

# SETTING THE SCENE

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## **What is changing? Is there a problem?**

**M**UCH HAS BEEN ALREADY WRITTEN about our changing world and this book does not delve into the causes, the facts or the solutions for climate change, peak oil and food sovereignty.

These are the “big three” that are taking center stage at this point in history, and for those of you who are not aware of some aspects, here is a short summary of each.

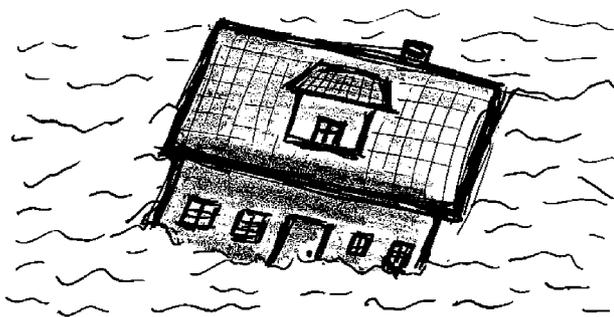
People often focus on one problem, so you find groups solely focusing on peak oil or climate change, or some other ecological problem. We really need to broaden our thinking in a more holistic way, because when you consider human existence on this planet, I believe that the most pressing issues are food sovereignty (some suggest food security), peak oil and then climate change, in that order, although this order is debatable.

While change is all around us, it is our response that is most important. As we all move through this period of transition, we will need to re-skill and adapt, find new ways to solve new problems, and amongst all of this, enjoy our lives and our families.

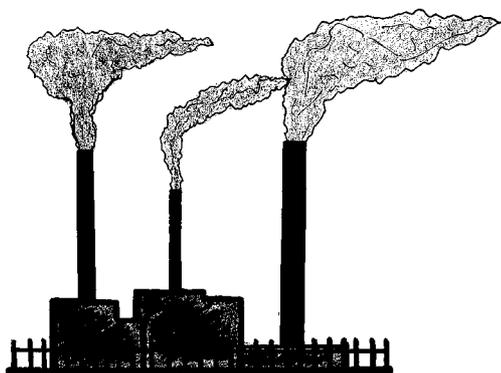
## **Climate change**

When we first learned about our Earth heating up a few decades ago the focus was on “global warming.” There was contention, as there still is today, about whether global warming is caused by humans, enhanced by humans or just a part of nature’s cycles — as historical evidence has shown cycles of ice ages and warmer climates in the past.

As science and observational data developed in recent years, it became more apparent that the focus was about “climate change,” the predictions of severe weather events and extremes, changing rainfall patterns and changing



*Severe weather events will become more commonplace.*



*Fossil fuels are being rapidly consumed, and the gases produced from burning contribute to global warming.*

ments exhibit deliberate inaction, and this would only make the impact of climate change worse.

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If you want to know more about what this means for our future, make a search online for transition towns, peak oil, 100 mile diet, post carbon cities and the relocalization network.

### **Peak oil**

Oil resources are finite — we will eventually run out. We have so far used about half of the known reserves in the world (some scientists suggest more than half), but as more oil is pumped from the ground, what is left gets

temperatures. While a few skeptics still believe humans haven't really had any effect on our climate, it is commonly held that we have increased the rate at which Earth changes are occurring.

From a permaculture perspective, this is a real concern and we need to respond to this in a positive way. We need to grow food plants that are resilient to local change and to develop techniques for an integrated pest management strategy, as the cycles of pests and predators also change with the seasons and some of these are "out of kilter" with each other.

Coupled with our changing weather patterns are increasing levels of pollutants in our atmosphere. We are still pumping tons of carbon gases into the air every day, and this is overlooked by governments and industry, who both seem complacent about the destruction we are doing to the planet.

It would be true to say that some govern-

progressively harder and more costly to access. Fuel prices rise and the cost of synthetic chemicals (both fertilizers and pesticides) increases dramatically as the price of oil increases. This has implications for the cost of food.

Like climate change, large numbers of books and articles have been written about the effect of peak oil on human existence. Our modern society is totally dependent on oil, that relatively cheap fossil fuel that drives the economy, fuels machinery and transport systems, and is used to manufacture a large number of products.

While we still have enough oil and gas and coal to last decades, we need to develop energy alternatives.

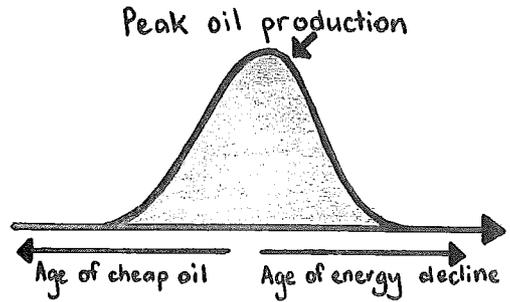
Many writers refer to this period of energy decline as a time when we could wean ourselves off oil and develop longer-lasting energy sources, such as wind, solar and water.

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The concept of peak oil was put forward by Marion King Hubbert in the mid-1950s. He predicted that we would rapidly use the world's vast oil reserves and that the rate of extraction would "peak" when half of the reserves were consumed. We appear to be at the halfway mark, and now we are heading down the slope.

As oil is depleted, goods and products will increase in cost. You might be surprised to find out just how many things we have in our homes that use oil in their manufacture. There will be issues around transport and food production, the cost of goods and services, and production of electricity and heating in our future.

I would like to think that the impact of peak oil can be offset to some extent by new and improved technologies and by changes in the behavior of individuals.



*Peak oil has occurred. We are heading towards the age of energy decline.*



*Bicycle use throughout the world has increased in recent years.*

## **Food sovereignty**

First we need to distinguish between food sovereignty and food security. Food sovereignty is about our control over the food we eat. This means that as we are the growers and consumers of food, we should take more responsibility and be more involved in the policies of food production and its distribution, rather than the large corporations that currently dominate the global food system.

Food sovereignty is about the rights of people to make their own decisions regarding the way they farm and what they grow, and this enables greater choices for consumers.

Food security is about the supply of food: year-round access to sufficient food that is safe and nutritious and can support an active life. It is both about quality and quantity. Food security has four components: availability, access, use and stability.

Food availability relates to production and distribution: how much food can be grown and how it can be moved to other areas. A country doesn't necessarily have to grow food in order to achieve food security, but most countries endeavor to promote agricultural enterprises.

Access to food refers to the ability (or inability) to obtain food. Poverty can limit access to food, so income is strongly correlated with the purchase and allocation of food.

Food use refers to the efficiencies of individuals in metabolizing food, so both the food quantity and quality are important. People need to eat safe foods and to make sure their dietary requirements are met.

The fourth component of food security, stability, is about our vulnerability in regularly obtaining adequate food. It is a reflection of the previous three components (availability, access and use) over time.

As we are losing more arable land each day, and as the world's population keeps growing, eventually there won't be enough food for everyone. This becomes even more severe as our climate changes (and so plant cycles change, and drought or fire may seriously affect some food bowl areas) and the cost of operating machinery (costs of production and fuel) escalates.

No amount of science, genetic engineering, cloning or advances in agricultural techniques and methods will provide the shortfall.

Many people believe that to grow more food on the scale required will ultimately mean the increased use of pesticides and herbicides to control the pests that are just as keen to eat our food as we are.

Furthermore, half of every ton of fertilizer applied to fields never makes it into the plant tissue. It ends up evaporating or being washed into local water-courses or leached through the soil.

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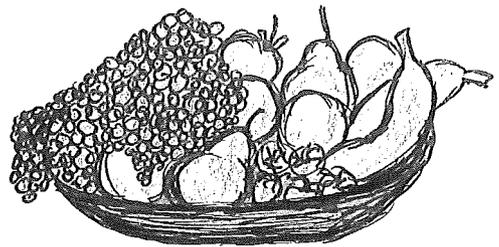
In Australia 440 different pesticides are routinely used, and in 40 years of intense pesticide use we have not eradicated a single pest.

This madness must stop. If we are to have a future, we need to grow our food organically. We need to embrace the concept of food sovereignty and work towards more recognition and support for our farmers and growers. But we also need to address the issue of overpopulation. There just won't be enough resources for everyone, and while governments and countries recognize this problem, few seem to be doing anything about it. Some countries have brought in measures to curb population growth and they have been looking afar to ensure they secure resources to meet their growing needs. Governments move forward in an exceptionally slow way. Any changes that occur will happen at the grassroots level, and this is why the Transition initiative and other similar endeavors have been so successful to date.

The issues surrounding food sovereignty and food security are complex because they involve international trade and economic development, and impact directly on our health and wellbeing.

Some people suggest that there is enough food in the world to feed everyone adequately; the problem is distribution. Others contend that we need to develop strategies for resilience because we just don't know

*Food sovereignty is about controlling where your food comes from and what types of foods you want to consume.*



*We need to learn how to better use foods.*



what our food production capacity will be in years to come. We need to learn how to make better choices when buying food and make better use of leftovers and thus reduce food waste.

Historically, permaculture focused on re-designing our agricultural systems and reintroducing food production into the household economy. This led to excess produce being stored and, in turn, greater food security.

We believed that food security was storing enough away for tougher and lean times, when particular seasonal foods were not available. And while we still hold onto those beliefs, we

*Permaculture promotes home food production.*

also need to see the bigger picture.

The challenge we need to set ourselves is:

- How can we strengthen and expand our current farming sector, as many industrialized countries are experiencing declines in their annual food production?
- How can we support the agricultural sector of our community to produce safer foods?
- How can we make farming a more resilient enterprise because, as we have seen so often, it only takes a severe drought or extensive floods to seriously cripple a country's food production?

These questions are clearly about food sovereignty as they involve economics, markets, policy, politics and people.

The power of community revolves around food. Food is what brings people together.

People get and understand food much more easily than water and energy efficiency, so it is easier to bring people together to discuss growing food. That is where permaculture comes in.

## Sustainability

**S**USTAINABILITY HAS BEEN DEFINED as those activities and resources that can be maintained at a level that won't compromise current and future generations from meeting their needs. This means that renewable resources such as timber, food crops and fish should not be consumed faster than they can be replaced, nonrenewable resources such as oil and gas must not be exploited until they can be replaced by renewable energy systems such as solar and wind, and waste must not accumulate — waste has to be processed, assimilated or reused.

Putting all of this simply, the most common understanding about sustainability is that it is the responsible use of resources, recycling and growing some of our own food.

I think it is reasonable to say many people are not living sustainably. If you think about the way we farm and denude the land, the problems with our river systems, the clearing of bushland for housing estates, mining, logging and increasing levels of pollution, the loss of biodiversity and the current rate of extinction of species, then maybe it's time to reflect on how each of us can work towards making a better world for all.

Once you have reached the conclusion that we are living in an ecologically unsustainable fashion then the solution is obvious: we have to adopt sustainable living. This means that we will be accountable for our actions, that we need to find the right balance between what is available and what we actually need to survive. It will involve being smarter about how we interact with the natural world, and it will mean adopting strategies to minimize our impact on the environment. We will have to work towards both sustainable consumption and sustainable production. "Sustainable living," then, is all about ecological and environmental responsibility.

Trying to live sustainably involves the intertwining of caring for the environment with social and economic considerations. This may mean that

before you buy anything you might consider the manufacturer's policies and operations so that the food, clothes and items you buy are produced fairly and ethically, that their workers are not exploited, and that the resources they use are able to be replaced.

In the social context, it is also about our wellbeing, about having the right to be healthy, about making the right choices, about building resilient communities that have the ability to adapt to change.

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If we adopt the ideals of sustainable living, we can reduce our ecological footprint — the average area of land we require as individuals to support our current lifestyle and existence. Sadly, Australians have a footprint of about 17 acres, the USA has one of 25 acres and the UK, 12 acres. In comparison, developing countries such as India and China have footprints of about 5 acres, and Bangladesh, 1 acre.

Moving towards a sustainable future will require social change and, more importantly, behavioral change. Unless we change our worldview of what is valuable, what is really important for all life on Earth to continue, and determine what we need to change, as individuals, about our lifestyle, then no amount of talking or writing about all of these things will make much difference.

University of New South Wales academic Dr Ted Trainer argues that sustainability is not possible unless there is a zero growth economy. As we enter times of severe scarcity, he sees society moving towards small, highly self-sufficient local economies run by participatory procedures.

This is, of course, completely the opposite of what currently is in place — large corporations endeavoring to make profits for themselves or their shareholders, globalized markets and political parties and countries pushing for continual economic growth.

In this context our ideas about wealth may need to change. Wealth should not be measured by money but by good health, good food, safety and shelter, family and friends, enjoyable work, personal growth, being creative, and having time to pursue all of these things.

It was Winston Churchill who said “History tells us that we will choose the right path — once we have explored all the wrong ones. It’s not enough that we do our best; sometimes we have to do what’s required.”

So much of the “green” work people are doing at present is really a Band-Aid solution — their thinking that setting up a community garden will change consumer society is insufficient. We need to replace the structure of society altogether.

There is a groundswell of people throughout the world who have decided to change. More people are taking public transport, riding bicycles or walking to work; using cloth shopping bags; carpooling; growing their own food — organically and without the use of pesticides and artificial fertilizers; installing solar power systems on their roof; harvesting rainwater to offset their water budget in the home; recycling graywater onto their gardens; buying green products; composting food scraps and plant material; installing water-efficient appliances and fixtures in their homes; recycling their used glass and metals; and building passive solar homes that are energy efficient.

All of these types of changes, all highly commendable, should be seen as stepping stones for the restructure of society.

However, most societies are dynamic and continually changing, and so too is our world. Sustainability implies a stable state (homeostasis) with a balance between what is used and what is replaced.

Maybe our world is changing too fast and too soon for true sustainability to be achieved. What we need is to be able to respond to change and adapt to new situations, and this is the concept of resilience, and this is where permaculture steps in.

I believe that everyone can make a difference, that we can take that first step on a long journey into the future, starting by simply making small changes in our behavior until what we do and think is second nature.

## **Permaculture: designing for a sustainable future**

Permaculture had its origins in the mid-1970s when university tutor and mentor, Bill Mollison, and student David Holmgren developed a range of strategies with the ultimate goal of a *permanent agriculture*, or permaculture.

While the underpinning foundation of permaculture was the production of permanent food crops, it developed into an all-encompassing framework about all aspects of human settlement. It became *permanent culture*.

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“Permaculture” was coined after J Russell Smith’s book *Tree Crops — A Permanent Agriculture*, first published in 1929.

There are many books about permaculture, including a couple of my own, that deal with the basic concepts and principles on which permaculture is based. Throughout this text there will be some elaboration on permaculture design strategies and principles, but the focus here is all about practical solutions, and the relevance of permaculture in our society.

Permaculture is certainly about growing enough food and having a lifestyle that will enable you to become self-reliant (and not self-sufficient as some would believe) and less dependent on the marketplace and agencies outside of our control. But permaculture is more than this: it is about how we live, the types of houses we build, ways in which we can live more sustainably, and how we deal with water, energy, soil and living things. Permaculture is fundamentally a vocation, a way of life. It is about taking responsibility for your life and doing the things you feel are important for your own wellbeing and for the wellbeing of others and to help the environment.

Permaculture is not just about forest gardening or about mimicking natural ecosystems, although at times most of us use these phrases to explain what permaculture is in a simple sentence or two. We forget that permaculture advocates rainwater harvest, graywater reuse, renewable energy systems, and much more, all of which have nothing to do with forest gardens or natural ecosystems. We should always start our discussion about permaculture as a design approach to create edible, functioning, integrated landscapes that support all life, including humans.

Our aim should be to build productive landscapes that will take care of us while we take care of it. Permaculture doesn’t have its own set of techniques, but rather a bag of tricks, tricks that are really principles and strategies to enhance vulnerable ecologies.

As we discussed in the above, concerns like global warming and climate change, food security and peak oil will have major impacts on our future survival. Permaculture is seen by many people as providing strategies to enable us to adapt to a challenging future.

How important it will be to us only time will tell, but there is a huge re-interest in permaculture throughout the world as people begin to understand how our environment is changing and how we are totally dependent on oil.

Permaculture is a sensitive process for designing sustainable systems for living. It is based on a collection of the new and old experiences of huge numbers of people, all over the world. But it is more than a collection — it is about how each item in this collection, be it a technique, a species or a piece of knowledge, can be placed in relation to another to make the system more resilient and better able to meet the needs of the people within it.

Permaculture is often described as strategies to work in harmony with nature (which is true), but it is more than this. It complements nature and it works alongside nature to develop integrated, self-sustaining, resilient systems that can produce all of our needs.

At times we may be able to tweak nature to allow us to improve plant and animal species (mainly for our own needs, of course) and to influence our environment by large-scale reforestation projects, which, in turn, would affect water and energy movement in the landscape.

We would hope that these practices would not only benefit us but our world, while still allowing nature to provide those environmental services to benefit everything.

While permaculture books are not gardening books, gardening teaches us life skills that we can't obtain elsewhere. Gardeners tending their plants have to learn how to respond to the changes in seasons, drought, heat and cold, soil changes and bugs to ensure their plants survive and thrive. We are not oblivious to nature and we can understand what is happening around us, and respond to environmental issues as they occur.

We can be prepared for change as well as being the agents for change. The garden teaches us balance, and permaculture is also about balance — how we integrate our lives with nature, how we juggle input and output to get optimum yields, and how we tend to the needs of all the organisms present in our world so that everything flourishes.

One of the main criticisms of permaculture is the apparent proliferation of introduced plants and animals in gardens, which occasionally escape into



*Stacking plants to increase production is one permaculture strategy.*

bushland. The onus is on people practicing permaculture to carefully avoid oversimplifying the solution to our environmental and food production problems.

The belief in permaculture that natural systems and people systems have a capacity to recover from environmental degradation through the introduction of foreign species is apt, but not at the expense of losing genetic diversity or having to deal with a host of other concerns by ecologists.

An appropriate management response would be to firstly define the remnant values of an area, inclusive of endemic species, and the risk level of dispersal of an introduced species.

Bringing these issues to light is not intended to deny permaculture its capacity for adopting a wider view and therefore greater community acceptance. Ecologists, in general, would appreciate permaculture taking a self-critical approach when assessing the risk of introducing any organism into a foreign environment.

From an ethical perspective we need to remind ourselves of the importance of having an ecocentric view. This means carefully considering the intrinsic worth of all living things and their right to self-perpetuation, free from human interference. Hopefully, being ecocentric in our approach means greater cultural acceptance of permaculture. An ecocentric worldview is something that legal regulation and human-based environmental education programs have failed to achieve.

And this is where permaculture steps in again: it's about design. Permaculture practitioners endeavor to design functioning ecosystems with positive enhancements to all the organisms present.

Permaculture designs do take time to establish, but once they are implemented they become more and more productive. A larger range of useful products becomes available, the level of maintenance decreases and the system becomes more complex.

Permaculture, and the ecological framework it embraces, will give people hope and enable them to develop skills that allow us to rise to the challenges of a changing world.

## **Permaculture design fundamentals**

There are many versions of the basic principles on which permaculture is based. David Holmgren's 12 principles have been almost universally adopted,

and have more rigor than Bill Mollison's principles, which are discussed in earlier permaculture works.

Discussion on these overarching principles that guide people along their permaculture journey can be found elsewhere. I want to focus on the design process itself and what steps are taken to distil and condense the ideas and concepts that make permaculture designs so unique.

When thinking about how designs are undertaken, there are six fundamentals.

### **1. Observe and analyze**

The first step is to observe, collect and collate data. This may include soil and water analysis, local climate, water movement in the landscape, sun angles for each season, and the wants and wishes of the human inhabitants.

From this information we sort, group and analyze trends, make predictions and determine priorities.

### **2. Consider needs and functions**

All of the things that are placed in a design are called elements. We need to think about the needs, requirements, functions and products for each of the elements in the system.

This means identifying which special requirements the various plants and animals have, how their waste can be used as a resource, what functions we want the animals to perform, how each element can complement many others, and how human needs can be met in the design we are proposing.

### **3. Use patterns and make connections**

The third step of the design process asks: how can we integrate all of this into a holistic system, involving communities of plants, animals and people? This is where we start to use concepts such as edge, stacking, guilds and zones.

We endeavor to determine ecological interactions between all of the living components and examine land use patterns to develop strategies.

For example, we may consider the types and shapes of garden beds for maximum production, how we can place plants to grow as much food as possible without jeopardizing their needs for sunlight, nutrients and water, and where we place everything in areas of different intensity.

#### **4. Manage energy and use local materials and resources**

Permaculture design is essentially about energy. We consider how winds and storms can be deflected and their effects minimized by sector planning, we think of ways to harvest and store energy and water, we determine what recyclable materials and renewable energy systems we can access and use (with consideration of the embodied energy of these materials), and then we consider what local resources are available.

#### **5. Increase biodiversity and productivity**

Our ultimate aim should be to nurture soil to increase both food and non-food production and to increase the biodiversity and biomass of the cultivated ecosystems we develop. This will involve a whole host of techniques and strategies, including integrated pest management; growing, harvesting and storing food and materials; and replenishing spent nutrients as plants are removed from the system.

#### **6. Design for catastrophe**

Natural disasters have always been with us, so we should prepare, within reason, for flooding, drought, fire and even earthquakes. While we don't really know how our future will unfold, we can make some very good guesses of what might happen.

Simple observations of what is happening now will reinforce our resolve to address pest and plague, energy decline, severe weather and extremes, nutrient depletion, declining freshwater sources, pollution and loss of arable land.

Our designs should include contingencies to counteract possible future scenarios and to enable resilience in the systems we construct.

Sometimes you need to be the change you want to see happen.

You know what they say about the longest journey starting with the first step, so don't underestimate the power of one. I remember Bill Mollison once said (maybe not verbatim), "I can't change the world all on my own. We'll need at least three of us."