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## Permaculture: A way of sustainable living

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### Abstract

Permaculture is a concept focused on the sustainable living of human beings, both in rural and urban areas although it was initially developed in a rural setting. Permaculture's is based on intensive use of biological resources and thoughtful, holistic, design, patterned after natural ecosystems (eco-mimicry) which balances the environment degradation. For required change in the environment by maintaining ecological balance, it is necessary to develop a permanent culture based on natural resources (land, resources and waste management) with long term sustainability.

**Keywords:** Permaculture, sustainable, water harvesting, waste management

### Introduction

Permaculture (Permanent Cultivation) includes land, resources, human habitation and the environment through mutually beneficial synergies in diverse natural systems. Permaculture studies and applies holistic solutions that are applicable in rural and urban contexts at any scale. It is a multidisciplinary toolbox including agriculture, water harvesting, natural building, forestry, waste management, animal systems, aquaculture, appropriate technology, economics and community development.

The word "Permaculture" was coined by Bill Mollison. According to him, Permaculture is the conscious design and maintenance of agriculturally productive ecosystems which have the diversity, stability, and resilience of natural ecosystems.

### Why we need permaculture

The statistics of consumption rates are frightening. The projected outcomes of overconsumption and the abuse of our earth are dire, especially as we are already consuming 50% more resources than the planet can sustain. Permaculture aims to address these and other issues by developing models which ensure that humanity can not just survive, but thrive, even in an 'oil obsolete world' (Mollison and Holmgren, 1978)<sup>[15]</sup>.

One example, among many, is the devastating impacts of industrial agriculture. It may have sped up the cultural evolution of humanity, but on a large and widespread scale it damages the natural world, including animal colonies such as bees, and has created a decline in the nutrient levels of the food it produces. It relies on fossil fuels, such as the oil required for machinery, fertilisers and pesticides. (Lockeretz, 2007)<sup>[10]</sup> It kills the soil of its life, which includes bacteria, fungi, protozoa, nematodes, arthropods and earthworms. It essentially kills natural systems.

Industrial agriculture also requires high input for the associated output. Another important point is that it doesn't even feed the local population; through free trade agreements food is unnecessarily shipped all over the globe and immorally misses the people who need it most, whilst so much waste is created in the so-called 'developed' nations. Industrialised farming simply has to go, for the death of it will be the conscious birth of humanity's sustainable partnership with planet earth (Mollison and Holmgren, 1978; Méndez *et al.*, 2013)<sup>[15, 13]</sup>.

Permaculture plots can be designed in small or large scale settings. They can very easily solve some of the mess that humanity has created for itself, such as the shortage of healthy and clean food and water, as well as the destructive imbalance our species has created on our Mother Earth and its interconnected and interdependent species (De Steiguer 2006; Hawken 2007; McCormick 1991)<sup>[3, 6, 11]</sup>.

### Principles of permaculture

Twelve Permaculture design principles articulated by David Holmgren (2002)<sup>[7]</sup> in his Permaculture: Principles and Pathways beyond Sustainability:

- Observe and interact: By taking time to engage with nature we can design solutions that suit our particular situation.

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- Catch and store energy: By developing systems that collect resources at peak abundance, we can use them in times of need.
- Obtain a yield: Ensure that you are getting truly useful rewards as part of the work that you are doing.
- Apply self-regulation and accept feedback: We need to discourage inappropriate activity to ensure that systems can continue to function well.
- Use and value renewable resources and services: Make the best use of nature's abundance to reduce our consumptive behavior and dependence on non-renewable resources.
- Produce no waste: By valuing and making use of all the resources that are available to us, nothing goes to waste.
- Design from patterns to details: By stepping back, we can observe patterns in nature and society. These can form the backbone of our designs, with the details filled in as we go.
- Integrate rather than segregate: By putting the right things in the right place, relationships develop between those things and they work together to support each other.
- Use small and slow solutions: Small and slow systems are easier to maintain than big ones, making better use of local resources and producing more sustainable outcomes.
- Use and value diversity: Diversity reduces vulnerability to a variety of threats and takes advantage of the unique nature of the environment in which it resides.
- Use edges and value the marginal: The interface between things is where the most interesting events take place. These are often the most valuable, diverse and productive elements in the system.
- Creatively use and respond to change: We can have a positive impact on inevitable change by carefully observing, and then intervening at the right time.

**Components of permaculture**

- Water harvesting Structures
- Food Forests and Agroforestry
- Gardening and landscaping
- Organic Farming
- Aquaculture
- Social Sciences
- Animal and Plant Breeding

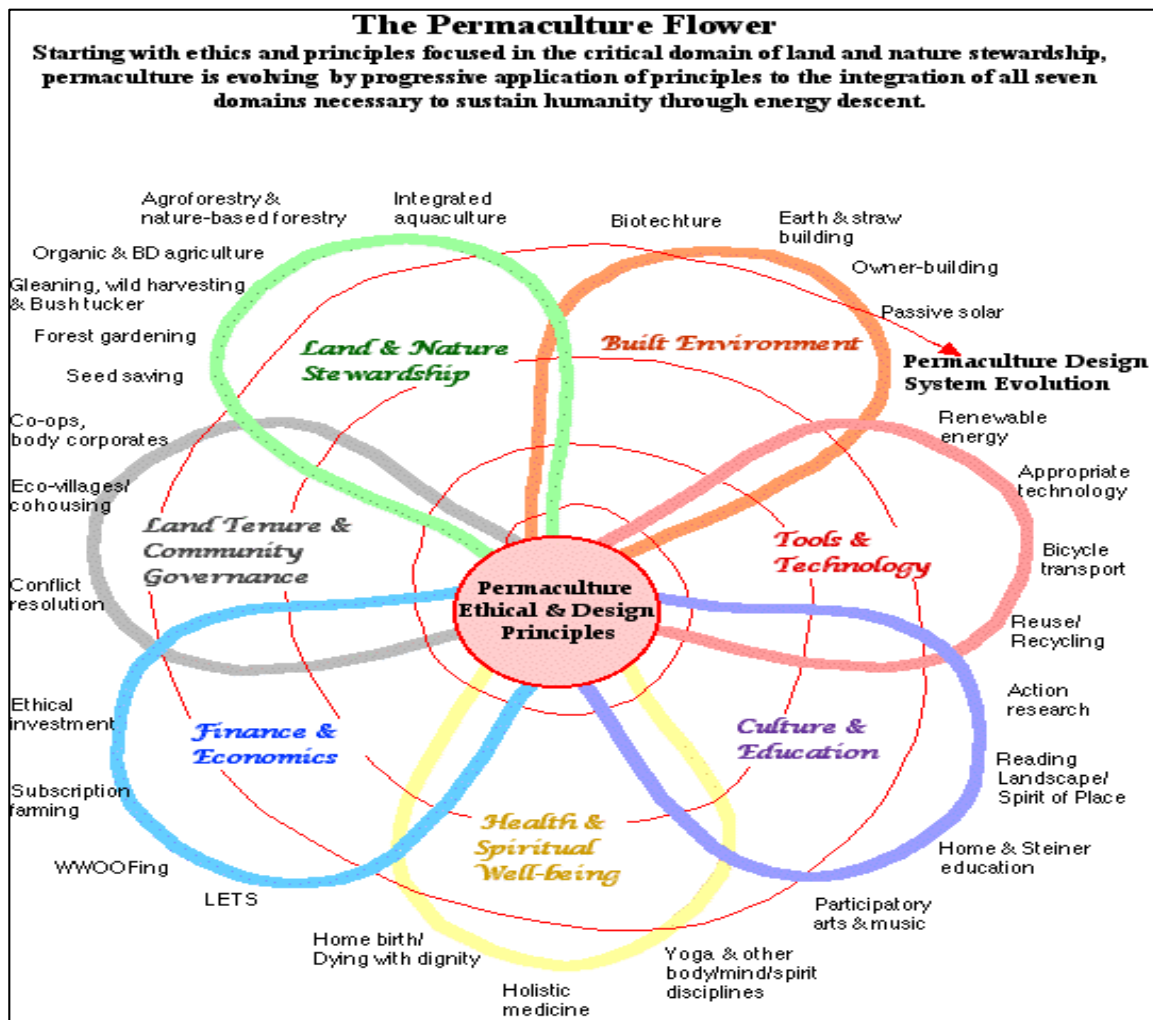


Fig 1: Components of permaculture concept given by holmgren (2002) [7]

**Permaculture status in the world**

Permaculture is the conscious design and maintenance of agriculturally productive systems which have the diversity, stability, and resilience of natural ecosystems. It is the harmonious integration of the landscape with people

providing their food, energy, shelter and other material and non-material needs in a sustainable way (Bell, 2005) [1]. According to Lancaster (2013) [9], “a diversion swale is built slightly off- contour, allowing a portion of the water to soak into the soil locally while moving surplus water slowly

downhill from one place to another, infiltrating water all along the way.”

Hawken (2007) <sup>[6]</sup> stated that permaculture integrates the human value aspect by approaching problems through ecology, systems thinking, and holistic inquiry. Ethics and considerations ingrained within those overarching approaches, taken from include: Land and nature stewardship, the built environment, Tools and technology Culture and education, Health and spiritual well-being and Finances and economics. The idea that urban forests are only important for the services they provide and not the products they produce reflects a bias that many urban foresters and planners have. A bias against activities generally associated with rural areas (agriculture, forestry, livestock production) being conducted in urban areas (McLain *et al.*, 2012) <sup>[12]</sup>.

Permaculture claims to provide tools and methods to design resilient, productive resource and labor efficient farming systems based on a high level of biodiversity and beneficial ecological interactions. These assumptions remain little documented and controversial. In this regard, the most significant studies have been led for doctoral dissertations. In industrialized countries (the United States and France), they have shown that the productivity and economic returns to labor of commercial permaculture farms could benefit from high level of cultivated diversity, crop/animal integration and be economically successful even with low levels of fuel consuming motorization (Ferguson and Lovell, 2017) <sup>[5]</sup>.

In developing countries, farmers using permaculture can experience agricultural, environmental, economic, and nutritional benefits in comparison to farmers solely using conventional agriculture, as demonstrated in Malawi by Conrad (2014) <sup>[2]</sup>. In this regard, some studies have considered that permaculture has been appropriated by poor communities to create new cultural identities adapted to the modern world based on traditional ecological knowledge (Millner, 2016) <sup>[14]</sup>.

Thorton (2008) examined the agricultural practices of 27 Malawian farmers who have been exposed to Permaculture Nutrition and Design. Identifies Permaculture adopters (positive deviants) and examines the factors and farmer characteristics associated with such adoption. and also examines household food security in Malawi and the extent to which it is affected by the adoption of Permaculture practices. Faber *et al.* (2002) <sup>[4]</sup> studied to determine whether the home-gardening program improved the dietary intakes of yellow and dark-green leafy vegetables and the serum retinol concentrations of 2–5-y-old children from this area. Growth and maternal knowledge regarding vitamin A were assessed as secondary outcomes. The number of gardens increased from 9 (baseline) to 126 (follow-up) - approximately 1/3 of all households. 33% of the respondents appreciated the fact that they did not have to buy vegetables. 21% related the gardens to poverty alleviation. Food security was the first priority of the households, and only 8% of the households with project gardens sold some of the produce for cash. Percentage of children who consumed provitamin A-rich vegetables at least once a week increased (range: 2-68%). Serum retinol concentrations increased significantly in the experimental village but decreased significantly in the control village.

## References

1. Bell G. The permaculture way: Practical steps to create a self-sustaining world. Hampshire, United Kingdom: Permanent Publications, 2005.
2. Conrad A. We are farmers: Agriculture, food security, and adaptive capacity among the permaculture and conventional farmers in central Malawi. Doctoral dissertation, American University, 2014.
3. De Steiguer JE. The origins of modern environmental thought. University of Arizona Press, Tucson, 2006.
4. Faber M, Phungula AS, Venter M, Dhansay SL, Spinnler Benadé MAAJ. Home gardens focusing on the production of yellow and dark-green leafy vegetables increase the serum retinol concentrations of 2–5-y-old children in South Africa. *American Journal of Clinical Nutrition*. 2002; 76:1048-1054.
5. Ferguson RS, Lovell ST. Livelihoods and production diversity on U.S. permaculture farms. *Agroecology and Sustainable Food Systems*. 2017; 41:588-613.
6. Hawken P. Blessed unrest: how the largest movement in the world came into being and why no one saw it coming. Viking, New York, 2007.
7. Holmgren D. Permaculture: Principles and Pathways Beyond Sustainability. Holmgren Design Services, 2002.
8. Holmgren D. Essence of permaculture. Holmgren Design Services, 2007.
9. Lancaster B. Rainwater harvesting for drylands and beyond: Guiding principles to welcome rain into your life and landscape. 2<sup>nd</sup> Edition. Tucson, AZ: Rainsource Press, 2013, 1.
10. Lockeretz W. Organic farming: an international history. CABI, Wallingford, UK; Cambridge, MA, 2007.
11. McCormick J. Reclaiming paradise: the global environmental movement, illustrated. Indiana University Press, Bloomington, 1991.
12. McLain R, Poe M, Hurley PT, Lecompte-Mastenbrook J, Emery MR. Producing edible landscapes in Seattle’s urban forest. *Urban Forestry & Urban Greening*. 2012; 11:187-194.
13. Méndez VE, Bacon CM, Cohen R. Agroecology as a transdisciplinary, participatory, and action-oriented approach. *Agro Ecol Sustain Food Syst*. 2013; 37:3-18.
14. Millner N. Food sovereignty, permaculture and the post-colonial politics of knowledge in El Salvador. In: *Alternative food networks in the postcolonial world*. London: Under contract with Routledge, 2016.
15. Mollison B, Holmgren D. Permaculture one: A perennial agriculture for human settlements. Tyalgum: Tagari, 1978.
16. Thorton H. Permaculture Adoption among Malawian Farmers: A Positive Deviance Inquiry. A Capstone Paper submitted in partial fulfillment of the requirements for a Master of Intercultural Service, Leadership, and Management at the School for International Training in Brattleboro, Vermont, USA, 2008.