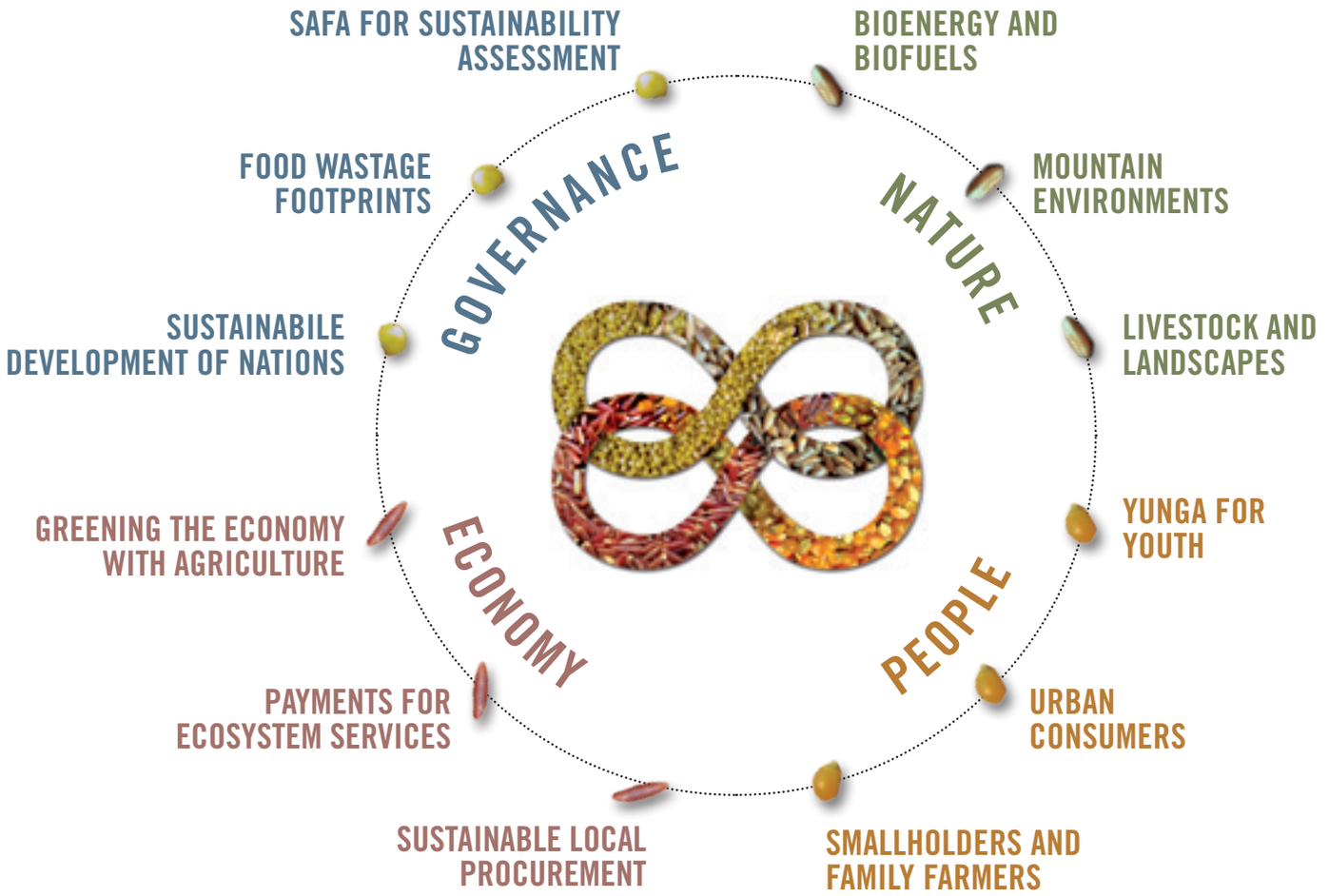
The FAO Guidelines for the Sustainability Assessment of Food and Agriculture systems (SAFA) provide an international reference for sustainable management, monitoring and reporting in food and agriculture at all levels of the supply chain.

For more details: http://www.fao.org/nr/sustainability/sustainability-assessments-safa



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