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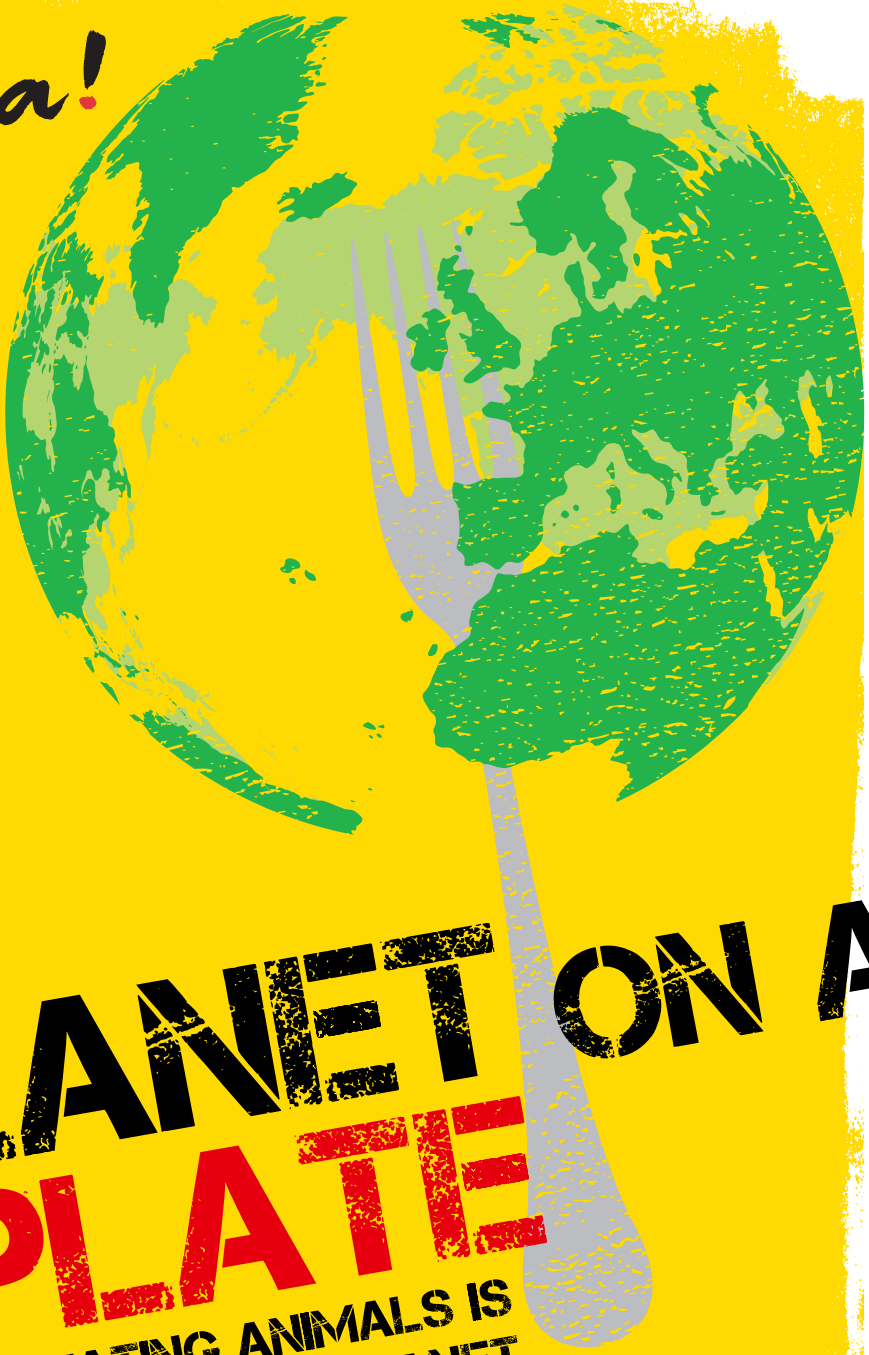

PLANET ON A PLATE

WHY EATING ANIMALS IS DESTROYING THE PLANET

By Tony Wardle,
Associate Director, Viva!

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PLANET ON A PLATE

INTRODUCTION

Planet on a Plate provides a worrying introduction to the climatic damage caused by large-scale meat, dairy and fish eating across the world. In 2009, some 55 billion food animals were slaughtered, 80 per cent of which were reared in obscene, intensive factory farms. These simple facts are at the heart of almost all of the world's huge environmental problems, any one of which could eventually prove catastrophic for the human species but are already destroying other species at an unprecedented rate.

This well-researched insight explains what we as individuals can do to reduce this relentless destruction. Forests are being felled on an industrial scale, the extinction of plant and animal species is accelerating whilst topsoil is being lost or degraded. Air and water pollution are increasing, fresh water is rapidly reducing and deadly superbugs threaten our future. At the same time, the world's oceans are being raped and poisoned at an unsustainable rate.

All these problems are potentially catastrophic but none more so than global warming – and all stem largely from the same cause.

Increasing public concern is matched by a feeling of impotence. People are increasingly adopting those practices they are asked to – recycling, using less plastic, switching off lights, and so on – but they instinctively know that this is tinkering at the edges and are looking for leadership. They aren't getting it!

They are simply not being asked to do the one thing that could have an immediate and massive impact – change their diet! By giving up meat and fish, and preferably dairy products too, a person massively reduces his or her contribution to most environmental calamities because livestock are at their heart.

Tony Wardle is a journalist, writer and award-winning TV producer and helped to found Viva!. He is now its associate director and edits its magazine *Viva!Life* and *Veggiehealth*, the magazine of the Vegetarian & Vegan Foundation (VVF). He co-authored *The Silent Ark* with Viva! and VVF founder, Juliet Gellatley. Tony Wardle is author of a 50-page referenced report on the environment called *Diet of Disaster*, from which much of this information was taken. It is available from Viva! for £3.50 (inc p&p).

Even with climate change, livestock produce more global warming gases than all the world's different forms of transport combined.

Other important benefits of changing your diet are to end your part in the obscene suffering that most farmed animals endure and to improve your chances of leading a healthier, longer life.

Animal agriculture is grossly unsustainable and yet not only continues to help destroy the planet but is subsidised with public money to do so. The agent of this destruction is increasingly factory farming, so intensive that it demands 70 per cent of the world's agricultural land for grazing or to grow fodder crops.

The animal protein industry is the biggest and most powerful industry on earth and exerts enormous influence over all governments. Its products are as much commodities as motor cars or TVs and essential components in the global political philosophy of constant growth. This places the onus to act on us as individuals.

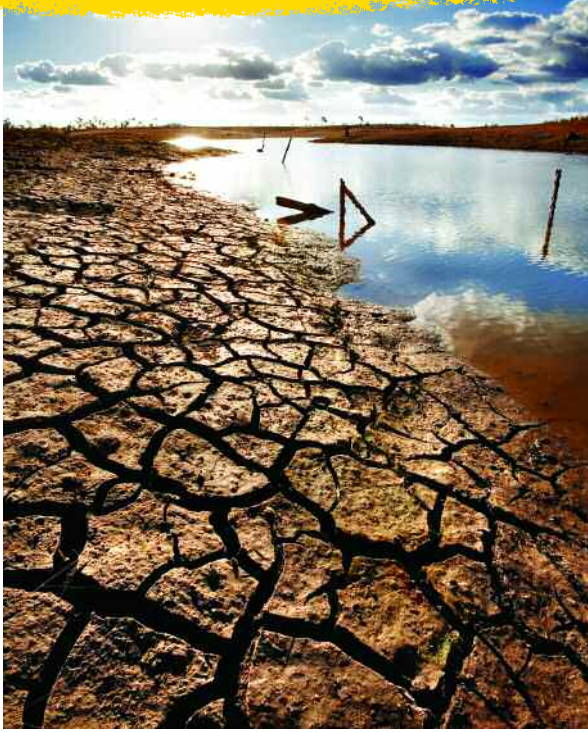
The inefficiency of livestock production is starkly illustrated by the fact that 10 hectares of land can provide enough meat to feed only two people, maize to feed 10 people, wheat and other grains for 24 people and enough soya to feed 61 people.

The world has now run out of agricultural land and the future growth of animal agriculture is based on invading what few wildernesses remain and by the dangerous practice of temporarily increasing fodder yields with ever-more poisonous pesticides and nitrogen fertilisers. It is insane.

About 400 different chemicals are used and 4.5 billion litres of pesticides are sprayed onto UK land every year. They not only remain in foodstuffs but accumulate in the soil and leach into waterways. Some are carcinogenic while others promote allergies, birth defects and various health problems. This terrifying situation is increasingly being mirrored across the world.

The dominance of meat and dairy cannot continue and by the time governments are moved to act to reduce consumption it may be too late, as this guide will make clear. You don't have to wait for them though – you can act today!

GLOBAL WARMING



Carbon dioxide (CO_2), methane and nitrous oxide are naturally occurring gases in the atmosphere. They act like the glass of a greenhouse by trapping the sun's heat and reflecting it back to earth. This phenomenon is what makes the world habitable, keeping the atmosphere about 33°C/92°F higher than it would otherwise be.

Animal agriculture adds significantly to these background levels and increases global warming. In 2006, the United Nations Food & Agriculture Organisation (UN FAO) identified the scale of this contribution – livestock are the second biggest source of global warming gases, producing 18 per cent of the total. This compares with a 13.5 per cent contribution from all the world's transport systems combined.

As polar ice caps melt and the world's oceans warm and expand, flooding will become a major problem. Britain's Hadley Centre for Climate Change predicts that 200 million people will eventually be at risk, including some entire island countries. About one third of all agricultural land will permanently disappear under water, dramatically increasing the existing pressure on food production.

Mass migrations of millions of landless people presents a potential environmental and humanitarian disaster as well as threatening serious conflict.

Permafrost regions of the world contain within their frozen soil an incalculable amount of methane – billions of tons. As temperatures rise and the soil defrosts, this gas will be released and accelerate the pace of global warming. It is a similar story with the sea bed of the Arctic Ocean.

The more the earth warms, the more methane will be released and this 'positive feedback' could mean that global warming becomes unstoppable and uncontrollable.

The gas most damaging for the environment is CO_2 because of the quantities produced. The second most damaging is methane, 21 times more effective at trapping heat than CO_2 and which remains in the atmosphere for nine to 15 years. Nitrous oxide is the third most damaging, has 296 times more global warming potential than CO_2 and retains its effect for 114 years.

Livestock and the processes to feed, transport, kill and turn them into meat and dairy are responsible for considerable amounts of all three gases. For example the UN FAO reported the following.

> *The bulk of the world's crop production is fed to animals and requires large-scale application of nitrogen fertilizer to boost yields. This produces nitrous oxide whilst*

fossil fuels used in the manufacturing of fertilizer may emit 41 million tonnes of CO_2 per year.

Livestock produce 65 per cent of all nitrous oxide emissions due to human activities, mainly from manure – both directly and when used as manure.

Concentrations of CO_2 are higher than at any time in the last 650,000 years, methane has doubled since pre-industrial days and average temperatures have increased by 0.8°C (2005).

In 2005, the University of Chicago examined the amount of energy used by different food industries. The worst offender is red meat followed by fish (largely due to industrial methods of catching), dairy, then poultry. Vegan diets are the least harmful.

The Washington-based World Watch Institute says:

"It has become apparent that the human appetite for animal flesh is a driving force behind virtually every major category of environmental damage now threatening the human future."

As developing countries such as China emulate the West's diet, the situation is accelerating away from us. According to researchers in the Profetas study, set up by the Dutch universities of Twente, Waganingen and VUA:

"This trend must be reversed on a global scale" – by moving from meat protein to vegetable protein alternatives.

A joint study by Amsterdam University and Loma Linda University, California, found that, on every count, meat, dairy and fish were environmentally more damaging than vegetable protein.

On average, 10g of vegetable protein was

needed to produce 1g of animal protein but the rate varied from animal to animal. Broiler chicken conversion rate was 16 per cent (nearly six to one); for pork it was nine per cent (11 to one) and beef, six per cent (17 to 1).

This inefficient form of agriculture is why livestock now demand 70 per cent of all the world's agricultural land as grazing or for fodder production.

For fossil fuel energy use by livestock, the difference in Europe is between six and 20 times greater for meat and dairy than a vegan diet. For fish and fish processing it is between 20 and 44 times greater than for vegetable protein.

The world is threatened not just by increased CO_2 but by the planet's reduced ability to absorb it and hold it captive in 'carbon sinks'. Again livestock production carries much blame.

One of the greatest carbon sinks is soil itself and as the hooves and overgrazing of animals degrade it, the CO_2 it holds captive is released. It then becomes incapable of absorbing further CO_2. Forests constitute another huge carbon sink and a similar process is happening as a result of felling.

According to the Global Climate Project in Canberra, 50 years ago, 600kg of CO_2 was absorbed for every tonne produced but in 2006 it was only 550kg – and reducing.

There is a scientific consensus that things are happening much faster than predicted – three times faster, according to the US National Academy of Sciences.

A major worry expressed in the journal, *Proceedings of the National Academy of Science*, is that once average temperatures rise by 3ºC – well within the predicted range – the atmospheric CO_2 currently absorbed by plants will be outweighed by the CO_2 produced from the soil in which they stand as a result of organic decomposition.

A far-sighted report by European meat industry vets written in 1990 said the unsayable:

"We are not able to destroy the Earth but we might change the climate in an unpredictable direction – at worst endangering our survival as a species".

Energy used on livestock farms for heating, lighting and various forms of equipment release 90 million tonnes of CO_2 per year.

Professor Peter Cox of Exeter University reported to the Royal Geographical Society in 2007 that global warming could be unstoppable by 2050:

"You cannot mitigate yourself out of this problem… The choice is between a damaged world or a future with a seriously damaged world."

This damage will include:

- 350 to 600 million people in Africa suffering water shortages;
- a fall in agricultural yields of up to one half;
- a spread of eight per cent in arid areas;
- one billion people in Asia suffering from water shortages as Himalayan glaciers melt and crop yields fall;
- 77 million people in Latin America suffering water shortages as tropical rainforests become savannah;
- storms, tempests and wide-scale flooding happening almost everywhere.

DEFORESTATION AND LOSS OF BIODIVERSITY

Forests contain 60 per cent of the world's flora and fauna, play a vital role in climate regulation and are an important sink for carbon. Livestock are the major cause of deforestation and therefore of biodiversity loss, also.

During the 1980s, 15 million hectares of tropical forest were destroyed every year. In the 1990s the devastation accelerated and between 2003 and 2004, 700,000 hectares were destroyed in Brazil alone – an area the size of Belgium.

Forests have continued to be lost at a rate of 8.9 million hectares annually in the decade to 2000 and 7.3 million hectares annually between 2000 and 2005.

The process of slash and burn – cutting down and burning – unlocks centuries' worth of stored CO_2 in only minutes and is responsible for 20 per cent of human-caused (anthropogenic) CO_2 emissions.

Clearing forests for grazing using slash and burn may emit an astonishing 2.4 billion tonnes of CO_2 per year.

The overwhelming reason for deforestation is cattle ranching and the growing of fodder crops.

It has been estimated that just one hamburger made from Costa Rican beef results in the eradication of one large tree, 50 saplings, seedlings from some 20-30 different species, hundreds of species of insects mosses, fungi and microorganisms.

Europe's livestock increasingly depends upon soya, with some 18 million tonnes being imported annually from the Amazon. It finds its way into just about every piece of chicken, burger, cheese, sausage or bacon sold across the European Union (EU). Between 2004 and 2005, 1.2 million hectares were planted with soya in the Amazon.

Currently, 70 per cent of cleared Amazon rainforest is used for the grazing of cattle while most of the remaining 30 per cent is used for growing soya animal feed.

Sadly, deforestation is a game without end as the soils of rainforest land are thin and after a few years of being saturated with agrochemicals they become unproductive and the process of clearing and burning is repeated. It is a problem that is happening across the world.

Deforestation is a policy not a mistake and the profits from livestock are the driving force behind it.

The Millennium Ecosystem Assessment (MEA, 2005) estimates that species are disappearing 100 to 1,000 times faster than should be expected on the basis of fossil records. It believes that one-third of all amphibians, a fifth of mammals and one-eighth of all birds are now threatened with extinction.

Valuable sources of sustainable timber, food, clothing and potential medicines are being eliminated and essential contributions to recycling of nutrients, pollination, seed dispersal, climate control and purification of air and water are being trashed without a second thought. This is much more than simply a moral issue.

OVERUSE OF FRESH WATER

Only 2.5 per cent of all water on the planet is fresh and 70 per cent of this is locked up in glaciers and permanent snow. It was a slow process of summer melt and winter renewal that fed rivers and aquifers the world over. With global warming, glaciers are melting at an unprecedented rate and the water is simply running into the sea.

Currently, more than 2.3 billion people in 21 countries live in areas which are classified as 'water stressed' while a further 1.7 billion live in areas of scarcity. More than one billion people have little access to clean water. It is in these areas where most agricultural expansion and population growth are taking place and 64 per cent of the world's population will live in 'water stressed' areas by 2025.

An International Water Management Institute assessment in 2000 estimated that one-third of the world's population will live in areas of 'absolute water scarcity'. These include Pakistan, South Africa and large parts of China and India.

Agriculture is the biggest user of fresh water, demanding 70 per cent of all that is available while in many third world countries the figure is as high as 85 to 95 per cent.

WATER, WHEAT AND BEEF

All farming needs water but the amount of water needed to produce a pound of beef is far greater than that required for a pound of wheat.

Amount of water required to produce 2.2 pounds of wheat: 2,113 pints (1kg of wheat: 1,000 litres)

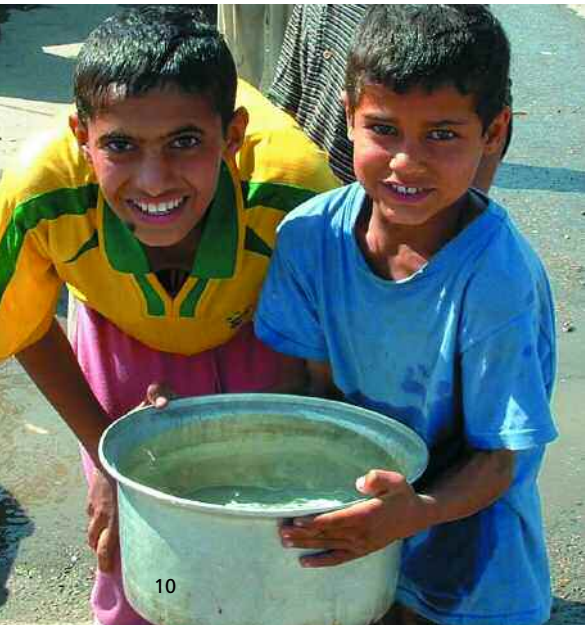
Amount of water required to produce 2.2 pounds of beef: 211,000 pints (1kg of beef: 100,000 litres)

Agriculture also accounts for 93 per cent of all depletion – drawing water unsustainably from underground aquifers, for example.

Water constitutes 60 to 70 per cent of the body weight of most animals and a cow will drink up to 127 litres a day, a pig 46.7 litres and 100 chickens up to 62 litres. The water used for cleaning, processing and slaughtering chickens can amount to 15 litres per kilo – more than 60 litres per bird.

The University of California studied water use in their state, where most agricultural land is irrigated, and said it takes between 20 to 30 gallons of water to produce one edible pound of vegetables such as tomatoes, potatoes and carrots, yet takes 441 gallons of water to produce a pound of beef.

It is coincidence that in return for loans, the International Monetary Fund (IMF) requires poor countries to privatise resources – selling them to the highest bidder. This, of course, includes water and the buyers are invariably multinational agribusinesses involved in livestock production – ensuring their raw materials for future expansion.



DESERTIFICATION

The world's topsoil is its lifeblood and without it almost nothing will grow, yet it is disappearing or degrading almost everywhere animals are farmed. Grazing and denaturing due to the excessive use of pesticides and fertilisers for fodder crops are largely responsible.

Forty per cent of all agricultural land has been degraded in the last century because of compaction by the hard hooves and heavy bodies of animals along with nutrient depletion and pollution.

The UN FAO maintains that about 20 per cent of pastures and rangelands are degraded in the more fertile areas of the world but in the arid and semi-arid lands, which girdle one third of the Earth, the figure is as high as 73 per cent.

Former rainforest land is particularly prone to deterioration as the soil is comparatively thin and cattle and other grazing animals make short work of breaking down the soil's structure.

Once felled, forests no longer soak up heavy rainfall which instead floods off the land carrying topsoil with it. When this silt reaches the ocean it can smother much of the life there.

Loss of evaporation through the trees' leaves eventually reduces water vapour in the atmosphere and prompts a drying of the climate to such a degree that rainfall can virtually cease. The end result of these different factors is desert. Those responsible generally move on and repeat the process elsewhere.

When drought strikes and crops fail, as in the appalling Ethiopian famines of the early 1980s, there is enormous sympathy in the affluent world. Few are aware – or are made aware – that their dietary practices play a part.

The Sahel region, of which Ethiopia is part, has suffered greatly from overgrazing by cattle. Herd sizes were increased dramatically when deadly sleeping sickness disease (trypanosomiasis) was chemically controlled and far more cattle were grazed than the land could sustain. The resulting land degradation resulted in famine. It was not an act of nature but the result of political and economic decision making.

The main grazing animals are increasingly cattle in order to fuel the hamburger culture but as land degenerates and becomes unsuitable for cattle, goats and sheep are increasingly taking their place. Their appetite for almost any vegetation ensures virtually complete destruction.

The most effective way of slowing down soil degradation and desertification is to reduce overgrazing, deforestation and intensive agriculture. Nothing will do that quicker than going vegan.

ANTIBIOTIC POLLUTION

There is a general belief that antibiotic resistant bacteria and superbugs stem from the over-prescribing of antibiotics by doctors. Their global use in livestock farming for treating diseases (therapeutic), preventing diseases (prophylactic) and simply to make animals grow faster (growth-promoting) is rarely mentioned.

Despite an EU-wide ban on growth-promoting antibiotics from January 1, 2006, the total quantity of antibiotics has barely altered, there having been a commensurate increase in 'disease prevention' drugs. These have had a similar growth-promoting effect as the banned drugs!

In the UK, these prescription-only antibiotics are even advertised to livestock farmers for their growth-promoting properties in defiance of an EU Directive!

Farm use of antibiotics has caused antibiotic resistance to medical drugs in several types of food poisoning (eg salmonella, campylobacter and Escherichia coli (E coli)) and drugs of last resort for treating strains of the hospital superbug, vancomycin-resistant enterococci (VRE), which infects wounds and incisions.

Resistance in food poisoning bacteria has come about mainly from using antibiotics routinely to prevent disease in animals while in the case of VRE, it came from using growth-promoting antibiotics.

The issuing of detailed reports on the threat to human health from antibiotic use has continued and so has ignoring of them, such is the power of the livestock lobby – see Richard Young's *The Use and Misuse of*

Antibiotics in UK Agriculture parts 1 to 4 from www.soilassociation.org). It was followed by three further reports.

In 1997, the World Health Organisation (WHO) issued a report calling for a restriction in the use of antibiotics in farmed animals. In 1998 the National Research Council & Institute of Medicine was even stronger in its condemnation. In 1999, the UK government's own Advisory Committee on the Microbiological Safety of Food also issued a massive report and agreed with the WHO.

But the drugs have kept flowing and the scale of antibiotic resistance has grown.

Sandy Macara, former chairman of the British Medical Association, set out the scale of the problem:

"There is a real prospect that the majority of our antibiotics could become impotent for the purposes upon which we have relied upon them for 40 years. This would transform society, essentially taking us back to prewar days when infectious diseases were prevalent. It would also place an extremely high risk on invasive surgery such as hip replacements."

A team of researchers reporting in the journal *PLoS Medicine* in 2007 found evidence that animal agriculture is the main source of deadly mutations.

Antibiotics and resistant bacteria are found in the air and soil around farms, in surface and ground water and in wild animal populations and on much of the meat produced by these places. When Denmark banned growth-promoting antibiotics there was a drop in the prevalence of resistant bacteria in all these areas.

Methane from animal manure: 18 million tonnes per year.

Across the third world, where intensive animal farming is exploding fastest, antibiotic use is even more unregulated than it is in the UK. Residues find their way into the environment and through the passing of genetic material from one bacterium to another, antibiotic-resistant strains can pass on their resistance to other, unrelated bacteria.

The superbug methicillin-resistant Staphylococcus aureus (MRSA) is already a high-profile, persistent problem in many UK hospitals. Now a new strain of MRSA (identified in 2004) has developed amongst intensively farmed pigs, chickens and other livestock in The Netherlands.

The UK government says it is committed to reducing the amount of antibiotics used in UK farming yet veterinary use of antibiotics has increased by 3.5 per cent, from 405 tonnes in 1999 to 419 tonnes in 2005, despite a fall in overall livestock numbers. In the UK, over 90 per cent of veterinary antibiotics are used in pig or poultry production.

CHEMICAL POLLUTION

Pollutants result from rearing and feeding animals but also from processing them. Livestock excreta contains considerable amounts of nitrogen, phosphorous, potassium, drug residues, heavy metals and pathogens (disease causing bacteria) and these pose serious threats to the environment.

In 2004, it is estimated that 135 million tonnes of nitrogen and 58 million tons of phosphorous were produced globally from manure – cattle accounting for 58 per cent, pigs around 32 per cent and poultry seven per cent. To this has to be added the vast amounts of nitrogen used as chemical fertiliser on fodder crops.

Of these nutrients the most pressing concern is over nitrogen which, although a nutrient essential to all forms of life, is now produced in massive overabundance. The amount has doubled since the 1940s because of huge quantities used to grow animal fodder, the burning of fossil fuels and large-scale clearing of forests.

Excess nitrogen can seriously damage the environment, destroying heathland and many grasses. In humans it can produce blue baby syndrome, a potentially fatal destruction of red blood cells in new-born children.

The gases nitrogen produces – nitric oxide and nitrous oxide – play a major role in causing smog, ozone depletion, global warming and acid rain – for which they carry 65 per cent of the blame.

Only 50 per cent of nitrogen fertiliser is taken up by vegetation, the remainder evaporating or being washed into groundwater or watercourses, posing one of the greatest threats to the aquatic environment.

Water plants and algae can grow almost uncontrollably. When they die and decay, the water can be robbed of oxygen, suffocating fish and other organisms (eutrophication). The damage extends to estuaries and inshore waters too, where most fish breed.

Partly enclosed seas such as the Baltic Sea, Black Sea and Mediterranean have been hit hard by eutrophication and a dead zone has developed in the Gulf of Mexico off the mouth of the Mississippi River. In fact, 150 of these dead zones have been identified – some the size of small countries. The United Nations Environment Programme (UNEP) believes they will soon damage fish stocks even more than overfishing.

It is estimated that global livestock produce in excess of 13 billion tonnes of excreta a year. Apart from its threat to the environment, more than 40 diseases can be caught by humans from manure.

Tony Wardle's detailed report on the environment – *Diet of Disaster* – is available from Viva! for £3.50 (inc p&p).

HEAVY METAL POLLUTION

Heavy metals are fed to livestock at low concentrations to counter health problems or to act as growth promoters. They include copper, zinc, selenium, cobalt, arsenic, iron and manganese. Animals can absorb only 5 to 15 per cent of the metals they ingest and the remainder is excreted into the environment.

Methane from the digestive processes of goats, sheep and particularly cattle: 86 million tonnes a year.

PESTICIDE POLLUTION

It is the enormous demand for fodder which spurs most pesticide, fungicide and herbicide use. This process of dousing the land with chemicals is destroying its fertility and contributing to land degeneration, effectively reducing the amount of land available. It is a self-defeating policy that appears to concern few in government or agriculture.

While usage has decreased slightly in the EU, several hundred different pesticides are currently used in agriculture around the world. The two most important groups are organochlorine and organophosphorous compounds. They can contaminate soil, water and air, affect non-target creatures and damage the proper functioning of ecosystems.

Biomagnification describes how pesticide residues concentrate the further up the food chain you go, resulting in huge concentrations in top predators and humans. This can cause cancers, tumours and lesions, disrupt the immune and endocrine systems,

affect reproduction and result in birth defects. Agent Orange, used in Vietnam, was an organochlorine defoliant.

A recent study based in Germany found that areas near to farms using pesticides show up to six times less biodiversity than habitats surrounding organic farmland.

What amounts to almost unbridled chemical warfare has led to 4.5 billion litres of pesticides being sprayed onto UK land every year.

CONCLUSION

As the world's resources sink and the environmental problems soar leading scientists, ecologists and experts are repeatedly calling for decisive action before it is too late. There is one thing within your power that will have a huge and immediate impact in protecting our planet, and that is to change your diet. Stop eating meat and fish today – and give up dairy products. Any step you take is important, and you can immediately begin to remove yourself from the cycle of exploitation and destruction. Even better, raise your voice in protest, join with others such as Viva! and actively fight against the ruthless corporations who will allow greed to destroy the globe.

HOW IS YOUR FOOD GROWN? Organically, which involves animal manures, a by-product of the slaughterhouse industry, or with chemical fertilisers and pesticides? All these contribute to global warming, pollution, land devastation, deforestation, overuse of water and energy resources and the displacement of food from poorer countries – where people are malnourished – to the rich West.

THE VEGAN-ORGANIC NETWORK

and affiliated farmers provide the only viable alternative.

Vegan-Organic Network (VON) promotes truly sustainable ways of growing food: vegan permaculture, animal free home growing and stockfree organic (animal free) farming. Our magazine *Growing Green International*, reports on worldwide ethical farming and growing. VON provides support and information for individuals and through *Stockfree Organic Services*, promotes animal free methods to farmers. Thus we are working towards the day when truly ethical food will be available to all.

Want to know more? Want to study and practice stockfree farming? Need financial help to do so?
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Please became a member and help promote our work.
Find out more and join online: www.veganorganic.net

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Belatedly, the world has started to focus on the environment and talk, if not action, on global warming is everywhere. As a consequence, all the world's other pressing environmental problems are largely being ignored. Central to all of them is our diet. Eating meat, dairy and fish is literally destroying the Earth. This guide makes clear how little time is left for action and how simple that action can be.

CHANGE YOUR DIET – CHANGE THE WORLD

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