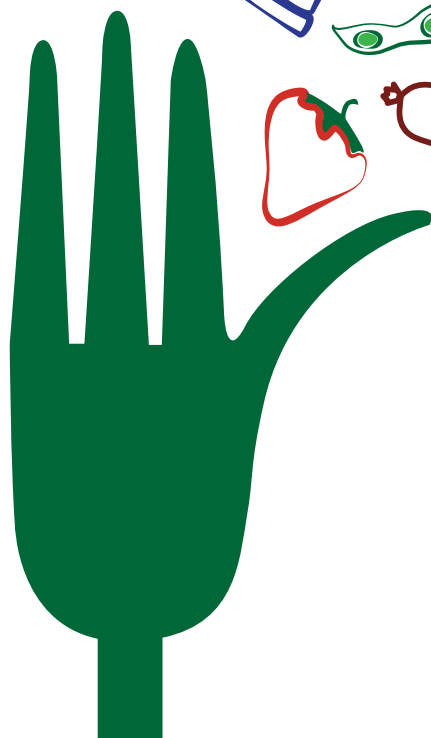


# Our Planet

UN SECRETARY-GENERAL BAN KI-MOON ZERO HUNGER NOROVYN ALTANKHUYAG GREAT OPPORTUNITY  
JOSÉ GRAZIANO DA SILVA FOOD LOSSES MEAN HUNGER ERTHARIN COUSIN SOLVABLE PROBLEM

Reduce your foodprint



THINK  
EAT  
SAVE



**Our Planet** — the magazine of the United Nations Environment  
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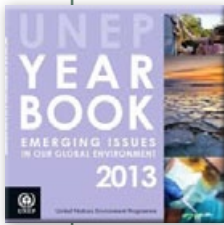
## UNEP 2012 Annual report

The 2012 Annual Report details UNEP's wide-ranging activities in what proved to be the most momentous year in the organization's history. At Rio+20, Heads of State and governments decided to strengthen and upgrade UNEP; this was followed by the adoption of a resolution at the 67th session of the UN General Assembly later in the year that granted UNEP universal membership and called for increased resources.

The report details UNEP's work across its six thematic areas: Climate Change; Disasters and Conflicts; Ecosystem Management; Environmental Governance; Harmful Substances and Hazardous Waste; Resource Efficiency; and Sustainable Consumption and Production. It also highlights the key role UNEP plays in providing environmental leadership to the UN system and the international community, showcasing dozens of collaborative initiatives that drive the agenda of international environmental governance.

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## UNEP Year Book 2013 - Emerging Issues in Our Global Environment

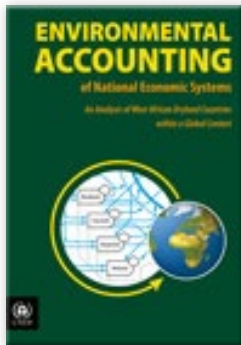
Rapid change in the Arctic resulting from climate change is threatening ecosystems and providing new development opportunities including easier access to oil, gas and minerals. The UNEP Year Book 2013 shows that changes in the Arctic will have consequences far beyond this fragile region and that they require an urgent international response.

The volume of chemicals in the world continues to grow, with a shift in production from developed to developing countries. To meet the goal of producing and using chemicals in ways that minimize significant impacts on health and the environment by 2020, we need to step up efforts to reduce the use of toxic chemicals, promote safer alternatives and build capacity for sound chemicals management. Adequate information for minimizing chemical risks is essential to support these efforts.

The UNEP Year Book series examines emerging environmental issues and policy-relevant events and developments. It also presents the latest trends using key environmental indicators.

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## Environmental Accounting of National Economic Systems: An Analysis of West African Dryland Countries within a Global Context

Over the past several decades, increasing human population, economic development, and emergence of global markets, have resulted in immense pressures on natural resources, and these pressures are expected to intensify further over the next few decades. It is essential for sustainable policy that the costs of degradation of ecosystem services associated with development be incorporated into decision making and are not considered to be free. There is a growing need to include natural capital and ecosystem services in national accounting.

This report presents an environmental accounting framework based on a biophysical approach to quantifying values of ecosystem services. The foundation of the method (emergy analysis) is based on our understanding of energy and material flow through systems. Accounting for basic physical flows of energy and materials transformed in both environmental and economic processes permits a direct linkage with monetary valuation of environmental services and natural capital.

Detailed environmental accounting of 134 national economies is presented, with a strong emphasis on the dryland countries of West Africa, where the rural poor are especially dependent on environmental resources. Environmental accounting is used for: (i) understanding the comparative resource basis of nations, (ii) determining the value of global losses of natural capital, (iii) quantifying links between a nations resource basis and indicators of human welfare, and (iv) examining implications of biophysical valuation on international trade and debt.

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## Elephants in the Dust - The African Elephant Crisis

The African elephant, the largest remaining land mammal on the planet, is facing the greatest crisis in decades. Reports of mass elephant killings in the media vividly illustrate the situation across many African elephant range States. This Rapid Response Assessment provides an overview of the current state of the African elephant alongside recommendations for action to ensure its protection.

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Message of the UN Under-Secretary-General  
and Executive Director, UNEP  
**Achim Steiner**

Every year on June 5<sup>th</sup>, people across the planet celebrate the United Nations World Environment Day. It is a day for action. Hundreds of thousands of activities take place in virtually every country in the world to improve the environment now and for the future.

This year's theme focuses on food waste and food loss. Think.Eat.Save.Reduce Your Foodprint is the new campaign that UNEP and the Food and Agricultural Organization of the UN, in conjunction with a rapidly growing list of partners from the public and private sector, launched earlier this year. It draws attention both to the issue and the absurdity that high volumes of perfectly edible produce are never making it from the farm to the fork.

Indeed, at least one third of everything we grow on this planet is lost between the field and the consumer. It is an ethical, economic and environmental issue given the enormous waste of energy, water, fertilizers and other inputs as a result of food that is produced but never eaten.

Each one of us can do something about this and that's why, through the Think.Eat.Save. Reduce Your Foodprint campaign, we invite people across the world to join us in an effort to both raise awareness and to take practical actions whether in your home, whether on your farm, whether in the supermarket, in a canteen, in a hotel or anywhere else where food is prepared and consumed.

This year's global host for WED 2013 is Mongolia, one of the fastest growing economies in the world and one that is aiming for a transition to a green economy and a green civilization. It is not a big waster or loser of food, but the traditional and nomadic life of many of its people does have some ancient answers to the modern-day challenge of food waste.

The Mongol general Chinggis Khan and his troops utilized a traditional food called borts to gallop across Asia without depending on elaborate supply chains. Borts is basically concentrated beef equal to the protein of an entire cow but condensed and ground down to the size of a human fist. This remarkable method of food preservation, without refrigeration, meant a meal equivalent to several steaks when the protein was shaved into hot water to make soup.

And the Mongolians have other secrets to share that may contribute to preserving and thus not wasting food – the aaruul, for instance, is a form of dried curds that can last as a perfectly healthy dish or snack for years, again without refrigeration.

UNEP has, in advance of WED 2013, been compiling similar examples of traditional and indigenous knowledge from familiar techniques such as pickling or salting fish to the smoking of meat, the drying of fruit and other techniques employed by the Inuits to preserve seabirds which are served later at feasts and weddings.

Mongolia is also aiming to green not only its mining sector but its energy and agricultural systems while developing its landscapes and national parks – home to such rare and iconic species as the [przewalskii horse](#) – for eco-tourism.

Join us on June 5<sup>th</sup> in Mongolia or wherever you are in the world and organize an event. It can be in your home, your school, your company and your community. Share what you are up to including photographs via the dedicated website – [www.unep.org/wed](http://www.unep.org/wed) And above all, Think Eat Save. Reduce Your Foodprint.

# Great opportunity



**NOROVYN ALTANKHUYAG**  
Prime Minister of Mongolia



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2013 marks the 40th Anniversary of World Environment Day. The date is significant for those who are working to save the environment as it was the first occasion on which world leaders met to discuss issues of global environment and development. It represents an important reminder that climate change continues to present a number of challenges to the global community.

This year Mongolia is delighted to be hosting World Environment Day. This event will provide a great opportunity to promote sustainable development both domestically and overseas. So why are we so excited to be hosting WED this year?

We have an environmentally friendly president. President Tsakhia Elbegdorj of Mongolia became the Champion of the Earth Laureate in 2012 in the area of Policy Leadership. President Elbegdorj has been honored for his political and environmental activities which include; leading the peaceful democratic revolution that ended communist rule in 1990 and chairing the Community of Democracies, a grouping

of countries that work to strengthen democratic norms and practices worldwide since July 2011. President Tsakhia Elbegdorj has also initiated many positive environmental policies. These include: submitting the Law on Decreasing the Capital's City Air Pollution; suspending the issuance of all new mining licenses; organizing tree planting days to combat desertification; and initiating campaigns to educate the young generation on the impacts of climate change and the importance of environmental stewardship.

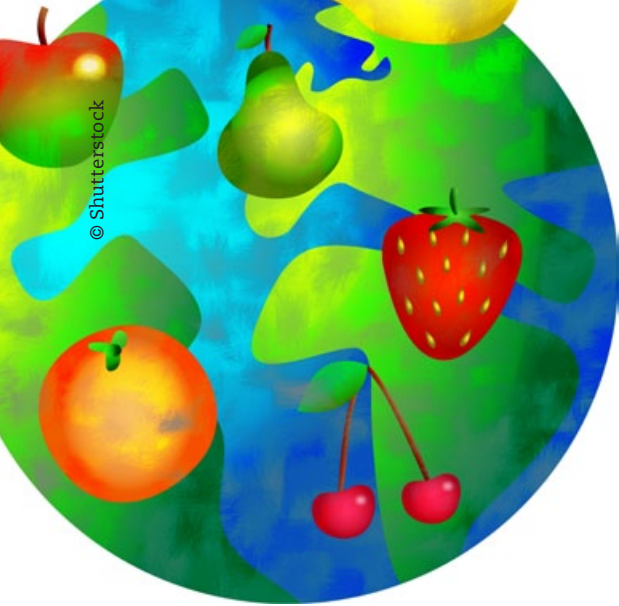
By virtue of having an environmentally-conscious President, Mongolia has a 'green-friendly' government. Established after elections in June 2012, the current government has converted the Ministry of Nature, Environment and Tourism into a new Ministry of Environment and Green Development, and elevated its status to one of four core ministries.

This ministry is working to develop a green development strategy, entitled "Green Civilization". It reflects Mongolia's renewed commitment to moving towards a low-carbon economy. It addresses economic, social, environmental, cultural and political pillars in order to drive positive change. The Mongolian Government is aiming to "lay the foundation of green development, to approve the 'Green civilization' development strategy and to build models of green development" during its current term which ends in 2016.

We are very excited about this year's World Environment Day and specifically about the global theme: Think.Eat.Save. Reduce Your Foodprint is an anti-food waste and food loss campaign that encourages you to reduce your food print.

We hope that WED will provide us all with an opportunity to share knowledge and learn from each others' experience.

Welcome to Mongolia – host country of WED 2013!



# Zero hunger



**BAN KI-MOON**  
Secretary-General of the  
United Nations

Growing up in war-time Korea, I knew hunger. Food shortages were common and we could not let a single grain to go to waste. Since then, many countries, including my own, have taken bold steps to end hunger, unlocking their potential for exponential growth.

Today, the world produces more than enough food for everyone, yet 870 million people are undernourished. Meanwhile, one third of all food produced is never eaten. According to the Food and Agriculture Organization, approximately 1.3 billion tonnes is wasted each year.

That is why I am pleased that the theme for this year's World Environment Day is Think.Eat.Save. Reduce your Foodprint. This campaign, spearheaded by FAO and UNEP, is directly in line with my Zero Hunger Challenge, which calls for zero loss or waste of food at all stages of the food chain, from farm to table.

Infrastructure and technology can reduce the amount of food that perishes after it is harvested and before it reaches the market. Manufacturers and retailers can minimize the amount of food wasted during processing and storage. Regulators can make sure that product expiry dates reflect the maximum shelf-life possible within the limits of food safety. And individuals can take a tip from a

leaflet put out by the United States government in 1917: "Food – buy it with thought; cook it with care; serve just enough; use what is left".

Of course, we cannot end hunger solely by eliminating food waste. The Zero Hunger Challenge calls on all actors to scale up efforts to create a world where everyone can enjoy the right to food and have access to adequate nutrition all year round. It means ensuring an end to childhood stunting, and doubling the productivity and income of smallholders, who grow the vast majority of food in developing countries. It also means building a world where all food systems are sustainable, particularly in the face of climatic and economic shocks.

This vision cannot be accomplished when we lose almost one-third of all the food we produce, and when resources are wasted in production and processing. When food goes uneaten and is spoiled, everything that went into its production is lost – from a farmer's time and effort, to the fuel used to transport it to market, and the land and water used to grow it. Besides being an affront to the hungry, food waste is a drain on natural resources and damaging to the environment.

Global hunger and the environment are intricately linked. We must ensure that food systems do not damage the ecosystem services they depend on. Think.Eat.Save -

Reduce Your Foodprint encourages us to become more aware of the environmental implications of our food choices and find ways to reduce our ecological "foodprint". That requires us to think across all sectors. Global food production is the largest single source of greenhouse gases, biodiversity loss and land-use change. It occupies a quarter of habitable land and uses 70 per cent of freshwater -- our most precious resource -- often very inefficiently. The consequences include groundwater depletion and the salinization of arable land. Reliance on nitrogen-based fertilizers pollutes lakes, rivers and the marine environment. Monocultures and the widespread use of insecticides and herbicides threaten to disturb important ecological systems, such as pollination by bees.

This year's World Environment Day Think.Eat.Save. Reduce Your Foodprint campaign encourages each of us to make a difference, individually and collectively. Governments, businesses, farmers, civil society, scientists and consumers all have an important role to play. The current global population of seven billion is expected to grow to nine billion by 2050. But the number of hungry people need not increase. By reducing food waste, we can save money, minimize environmental impacts and make food production more sustainable and resilient. Most importantly, we can move towards a world where everyone has enough to eat.



# Food losses mean hunger

**JOSÉ GRAZIANO DA SILVA**  
Director-General  
Food and Agriculture Organization  
of the United Nations



Let's look at the facts.

Worldwide, about one third of all food products – equivalent to 1.3 billion tonnes – are lost or wasted in food production and consumption systems every year.

In developed countries, about half of the food that is lost or wasted can be described as “food waste.” Almost half of the food squandered is wasted because producers, retailers and consumers discard food that is still fit for consumption. This is more than the total, net food production of sub-Saharan Africa.

In developing countries, roughly 95 per cent of food loss and waste are unintentional losses at early stages of the food supply chain due to limitations in harvesting techniques, storage and cooling facilities in difficult climatic conditions, infrastructure, packaging and marketing systems.

Such losses need to be tackled by energetic and well-targeted development of the food and agriculture sector.

By eliminating food loss and waste we would have sufficient food to feed the estimated 870 million chronically undernourished people in the world, without having to increase food production and putting additional pressure on our natural resources.

The UN Secretary-General Ban Ki-moon even linked hunger, food systems and food loss and waste in three of the five elements of the Zero Hunger Challenge (<http://www.un.org/en/zerohunger/#&panel1-1>), launched during the United Nations Conference on Sustainable Development (Rio+20): all food systems should be sustainable; there should be 100 per cent growth in smallholder productivity and income, particularly for women; and there should be zero loss or waste of food.



The example of food loss in sub-Saharan Africa shows the magnitude of the problem of getting food from field to market.

Ten to 20 per cent of Africa's grain harvest is lost after harvest. Worth \$4 billion a year, the lost grain is enough to meet the minimum annual food requirements of at least 48 million people.

Losses occur when grain decays or is infested by pests, fungi or microbes. Physical losses are only part of the equation. Losses can also be economic, resulting from low prices and lack of access to markets. Contamination of food or deterioration in quality also contributes to malnutrition when the food is nevertheless consumed by hungry people who cannot afford to be choosy.

A variety of practices and technologies are available for reducing post-harvest losses, including crop protectants and storage containers such as hermetically sealed bags and metallic silos.

If losses are high in developing countries, food waste is more frequent in industrialized countries. Per capita waste by consumers is between 95-115 kilograms a year in Europe and North America, while consumers in sub-Saharan Africa and South and Southeast Asia each throw away only 6-11 kilograms a year.

In a broader sense, the issue is one of sustainability, since food loss represents an appalling waste not only of good food, but all the resources that go into producing it: energy, land, water, fertilizer and human labour.

The Organization that I have the honour to lead is making the eradication of hunger its main objective and sustainability plays a major role in reaching it. This

becomes clear in the new strategic objectives that should be adopted by our members this year: contribute to the eradication of hunger, food insecurity and malnutrition; increase the provision of goods and services from agriculture, forestry and fisheries in a sustainable manner; reduce rural poverty; enable more inclusive and efficient agricultural and food systems at local, national and international levels; and increase the resilience of livelihoods to threats and crises.

The definition of food security not only covers availability, but access. Markets may be full of food, but the poor can't afford to buy enough of it to adequately and nutritiously feed themselves and their families.

Our planet has about 870 million hungry people. We know many ways we can help them to help themselves: developing the rural economies where most of them live so they can grow enough food or work and earn money to buy their food. The urban hungry may need an economic safety net so they at least have the minimum access to the food they need.

In a world that has the technical and economic capacity to end hunger and that already produces enough food for all, it is obscene that nearly one in eight human beings still suffer from hunger. Reducing food loss and waste can go a long way into changing this reality and making food security a reality for every person.

There is a lot that each and every one of us can do to reduce food waste. The Think.Eat.Save. Reduce Your Foodprint campaign (<http://thinkeatsave.org>), in which FAO participates with the United Nations Environment Programme and other partners, gives us many examples.

Food loss and waste is an issue whose time has come. Let's put our shoulders against the problem and start pushing.



FAO/Sebastian Scharf



FAO/Olivier Asselin



FAO/Sandro Cespoli



FAO/Olivier Asselin



FAO/Seyllou Diallo



FAO/Franco Martelli



**ERTHARIN COUSIN**  
Executive Director  
UN World Food Programme

# Solvable problem

Whenever I have the privilege of spending time among the people that the World Food Programme (WFP) serves, I come away enriched with precious extra knowledge and inspired by the new ways in which governments are tackling the world's greatest solvable problem – hunger. That happened again recently when I was in Burkina Faso, heartened to see the results of efforts to help communities become more resilient to shocks, especially climate-related ones.

Yet one theme dominated my discussions with President Blaise Compaoré and government ministers



Photo: Courtesy of International Institute for Tropical Agriculture (IITA)

– that too much of the food grown in their country is lost, often before it even leaves the farm. In Burkina, small-scale, family farming accounts for 70 per cent of total agricultural production, so post-harvest losses badly dent the capacity of vulnerable farmers to make a decent living and that of the country to feed its people. The same is true for most developing countries, where food loss occurs mostly at the production stages – harvesting, processing and distribution.

Our sister agency the Food and Agriculture Organization (FAO) estimates that close to one-third of all food produced worldwide is lost or wasted in food production and consumption systems. At the same time, around 870 million people suffer hunger, often not knowing where their next meal is coming from.

We expect to have to feed 9 billion people on this planet by 2050 and are going to have to do it with less land and less water, due to slow onset climatic changes, while coping with more frequent extreme weather events. So there is no space for loss or waste.

Encouragingly, though, tackling post-harvest loss is not rocket science. It does not require technological breakthroughs or years of high level scientific research as do some of the other challenges we face.

We at WFP have seen farmers' capacity to prevent food loss transformed thanks to the Purchase for Progress (P4P) pilot project, which we launched with partners five years ago to test new ways to buy food that could enable smallholder farmers to achieve better yields, improve the quality of their crops and sell to reliable buyers for a fair price. Addressing post-harvest loss has been a pillar of the programme in the 20 countries it covers.

Developing country farmers, especially smallholders, face many problems

after the harvest. Proper storage is rare or in need of repair, meaning fresh crops are often exposed to the elements and such vermin as weevils or rats. When farmers dry grain in the sun, something as simple as a sudden shower can spoil it. This leads to rotten grains or the development of aflatoxin, which can cause liver cancer.

But the outcome can be radically different when farmers receive proper training, such as awareness-raising on the existence and effects of aflatoxin and advice on storage, including providing simple tarpaulins to dry the grains, and household or communal silos to store them.

So far, more than 193,000 farmers, agricultural technicians, warehouse operators and small and medium-sized traders have received training from WFP and partners in improved agricultural production, post-harvest handling and quality assurance through P4P. I am particularly proud that, on average, one third of the trainees were women - and we're constantly striving to reach parity.

The results are outstanding. Training has greatly helped farmers to increase the quality of produce. At the start of P4P, most farmers' organisations paid little attention to quality. Now even those with low capacity have been able to meet WFP's rigorous quality standards relatively quickly. As a result, rejection of consignments because they failed to meet quality standard is increasingly rare.

The training process has also inspired innovation. In Guatemala, the P4P team created the Blue Box - a portable lab about the size of a large trolley bag - containing a nickel pike grain tester, digital scales, sieves, a voltage converter, a humidity sensor, a mill, a digital clock and the aflatoxin test kit.

P4P staff and partners clock up thousands of kilometres on highways and mountain tracks to reach remote

farming communities. Training with the Blue Box means they can test in the field and identify any problems early on. Farmers become much more aware of quality and post-harvest management and their confidence grows. They now know the quality of their staple grains and the just price for it, whether they're selling to WFP or to other buyers.

Tackling post-harvest loss also strengthens agriculture and local economies. We work closely with the FAO and the International Fund for Agricultural Development to ensure a continuum from the emergency work where WFP is often the first responder, through recovery to development.

But preventing food that could nourish the hungry from being lost early in the food chain requires the coordinated efforts of many actors.

National governments should take the lead in their own countries and embrace solutions at a policy framework level. Addressing waste across the food chain must be a critical pillar of future national food strategies.

International agencies and NGOs also need to coordinate their efforts fully to support farmers in growing more, growing better and accessing markets.

And community leaders must help their people understand and work together to prevent their maize, rice, beans or other staple crops from being damaged or destroyed.

The experience of P4P is showing us clearly that, with the right support and knowledge, it is possible to prevent losses of precious food in poor countries struggling to achieve food security. In the years ahead we will need to share those lessons far and wide to meet the challenge of feeding our growing population.



**BERNARD LEHMANN**  
Director  
Federal Office for Agriculture  
Switzerland

# Securing supplies

Food demand may well double by 2050 as world population continues to grow and changing food habits cause it to rise sharply. By contrast, agriculture is struggling with the consequences of climate change in many regions. And, to make things worse, global resources become increasingly scarce. Every year, for example, much fertile soil is irrevocably lost. Furthermore the stocks of fossil plant nutrients cannot be expanded infinitely. Food security must thus be ensured without increasing the amount of resources used. If we cannot achieve this, the world food system is likely to enter into a deeper and deeper vicious circle that can only be broken with enormous effort.

Switzerland is not exempted from these developments. Much of the food we consume is produced abroad and reaches us through global markets and a large part of (scarce) production factors such as fertilizers are also imported. Even though Switzerland plays only a minor role in the global system, in both production and demand, I am convinced that the Swiss agri-food chain must make a contribution to global food security.

Relying on our strong purchasing power to ensure the availability of food is not enough. The 2008 global food crisis has shown that a unilateral focus on the world market offers a false sense of security. Moreover, ignoring the impact of our actions on consumers and producers outside our country is not acceptable. So Switzerland strives to tackle challenges in both production and consumption, so as to contribute to sustainable global food security. For production we focus on a sustainable intensification, increasing our food production without impairing the environment or raising resource requirements. When focusing on consumption I mainly see food waste as a major problem that must be addressed.

It is crucial that Swiss food production remains at a reasonable level, but it must be recognized that this goal often conflicts with others. For instance, soil - that very scarce resource - is the basis not only for food production, but for such other goods and services such as biodiversity and recreation. Trade-offs very often, if not always, result and need to be taken into account in the design of agro-ecosystems. And there are other trade-offs, such as temporal ones. Do we, for example, use a non-renewable resource today or save it for our descendants?

It is most important to use resources efficiently to avoid such conflicts and to foster sustainable intensification of production. Agricultural research plays a key role in this endeavour; it needs to identify ways of improving resource use efficiency significantly, for instance with new varieties or improved management.

Practically implementing our knowledge is also a challenge. Where markets do not sufficiently

ensure the application of effective measures because prices do not signal the scarcity of a resource, for example, it is legitimate for the government to intervene to ensure their implementation.

Reducing food waste is another major lever for achieving the sustainable provision of food. Initial studies have concluded that, in Switzerland, about one third of the food produced is not eaten, with approximately 40 per cent of the losses incurred by consumers. In 2010 the average Swiss household spent seven per cent of its income for food, reflecting its high purchasing power which results in high expectations with respect to quality and variety.

These expectations, it is assumed, are a major driver for food waste. Fruit and vegetables that do not conform to these standards are sorted out at the production stage, for example. Many items that are not totally fresh are taken off the shelves in supermarkets or thrown away at home. One important factor is consumers' increasing distance from agriculture and food production. This has manifold implications: to take just one example, much perfectly edible food is thrown away for presumed safety reasons immediately after the "best before" date has expired because people no longer trust their senses.

Simple solutions for this complex problem, increasing food prices through taxes, would be economically efficient, but are difficult to implement for reasons of acceptability: furthermore such a measure would negatively affect the food security of people on low incomes.

As a first step towards reducing food waste in Switzerland, a

stakeholder dialogue has been initiated to analyze problems and explore areas for action. As all stakeholders in the food chain have starting points for reducing waste, all must be involved in the search for solutions. This dialogue is important because measures – in such areas as trading standards, marketing by-products in the meat and milk sectors, and reviewing use-by/best before dates – can only be implemented through collaboration, meaning that a consensus must first be found. There is already such a consensus that increasing consumers' awareness is important, so measures have been initiated in this area. Continued research on the causes and extent of food waste, based on more specific and internationally harmonized definitions, is important and an effort is being made to co-ordinate it.

I am convinced that sustainable food security is only possible if production is intensified in a sustainable way, while fostering sustainable consumption. To achieve this, Swiss agricultural policy is consistently focused on the various services of a multifunctional agriculture, remunerated so as to minimize conflicts between them: producing food is a very important service, but not the only one.

Searching for ways to reduce food waste, together with all the stakeholders involved, is another priority.

In addition there is heavy investment in research since its results are crucial in solving future problems. Only improved production systems and developing a sound scientific basis for resource-saving consumption patterns and diets will bring our agriculture and food economy onto a more sustainable path and create positive spill-over effects for the whole world.

# Making progress

As food waste has risen sharply up the agenda of governments and businesses across the world, WRAP – a company which advises governments and businesses on resource efficiency and a partner in UNEP and FAO's 'Think.Eat.Save. Reduce Your Footprint' campaign - has conducted pioneering research to identify its most significant sources, its types and its causes, so as to evolve a strategy to tackle it.

Our report, 'The Food We Waste', published in 2007, spotlighted the scale of the issue for the first time. It showed that most of the food waste generated in the UK happens in the home, and much is avoidable. Waste often arises from lack of planning, misunderstanding date labels, getting portion sizes wrong, and not having the skills to use up leftovers or knowledge on how to store food properly. Our 'Love Food Hate Waste' campaign, designed to empower people to take action, closely followed.

The campaign centres on a website ( [www.lovefoodhatewaste.com](http://www.lovefoodhatewaste.com) ), which attracts more than one million visits a year and gives consumers carefully researched practical advice on how they can get the most out of the food they buy. Having identified the behaviours that can lead to food waste, the campaign offers practical solutions to encourage such changes as checking cupboards before shopping, meal planning, using leftovers in new recipes, making the best use of packaging, and understanding the meaning of different food labels to keep food fresher for longer. We also work with and through a wide range of partners including retailers, brands and local authorities who use our insights, evidence, tested messages and campaign materials to communicate directly with consumers.

Since its launch, the campaign has helped UK households reduce food

waste from 8.3 million tonnes a year to 7.2 million tonnes, saving £2.5 billion (\$3.8 billion) a year. And that's not to mention the environmental benefits: we have calculated that if every Briton stopped wasting food that could have been eaten, the effect would be the equivalent of taking one in five cars off the road. We have also worked closely with manufacturers, regulators and governments to bring about innovations, especially in packaging and labelling, to make it easier for consumers to buy the right amount.

Food is a critical natural resource which, with a growing global population, has to be secured, and an equally critical part of most national economies. Though tackling food waste in the home was our first priority, we also know that around 15 million tonnes is wasted through the supply chain, from farm to factory gate and onwards, with around 3.6 million tonnes from food manufacture and retail. The Courtauld Commitment, which counts almost all the UK's major supermarkets and brands as signatories, has introduced targets to reduce it through the supply chain. This kind of action from businesses is crucial to ensure future availability, while industry faces volatile food prices and poor harvests, and an estimated 900 million people globally don't have enough food to eat.

**LIZ GOODWIN**  
CEO, WRAP



We've recently reached the end of the second phase of the commitment, and will report on results this Autumn. Supply chain waste has already been reduced by 8.8 per cent, well ahead of the five per cent three-year target. So far, signatories and consumers have successfully prevented 2.3 million tonnes of waste, valued at around £3.5 billion (\$5.3 billion). A third phase will tackle areas with significant environmental impact, focussing on dealing with the pressing environmental issues industry now faces, while positioning for the future.

Identifying which products have the greatest environmental impact is essential, and we're coming up with major insights through our Product Sustainability Forum (PSF). Understanding them means we can help businesses to prioritise their efforts to make the biggest environmental and economic savings. In March this year, the PSF published its first research report, bringing together product life-cycle data from over 150 published studies and from its members and industry, making it the most comprehensive study of its kind. The Co-operative Group, Nestle and Sainsburys are among the first major retailers and brands building on this work and looking for ways to improve the environmental performance of some of their products, through pilot projects known as 'pathfinders'.



Photo: Love Food Hate Waste / Recycle for Greater Manchester

The hospitality sector has a major role in promoting food security and tackling waste, and is also critical to many economies. WRAP is working with it through our Hospitality and Food Service Agreement, to which almost 150 organisations have already signed up, aiming to cut food and associated packaging waste by five per cent - and increase the overall rate of food and packaging waste that is being recycled, sent to anaerobic digestion or composted, to 70 per cent - by 2015.

Awareness of the global scale of the problem is now widespread. Just three days after the Think. Eat. Save. Reduce Your Foodprint launch, I was at the World Economic Forum in Davos, where the environmental and economic opportunities in food waste reduction were high on the agenda - after speaking last year, at Rio+20 in Brazil to an audience of governments and thought leaders. We're currently working with UNEP and FAO to produce a toolkit, based on our experience in reducing food waste in the UK, for other countries and supply chains across the world. We are also a lead partner on FUSIONS, a four-year project working towards achieving a more resource efficient Europe by significantly reducing food waste.

Current levels of food waste, demographic pressures - and, indeed, increasing extreme weather events - combine to present us with an enormous challenge. While we have demonstrated that good progress can be made, there is still a huge amount to do. We therefore welcome the opportunity to work with others across the world, in order to share experiences of what has and has not worked, and discuss what more can be done. Let's continue to work together, learn from each other, and make a real difference.

Around one third of the world's food is never eaten – that's 1.3 billion tonnes of food thrown away or left to rot every year. Food waste costs our customers money - £680 (\$1,045) a year for the average UK family - at a time when the pressure on household budgets is greater than ever. It is also widespread; 30 per cent of Polish consumers admit to throwing food away, while 28 per cent of household waste in South Korea is food.

Such wastage is unsustainable when the global population is set to grow from the present seven billion to nine billion by 2050, with demand for agricultural products likely to rise 70 per cent. Producing food which is never consumed also puts unnecessary pressure on land and natural resources, including water, and causes unnecessary greenhouse gas emissions.

Fortunately, great collaborative efforts are being undertaken, notably the work of the Waste Resource Action Programme's (WRAP) Love food, hate waste campaign, which has helped reduce household food waste by 13 per cent across the UK since 2006, and the UN's Think.Eat.Save. Reduce Your Footprint programme. Achim Steiner, UNEP's Executive Director, has rightly described the current level of food waste as "patently absurd", and Think.Eat.Save helps ensure that the initiatives to reduce it around the world are being co-ordinated and best practice shared.

At Tesco we believe we have a big part to play in reducing food waste. Our business is to buy, move and sell food, and we do it at scale - serving 50 million customers with products

# Scaling up to cut waste



**PHILIP CLARKE**  
Chief Executive, Tesco

sourced from over 70 countries. If we use that scale for good, we can make a real difference, so we're making reducing food waste a real focus for the business.

We've always paid attention to minimising the waste in our stores – as you would expect of an efficient business. In the UK, food waste makes up less than one per cent of food sold. Those elsewhere in Europe and in Asia have higher levels and we are determined to address this. So we're rolling out a blueprint based on our UK operations to share best practice with our other markets. This includes a raft of initiatives from optimising case sizes to more

accurately forecasting the demand for promotions.

Clearly, we have most control over managing food waste from Tesco's store operations. But, we can have an even greater impact if we work with suppliers and customers through an integrated approach. On average, for food produced and consumed in the UK, around half of the waste comes from the agriculture and supply chain, and the other half occurs in consumers' homes. So it is clear that, as a major food retailer, we have a shared responsibility to work with our supply chain partners to drive down unnecessary waste before it reaches



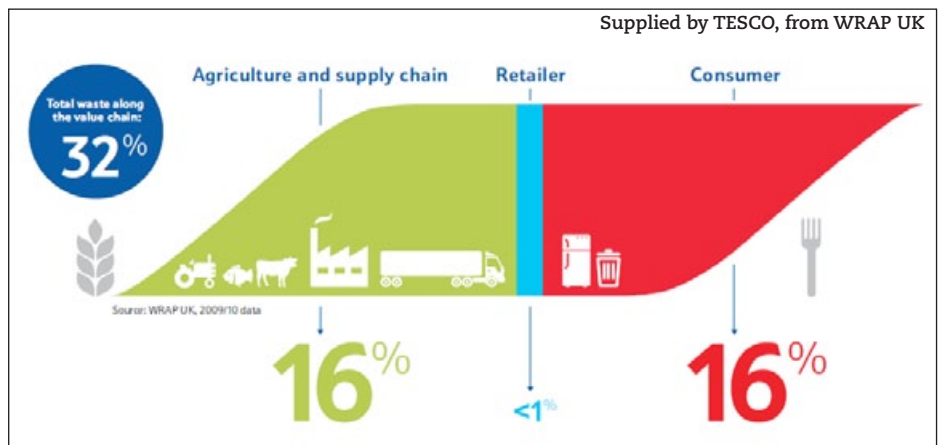


our stores and to help our customers find ways to reduce it at home.

Tesco is focused on building closer relationships with the farmers and growers who produce the products we sell. Pioneering work with dairy farmers, where we've developed tailored best practice advice aimed at reducing on-farm greenhouse gas emissions, shows how we can make a difference to the environment while saving farmers money.

We are also establishing networks with farmers, both on the ground in the countries where we operate and through online communities. These allow us to identify examples of where our product specifications may be contributing to higher than necessary levels of food waste, and look for ways of changing them. We already have programmes under way on pineapples and bananas in Costa Rica. Over time, we aim to improve the order forecasting with which we provide our suppliers, so that they can plan with more certainty and produce less surplus. We hope our partnerships will become more efficient through looking at how we work together through a food waste lens, and that the planet will also benefit.

Meanwhile, Tesco's uniquely powerful insight tools help us understand what really matters to our customers. We



This infographic illustrates where food waste occurs in the value chain for goods produced for, and consumed in, the UK.

know they want us to help them reduce their food waste and save money in the process, whether they shop in stores or online. Recent research in the UK shows that half our customers say they throw food out because they forget they have it and it goes out of date, half also tell us that 25 per cent of what they serve to their children is wasted, while one third say they regularly cook more than they mean to. A quarter admit they struggle with how to use up leftovers.

We are working with WRAP and the Sustainable Consumption Institute at Manchester University better to understand the underlying causes of food waste in the home. And we are working on measures like making date codes on packaging easier to understand, a simple step we believe will make a difference.

We want to work collaboratively, so that our work to reduce food waste can have the maximum benefit. To help target where to take action we are developing metrics that measure total waste for the food items most regularly sold in our stores, which will allow us to prioritise our efforts and collaborate effectively.

Driving down food waste in the value chain won't be easy and it will take long-term sustained programmes to make progress. But through such measures, by and working effectively with other leading authorities in this field, we think we can start making a difference right away. Reducing food waste to help ensure food supplies for decades to come is one of the biggest challenges facing our planet. But by using our scale for good, we believe we can play our part in shaping the solution.





Photo: courtesy of fairfoodforall

# New Paradigm



**VANDANA SHIVA**  
Founder, Navdanya, India.

Zero waste is a key commitment of the UN wide Zero Hunger Challenge announced by Secretary General Ban Ki-moon at Rio +20. Half the industrialized world's food is wasted by retailers or consumers, while there are growing losses after harvest in the South.

Yet wastage begins with how food is grown. Industrial agriculture creates waste at multiple levels. It is based on monocultures, and the destruction of biodiversity. And this biodiversity is food.

Nature has given us a cornucopia of biodiversity, rich in nutrients. Destroying it results in malnutrition and nutrient deficiency.

India's indigenous biodiversity, for example, offers rich sources of iron. Amaranth has 11.0 mg of it per 100gm of food, Moringa (Sahjan or drumstick) 28.26, buckwheat 15.5, neem 25.3, rice bran 35.0, rice flakes 20.0, Bengal gram leaves 23.8, amaranth greens 38.5, karonda 39.1, lotus stem 60.6, coconut meal 69.4, niger seeds 56.7, mango powder (amchur) 45.2, pippali 62.1, poppy seeds 15.9, tamarind pulp 17.0, turmeric 67.8, and so on.

However, the Green Revolution has spread monocultures of chemical rice and wheat, driving out biodiversity from farms and diets. And what survived as spontaneous crops like the amaranth greens and chenopodium (bathua) were sprayed with poisons and herbicides. Instead

of being seen as iron and vitamin rich gifts, they were treated as "weeds" Indeed, many of our iron rich foods are becoming forgotten.

Now there is an attempt to genetically engineer the banana, which has only 0.44 mg of iron per 100 gm as a solution to iron deficiency in India. Even if the iron content is increased five to six fold, it will be 3000 per cent less efficient than alternatives our biodiversity offers. This is a waste of biodiversity, nutrition, knowledge, money and time.

Navdanya's Health per Acre report shows that intensifying biodiversity and ecological processes, can produce enough nutrition to feed two Indias. And this goes hand in hand with decentralized food economies, which reduce both hunger and post-harvest food waste. Half the world's

hungry are food producers. But they can't eat what they grow, either because they are in debt from purchasing chemicals and seeds, and must sell their produce to pay it off, or because they are growing commodities for the global market.

Just as GDP fails to measure the real economy, the health of nature and society, "yield" fails to measure real costs and outputs. As the UN observed, the so called High Yielding Varieties of the Green Revolution should in fact be called High Response Varieties since they are bred for responding to chemicals.

The narrow measure of "yield" propelled agriculture into deepening monocultures, displacing diversity, and eroding natural and social capital. The social and ecological impacts have pushed the planet and society into deep crisis.

It has driven more than 75 per cent of agro-biodiversity to extinction, killed 75 per cent of bees with toxic pesticides, and depleted and polluted 75 per cent of the planet's freshwater, while nitrates from industrial farms are creating "dead zones" in the oceans.

Meanwhile chemical and industrial farming causes 75 per cent of land and soil degradation and emits 40 per cent of the greenhouse gas emissions responsible for climate change. The fossil fuels used to make fertilisers, run farm machinery and move food thousands of miles release carbon dioxide. Chemical nitrogen fertilisers emit nitrogen oxide and factory farming is a major source of methane.

UNEP's report *Avoiding Future Famines* will help alert the world to the real costs of destroying the ecological foundations of agriculture - soil, biodiversity, water, and climate stability - thus wasting the planet.

Such ecological destruction of natural capital is justified in terms of "feeding people". Yet hunger has grown. A billion people are permanently hungry. Another two billion suffer from food related conditions like obesity.

When the focus is production of commodities for trade, instead of food for nourishment, hunger and malnutrition result. Only 10 per cent of corn and soya is used as food: the rest goes for animal feed and biofuel.

It is a waste to use food to drive cars. It is a waste to use 10kg of food grain to produce 1 kg of meat. A food system that focuses on profits, rather than the health and well being of people or the planet, will waste food - and people and the planet. Indeed, half of India's children are so severely malnourished that they are technically described as "wasted".

Subsidies worth \$400 billion a year are wasted to keep this system artificially afloat. "Cheap" commodities have very high financial, ecological, and social costs. Industrial chemical agriculture displaces productive rural families. It creates debts which, with mortgages, are the main reason for the disappearance

*Ecological agriculture rejuvenates social, as well as natural, capital, increasing human wellbeing and happiness. And, while lowering the ecological footprint, organic agriculture increases output as measured through multifunctional benefits, instead of the reductionist category of "yield".*

of the family farm. In extreme cases, as in the cotton belt of India, such debt has pushed more than 270,000 farmers to suicide in a little over a decade. These are wasted lives.

Getting out of this suicide economy has become urgent for the wellbeing of farmers, eaters and all life on earth. A scientifically and ecologically robust paradigm is emerging as an alternative in the form of agro-ecology and organic farming, rejuvenating the natural capital on which sustainable food security depends

Chemical agriculture treats soil as inert and an empty container for chemical fertilisers; the new paradigm recognizes it as living, where billions of vital soil organisms create fertility. Chemical agriculture destroys biodiversity: organic agriculture conserves and rejuvenates it. Chemical agriculture depletes and pollutes water: ecological farming conserves it by increasing the water holding capacity of soils through recycling organic matter. Such soils, together with biodiversity, comprise the best strategy for climate resilience and adaptation.

Ecological agriculture rejuvenates social, as well as natural, capital, increasing human wellbeing and happiness. And, while lowering the ecological footprint, organic agriculture increases output as measured through multifunctional benefits, instead of the reductionist category of "yield".

The old paradigm of food and agriculture is clearly broken. As the Report of the International Assessment of Agriculture Science Technology and Development (IAASTD) carried out by 400 scientists over six years noted, business as usual is no longer an option.

# Involving everybody



**WERNER M DORNSCHEIDT**  
President and CEO  
Messe Düsseldorf Group

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There's one figure that no one on the planet - at least no one who takes human rights and human dignity seriously - should be complacent about. One in eight people on earth, 870 million human beings, go to bed hungry each night, according to the Food and Agriculture Organization (FAO). Since 1990 this number has been reduced by 130 million, from a starting one billion. However, that is no reason to lean back contentedly, especially since the world's population is predicted to increase by two billion to nine billion by 2050, posing an incredible challenge to the international community. We'll need to produce enough food for an additional two billion people, but many of the resources required to produce it - fuel, energy, water, fertiliser and land - are finite or limited.

No country and no region can solve this challenge alone. Furthermore, no national or international actor can possibly tackle all its aspects singlehandedly since there is no single solution for ensuring food security for today's hungry and for the growing world population.

The founders of the SAVE FOOD initiative – launched by the Food and Agriculture Organization (FAO) and Messe Düsseldorf in 2011 - believe very strongly that as many political, societal and economic actors as possible must jointly tackle the diverse tasks ahead. They are convinced that food security for nine billion people and effective control of world hunger can only be achieved through a cooperative effort by social and societal movements and state and economic actors. In 2013, the related Think.Eat.Save - Reduce Your Foodprint campaign was launched in cooperation with UNEP.

The SAVE FOOD initiative focuses on food waste and losses. Food thrown out uneaten or spoiled before reaching consumers doesn't just rip a hole in the global supply system. It wastes the use of resources - like valuable arable land, expensive fertilisers, costly fuel and precious water - along the production chain. Above all, the sheer volume of global food waste is so enormous – an estimated 1.3 billion tonnes, about a third of total global production, a year - that reducing it contributes to global food security.

*Only increased public awareness and a better understanding of the problem can lead to political and economic actors working towards possible solutions, and to producers and consumers changing and optimising their every-day behaviour and the way they handle food.*

*Field studies are being developed for various countries which will examine where food waste arises and in which places along the food production chain improvements would yield the best cost-benefit ratio.*



and to producers and consumers changing and optimising their every-day behaviour and the way they handle food.

Putting background knowledge and scientific findings on global food waste on a solid footing is also part of this educational mission. Only if this exists can concrete measures be taken to help solve existing problems. Field studies are being developed for various countries which will examine where food waste arises and in which places along the food production chain improvements would yield the best cost-benefit ratio. A first model study is in progress for Kenya; ones for an additional seven countries in Africa and Asia are expected to follow.

SAVE FOOD also examines socio-economic aspects of food waste and national regulatory frameworks, which must be improved. And it leans heavily on its private-sector partners: more than 70 international corporations now support it. In the end, their investments and assistance will be crucial in initiating many of the on-the-ground improvements recommended by our studies – within a successful network of societal, political and economic actors.

The SAVE FOOD initiative was launched as a cooperative effort at interpack 2011 and has picked up pace since then. It was early in addressing a topic now being discussed in all important international and political bodies. Sure, the fight against food waste is only one part of a solution to the global food security challenge – but it is a critical one. We shall remain committed. The issue and initiative will again be a major focal point of interpack 2014, with international expert discussions and continued networking with the non-profit and private sectors. And all with the goal of securely providing good food for nine billion people.

The reasons for these losses vary from region to region. In developed industrial countries especially, food waste is a consumption issue. Many consumers dispose of food that could still be eaten because they misunderstand the expiry date or because they bought too much and stored it inappropriately. By contrast, in many emerging and developing countries the issue is more one of food lost along the production chain. They frequently lack modern harvesting, logistics, transport, storage and packaging technologies - and so food spoils along its journey to retailers or consumers.

Professional, modern technologies can help prevent such losses and waste. So the SAVE FOOD initiative integrates corporations and economic actors, among others, in its activities: it is they who can make these technologies available wherever they are needed. To take one example: every three years, Messe Düsseldorf - in its capacity as an international trade fair location - hosts interpack, the most important

fair worldwide for packaging and related processing industries. Professional storage, processing and packaging technologies, custom-designed for specific purposes, are exceedingly useful in avoiding food waste along the entire production and supply chain. After harvest, industrial and bulk packaging protects against pest infestations. During transport, packaging protects sensitive foods against weather and transport-related damage. At retail, it helps food stay fresh longer, regardless of climatic conditions. And in households, the trustworthiness, safety, usability and size of a package determines how much is consumed rather than tossed in the rubbish.

The initiative aims to sharpen public perception – for example with a successful travelling exhibition that has already been seen on several continents. Only increased public awareness and a better understanding of the problem can lead to political and economic actors working towards possible solutions,



**ANDREA SEGRÈ**

Director of the Department of  
Agricultural and Food Science -  
University of Bologna and President  
of Last Minute Market



© Getty Images

# It's a Resource

Food losses and food waste occur at every stage in the food chain from farm to consumer.

Crops are sometimes left unharvested because their appearance does not meet strict quality standards. Food can be mishandled or stored improperly during transport. Large portions, large menus, and poor training for food handlers contribute to food waste in restaurants, while in households it mainly consists of fresh products.

As the UN's Food and Agriculture Organization points out, losses occur at the start of the food chain - during primary production, post-harvest and processing - whereas waste is observed at the end of it, such as during distribution and end consumption. Inedible crop residues and processing by-products do not, therefore, fall within the scope of the subject although - as knowledge and technology advance - it may be possible to use items which cannot currently be eaten or processed.

A European Commission study, published in 2010, concluded that up to 50 per cent of food is wasted. This amounts to a total of 89 million tonnes per annum in the 27 countries of the European Union, equivalent to 179 kg per person per year. (At the same time 79 million EU citizens live beneath the poverty line and 16 million depend on food aid from charities). If farming and fishing practices are excluded, households account for 42 per cent of European food waste, food industries 39 per cent, distribution five per cent and food services outside the home 14 per cent. If no action is taken, the continent's waste is projected to increase 40 per cent by 2020, to 126 million tonnes.

Meanwhile, the U.S. Department of Agriculture reports that a typical American throws out 40 per cent of fresh fish, 23 per cent of eggs, and 20 per cent of milk. Citrus fruits and cherries top the list for fruits, and sweet potatoes, onions, and greens are commonly wasted vegetables. Just reducing food waste by 15 per cent could feed more than 25 million Americans a year.

Research conducted by the University of Bologna's Department of Agricultural and Food Science, in collaboration with the JRC-IHCP (Institute for Health and Consumer Protection) and the Karlsruhe Institute of Technology, adds that about two thirds of household waste arises from not using food in time: the rest results from cooking or serving too much. Single households produce proportionately more waste per person, though children can also add to the tally.

Getting food to the table also eats up 10 per cent of the global energy budget, uses a great amount of land, and, in the US, swallows 80 per cent of freshwater. Almost all the uneaten food ends up rotting in landfills and accounting for almost 25 per cent of total methane emissions.

Increasing the efficiency of our food system would make better use of natural resources, provide opportunities to save money throughout the supply chain, and enhance our ability to meet food demand. This requires a suite of coordinated solutions, including operating changes, enhanced market incentives, increased public awareness and adjustments in consumer behavior.

Most developed countries are putting considerable effort into recycling and recovering food waste. It can, for example, be turned into gas and liquid fuels, providing an alternative to such non-renewable sources as oil, coal or uranium. Some can also be used in such environmentally friendly products as biodegradable plastics. And food about to be discarded by retailers could be saved and donated to people in need or used to feed animals.

San Francisco is one many American cities revitalizing food waste recycling, and even enacting new regulations to mandate it. Interesting European initiatives are

*Transforming food waste into a resource is possible. It will take pragmatism and a focus on action. The ability to develop smart, ecological solutions should be enhanced and new business models which interpret 'sustainability' and 'solidarity' as 'no waste, no impact' will need to emerge.*

also taking place, both nationally and locally, ranging from behavioral and quantification studies to grassroots projects. In January 2012, the European Parliament adopted a resolution to reduce waste by 50 per cent by 2020 and the European Commission Framework 7 is currently financing a multi-stakeholder project, Fusions (Food Use for Social Innovation by Optimising Waste Prevention Strategies), which aims to generate a shared vision and strategy to prevent food loss and waste across the whole supply chain through social innovation.

In Italy, Last Minute Market (LMM), an academic spin off of the University of Bologna, links shops and producers (such as processing industries, food shops, retail stores) with unsold food to people and charities who need it: in the city of Bologna alone more than 170.000 kg of food is recovered every year. LMM reduces waste by helping companies manage surplus and remove it from disposal. Public institutions and communities benefit from the reduction in waste landfilled and incinerated, saving them money and damage to health and the environment, and reducing dependency on food imports.

Since 2010 LMM has been running an European campaign called "A year against food waste" to raise awareness. It has also has launched a Zero Waste Charter, signed by mayors from Italy and elsewhere in Europe committing themselves and the municipalities they rule to reducing food waste.

Transforming food waste into a resource is possible. It will take pragmatism and a focus on action. The ability to develop smart, ecological solutions should be enhanced and new business models which interpret 'sustainability' and 'solidarity' as 'no waste, no impact' will need to emerge.



**NIKI CHARALAMPOPOULOU**  
Campaigns and Policy Manager  
Feeding the 5000

Imagine coming across the following offer at your local retailer: 'For every carrot you buy, another one will be wasted'. Sadly, this is not as far from the truth as you might expect

In the Western world, we waste nearly as much as we eat: between a third and a half of all the food produced in Europe and North America ends up being wasted. In the UK alone, the amount of food thrown away in one day would be enough to give all its 60 million people lunch - and we'd still have some left over for dinner.

Wasting this amount of food is ethically wrong in a world with more than a billion hungry people. In today's globalised market, we drive food prices up by buying more than we need and discarding it. We are literally taking food out of the mouths of the hungry in Africa, Asia and the rest of the world.

The resources embedded in food production – such as land, energy and water – massively increase the impact of this scale of waste on our planet's finite capacity to sustain us and other life. About 10 per cent of all greenhouse gas emissions arise from producing food that no-one eats. We are expanding agricultural land and moving into the world's remaining rainforests to grow food that is then wasted in farms, factories, pack-houses, supermarkets, restaurants and homes.

Waste has become so endemic to food production that we now accept as common practice attitudes and practices that were taboo to our ancestors. The planet simply cannot sustain this system.



Photo: Feeding the 5000



# Feeding change

Food waste has different causes at different points of the supply chain. It is a complex problem but the solutions are simple and everyone can win by implementing them. All it takes is bringing common sense back into the food system: using and eating what you can; redistributing what you can't; feeding food not fit for humans to livestock; and only then turning to other waste solutions, such as composting or anaerobic digestion.

The Feeding the 5000 campaign's ([www.feeding5k.org](http://www.feeding5k.org)) flagship events provide a free hot meal to 5,000 members of the public, made entirely from fresh produce that would otherwise have been wasted: wonky carrots, misshapen potatoes, offal and other delicious but unwanted food. The aim is to engage people from all walks of life, who taste the food and wonder: why should this ever be wasted? The event has taken place in London 2009 and 2011 and has so far been replicated in Bristol, Paris, Dublin and Nairobi. The Feeding the 5000 team is now partnering with the EU Fusions project and UNEP's 'Think.Eat.Save' campaign to organise the event, and associated campaigns, in cities across the globe, including Amsterdam, Lisbon, Sydney and New York.

Each event brings together a coalition of governmental and non-governmental organisations to provide positive, local solutions to the global problem, thus creating the level of awareness and mass mobilisation among citizens, governments and businesses that is needed to take effective action.

The millions of tonnes of food wasted every day in the UK's farms for failing to meet retailers' strict cosmetic specifications can help feed millions

of Britons in food poverty. Using it like this rather than leaving it to perish also helps reduce demand on agricultural land in the South, which can then produce much needed food for the local population.

Gleaning Network UK, a new initiative set up by the Feeding the 5000 campaign, aims to salvage this surplus produce from farms across the country by coordinating local volunteers, growers and food redistribution charities to bring this fresh and nutritious food to the most vulnerable members of society.

*Everyone can join in the fight against food waste, taking individual action, changing organisational practices and demanding change from governments and the food industry.*

A single gleaning day with just 20 volunteers salvages between two and four tonnes of fresh fruit and vegetables, with immense potential for scale-up. Gleaning groups are being set up all over the UK, France and Spain. And retailers are starting to respond to public pressure by slowly changing their practices. Partly also in response to poor weather conditions, some British supermarkets announced last year that they would accept more aesthetically imperfect vegetables. And the British Retail Consortium recently reported that wonky fruit and veg is the fastest growing segment of the British fresh produce sector.

The best thing to do with food that is no longer fit for humans is to feed it to livestock. In Europe, this would

reduce the need to import each year 40 million tonnes of South American soya, whose cultivation contributes to deforestation, biodiversity loss and carbon emissions. Yet an unjustified and environmentally destructive European law makes it illegal to feed catering and domestic waste to pigs, even if it has been properly sterilised. Retailers can, however, still send their bread, dairy, fruit and vegetable waste for livestock feed. Some have begun to do this, selling inedible surplus food to farmers for around £20 (\$30) a tonne, instead of paying an anaerobic digestion plant £60 (\$90) or more to take it.

Over the next year, a new campaign - The Pig Idea - will demonstrate that feeding food waste to pigs makes perfect environmental, economic and social sense. We will show that there is wide public support for reintroducing this ancient practice, which governments in countries like Japan and South Korea actively support and subsidise.

Food waste is a massive problem but it also offers a great opportunity. Making the most of the food we already produce is one of the easiest ways to reduce environmental impact while increasing food availability where it is needed the most. We really can help feed the world and protect the environment.

Rather than feeling guilty about the food we waste, we can feel empowered by a sense of shared responsibility. Everyone can join in the fight against food waste, taking individual action, changing organisational practices and demanding change from governments and the food industry. We all have a role in ending the global food waste scandal.

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US Department of Agriculture reports that a typical American throws out 40 per cent of fresh fish, 23 per cent of eggs, and 20 per cent of milk. Citrus fruits and cherries top the list for fruits, and sweet potatoes, onions, and greens are commonly wasted vegetables. Just reducing food waste by 15 per cent could feed more than 25 million Americans a year.

Each year, German households discard about 22 billion Euros (\$27.3 billion) worth of edible food. This led to the creation of FOODSHARING, an internet platform that gives individuals, stores and producers a cost-free way to give away or pick up surplus food.

Worldwide, 1.3 billion tonnes – about one-third of all food produced – is lost or wasted in food production and consumption systems. The cost of the losses is US\$ 680 billion in industrialized countries and US\$ 310 billion in developing countries.

Food currently lost or wasted in Latin America could feed 300 million people.

Food currently wasted in Europe could feed 200 million people.

Food currently lost in Africa could feed 300 million people.

According to FAO, roughly 95 per cent of food loss and waste in developing countries are unintentional losses at early stages of the food supply chain due to financial, managerial and technical limitations in harvesting techniques; storage and cooling facilities in difficult climatic conditions; infrastructure; packaging and marketing systems.

#### DID YOU KNOW?

It takes 12 litres of water to produce just one tomato!

650 litres of water to produce one chicken breast

A portion of rice uses 125 litres of water to be produced for us to eat

A loaf of bread takes a whopping 1,200 litres to be produced

On average the amount of water needed to produce food is about 1000 times the weight of the food itself!

Per capita waste by consumers is between 95-115 kg a year in Europe and North America, while consumers in sub-Saharan Africa, south and south-eastern Asia, each throw away only 6-11 kg a year.

*This page contains links to websites to help you research issues related to UNEP's work. Our Planet magazine, however, does not endorse the viewpoints of any of the groups to which we link and we cannot guarantee the accuracy of the information posted on these sites. Rather we hope to provide you with a broad range of opinion and perspectives.*

<http://www.unep.org/wed/theme/>

The theme of this year's World Environment Day is UNEP's Food Waste campaign

[www.thinkeatsave.org](http://www.thinkeatsave.org)

Think, Eat, Save: UNEP, FAO and Partners have launched a global campaign to change culture of food waste

Other web sites involved in the campaign against food waste:

[www.lovefoodhatewaste.com](http://www.lovefoodhatewaste.com)

[www.feeding5k.org](http://www.feeding5k.org)

Snazzy web site of the Feeding the 5000 food waste campaign

[www.thepigidea.org](http://www.thepigidea.org)

The Pig Idea campaigns for the recycling of food waste for livestock feed

[www.wastedfood.com/](http://www.wastedfood.com/)

This site serves as a resource for all sides of the food waste issue

<http://www.epa.gov/foodrecovery/>

The US Environmental Protection Agency offers tips to avoid waste

[http://www.leanpath.com/docs/Waste\\_Guide\\_o.pdf](http://www.leanpath.com/docs/Waste_Guide_o.pdf)

A short guide to food waste management

<http://esa.un.org/marrakechprocess>

Towards sustainable consumption and production

[www.ipbes.net](http://www.ipbes.net)

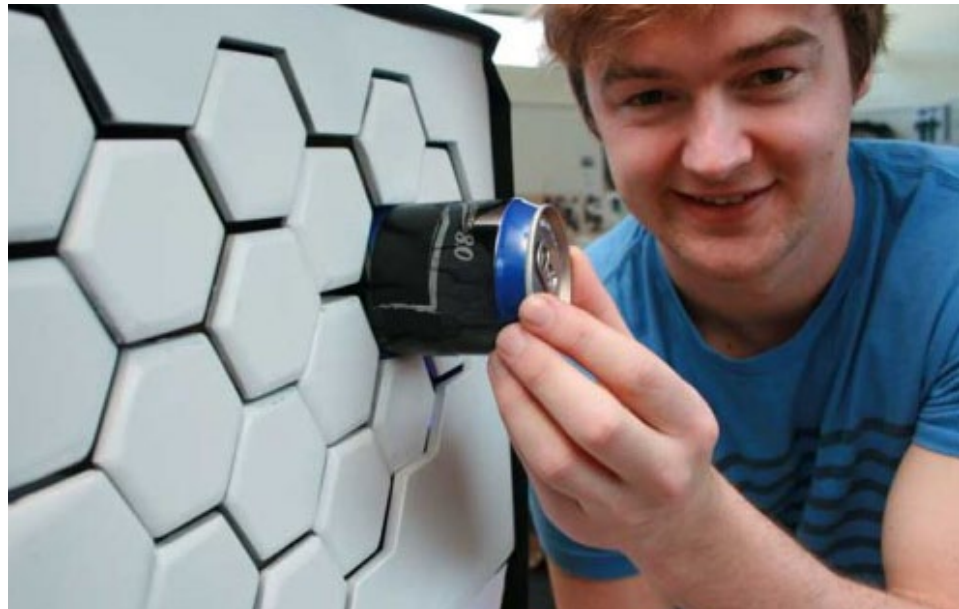
Intergovernmental Platform on Biodiversity and Ecosystems services

# Innovation

## DOORLESS REFRIGERATOR PREVENTS FOOD WASTE

Ben de la Roche, an industrial design student at Massey University in New Zealand, has designed a doorless refrigeration wall, called Impress, which prevents food waste and saves energy. De la Roche's design completely changes the way we refrigerate." Rather than hide refrigerated food and drinks in a closed box, the appliance places items out in the open. It saves energy by only applying refrigeration when a food item is present.

Impress consists of an assembly of separate elongated cooling units that de la Roche calls "pins." Each pin presents a hexagonal face to the outside, forming a unique honeycomb surface. When you're ready to



refrigerate an item, you press it against one or more of the hexagons and push back. The pins you're pushing on retract so your food item will be held in place, and the surrounding pins are activated so they begin cooling your item. Unlike conventional refrigerators that use toxic gases like ammonia, Impress employs thermoacoustic refrigeration using nitrogen.

Source: <http://inhabitat.com>



## SPACE TECHNOLOGY HELPS TURN UNWANTED SODA INTO WATER

A Swiss company ÖKO has taken advantage of NASA space filtration technology to create a bottle that can turn sodas into water. Made from super-light materials, the water bottle provides easy access to clean, clear, crisp water. ÖKO's water-filtering bottle comes in three sizes, six designer colors, and with three levels of filters, allowing for the exact type of filtration needed. The filters use ÖKO's patent-pending Upstream Valve that prevents any backwashed fluid from flowing back into the "unfiltered" water area for re-filtration and to ensure

that every sip is pure, fresh and clean. The ÖKO Level-1 filter is carbon based and is designed to effectively reduce present chlorine, taste and odor while providing crisp and clean tap water. The ÖKO Level-2 filtration was originally developed through a NASA grant for space stations and is described as "the state-of-the-art in water filtration technology".

Source: <http://inhabitat.com.okos-nasa>

## FRIDGE TELLS YOU WHAT TO COOK WITH LEFTOVERS

Scientists are designing a hi-tech fridge that tells you what to cook with your left-overs and automatically re-orders fresh food.

The self-cleaning 'fridge of the future' will automatically place supermarket home delivery orders when required and move food near its 'use by' date to the front of the shelves.

Researchers hope the fridge could clean itself, cut down on wasted food and offer up recipes - which could be tailored to different countries, cuisines and seasons depending on whether people want to whip up something Italian or fancy a curry.

These new developments are in the pipeline thanks to collaborations between scientists at the University of Central Lancashire and online supermarket Ocado.

The smart fridge will use 'nano-articulated technology' shelf surfaces which, whilst smooth to the touch, will have millions of independently controlled micro-tiles which will manoeuvre products which soon need to be eaten to the front of the fridge.

The fridge will also monitor gases released by degrading foods and push these to the front of its shelves. Ultrasound-scanning technology built into the door will allow the fridge to 'swipe and capture' the food on a plate before and after mealtime, meaning it can assess what type and amount of food is wasted.

Source: [www.dailymail.co.uk/sciencetech](http://www.dailymail.co.uk/sciencetech)



## APPS TO HELP CURB FOOD WASTE

### The Green Egg Shopper

This App is for iPhones and it allows users to manage and organize grocery shopping lists. Users can sort lists alphabetically, by category, or by priority. They can also view list of items near expiration, and can sort them with three categories of shelf life (short, medium, long). The app also allows users to link a store to the list, and take and attach photos to the items on their lists. Users are able to check items off of their list once it is purchased. The paid version allows users to create multiple shopping lists.

### Leloca

This an app available for iPhone and Android-based smart phone users which helps minimize restaurant

waste by offering diners a great deal. When there is an open table at a restaurant, you can be sure that food will be wasted. This app allows potential diners to get a great deal when there's an open table. The deals are generally 30 to 50 percent off. The app is free to use, and the deals must be redeemed within 45 minutes.

### Gojee

This App is available for iPhones, Android smart phones and iPads and it allows people to exchange recipes, and users can search for recipes by ingredients. For example, if I have coconut milk in my fridge, I can search for recipes containing coconut milk. Containing about 10,000 recipes from over 300 contributors on the internet, users are sure to find recipes based on ingredients they already have in their fridges or pantries.

Source: <http://www.thinkeatsave.org/index.php/be-informed/relevant-links>



# Mongolia

## Mongolia, the global Host of World Environment Day 2013, is one of the world's fastest growing economies.

The country is also prioritizing a Green Economy shift across its main mining economic sector and promoting environmental awareness among youth.

Mongolia's unique geographical and climatic situation and its specific socioeconomic conditions based on a traditional nomadic way of life and associated economic activities make it very sensitive to the impacts of climate change.

A UNEP assessment (<http://www.unep.org/climatechange/adaptation/ScienceandAssessments/MongoliaAssessmentReport/>) showed that certain impacts have already been observed: annual mean temperature has increased by 2.14°C during the last 70 years and precipitation has decreased in most regions except the western part of the country.

The future climate scenario for Mongolia projects changes such as increased air temperatures, increased precipitation in some areas but – nevertheless -- reduction of water resources and area of arable land. The most vulnerable areas in Mongolia are the agricultural, livestock, land use, water resources, energy, tourism and residential sectors. Adaptation is thus essential to reduce the country's vulnerability to the adverse impacts of climate change.

“Mongolia is facing enormous challenges including growing pressure on food security, traditional nomadic herding and water supplies as a result of the impacts of climate change,” said UN Under-Secretary-General and UNEP Executive Director Achim Steiner. “Indeed it is estimated that annual mean temperature has increased by over 2°C during the last 70 years and precipitation has decreased in most regions, except the western part of the country, indicating that Mongolia is among the most vulnerable nations in the world to global warming.”

“Yet its government is also determined to meet these challenges and seize the opportunities of a less-polluting and more-sustainable future – from a moratorium on new mining pending improved environmental regulations to plans to become a renewable energy power-house and exporter of clean energy regionally,” added Mr. Steiner. “I am sure that as the global host of WED, Mongolia will demonstrate to the world that a transition to a Green Economy is possible, even within some of the most traditionally challenging industrial sectors, when leadership, vision, smart policies and political will are translated into action on the ground.”

Mongolia's transition is already underway. It has passed a law on decreasing the air pollution that was triggered by a growing population and coal usage in the capital Ulaanbaatar. It is planning to establish a satellite-city



Ponies Photo: Courtesy of East Asian Peoples / Caroline Anderson

# UNEP at work

## UNEP/GEF Nomadic Herders Project

Mongolia's reindeer herders and their forest homeland are facing unprecedented challenges from unregulated mining, logging, water pollution, climate change and some tourism practices.

Of particular concern to the herders is the growth in unregulated, small-scale artisanal mining, which results in deforestation, forest fires, chemical contamination and poisoning of water sources. Reindeer herders have already abandoned some pastures in the western sections of their range because of damage caused by mining for gold, as well as green and white jade.

According to a UNEP study, the transformation of Mongolia to a market economy in the 1990s resulted in eight million livestock being added to Mongolia's pastures, significantly affecting traditional herding practices and the dynamics with the environment.

Erratic weather patterns are also taking their toll. Seven out of the ten most disastrous droughts and extreme winter events (known locally as 'dzuds') recorded since 1940 have occurred since 2000, resulting in widespread livestock deaths.

There are also concerns that current measures to conserve biodiversity within the region, such as the creation of national parks or protected areas, will limit access to pastures and adversely affect herder communities.

### WHAT UNEP IS DOING?

Jointly with herders, local partners and national authorities, the Nomadic Herders project is studying the impacts of land-use change, biodiversity loss, and climate change in reindeer herding societies of the Russian Far East and Mongolia, and further assessing the herders' adaptation options and opportunities.

The project facilitates partnership building between different reindeer herding communities, and supports and strengthens local institutions. It also works to increase the capacity of reindeer herders to engage in the decision-making processes concerning land use and natural resource management.

This project focuses on conserving globally-important biodiversity and the mitigation of land degradation, whilst increasing the resilience of reindeer herding societies. A unique focus of the project is on the co-production and application of traditional and scientific knowledge to address the pressing challenges facing these reindeer herding societies and their environments.

near the capital for the purposes of limiting coal-burning in the capital, transferring energy-saving technology, and imposing air-pollution tax in some regions of Ulaanbaatar.

Since 2010, Mongolia has suspended the issuance of all new mining licenses until fresh regulations are drawn up, citing the protection of the mineral-rich Asian country's environment and herdsman's livelihoods as well as promotion of green development with consideration of water shortage and land degradation.

Projects that enhance youth understanding of environmental protection have been set up, and national tree planting days to combat desertification and water scarcity have seen over two million trees planted across Mongolia's vast desert regions since 2011. Mongolia also has huge solar power potential, particularly in the sparsely populated Gobi region, and is looking for ways to exploit this.

"Our government has shown its commitment to positive environmental actions, not just with words but with concrete action," said Mr. Tulga Buya, Vice Minister of Environment and Green Development, "so we seized the opportunity to host World Environment Day with both hands."

"We hope our leadership in terms of what we have done at home and hosting this important yearly event will show the world that change is possible," he added.

# People

## Xu Zhijun

### Operation Clean Plate

As a child, Xu Zhijun worked in the rice paddies near his tiny village in China's eastern Jiangsu province. "My parents and my grandparents educated me to cherish food," Mr Xu explains.

After moving to Beijing to work at an agricultural newspaper, Mr Xu was shocked to see piles of half-finished dishes left on restaurant tables. After learning that the food wasted by Chinese university students could feed 10 million people a year, Mr Xu reached his boiling point.

In April 2012, he posted a photo on weibo, the Chinese version of Twitter, showing his empty plate at the end of a meal. He urged others to do the same.

Mr Xu was the first person to promote an anti-waste campaign on weibo, For months Operation Empty Plate received little attention.



"I started to post a picture of clean plate every day since 22 April 2012 and surprisingly found that the President of China appealed for reducing food waste in January 2013. It was originally quite an individual appeal and now this operation for empty plate has attracted billions of Chinese internet users to participate. Food waste is not only about food, it is in a wider context of resource efficiency and all sorts of nature capital such as land, water, climate as well as what UNEP has emphasized--a moral and ethical issue. I am happy to join Think-Eat-Save and make our campaign in China visible to the world. Let's also note that consistency is also key to this campaign, many people get involved but how many of us can turn this into a life habit?," he told UNEP during a recent meeting in Beijing







## Jamie Oliver

Celebrity Chef and healthy food champion

Jamie Oliver, a British celebrity chef and champion of healthy eating, recently added his voice to those in the food business who are lobbying for less waste.



## Danielle Nierenberg

Co-founder of FoodTank:  
The Food Think Tank.

Danielle is an expert on sustainable agriculture and food issues. She recently spent two years traveling to more than 35 countries across sub-Saharan Africa and Asia looking at environmentally sustainable ways of alleviating hunger and poverty.

Her knowledge of global agriculture issues has been cited widely in more than 3,000 major publications including The New York Times, USA Today, the International Herald Tribune, The Washington Post, BBC, the Guardian(UK), the Mail and Guardian (South Africa), the East African (Kenya), TIME magazine, Reuters, Agence France Presse, Voice of America, the Times of India, and other major publications.

Danielle worked for two years as a Peace Corps volunteer in the Dominican Republic and also currently serves as the food security adviser for Citizen Effect (an NGO focused on sustainable development projects worldwide).

She holds an M.S. in Agriculture, Food, and Environment from Tufts University and a B.A. in Environmental Policy from Monmouth College.

Connect with Danielle: Email her: [danielle@foodtank.or](mailto:danielle@foodtank.or) follow her on Twitter @DaniNierenberg,

Source: <http://www.daniellenierenberg.com/food-tank-foodthinktanklaunches/>

“Our food system is broken. Some people don’t have enough of food, while others are eating too much. There’s only one way to fix this problem and it starts with you and me,” she declares on her web site. “Food Tank: The Food Think Tank is for the 7 billion people who have to eat every day. We will offer solutions and environmentally sustainable ways of alleviating hunger, obesity, and poverty by creating a network of connections and information for us to consume and share.”

Responding to claims that as much as half of the world’s food could be wasted, Jamie responded: “There’s obviously a lot for everyone to think about at the moment about saving money and trying not to be wasteful, but we all need to look forward five years and see what might happen if we ignore this.”

He added: “We need to look at the amount of waste at home and in the supermarkets, which adds up to hundreds of millions of pounds a year, and could feed a small African country!

“It’s something that I’m trying to get better at but most of us are all guilty of waste.”

Jamie, who launched a campaign for better food school children, said another worrying figure was that 30 per cent of the world’s grown food was not even harvested.

Dr Tim Fox, Head of Energy and Environment at the UK’s Institution of Mechanical Engineers, said: “The reasons for this situation range from poor engineering and agricultural practices, inadequate transport and storage infrastructure through to supermarkets demanding cosmetically perfect foodstuffs and encouraging consumers to overbuy through buy-one-get-one-free offers.”

*Ian Somerhalder*



# lder

**Growing up in rural Louisiana, Ian Somerhalder** was steeped in the magnificence of nature. So when the oil from the Deepwater Horizon spill came ashore in 2010 the star of *The Vampire Diaries* – the son of a building contractor and massage therapist in the small town of Covington, close to the coastal wetlands and marshes – was affected particularly strongly.

“What I assimilated through that experience stays with me every single day”, he told *Our Planet*. “I remember my feet planted into the ground, as I surveyed the earth around me witnessing the unthinkable devastation caused by the spill, when it hit me: I was overcome with vulnerability. Everywhere around me echoed a sense of helplessness - from the creatures suffocating to the families drowning in debt and looking into their future with despair. I knew right then that I never wanted to feel this sense of absolute vulnerability again.

“From that moment, I looked around and witnessed others with parallel sentiments who were ready to act. I watched countless people come together, entangling their networks, their own personal resources, time and energy, to commit to rescuing, cleaning, changing and activating. In the face of devastation, I recognized the power in collective action.”

The experience led him, later that year – on December 8th, his 32nd birthday – to set up the non-profit Ian Somerhalder Foundation, whose mission, as he puts it, is “as variable as the problems our planet, humans and its creatures face”. He goes on: “We know all the issues are interconnected and we believe the solutions are as well.”

One such issue is food waste. Somerhalder, who won the award for the Most Responsible Celebrity in the 2012 International Green Awards, says; “It is absolutely nuts that 30 per cent of all food is thrown away. That translates into \$48.3 billion. Can you imagine what we could do with \$48 billion. Can you imagine the decrease in pesticides, water and land use if we no longer needed to produce that 30 per cent that is just ending up in the bin?”

“It’s not difficult to make a huge impact by make fairly small changes to our behaviour. Many environmental issues seem insurmountable because much of the damage is business-driven, but – with food waste – we just need to be aware and then adjust our lifestyles. It’s as simple as making a pledge not to waste any food in your fridge: buying only what you need, versus only what you want, will help ensure you have what you need for the week ahead and, in turn, result in zero food waste.”

His foundation has been encouraging its supporters to commit a ‘Waste Free Wednesday’ on World Environment Day, and then to work towards a “Waste Free Week.” He adds: “If we were all conscious consumers we would see massive change quickly. But I think it runs deeper. Not only do we need to be conscious consumers, we really need to shift and become conscious humans, period. That would mean we make all choices with all our fellow human beings and the planet in mind.”

He goes on: “What I have come to know is that the environment around us mistakenly seems outside of ourselves, when in reality it’s completely within us. It’s precisely what we are made of. We take it everywhere we go. A friend and mentor of mine, Deepak Chopra, expresses it perfectly: “Our forests are our lungs and our rivers our blood stream”. We cannot escape the environment “I’d love to see more celebrities mobilising action by delivering information that ignites passion, talent and ultimately – and necessarily – action. I’ve found that the more I voice my desire for a positive green planet, the more I discover just how many people long for the same harmony.”



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