



# **The potential of Permaculture to improve sustainable nutrition: a synthesis of 13 case studies**

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# Overview

- Project
- Global nutrition
- Permaculture case studies
- Nutrition analysis

# Project

- Global Food Security Journal
- Special Issue on Sustainable Food Systems and Diets
- Answered global call for abstracts – deadline 31<sup>st</sup> May 2019
- Invited to submit 5,500 word paper – deadline 31<sup>st</sup> August 2019
- Original research

# Global Nutrition

- Magnitude of the problem of malnutrition
- Usual approach to nutrition in programmes and limitations
- Call to action by The State of Food Security and Nutrition in the World Report and International Panel on Climate Change (IPCC) Special Report on Climate Change and Land
- Permaculture justification



# Magnitude of the problem of malnutrition

- Increasing numbers of undernourished people experiencing moderate or severe levels of food insecurity
- 820 million people in the world were still hungry
- Rising prevalence of micronutrient deficiency disorders, overweight, obesity and diet-related non-communicable diseases
- Global Nutrition Targets will not be met



# Usual approach to nutrition in programmes

- Conventional nutrition programmes use:
  - Therapeutic foods
  - Supplements
  - Fortification
  - Biofortification
- These approaches are treating symptoms rather than addressing causes of malnutrition in all its forms
- Business as usual is clearly not working
- There is an urgent need for sustainable solutions

# Call to action by Global Reports

- The State of Food Security and Nutrition in the World Report (July 2019)
  - Calls for an understanding of food security and nutrition for health and well-being, looking at root causes of poverty, inequalities and marginalisation
  - Multi-sectoral policies
- International Panel on Climate Change (IPCC) Special Report on Climate Change and Land (August 2019)
  - Calls for a holistic, integrated approach involving local stakeholders, particularly those most vulnerable to climate change
  - Policies must operate across the food system



# Permaculture justification (1)

“Permaculture is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems. It is the harmonious integration of landscape and people providing their food, energy, shelter, and other material and non-material needs in a sustainable way”

(Mollison, 1992)

# Permaculture justification (2)

- Permaculture systems are designed for sustainability using a set of 12 design principles
- Permaculture:
  - is implemented through a clear and specific design process
  - promotes the use of locally available, low cost resources and food-based approaches
  - is accessible, implemented worldwide and provides a potentially cost-effective alternative to conventional nutrition programmes
- Permaculture projects are inherently cross sectoral, despite not being expressly designed to improve nutrition

# Permaculture case studies

- Thirteen contributors
- Ten operational in one specific country and three in multiple countries
- Seven projects implemented in Africa, six in Asia, one in Australia and one in North America
- All contributors operational in tropical climatic zones, with one in temperate climatic zones
- Project durations varied: under one year (1); 1-5 years (6); 5-10 years (3); 10-20 years (2); and 20-30 years (1).

Project Name/ Abbreviation	Start Date	Country	Continent
YICE Permaculture Project (YICE)	May 2017	Uganda	Africa
BEU Permaculture Group (BEU)	January 2012	Uganda	Africa
Brackenology (BRACKEN)	July 2018	Kenya	Africa
Ololo Farm (OLOLO)	January 2015	Kenya	Africa
Practical Permaculture Institute Zanzibar (PPIZ)	January 2016	Tanzania	Africa
The Regional Schools and Colleges Permaculture (ReSCOPE) Programme	December 2006	Uganda; Kenya; Malawi; Zambia; Zimbabwe	Africa
Never Ending Food (NEF)	August 2003	Malawi	Africa

Project Name/ Abbreviation	Start Date	Country	Continent
Himalayan Permaculture Centre (HPC)	January 2010	Nepal	Asia
Aranya Permaculture India Project (API) (supported by LUSH)	November 2015	India	Asia
Organic Agriculture and Natural Regeneration (TC)	November 1990	India	Asia
Green Shoots Foundation Agri-Tech Centre (GSF)	December 2018	Cambodia	Asia
Permaculture School Gardens; Youth education and engagement activities (PERMATIL)	January 2015 July 2008	Timor-Leste	Asia
Marine Permaculture to Regenerate Ocean Productivity, Food Security and Marine Ecosystems (CF)	January 2014	USA Philippines Australia	North America Asia Australia

# YICE Uganda

- YICE Uganda permaculture project
- May 2017
- Bukompe village, Kyakatebe Parish, Nalutuntu sub county, Mubende District, Central Uganda
- Permaculture gardens with refugees and host population
- To empower smallholder farmers (refugees and host population) with practical knowledge and skills to increase their farm productivity, improve incomes and promote good nutrition
- <https://yiceug.org/>





# Ololo Safari Lodge

- Ololo Farm (OLOLO)
- January 2015
- Southern border of Nairobi National Park in Nairobi, Kajiado, Kenya
- To use simple regenerative solutions in the design of a demonstration farm for education of local community members, especially youth, enabling them to create conscious profitable enterprises around environmental conservation and regeneration, sustainable diets and general healthy living
- <https://www.olololodge.com/>





# The Regional Schools and Colleges Permaculture (ReSCOPE) Programme

- ReSCOPE
- December 2006
- Head Office: Lusaka, Zambia; East Africa: Kampala, Uganda; Nairobi, Kenya; Southern Africa: Lilongwe, Malawi; Lusaka, Zambia; Harare, Zimbabwe
- To develop organic food forests in schools with the active participation of the whole school community
- <http://www.seedingschools.org/>



# Aranya Agricultural Alternatives

- Aranya Permaculture India Project (supported by LUSH) (API)
- November 2015
- Adilabad district, State of Telangana, India
- To improve livelihoods through regenerative agriculture systems by providing support to the tribal women farmers to establish permaculture farms in remote areas
- <https://permacultureindia.org/>





# The Timbaktu Collective

- Organic Agriculture and Natural Regeneration (TC)
- November 1990
- 60 villages, Ananthapuramu District, State of Andhra Pradesh, South India
- To enable marginalised sections of the population to get organized, enhance their livelihoods, and work towards social justice and gender equity. The project runs various thematic programmes and establishes community-owned and managed people's organisations in the form of Cooperatives as a cross-cutting strategy
- <https://www.timbaktu.org/>



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# Green Shoots Foundation

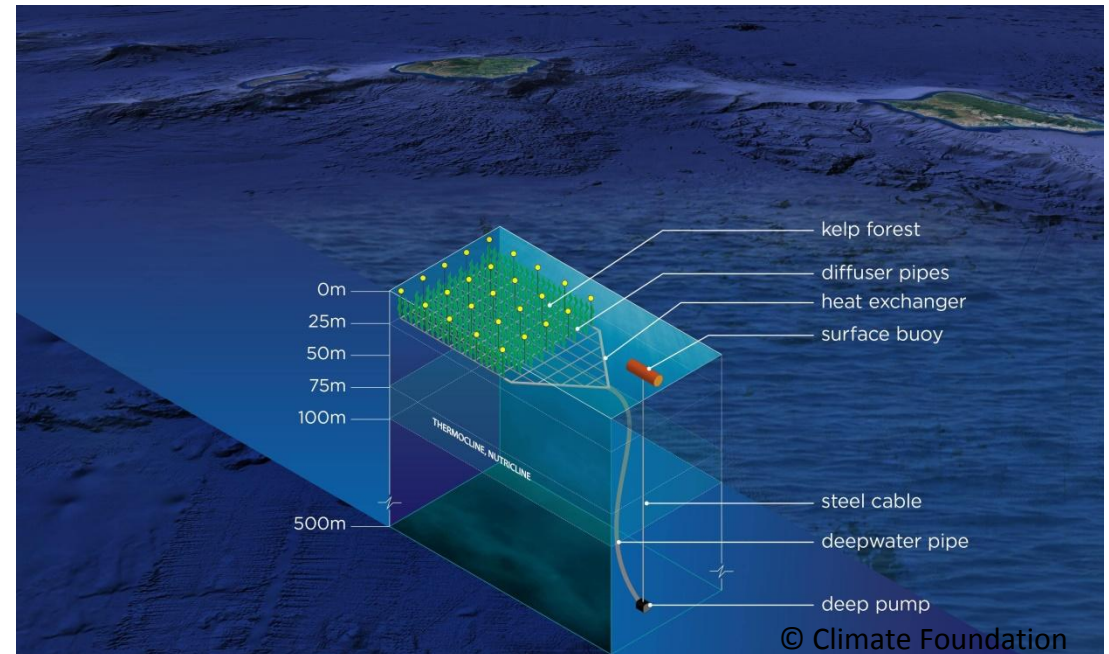
- Green Shoots Foundation Agri-Tech Centre (GSF)
- December 2018
- Bosbov Village, Samrong, Odar Meanchey Province, Cambodia
- To introduce skills and techniques to revitalize rural economies
- <https://www.greenshootsfoundation.org/>





# Climate Foundation

- Marine Permaculture to Regenerate Ocean Productivity, Food Security and Marine Ecosystems (CF)
- January 2014
- Woods Hole, Massachusetts, USA; Cebu, Visayas, Philippines; Hobart, Tasmania, Australia
- To regenerate livelihoods of thousands of subsistence seaweed fishermen farmers, while growing seaweed with marine permaculture irrigation to regenerate ecosystems near seaweed farms, kelp forests, fish habitat, forage fisheries and higher trophic levels, and sequestering carbon
- <http://www.climatefoundation.org/>



# How can Permaculture improve nutrition?

- Food that is produced for consumption
- Permaculture encourages a healthy environment
- Women's drudgery is reduced, more time available for care of self plus children
- Education and training on nutrition and health
- Livelihoods improved, poverty reduced

## *Synthesis of Guiding Principles on Agriculture Programming for Nutrition.* Rome: FAO.

### Programming Principles

1. Incorporate explicit nutrition objectives and indicators into design.
2. Assess the local context.
3. Target the vulnerable and improve equity.
4. Collaborate and coordinate with other sectors.
5. Maintain or improve the natural resource base, particularly water resources.
6. Empower women.
7. Facilitate production diversification, and increase production of nutrient-dense crops, and livestock.
8. Improve processing, storage, and preservation of food.
9. Expand market access for vulnerable groups, and expand markets for nutritious foods.
10. Incorporate nutrition promotion and education that builds on local knowledge.

Food and Agriculture Organization of the United Nations (FAO). 2013.



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# **1. Incorporating explicit nutrition objectives and indicators into the project's design**

- The approaches included
  - diversified production;
  - diversified diets;
  - nutrition education/teaching;
  - processing;
  - food security;
  - value-added products;
  - health/education;
  - ecosystem restoration;
  - food systems;
  - addressed caring practices.

## 2. Assessing the context at local level, to design appropriate activities addressing the types and causes of malnutrition

- GSF conducted focus groups with school students to evaluate the organisation's activities and gather their opinions on a career in agriculture.
- Findings were then used to design their current Agri-Tech Centre project, reviving “forgotten foods”, supporting an indigenous foraging culture and diversifying diets to combat “hidden hunger”.



GSF - working with children

### 3. Targeting the vulnerable and improving equity (13)

- The projects used a very broad range of targeting. With vulnerable populations included, for example
  - Smallholder farmers (11); foresters (2); fisherfolk (1);
  - Remote/marginalised communities (8); poor or extremely poor populations (8); Refugees (3); Internally Displaced Persons (2);
  - Pregnant and Lactating Women (3); widows (3); older persons (3);
  - People Living with AIDS (1);
- Livelihoods
  - For YICE, objective is to empower smallholder farmers with practical knowledge and skills to increase farm productivity, improve incomes and promote good nutrition. 350 farmers have been trained in Permaculture, with a target of 500 farmers by the end of 2019. The project is monitored using “change in incomes since the household started adopting Permaculture.”

## 4. Collaboration and coordination with other sectors

- Collaboration with non-government organisations (NGOs), government and the private sector was standard.
- CF works in multiple sites for Marine Permaculture operations, with local government, subsistence farmers, buyers and operators to develop cost-effective projects.
- Several projects work with Schools (e.g. PERMATIL, ReSCOPE, BEU, GSF)
- Coordination with Health Sector for Nutrition education (HPC)



ReSCOPE Schools

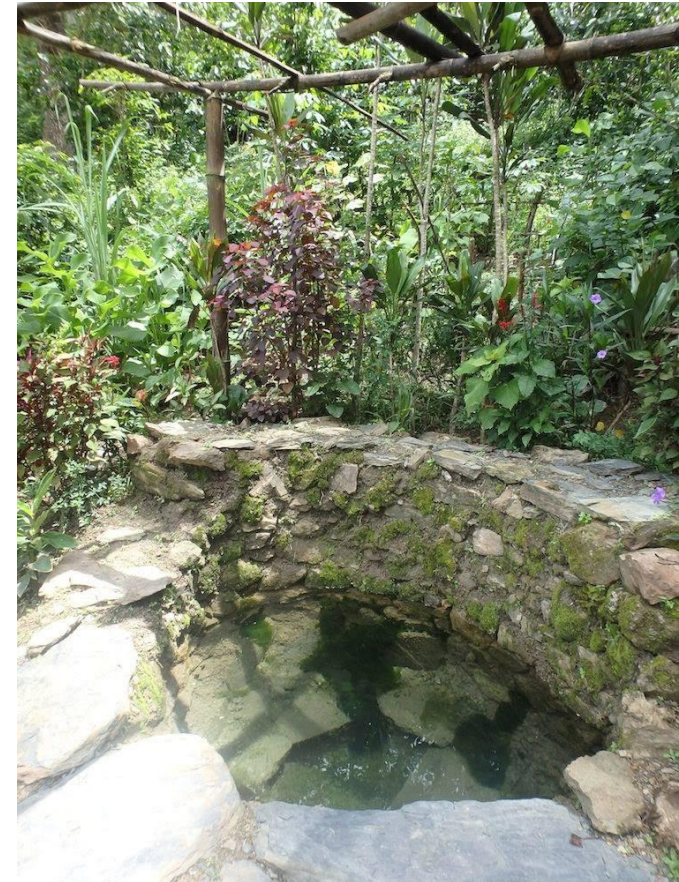


## 5. Maintaining or improving the natural resource base (13)

- For all Permaculture projects, natural resource management and regeneration is a key feature.
- Natural resource management is a main focus of work, through conservation of water resources, soil improvement, forest protection and agricultural diversification.



HPC – reforestation  
through livestock  
management



PERMATIL - preserving natural spring

## 6. Empowering women (9)

- API: Tribal women farmers are targeted for activities
  - Income from poultry, kitchen garden and orchards activities
  - Monitoring: yield, water usage, time and dietary intake
  - Key successes: greater dietary diversity and improved health outcomes for anaemic women.
- HPC: Women's time saving
  - Use of relative proximity of fodder to livestock; water to the homestead
  - Use of mulch reducing the need to weed and water, thus building fertility and saving time.
  - energy efficient stoves reduce labour and firewood use.
  - Time saved for preparing special meals for children and hygiene practices (amongst others)



HPC Nepal



GSF schools



## 7. Facilitating diversification of production (13)

- ReSCOPE
  - Schools: food forests intercropping maize, pumpkin, cowpea, legume trees.
  - Project successes: production of diverse fruits, vegetables and staple foods
  - Smallholder farmers transform own food production systems and diets- learning from schools.
- BRACKEN
  - promote the use of indigenous plants.
  - 3 new Permaculture gardens with the soil improved and producing a variety of foods.



PERMATIL School garden



HPC agro-forestry

# Improving the nutritional quality of foods (12)

- healthy soil - healthy plant - healthy foods strategy with the use of organic practices (PERMATIL, OLOLO, HPC, BEU, BRACKEN, TC).
- NEF has raised over 200 of 600 foods that have been categorised according to nutrition and seasonal spread in Malawi



OLOLO vegetable production

## 8. Improving processing, storage and preservation (12)

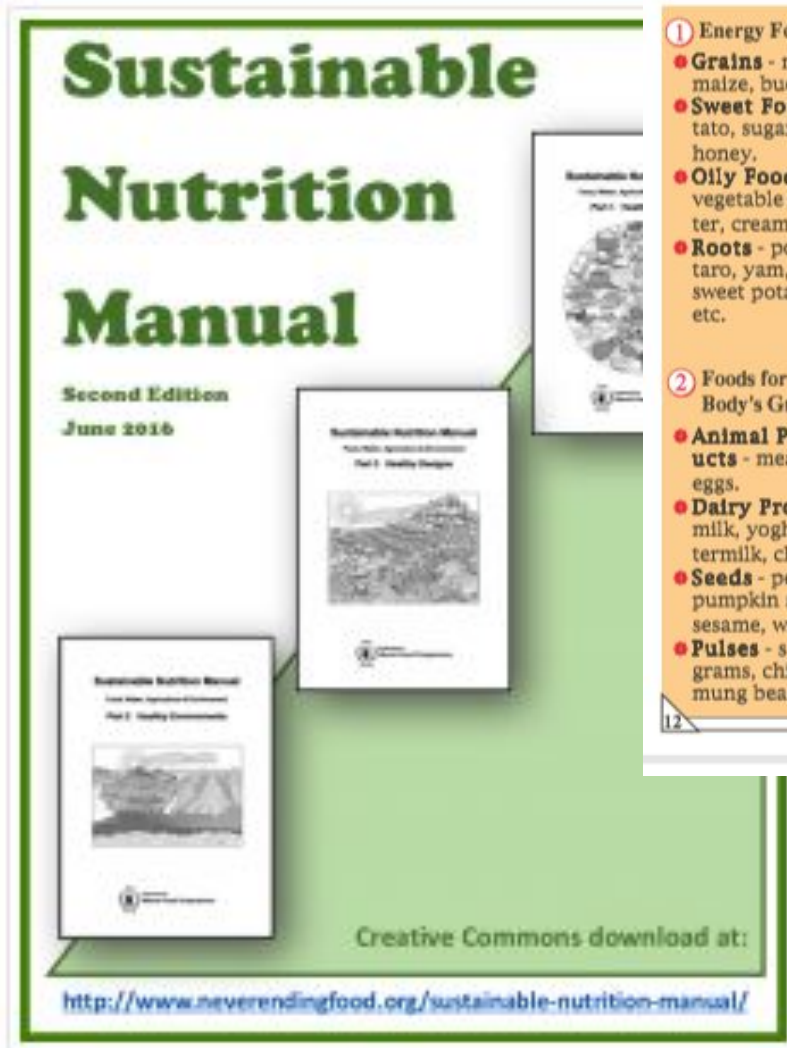
- The following activities were undertaken:
  - processing of seaweed to produce marketable seaweed products (CF),
  - training on community preservation and storage of harvests, including drying and jam making (HPC),
  - TC has a 900-tonne capacity hybrid-solar powered unit to process groundnut, millet, pulses and rice, and eight small mills to enable local farmers to process millets for consumption.
  - API farmers are taught traditional way of ripening fruits, solar drying and shade drying techniques to prevent nutritional losses

## **9. Expanding markets and market access for vulnerable groups, particularly for marketing nutritious foods (10)**

- TC, working with a cooperative increased market access and value chains for millets through production, procurement, processing and marketing whole grain and value added-products,
- BEU cooperative development for smallholder farmers, who experience challenges in pricing their small quantities.



# 10. Incorporating nutrition promotion and education (10)



# Monitoring and Evaluation (M&E)

- M & E – a wide range of activities
  - from developing an M&E system (BRACKEN, PPIZ), to
  - undertaking baseline and end-line surveys (API),
  - ongoing monitoring (YICE),
  - an extensive review (PERMATIL, TC) and a nutrition evaluation (HPC).
- Quantitative and qualitative measures.
  - Demonstration sites (NEF, HPC, OLOLO).
  - Participation, adoption of practices (HPC, PPIZ, YICE).
  - agricultural productivity or diversity (TC, PERMATIL, ReSCOPE, CF, OLOLO, NEF, HPC)
  - Economic indicators such as sales, and value (TC, BRACKEN, NEF), and income (YICE).

# M&E for diet and nutrition

- Food security includes- availability, access, affordable, appropriate and utilisable
- Utilisation of food
  - weekly household consumption of vegetables (YICE),
  - amount of food given to children (ReSCOPE)
  - GSF is planning to use food diaries to collect dietary data.
  - increased consumption of healthy food and dietary diversity and improved health outcomes in anaemic women after 4 years (API).



# Conclusions

- Immense potential for Permaculture to support multi-sectoral activities and effectively improve sustainable food systems, diets and nutrition.
- Training – PDC and special courses on PC for Development workers
- Multi-sectoral nutrition- evaluations