THE FOOD TRANSFORMATION

HARNESSING CONSUMER POWER TO CREATE A FAIR FOOD FUTURE

GROW
FOOD. LIFE. PLANET.

OXFAM

CONTENTS

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This document is designed for viewing on screen. If you do have to print it, please do so double sided and two pages to a side.

INTRODUCTION

Every time you open your fridge and food cupboards, you step into the global food system. Sounds odd, but it's true. The system is an enormously complex web of all the people, businesses, organizations and governments involved in the production, distribution, sale and consumption of food. Irrespective of who we are, or where we are on the planet, the food we eat is made available by this global food system.

Here, at the beginning of the twenty-first century, this system is not working properly. It is a system that leaves nearly one billion people hungry every day[1]. It is a system that has led to over 50 per cent of the population in more than half of industrialized countries becoming overweight[2]. It is a system characterized by volatile prices that make life hard for small-scale producers as well as consumers; a system that is increasingly dominated by a small number of immensely powerful corporations; and a system that is contributing significantly to climate change as well as being highly vulnerable to its impacts. It is a system that is unfair, and unsustainable.

It is obvious that the food system needs fixing. It is much less obvious how this should be done. The sheer size and complexity of the system can seem overwhelming; and the power of some of the corporations and governments involved is daunting. They can and must take urgent action to change the policies and practices that play a huge part in the broken food system.

Corporations and governments are not the only power in the system, however. Those of us that buy, cook and eat the food are more powerful than we might think. If, together, we say we want *this* rather than *that*, we become a force that affects the system. If enough of us say we want *this* rather than *that*, the existing powers cannot ignore us: they can either adapt to meet our demands, or someone else will fill their place.

The power that we have is invisible to us, much of the time. As individual households, we already have a lot on our plates: the household budget, the health of our families, the juggling of all the things we need to get done. It is hard to think about the 'big picture'. It is hard

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to think of all the other millions of people, just like us, struggling with the same challenges.

With this report, we will bring this big picture down to a more manageable size. We will show the connections between the global food system and the things we do every day. We will show how households, acting together, can make a difference.

Mother with child, West Timor
© Tom Greenwood / Oxfam

To do this, we explore a series of 'what ifs'. We ask 'what if?' households were to take a few small steps to start doing things differently when shopping, cooking and eating. Drawing on a wide range of data sources, we calculated the impact that this would have, and what it would mean for the global food system. By doing this, we begin to show how, by acting together, people really can change the system. The main body of this report is devoted to introducing, explaining and interpreting these 'what ifs', and to showing how initial small steps can lead to even bigger changes in the future.

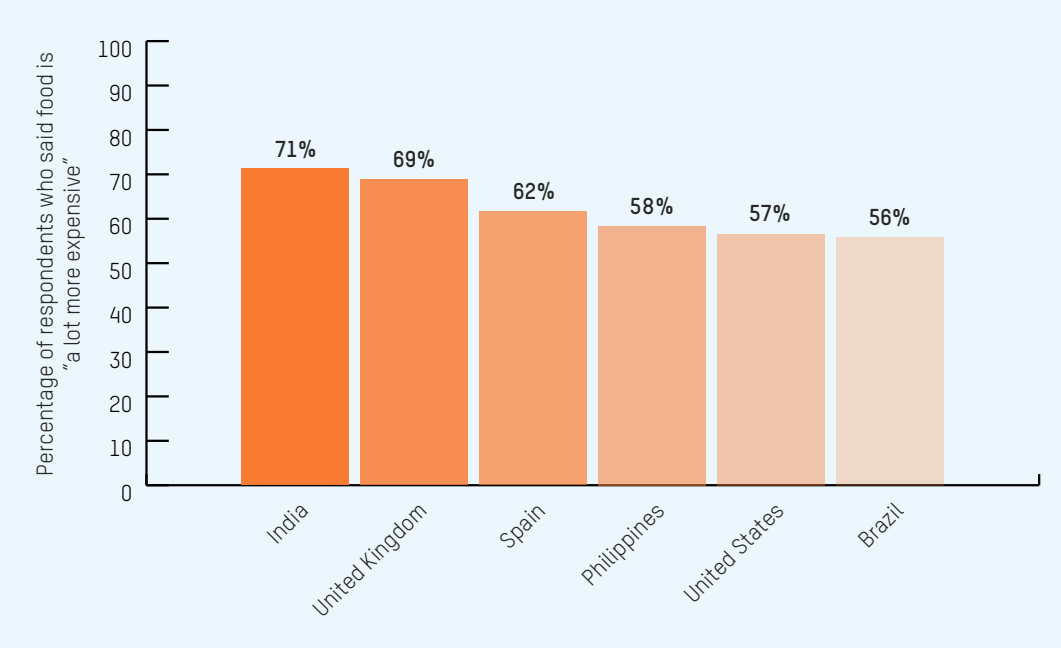
To keep the big picture to a manageable size, we focus on households in just a handful of countries. We chose six: three developed countries and three developing countries. The countries – Brazil, India, the Philippines, Spain, the UK and the USA – are not 'representative' of the world, but they are illustrative.

We look in particular at households in cities and large towns. In urban areas around the world, some of the injustices of the global food system are most apparent. In the cities of developing countries, many struggle to have enough to eat, but, globally, towns and cities are also where spending power tends to be greatest. The choices of affluent households in these places can have a significant impact on the food system. Yet it is also these affluent urban households for whom the disconnection from the producers of food is most acute. This disconnection may be a key part of why the food system is not working properly – even if people want to know how or where their food is produced, it can be difficult to find out.

We also wanted to know what people in these six countries think about these issues. Across the world (including in our six chosen countries), women make most of the decisions about what food gets bought[3] and how it gets cooked. Compared to men, nearly twice as many women cook, and women spend nearly four times as long preparing, cooking and cleaning up after meals.[4] This inequitable distribution of household responsibilities is not right and needs to be tackled, of course, but – at the moment – it is the world's women who make the majority of household decisions and so they have incredible power to help change the world's food system. We therefore conducted a survey of the key decision makers – women with families – who live in towns and cities in our six countries, and we asked them a few questions about food.

We gathered information from more than 5,000 women.
Here are some of the things they told us:

FIGURE 1 – THE RISING COST OF FOOD



We asked: "Compared to two or three years ago, would you say that food is..."

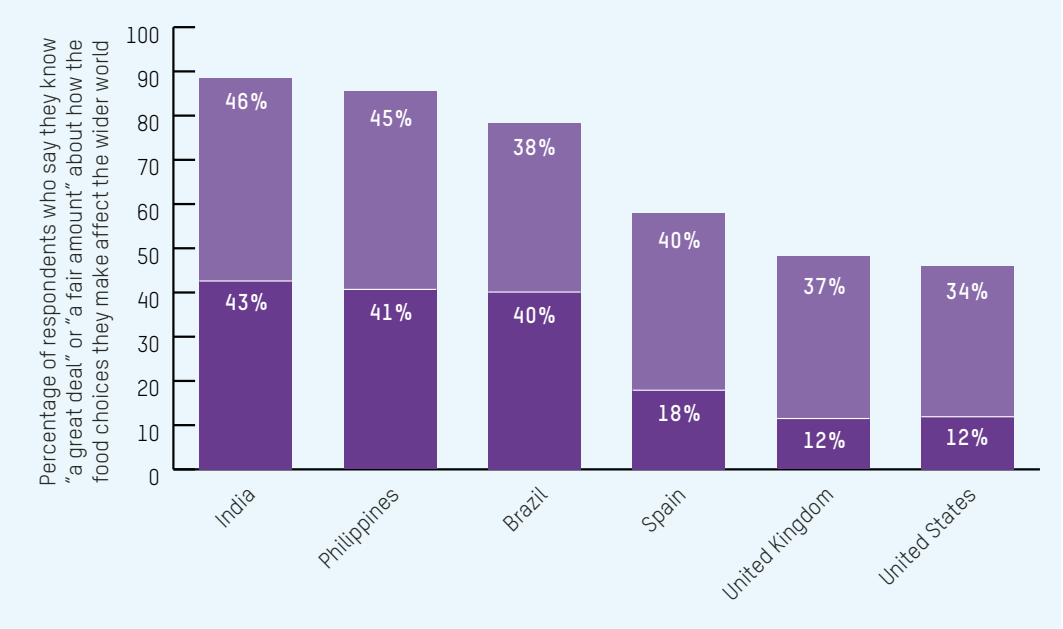
Answer options: A lot more expensive; A little more expensive; About the same price; A little cheaper; A lot cheaper; Don't know.

Base: 5,100

The results show clearly that families living in towns and cities in all six countries have experienced increases in the cost of their food in recent years.

© Slobo / iStockPhoto

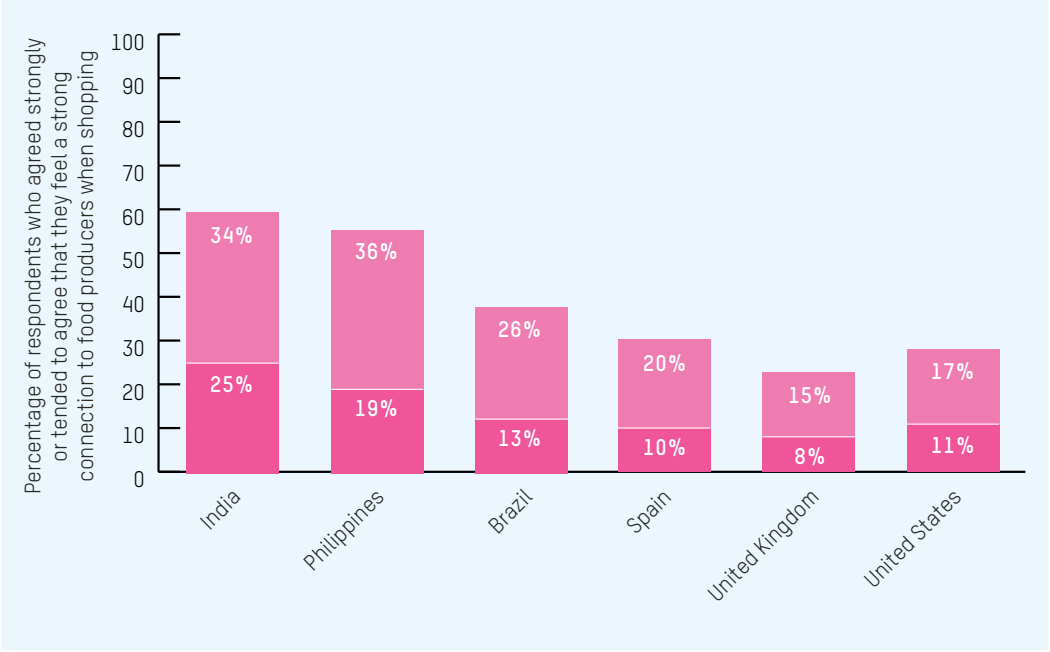
FIGURE 2 - KNOWLEDGE OF THE IMPACT OF FOOD CHOICES



We asked: "How much would you say you know about how the food choices you make affect the wider world?"
Answer options: A great deal; A fair amount; Not very much; Nothing at all; Don't know
Base: 5,100

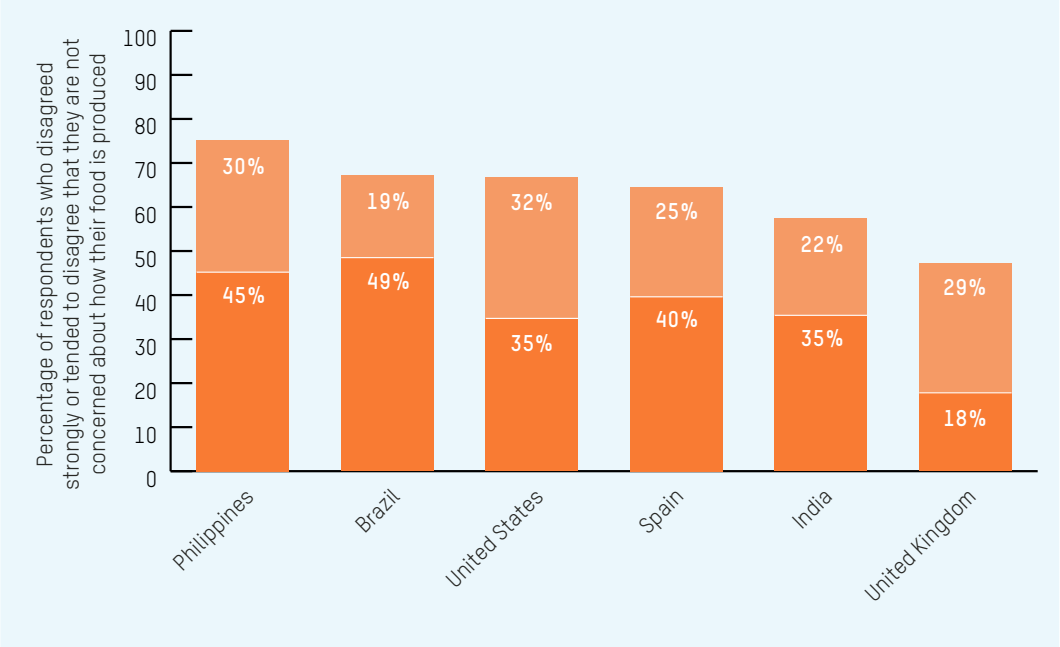
When asked about their sense of connection with the people that have produced their food and about understanding the consequences of their food choices, our survey respondents showed a clear pattern: both understanding and sense of connection is stronger in developing countries than developed countries.

FIGURE 3 - CONNECTION TO FOOD PRODUCERS



We asked: "Here are some things that other people have said about the shopping and food choices that they make. How much do you agree or disagree with each one? - When shopping for food I feel a connection with the people that have produced the food."
Answer options: Agree strongly; Tend to agree; Neither agree nor disagree; Tend to disagree; Disagree strongly; Don't know
Base: 5,100

FIGURE 4 - CONCERN ABOUT HOW FOOD IS PRODUCED

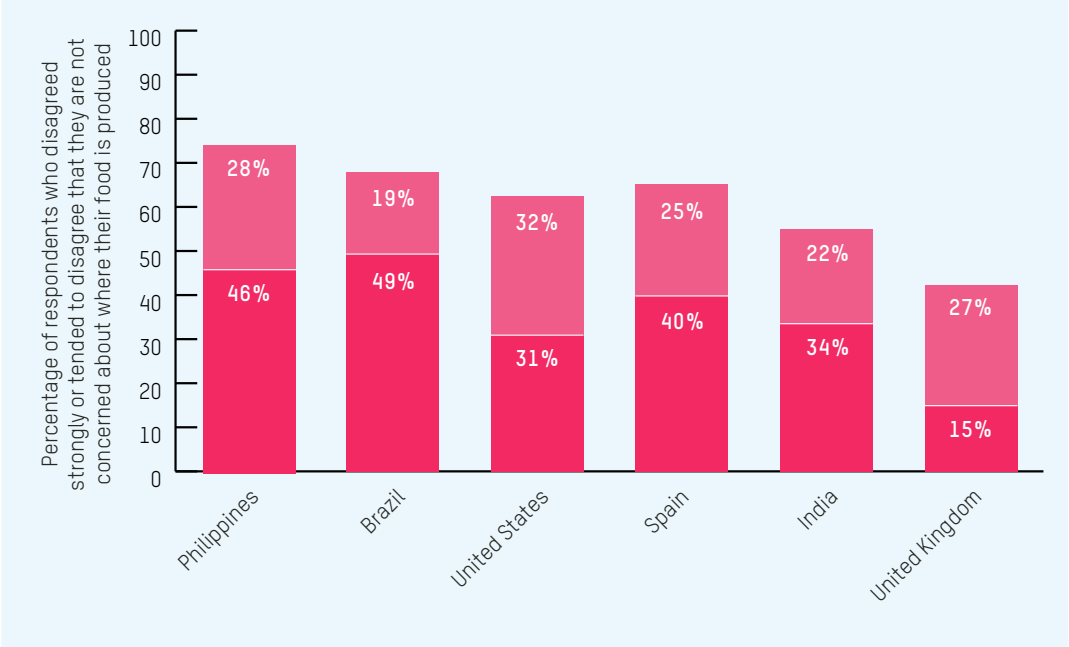


Disagree strongly

Tend to disagree

We asked: "Here are some things that other people have said about the shopping and food choices that they make. How much do you agree or disagree with each one? - I am not really concerned about how my food is produced."
Answer options: Agree strongly; Tend to agree; Neither agree nor disagree; Tend to disagree; Disagree strongly; Don't know
Base: 5,100

FIGURE 5 - CONCERN ABOUT WHERE FOOD IS PRODUCED



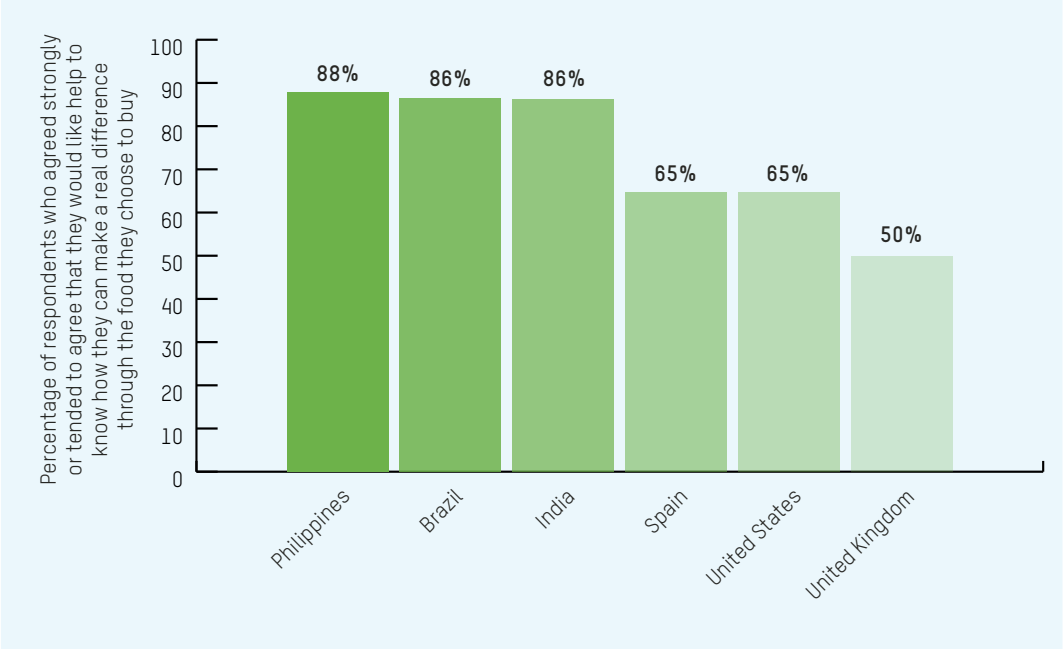
Disagree strongly

Tend to disagree

We asked: "Here are some things that other people have said about the shopping and food choices that they make. How much do you agree or disagree with each one? - I am not really concerned about where my food is produced."
Answer options: Agree strongly; Tend to agree; Neither agree nor disagree; Tend to disagree; Disagree strongly; Don't know
Base: 5,100

Figures 4 and 5 highlight the concern that our respondents feel about how and where their food is produced. Although these present a mixed picture, with the exception of those in the UK, the majority of respondents in all countries are concerned about how and where their food is produced.

FIGURE 6 - WANTING TO KNOW HOW TO MAKE A DIFFERENCE



We asked: "Here are some things that other people have said about the shopping and food choices that they make. How much do you agree or disagree with each one? - I would like help to know how I can make a real difference through the food I choose to buy."

Answer options: Agree strongly; Tend to agree; Neither agree nor disagree; Tend to disagree; Disagree strongly; Don't know

Base: 5,100

Figure 6 shows that across all countries surveyed, most respondents want to be clearer about how to make a difference through the food choices that they make.

Together, these survey results suggest a significant opportunity: key decision makers in towns and cities across the world would like to have a better food system. The rest of this report begins to explore how, together, they might bring that about.

IF IT IS BROKE, LET'S FIX IT

This report is about what we can do to help fix the broken food system. It's about how the food we put on our tables, the food we share with our families and friends, can be the starting point for building a better world for the future. It's about how we can take steps towards a fairer, more sustainable world – a world where everyone always has enough to eat.

We all want to provide ourselves and our families with healthy, wholesome food. Most of us have to try to do this on a limited budget. At the same time, we want to make sure that the choices we make now don't compromise the world our children will grow up in.[5] We want the best for our families, and for the rest of the world, but we're not always sure how best to go about it.[6] Imagine, with a little help, what a difference we could make together.

Through the GROW campaign, Oxfam is working to help repair the broken food system. This is a task that needs to involve everyone – from those who produce and sell food, to all of us who buy and cook food, as well as governments and big food and beverage companies. By being part of this campaign, you can find out more about the things we can do together to make food fairer and more sustainable.

THE BROKEN FOOD SYSTEM

This is a story that starts with earth and with the farmers who work with it. It takes us from local markets, through supermarkets and world markets, via fridges and stoves, across tables, into garbage cans and onwards to landfill sites across the world.

FOOD PRODUCTION

The world's food producers are facing a huge challenge. It looks as though growing populations and increasing economic development may lead to an increase of 70 per cent in global demand for food by 2050.[7]

In many developing countries, small-scale farmers are responsible for the bulk of food production.[8] In addition, three-quarters of the world's poor live in rural areas, and the vast majority of these rely on agriculture for their own survival.[9]

Small-scale food producers struggle with a lack of support and a lack of infrastructure. They face the multiplying risks of extreme weather and a changing climate. Even the food that they do manage to grow may never make it onto people's plates, as around a

Kenyan farmer harvesting coffee beans

© Ami Vitaki

third of it may be lost in the process of harvesting, transportation and storage.[10] To make matters worse, small-scale food producers face difficulty in accessing markets to sell their produce, and may face exploitation if and when they do succeed.

Small-scale food producers in developing countries need help to overcome these challenges, and it's crucial that they receive it. They are not marginal in the food system: they are its mainstay, ideally placed to provide the food needed by those who are hungry.[11]

Women are at a particular disadvantage. Of the world's total agricultural labour force, 43 per cent are female,[12] yet, globally, women account for only 10-20 per cent of landowners.[13] In some countries, women receive only a tiny proportion of the training and support that is available to smallholders.[14] If women were given the same access to resources as men, they could increase yields on their farms by around a quarter, with the potential to reduce the number of hungry people in the world by up to 150 million.[15]

FOOD DISTRIBUTION

All of us need a similar amount of food and we need the right nutrition, too. Yet food – both in terms of calories and nutrients – is not evenly distributed across the world. This is an injustice that has severe implications for our health, for our environment, and for our ability to feed the world in the future; an injustice that governments, together with food and beverage companies, urgently need to address.

Too much of the world's food is in the North and West, with not enough elsewhere. In Europe, shops and food outlets have enough food available to provide each and every person with more than 3,000 calories per day. In the US, this figure is around 3,600 calories. We don't need this many. In fact, on average, a person only needs to eat around 2,000 calories each day.[16]

Where do these extra calories go? Some of them get eaten – think about snack foods full of 'empty calories' with nothing nutritious about them. These snack foods contribute to rising numbers of overweight people and to crippling obesity worldwide. The calories that don't get eaten end up in our garbage cans and then often go to landfill sites, where they rot, producing greenhouse gases that contribute to climate change.

Elsewhere in the world, as few as 1,500 calories may be available per person per day.[17] Women, again, are most severely affected by the problem of food being unevenly distributed. Twice as many women suffer from malnutrition as men, and girls are twice as likely to die from malnutrition as boys.[18] Yet, providing the additional calories needed by the 13 per cent of the world's population facing hunger would require just 3 per cent of the current global food supply.[19]

FOOD CONSUMPTION

Food is not just about calories. It can also be a source of enjoyment, a way of nurturing ourselves and others, and a point of connection between families and friends. Many of us would like to know more about where our food comes from and how those who grew or produced it were rewarded for their efforts, but it can be difficult to find out.[20] Many of us have lost touch with the seasons and forgotten what grows when, because supermarkets seem to have everything available all of the time.

This disconnection means that we don't value our food in the way that we might if we could picture the toil and the tenderness that went into growing it or making it. We fall into the habit of eating the same things all year round rather than asking 'what's good now?', and the sameness of food can become boring. There's a risk that we stop enjoying our food; instead, we simply 'consume' it.

We've grown used to produce being available all year round
© YinYang / iStockPhoto

WHAT IT ALL MEANS FOR FUTURE FOOD PRODUCTION

The broken food system – struggling producers, unfair distribution and unhappy consumers – is creating a whole raft of other problems. It is affecting our natural and physical environment, which makes the lives of food producers even harder.

Agriculture is implicated in nearly a third of global greenhouse gas emissions,[21] with about half of that resulting directly from food production and the other half coming from agriculture-driven deforestation and land degradation.[22] Transporting food also has emissions impacts – though there can be complex trade-offs which make it difficult to judge whether it is best to grow things locally to where they will be eaten, or in season elsewhere. Further greenhouse gases are produced when lost or wasted food is sent to landfill – and, worse still, greenhouse gases were unnecessarily released during the production of that wasted food. All of these emissions add up and contribute to climate change.

Chemicals such as nitrogen fertilizers, used in modern intensive farming, can cause further harm to our environment. Intended to support food crops, the majority of these chemicals instead escape to cause damage elsewhere.[23] Some get washed into rivers, where they 'fertilize' algae and create algal blooms that use up oxygen in the water, suffocating and killing other wildlife, such as fish. Some algae release toxins that are dangerous to wildlife as well as to humans.

All of this – a changing climate and a damaged environment – are affecting the quality and quantity of agricultural land, the seasonal availability of water resources, and the growing seasons. These changes are compromising the ability of the world's poorest to produce food for their families and communities.

WHAT WE CAN DO

Oxfam's 'GROW Method' is the start of a conversation about what we can all do in our daily lives and interactions with food to help readjust the food system and move towards a future where everyone has enough to eat, always.

The GROW Method starts when we go shopping, is used in the kitchen, and continues long after we

finish breakfast, lunch or dinner. It's a pathway to a sustainable food future and it starts with five simple principles – some of which many of us are probably doing already:

SAVE FOOD
Around a third of the food produced for people's plates ends up lost or wasted between farm and fork. But by planning our meals and saving our leftovers, we can reduce this waste. We'll also be responsible for less greenhouse gas emissions, which is more sustainable.

SUPPORT
By supporting small-scale food producers, we're supporting the 1.5 billion people that live on small farms all over the world, and helping to protect our ability to produce food in the future through sustainable farming practices. Looking out for Fair Trade products and brands when we shop is a great way of doing this.

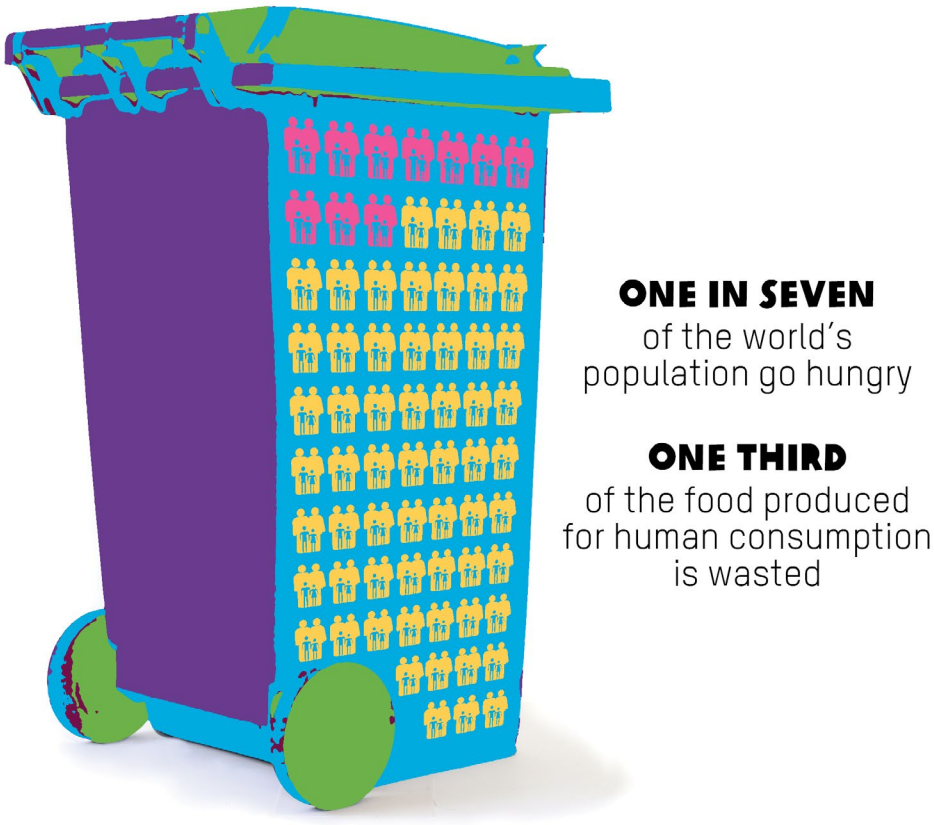
SEASONAL
A lot of energy is wasted in trying to grow food in the wrong place, at the wrong time of year. By discovering what's in season near us, we'll find delicious fruit and vegetables to eat, which aren't using all that energy to reach our plates.

COOK SMART
We rely on precious fossil fuels to cook and heat our food, and these everyday tasks add up to big emissions, as well as big energy bills. If we try cooking with as little water as possible, using flat-bottomed pans, covering our pans with lids, and reducing the heat as soon as the water starts to boil, we can save energy, water *and* money.

LESS MEAT
Rearing animals for food means a lot more greenhouse gas emissions, more water consumed, and more land required, compared to growing food crops. If we eat a little less meat and a little less dairy, we will dramatically reduce the impact of our diets on the environment.

Over the next few pages, this report explores what we could achieve by taking some of the positive actions outlined here. It takes some simple examples, and asks 'what if?' we were to make just a few small changes – what would that mean for our food system and for the wider world?[24] The actions explored here are not the whole solution, but they are a starting point and an illustration of the sheer scale of what we can achieve together.

WHAT IF...



A PROBLEM WITH FOOD WASTE

The world has a problem with food waste. Around a third of the food produced for people's plates ends up lost or wasted between farm and fork. Each year, the amount of food thrown away in rich countries is almost the same as that produced in sub-Saharan Africa.[25] With nearly a billion people going hungry in the world, and with demand for food set to soar,[26] we need to play our part in ensuring that the food that's grown is available to the people who need it, rather than rotting in landfill.

Food waste is bad news in more ways than one. Both food production and sending food to landfill result in emissions of greenhouse gases. These gases contribute to changes in the climate, which make it increasingly difficult for farmers to supply the world with food. The problems that climate change causes mean that even more of us could go hungry in the future.

WHAT IF... WE NEVER LET AN APPLE SPOIL?

None of us likes to throw good food away, but with busy lifestyles and, sometimes, with fussy families to feed, it can be difficult to avoid. Despite our best intentions, some of the food we buy does not, in fact, end up being eaten. To give just one example, of all the fresh apples bought in Brazil, India, Spain, the Philippines, the UK and USA, one in six ends up in the garbage can.

5.3 BILLION APPLES

What if, starting just with apples,[27] we were to take steps to ensure that everything we bought got eaten? We can do this by making sure we store our apples in the best possible way, by checking how many apples we have before we shop for more, and by eating our apples in the order in which they were bought. In this way, in urban households across these six countries alone, over 5.3 billion apples could be saved every year. That's enough apples, lined up side by side, to stretch more than nine times around the Earth.

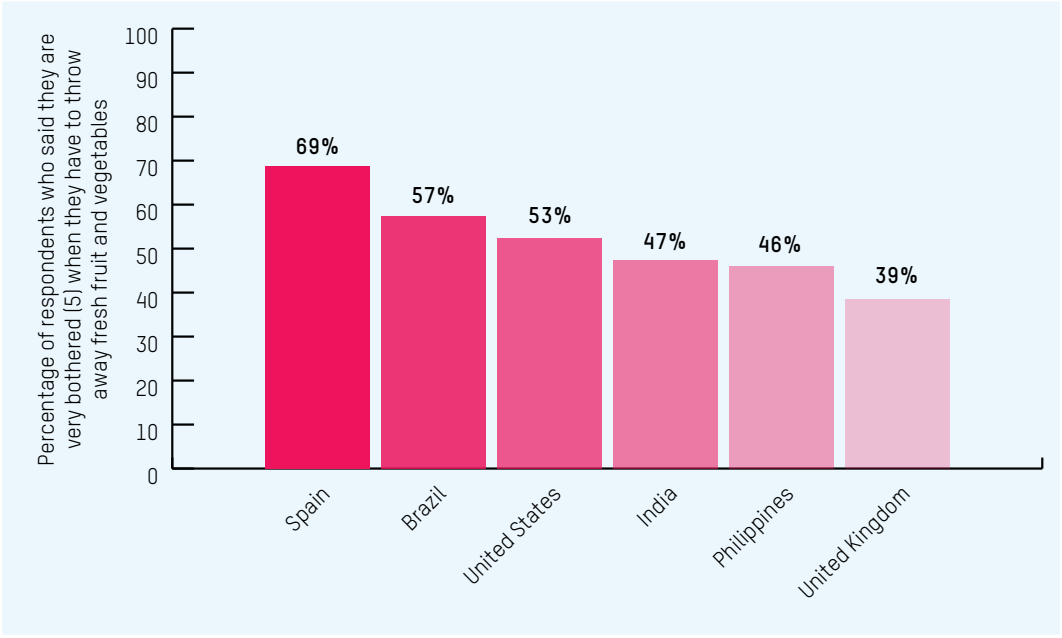
STOPPING SPOILAGE IN ITS TRACKS

The usual reason for throwing food away is that the food spoils before we get around to eating it. While this is frustrating, there is good news – spoiling is something we can help prevent. In the case of apples, many of us like to keep them in a fruit bowl[28] as this can seem like the best way of making sure they get eaten. Apples, however, actually keep for longer if stored in a bag, in the fridge. This is also true of most other fruit (with the exception of bananas and pineapples) and for a lot of vegetables too.

FOOD FOR THE FUTURE

The impact of those 5.3 billion lost apples extends to our ability to feed ourselves in the future. The energy and fertilizer used to grow, harvest, store, transport and package those apples all have an impact on the atmosphere and environment – putting unnecessary pressure on the food system. When sent to landfill, apples create further greenhouse gases, which contribute to climate change. These wasted apples alone would be responsible for as many greenhouse gas emissions as burning 10 million barrels of oil. By making sure we buy only the apples that we need, and that we eat all the apples that we buy, we are helping to protect the ability of farmers, now and in the future, to supply us with the food we need.

FIGURE 7 - HOW BOTHERED ARE WE BY FOOD WASTE?



We asked: "Thinking about fruit and vegetables, on a scale of 1 to 5, where 5 is 'very bothered' and 1 is 'not at all bothered,' how bothered are you when you have to throw away fresh fruit and vegetables?
Answer options: 1 (not at all bothered); 2; 3; 4; 5 (very bothered); Never throw away fresh fruit and vegetables; Don't know
Base: 5,097

RISING FOOD PRICES CAN BE BAD NEWS FOR SMALL-SCALE PRODUCERS

When food prices go up, you'd think it would be good news for the people who farm and produce our food, but often this is not the case. Small-scale producers in developing countries typically spend well over half of their total income on food. Many of them spend more on buying food for their families than they earn from selling the produce that they grow.[29]

One problem is that the prices paid to farmers are usually modest compared to the prices that we pay in the shops. When prices go up, we can't be sure that the extra money we're paying reaches the farmers. Instead, it can go to other actors in the supply chain – like retailers, manufacturers, traders and speculators. Low incomes make it difficult for small-scale producers to invest in their farms, to respond to short-term changes in demand, and to afford the increasingly expensive materials and tools they need. What's more, the increased frequency with which prices go up and down makes it even more difficult for small-scale producers to plan what to grow and to invest for the future.

WHAT IF... WHEN WE TREATED OURSELVES TO CHOCOLATE, WE MADE SURE IT WAS FAIR TRADE CHOCOLATE?

When we treat ourselves to a chocolate bar, we can also ensure that the small-scale farmers who grew the cocoa in it are being treated fairly. If all of us make sure that two of the chocolate bars we buy each month[30] are Fair Trade, across urban Brazil, Spain, the UK and the USA alone, over 12.5 billion bars made with Fair Trade cocoa would be bought every year.

A FAIRER DEAL

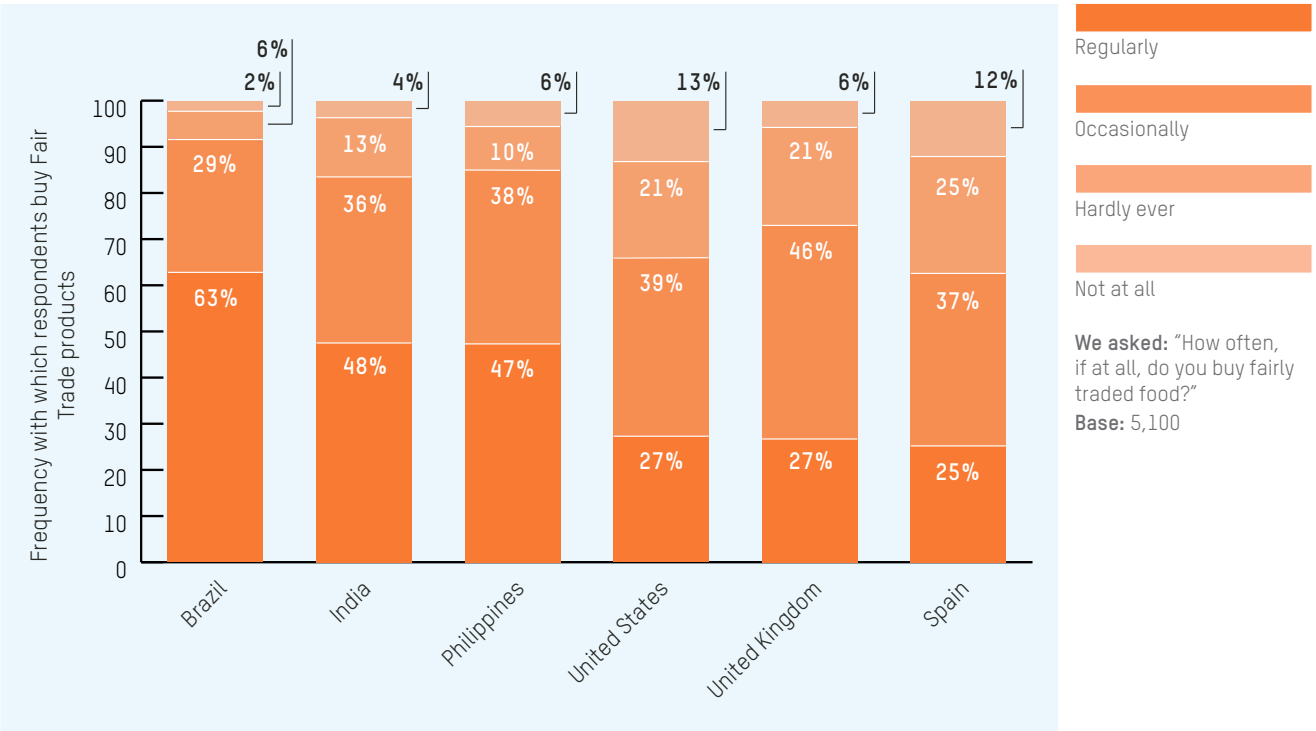
Over the course of a year, those 12.5 billion bars of Fair Trade chocolate would support the people who live and work on over 90,000 small-scale cocoa farms. Fair Trade products, particularly those from Fair Trade Organizations whose business models and values provide the maximum benefits to small-scale food producers, can transform the lives and livelihoods of people in developing countries. Fair Trade helps these families move from poverty towards economic self-sufficiency and ownership. It helps to empower small producers to gain better access to markets, as well as to ensure that buyers act with concern for their social, economic and environmental wellbeing.

When small-scale cocoa farmers receive fair prices for their produce, this helps to ensure that, even when global food prices change unpredictably, they have the money to buy food for their families.[31] This is especially important for expectant mothers and young children, as proper nutrition before birth and at a young age is vital for healthy growth and development. Nutrition even affects how well children do at school – and of course every parent wants their children to do well at school – and, when they grow up, at work.[32]

LONG-TERM BENEFITS

As well as the other benefits, the stability of Fair Trade prices and the support offered by Fair Trade Organizations from one year to the next also allow small-scale food producers to make long-term plans, for their farms and families, and to break the cycle of indebtedness. This helps support and maintain rural economies while giving farmers and their children more options for the future. These options can range from education and healthcare projects to gender equality initiatives and career development.

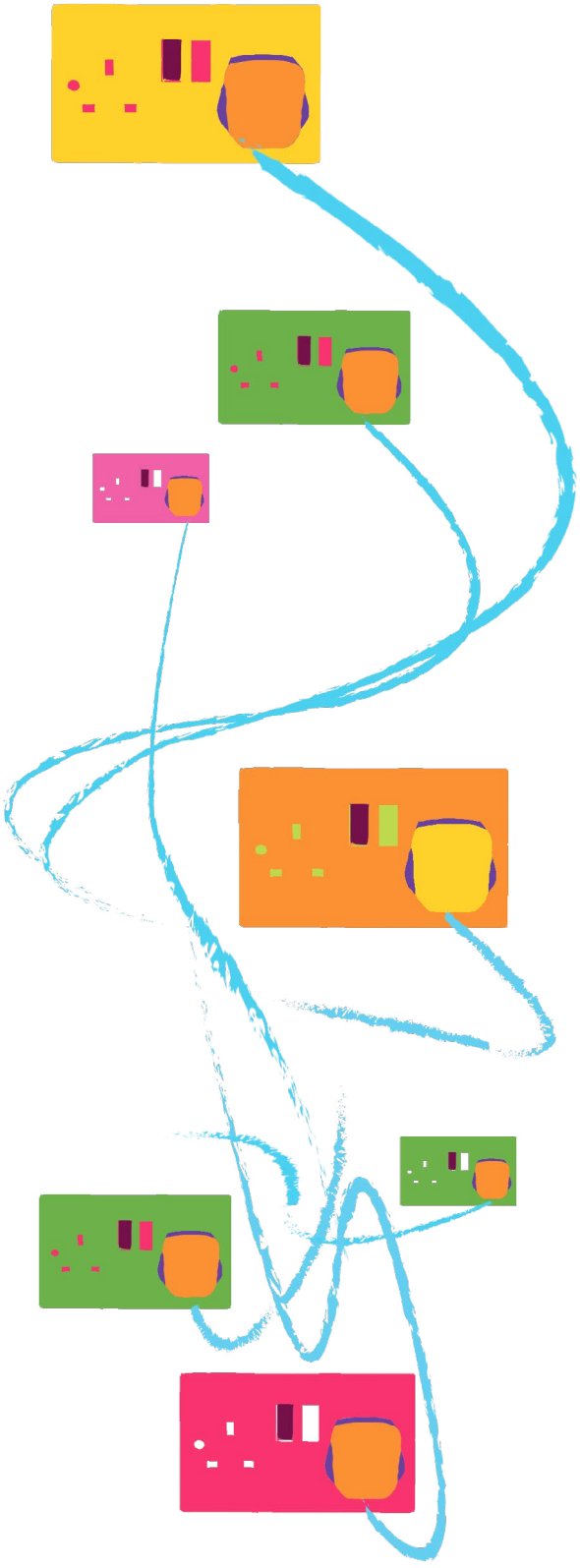
FIGURE 8 - BUYING FAIR TRADE



AN ORDINARY DAY IN THE KITCHEN

Despite the fact that many of us are buying more energy-efficient appliances for our homes, we are actually using more energy than we used to, rather than less.[33] Much of this increase is down to the way in which appliances are used. Leaving appliances switched on, using standby, and using appliances in an inefficient way – for example, filling kettles or pans to the top when we are only using a small amount of water – all of these things play a part.

WHAT IF... WE COULD SAVE ENERGY WHEN COOKING?



The amount of energy we use to cook the same meal with the same equipment can vary hugely depending on *how* we cook. What kind of pan we choose[34], whether we use a lid or not, even whether we are in a hurry when cooking – all of these factors have an impact.

THREE SIMPLE STEPS TO MAXIMUM EFFICIENCY COOKING

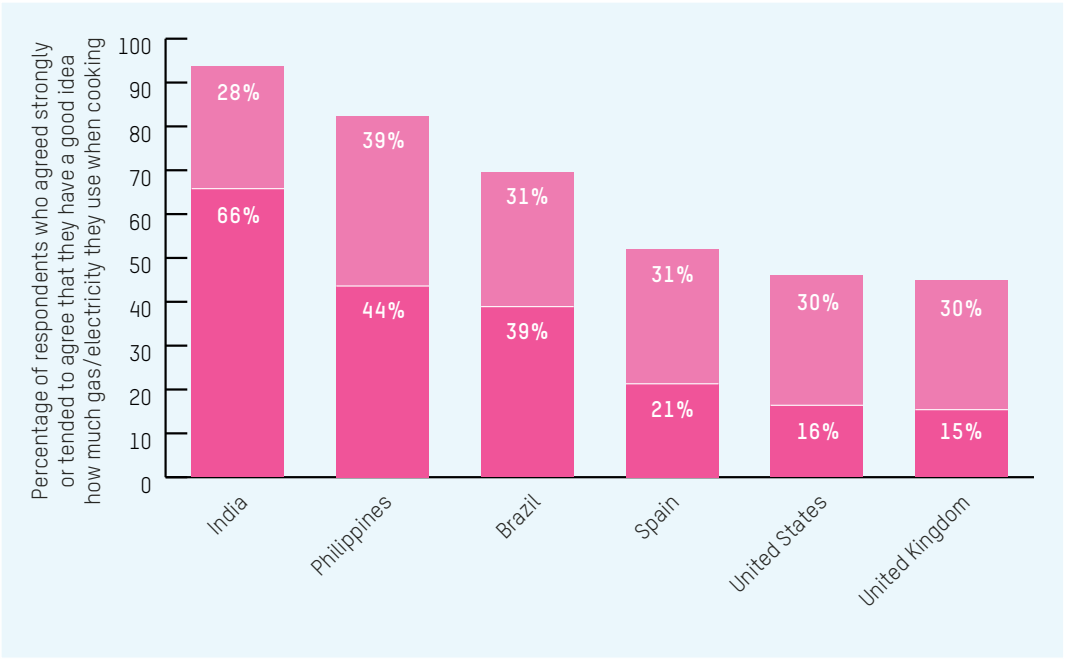
When cooking vegetables on the stove, for example, we could reduce the amount of energy we use by up to 70 per cent[35], by following these simple steps:

1. using only just enough water to cover the vegetables, rather than filling the pan up to the top;
2. using a flat-bottomed pan, and covering this pan with a lid; and
3. reducing the heat as soon as the water starts boiling.

540 MILLION TREES

If all urban households in Brazil, India, the Philippines, Spain, the UK and the USA took these simple steps, over 30 million megawatt hours of energy could be saved every year. The benefit for the environment would be greater than if these same households each planted a tree seedling and let it grow for ten years.

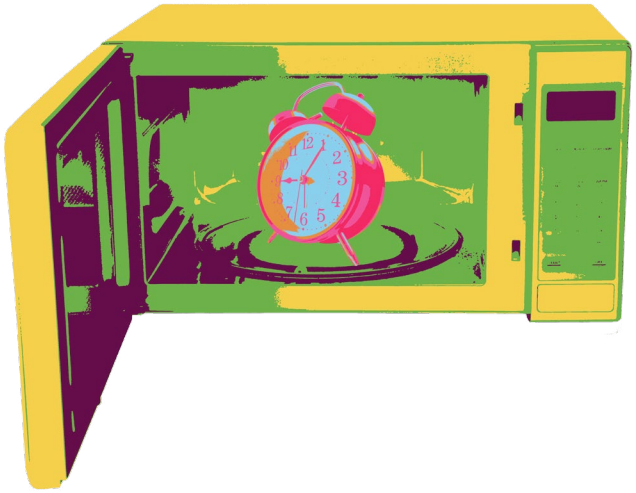
FIGURE 9 - KNOWLEDGE OF ENERGY USE



We asked: "Thinking about cooking at home, how much do you agree or disagree with the following: I have a good idea of how much gas/electricity I use when I'm cooking."

Answer options: Agree strongly; Tend to agree; Neither agree nor disagree; Tend to disagree; Disagree strongly; Don't know

Base: 5,100



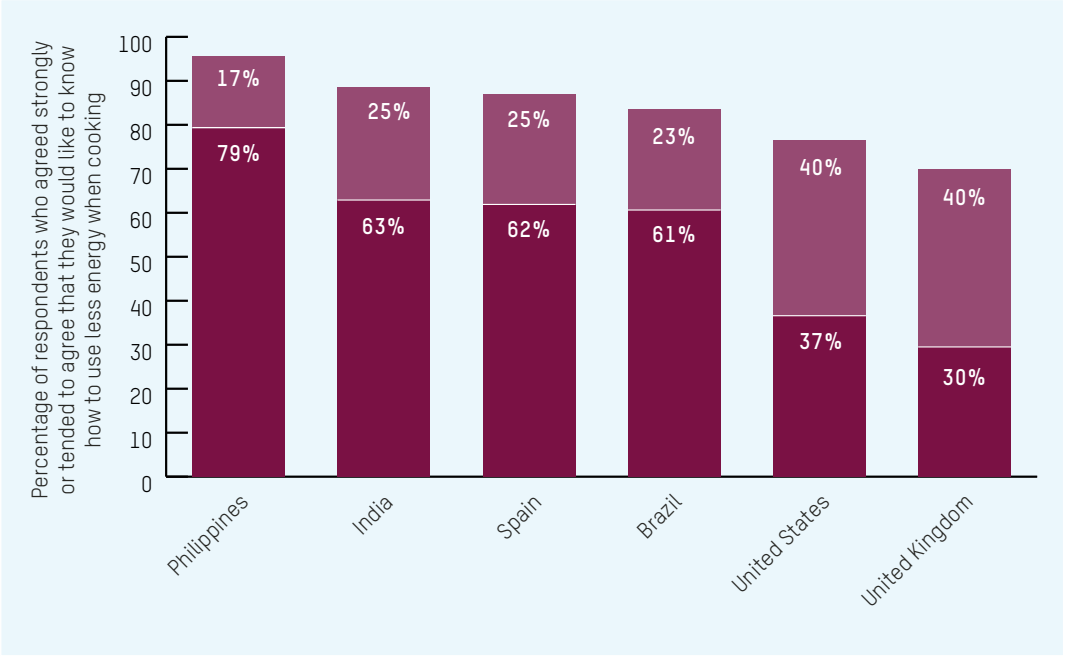
SMALL TWEAKS TO COOKING TECHNIQUES

These small tweaks to the way we use our stoves can help ensure that we are not wasting time, money and precious fossil fuels by heating air or water instead of our food. Most of us use our stoves for cooking every day,[36] and so although the amount of energy used to cook each meal is small, these little tweaks to the way we cook can add up to a big impact.

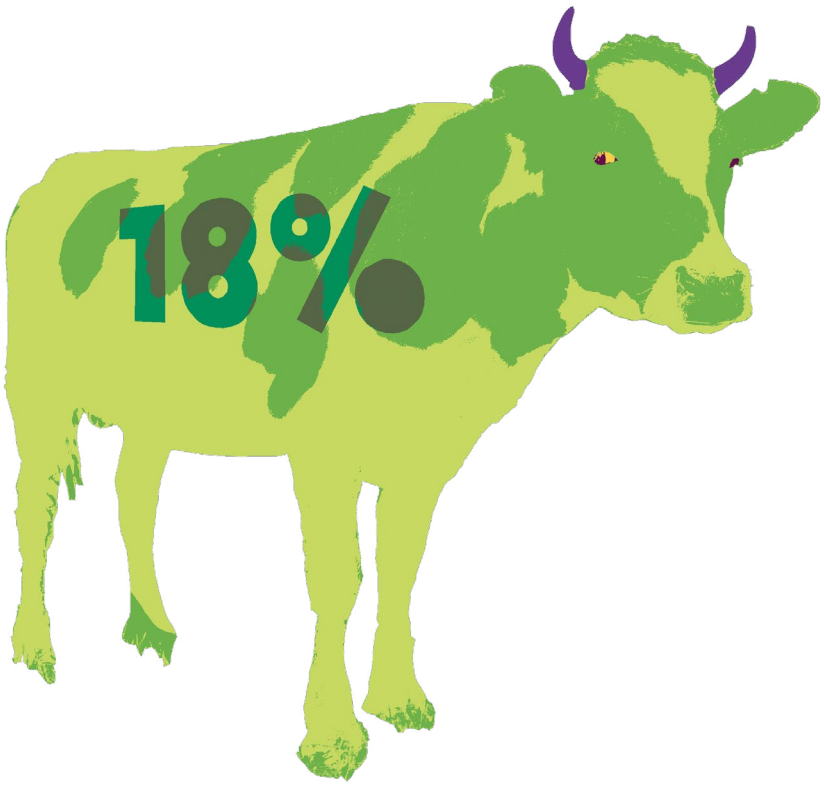
GETTING THE MOST FROM OUR MACHINES

There are lots of ways to save energy at home – for example, turning off or unplugging appliances when they are not in use. Up to half of the power used by our microwaves, for example, may be spent powering the clock rather than in heating food.[37] While it's worth bearing energy efficiency in mind when the time comes to replace appliances in the kitchen, for most of us this doesn't happen very often.[38] Changing the way in which we use the appliances we already have is the quickest and easiest route to making energy savings.

FIGURE 10 - KNOWING HOW TO SAVE ENERGY



We asked: "Thinking about cooking at home, how much do you agree or disagree with the following: I'd like to know how to use less energy when I'm cooking."
Answer options: Agree strongly; Tend to agree; Neither agree nor disagree; Tend to disagree; Disagree strongly; Don't know
Base: 5,100

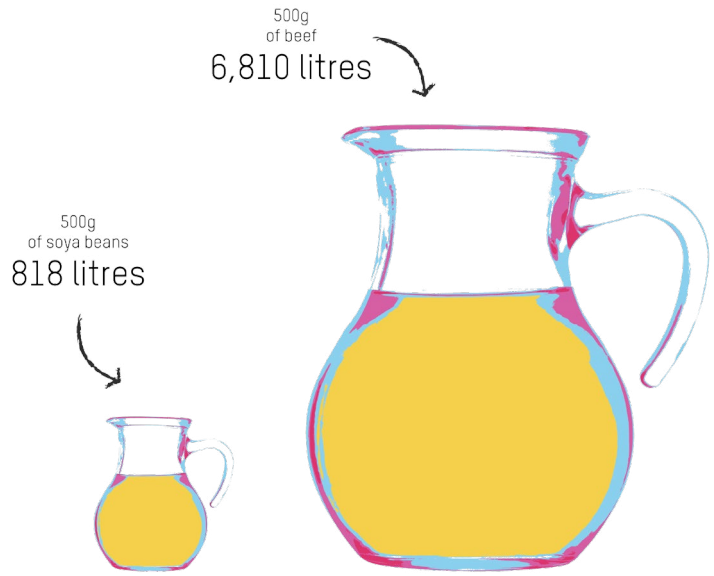


MORE TO MEAT THAN MEETS THE EYE

Livestock produce some of the most dangerous greenhouse gases – methane and nitrous oxide – through their digestive systems (in the case of ruminants, such as cows) and their manure. Both of these gases are far more powerful than the more commonly talked-about carbon dioxide. Overall, livestock is responsible for 18 per cent of global greenhouse gas emissions. Livestock farming also uses huge amounts of water – nearly 8 per cent of global human water use goes to grow food for cattle alone.

Worldwide, nearly 42kg of meat is produced per person every year. But meat eating varies between regions and according to socio-economic status.[39] In rich countries, some of us eat so much meat that it can cause problems with our health. In contrast, many people in developing countries – especially children – need more of the protein and micronutrients found in meat and milk in their diets.

WHAT IF... URBAN HOUSEHOLDS ATE A MEAT-FREE MEAL ONCE A WEEK?



If we swap, for example, one meal of beef for a vegetarian option just once a week, the benefits can be huge.

THE HIDDEN WATER IN OUR FOOD

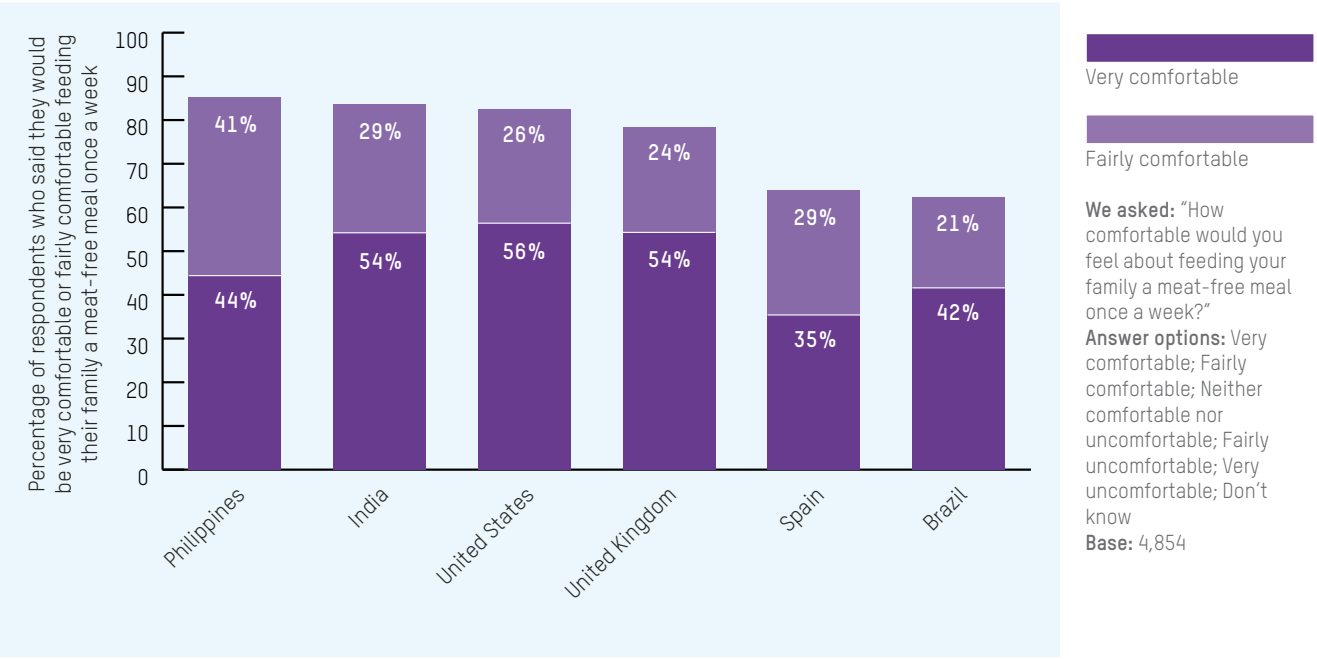
A 500g packet of beef (the amount we might use when cooking a spaghetti bolognaise for four people) takes 6,810 litres of water to produce.

That's a lot of water. If one household – two adults and two children – tried to drink that same amount, they would each have to drink over four and a half litres of water every day for a year to get through it all.

In contrast, growing 500g of beans (the amount of beans we might use to make bean burgers for four people) only takes 818 litres of water.[40] That's the equivalent of a large glass of water[41] a day each for the two adults and the two children over the course of a year – much more manageable.

So if we swap that 500g of beef for an alternative, such as beans or lentils, we can

FIGURE 11 - MEAT-FREE ONCE A WEEK



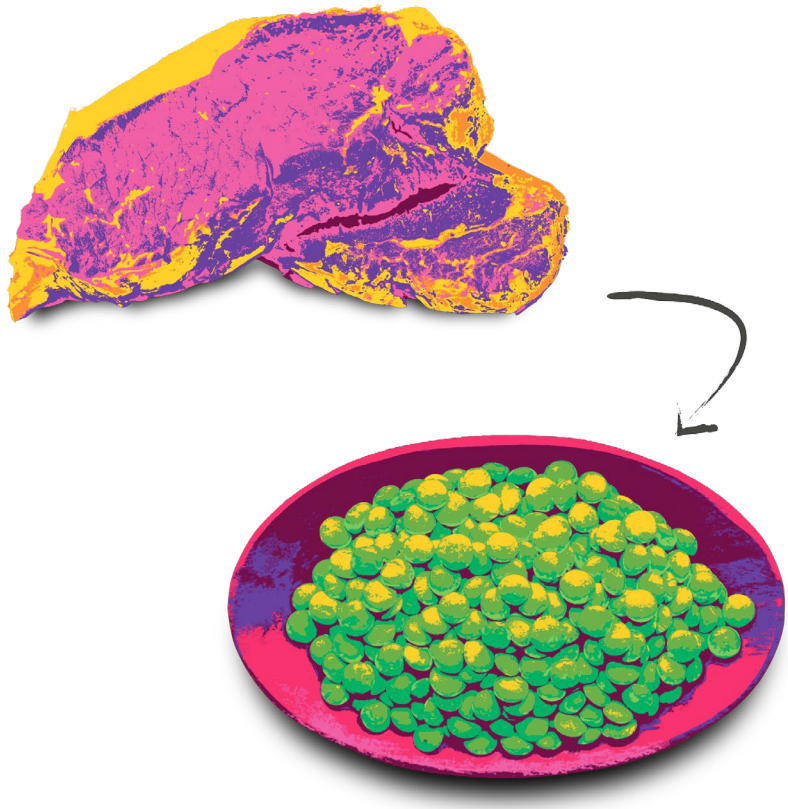
save nearly 6,000 litres of water in just one four-person meal. That's the equivalent of seventeen bathtubs filled to the brim, and then some. If just one household can choose to save or use this amount of water in a single meal, imagine how much water could be saved by small changes to the diets of those who eat meat every day. Choosing beans instead of meat can help relieve the immense strain our water resources are already under,[42] and help secure safe food supplies for everyone's future.[43]

BEANS VERSUS BEEF

If urban households in the USA, UK, Spain and Brazil were to eat a meat-free meal once a week, swapping beef for beans or lentils, around nine and a half million fewer cows would need to be reared every year. That would mean over 900,000 tonnes less methane being produced every year, making as much of a difference to the environment as taking over 3.7 million cars off the road for a year.

SUPPORTING SMALL-SCALE LIVESTOCK FARMERS

Of course, there's more to it than greenhouse gas emissions and water use. In some areas, livestock farming is the most sensible use of agricultural land that isn't suitable for growing crops, and many people depend on livestock farming for their livelihoods.[44] But it doesn't have to be a choice between the environment and the livelihoods of small-scale food producers. As well as swapping our chilli con carne for a bean chilli once a week, we can help to support small-scale producers by making choices about the meat we buy and where we buy it from every other day of the week too.



WHAT IF... WE DIDN'T STOP THERE?

TODAY THE KITCHEN - TOMORROW, THE WORLD

We have seen what a huge difference we can make through positive choices when buying and cooking food for our families. An apple, a bar of chocolate, a portion of vegetables, or a family dinner – the choices that we make together can help to make the food chain better for people and the planet. And if just a few small changes can make such a big difference, imagine what else we could achieve.

We have the power to change the way that food is produced and distributed on a global scale. We can do this bit by bit, starting in our own homes. The choices we make can have a positive impact in their own right. They also show governments and corporations that we care, and that we want them to act, too, with the same urgency and commitment that we have shown. If we all act together, the collective momentum of our choices and our actions will be so strong that it changes the world.

WHAT IF... WE DIDN'T STOP THERE?

IT ALL STARTED WITH AN APPLE...

Making sure that we don't let apples spoil is an easy but effective way to start tackling the food waste problem. And once we get into the habit with apples, it's easy to start taking extra steps to make our efforts go even further.

Starting with apples, we can make sure that we're storing all of our food in the best possible way so it keeps for longer – for example, keeping most other fruit and vegetables in the fridge, too. We can also do things like checking what's in our cupboards before going shopping, planning meals and writing shopping lists, so we don't accidentally over-buy things we're not going to need or don't have time to eat. We can make sure we keep regularly checking the 'use by' dates on our food, to help us eat things up before they go out of date. We can carefully measure out the right portion sizes to help make sure we don't cook too much and, if and when there are leftovers, we can eat them up with other meals rather than throwing them away.

All of these little things will add up to less and less food being thrown into our garbage cans – and less food in our garbage cans means fewer greenhouse gas emissions. This is because we won't be wasting energy to grow, process and transport food that ends up being thrown away, and because there will be less wasted food rotting in landfill and releasing greenhouse gases. This is good news for the small-scale food producers who are struggling with the effects of climate change. Keeping greenhouse gases and climate change under control is essential if they are to continue producing the food we need now and into the future.

FINDING SMALL-SCALE FOOD PRODUCERS

Buying Fair Trade chocolate (and coffee, and tea, and sugar...) wherever and whenever Fair Trade food is available is a great way of supporting small-scale food producers in developing countries. It's not always so straightforward, though – it can sometimes be difficult to know who has produced the food that we buy in the shops.[45] Often, that information is not available. But we can start by asking questions, and show the food retailers that we want to know where our food comes from. If enough of us are demanding answers, the retailers will supply them.

THE JOY OF SEASONS

Another way of eating more sustainably is to look for seasonal food. By eating seasonably, we can help minimize the energy use and greenhouse gas emissions that result from producers having to force food to grow outside its natural season. The beauty of seasonal food is that it's never the same: what's in season varies depending on not only what time of year it is, but where in the world we are. Eating with the natural cycles of our local seasons means that we always have something to look forward to – like this year's crop of strawberries or sweetcorn – instead of getting bored eating the same things week in, week out. And because food often tastes better when it's in season, it's worth the wait.

When it comes to the 'how to' of eating seasonably, there are no straightforward, universal rules of thumb

for what to eat and when. The only way to go about eating more seasonably is to investigate what's in season where we are and what's in season elsewhere in the world – but that's part of the fun and excitement of it.

The picture seems to become more complex if we want to eat food produced locally in season *and* support small-scale food producers in developing countries. How can we do both at the same time, and don't the two contradict each other?

One of the obvious benefits of eating local seasonal food is the reduction in 'food miles' – or the distance that food travels from farm to fork. Put simply, fewer food miles means less food transport, which in turn means fewer greenhouse gas emissions. However, there's more to the environmental impact of food than just the distance it travels, so there are more questions we need to ask beyond simply 'where was this food grown?' Some of these questions are 'how was this food grown?' – outdoors during its natural growing season or intensively in a greenhouse? – and 'how was this food transported?'[46]

All of this shows that it doesn't have to be an either/or choice between seasonal produce or supporting small-scale food producers in developing countries. Different foods grow best in different locations: we can eat local, seasonal foods that are suited to growing where we live, as well as the more exotic foods grown by producers elsewhere in the world.

This is a complex issue and there are many considerations to think about; we may not always be sure of what the best thing to do is, but the important thing is that we take an interest in our food and its complexity.

SMART COOKING

With cooking, the rules of thumb are much more straightforward, and there is a lot we can do besides making sure we're using our stoves efficiently. Microwaves and pressure cookers are energy-efficient, and can be good alternatives to cooking things on the stove or in the oven. Ovens use a lot of energy, but when we do use them, we can make the best use of them by cooking as many different things as we can fit in at once (like baking a cake while dinner is in the oven). We can also take a look around the kitchen and make sure that we switch off any appliances that are not in use. Many use energy while on standby, for example to power clocks – and we probably don't need every single one of the clocks that manufacturers put on our kitchen appliances. Some appliances need to be switched on all the time, and we can make sure that these are running as efficiently as possible – both in terms of energy use and the jobs that they're there to

do. For example, keeping our fridges below 5°C helps food keep for longer, helping us make sure that our apples and other fruit and vegetables don't spoil.

All of these are simple actions that we can take daily to help ensure that we minimize our energy use and greenhouse gas emissions when cooking. It's all about building up planet-friendly habits that make a tiny difference every day but which add up to a big impact overall.

BEEF IN THE BALANCE

Meat production is putting a lot of pressure on our environment: it's water-hungry and land-hungry, as well as creating greenhouse gas emissions. Each meat-free meal takes some of the pressure off our natural resources. As the world population grows, it's also vital that global meat consumption is re-balanced. Many people in developed countries need to eat less meat, and many people in developing countries may need to eat more, so that every child gets the protein and nutrients they need for healthy growth and development.

This doesn't mean that any of us need to give up our favourite foods. On the contrary, getting into the habit of 'Meat-Free Mondays' or similar can be an opportunity to discover exciting new recipes and flavours.[47] We can also help by making sure that none of the meat we buy and cook goes to waste. And to take this one step further, we can help to make sure that no part of meat-producing animals goes to waste either: we may be used to being offered only a small range of cuts of meat in the supermarket, but there are other tasty and exciting options to explore.

HOW TO FIX A BROKEN FOOD SYSTEM

There are many things wrong with our food system. It's not working for people, for the planet, or for our future. This needs to change. Together we have the power to start re-shaping it, through the choices that we make every day. Together we can influence governments and businesses, demanding that they, too, start making better, fairer choices.

Together we have the power to take on the task of making the global food system fairer for all, more sustainable and more secure. We already know how to feed our families wholesome, healthy food on limited budgets, and we can extend our skills to help ensure that our choices also have a positive impact in the wider world. It doesn't need to be time-consuming or expensive. We can start by making small changes to our everyday habits. We can keep finding out more about what our choices mean for the planet and for people, locally and further afield, and we can build up from there. We can tell governments and businesses that we want them to take action to make the global food system fairer and more sustainable.

The global food system may be big and unwieldy, but together we can build up the momentum that we need to start changing it. By joining forces we can harness our collective power and make our shopping trolleys, our kitchens and our dinner tables a force for good.

GROW
FOOD. LIFE. PLANET.

GROW is Oxfam's campaign for a future where everyone on the planet always has enough to eat. It is bringing people across the world together to help them make positive changes in their own lives and to press governments and companies to take urgent action. GROW is a vision for a brighter future. It involves all of us. So be part of it:

- Take on the 'GROW Method' – a brand new way of thinking about food and the way we buy it, prepare it, and eat it through five simple principles. Find out more at www.oxfam.org/growmethod.
- Share the 'GROW Method' with your friends and family – learn it, talk about it, teach it, share it, tweet it, blog it.
- Join GROW so you can find out about opportunities to come together with people from all over the world to pressure governments and companies to take urgent action.

Go to www.oxfam.org/GROW to find out more, and help grow a happier future for us all.

ANNEX
SOURCES AND CALCULATIONS

INTRODUCTION

Notes

1. World Food Programme (2012) *Hunger stats.* http://www.wfp.org/hunger/stats – accessed 26 June 2012.
2. Oxfam (2011) Growing a Better Future: Food Justice in a Resource-constrained World.
3. Neilsen (2011) *Women of tomorrow: A study of women around the world* states that women control the majority of purchasing decisions in a household, and that their influence is growing. In developed economies (including Spain, the UK and USA) 43 per cent of women and men surveyed felt that the most appropriate decision makers for purchases and activities relating to food were primarily women, while 51 per cent felt that both men and women equally were appropriate decision makers. Only 6 per cent felt that the most appropriate decision makers were primarily men. In emerging economies (including Brazil and India) 48 per cent of women and men surveyed felt that the most appropriate decision makers for purchases and activities relating to food were primarily women, while 43 per cent felt that both men and women equally were appropriate decision makers. 8 per cent felt that the most appropriate decision makers with respect to food were primarily men.
4. OECD (2011) *Society at a Glance 2011: OECD Social Indicators: Cooking and Caring, Building and Repairing: Unpaid Work around the World*. Data drawn from detailed time-use surveys for 26 OECD countries, and for China, India and South Africa, shows that 82 per cent of women participate in cooking, while 44 per cent of men do. Women spend an average of 83 minutes per day on cooking and food clean-up, compared to 21 minutes for men.

Survey methodology

A survey of a total of 5,100 women from Brazil, India, Spain, the Philippines, the UK and USA was conducted online, between 31 May 2012 and 11 June 2012. Respondents were selected as those aged between 18 and 64; classing themselves as living in 'a big city,' 'the suburbs or outskirts of a big city,' or 'a small city or large town'; responding 'yes' to the question 'are you the mother or main or joint carer of any child/children aged 17 or under who lives in your household?'; and stating that they have responsibility for 'some', 'half' or 'all or most' of the food shopping and the cooking in their household. The survey was designed by Brook Lyndhurst, in consultation with Oxfam, and was conducted by GfK NOP.

All figures in this report were produced by Brook Lyndhurst, using data from the survey described above. All figures use the full base (5,100) with the exception of Figure 7, which excludes respondents who stated that they do not buy fresh fruit and vegetables, and Figure 11, which excludes respondents who stated that they do not buy meat.

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IF IT IS BROKE, LET'S FIX IT

Notes

5. nVision Research for Oxfam (2010) In a survey of mothers in towns and cities, 85 per cent in India, 84 per cent in Brazil, 68 per cent in Spain, and 60 per cent in the USA, agreed or strongly agreed with the statement "I am strongly concerned about what I personally can do to help to protect the environment." Base: 1,000-7,000

online respondents per country, aged 16-64 (China 16-54). In the same survey, 74 per cent of respondents in India, 72 per cent in Brazil, 37 per cent in Spain, and 27 per cent in the USA agreed or strongly agreed with the statement "I would be willing to pay as much as 10 per cent more for grocery items if I could be sure that they would not harm the environment". Base: 1,000-5,000 online respondents per country, aged 16-64 (China 16-54). The definition of mothers for this research in the USA, Brazil and India was women with tertiary education and at least one child under 16 living in the household. In Great Britain and Spain it was women with at least one child under 16 living in the household.

6. Fletcher, J. and Downing, P. (2011) *Consumer understanding of green terms: A report to the Department for Environment, Food and Rural Affairs* (Brook Lyndhurst & Icaro Consulting) states that people may find it difficult to judge the value and importance of different environmental or ethical terms or claims made on or about products. For example, 43 per cent of respondents said they found it difficult to understand whether a product is environmentally-friendly based on the information on product packaging.

The broken food system

Notes

7. Bailey, R. (2011) *Growing a better future: Food justice in a resource-constrained world* (referencing FAO (2009) *How to Feed the World in 2050*). Oxfam.

8. Fairtrade Foundation (2009) *The global food crisis and Fairtrade: Small farmers, big solutions?* states that small-scale farmers produce, for example, up to 80 per cent of Zambia's food, and up to 45 per cent of Chile's vegetables, corn and rice.

9. Department for International Development (2011) *Scaling Up Nutrition: The UK's position paper on undernutrition* states that 86 per cent of the world's poor who live in rural areas rely on agriculture for their own survival.

10. Gustavsson, J., Cederberg, C., Sonesson, U., van Otterdijk, R. and Meybeck, A. (2011) *Global food losses and food waste*. FAO.

11. Fairtrade Foundation (2009) *The global food crisis and Fairtrade: Small farmers, big solutions?* A considerable body of evidence suggests that small, integrated farming systems yield more per hectare in the long-term than large-scale monoculture farms.

12. Department for International Development (2011) *Scaling Up Nutrition: The UK's position paper on undernutrition.*

13. Oxfam (2011) *Growing a Better Future: Food Justice in a Resource-constrained World*.

14. Fairtrade Foundation (2009) *The global food crisis and Fairtrade: Small farmers, big solutions?* In Africa, women receive only 5 per cent of government training and support for smallholders.

15. FAO (2012) *Men and women in agriculture: closing the gap* states that this would enable women to increase yields by 20-30 per cent. http://www.fao.org/sofa/gender/en/ – accessed 1 June 2012.

16. Smil, V. (2004) *Improving efficiency and reducing waste in our food system*. Environmental Sciences 1(1): 17-26

17. Millstone, E. and Lang, T. (2008) *The atlas of food: who eats what, where and why*, quoting FAO statistics for the Horn of Africa from 2001-2003.

18. FAO (2012) *FAO Programme: Food security*. http://www.fao.org/gender/gender-home/gender-programme/gender-food/en/ – accessed 21 June 2012.

19. Raworth, K. (2012) *A Safe and Just Space for Humanity: Can we live within the doughnut?* Oxfam. http://policy-practice.oxfam.org.uk/publications/a-safe-and-just-space-for-humanity-can-we-live-within-the-doughnut-210490 – accessed 22 June 2012.

20. For example, Defra (2011) *Attitudes and Behaviours around Sustainable Food Purchasing* showed that only 17 per cent of households strongly agreed with the statement "I have a good understanding of the issues surrounding buying local / seasonal products", and that while 70 per cent of households feel that buying sustainable fish is important, a third are not sure how to choose sustainable fish products and are confused by labelling. 35 per cent of households were actively seeking to buy British seasonal produce when buying fruit and vegetables, while a further 37 per cent stated that they were doing this, but not as much as they would like. US Farmers and Ranchers Alliance (2011) *Food Dialogues* showed that US consumers were divides as to whether the US was heading in the right or wrong direction in the way they produce food. Consumers were confused over the effects of government regulations on farming, how pesticides are used, genetic engineering, how antibiotics are used, and how livestock and poultry are cared for. http://www.fooddialogues.com/survey-responses/ – accessed 22 June 2012.

21. FAO (2009) *Low Greenhouse Gas Agriculture: Mitigation and Adaptation Potential of Sustainable Farming Systems*.

22. FAO (undated) *Climate-smart agriculture: managing ecosystems for sustainable livelihoods*.

23. FAO (2009) *Low Greenhouse Gas Agriculture: Mitigation and Adaptation Potential of Sustainable Farming Systems*. This report cites Erisman et al. (2008) who report that only 17 per cent of the 100 Mt N produced in 2005 was taken up by crops, while the remainder was lost to the environment. For example, "high levels of reactive nitrogen (NH_4, NO_3) in soils may contribute to the emission of nitrous oxides and are main drivers of agricultural emissions".

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What we can do

Notes

24. The table on the following page illustrates the population figures used in the 'what if' calculations.

WHAT IF...

What if... we never let an apple spoil?

Notes

25. Gustavsson, J., Cederberg, C., Sonesson, U., van Otterdijk, R. and Meybeck, A. (2011) *Global food losses and food waste*. FAO.

26. Bailey, R. (2011) *Growing a better future: Food justice in a resource-constrained world*. Oxfam. This report references FAO (2009) *How to Feed the World in 2050* which anticipates that global food demand could grow by 70 per cent by 2050.

27. Apples have been chosen as an example of a food that is nearly universally bought across the six countries used as case studies for this report, and which are frequently stored in a way which is less than optimal.

28. Exodus research (2007) *Food storage and packaging* (WRAP) showed that nearly two thirds of respondents to a survey of 1,001 UK residents stored fresh fruit in a container in the light, such as a fruit bowl. In Johnson, D., Hipps, N. and Hails, S. (2008) *Helping consumers reduce fruit and vegetable waste: final report* (WRAP), 54 per cent of respondents in a UK survey (Base: 1,001) stated that they never stored apples the fridge, and a further 29 per cent stated that they were never/rarely stored this way. As part of the survey carried out for this report, 5,084 women in Brazil, India, the Philippines, Spain, the UK and USA were asked about where they stored apples. 42 per cent do not usually store apples in the fridge. Storing apples outside the fridge was most common in the UK (69 per cent) and in Spain (64 per cent).

Calculations

Of all the fresh apples bought in Brazil, India, Spain, the Philippines, the UK and USA, one in six ends up in the garbage can:

Figures for metric tonnes of apples purchased for fresh, domestic consumption were taken from Index Mundi (2011) Fresh Apples Fresh Domestic Consumption by Country in MT.
(http://www.indexmundi.com/agriculture/?commodity=apples&graph=fresh-domestic-consumption – accessed 1 June 2012).
According to this source, the amount of apples consumed annually (2011 data), in metric tonnes, is 1,095,000 MT in Brazil, 1,850,000 MT in India, 75,000 MT in the Philippines, and 2,193,927 MT in the USA. In the EU27, 7,872,300 MT of apples are consumed annually. Assuming that apples consumption in Europe is evenly spread per capita and there are 502.5 million residents in the EU27 (according to a 2011 Eurostat News Release on European demography:

Statistic	Brazil	India	Philippines	Spain	UK	USA	Source
Total population (2010)	195,423,000	1,214,464,000	93,617,000	45,317,000	62,130,000	317,641,000	Food and Agriculture Organisation of the United Nations (2011) The State of Food and Agriculture 2010-2011: Women in Agriculture - Closing the gender gap for development.
Urban population	169,040,895	365,553,664	62,161,688	35,075,358	55,854,870	261,418,543	Calculated using figures from: Food and Agriculture Organisation of the United Nations (2011) The State of Food and Agriculture 2010-2011: Women in Agriculture - Closing the gender gap for development.
Urban share of population	87 per cent	30 per cent	66 per cent	77 per cent	90 per cent	82 per cent	Calculated using figures from: Food and Agriculture Organisation of the United Nations (2011) The State of Food and Agriculture 2010-2011: Women in Agriculture - Closing the gender gap for development.
Number of households	68,399,000	306,200,000	18,539,769	14,187,169	26,258,000	114,235,996	
Sources	Instituto Brasileiro de Geografia e Estatistica, 2010 final census results	Census of India, 2011 provisional results for number of occupied houses	National Statistics Office, Manila, Philippines, 2007 Census results	Instituto Nacional de Estadistica, 2001	Office of National Statistics, mid-2010 estimates	United States Census Bureau, QuickFacts, 2006-2010	
Number of urban households	59,165,135	92,166,200	12,310,407	10,980,869	23,605,942	94,016,225	Calculated using the census data cited above and figures from Food and Agriculture Organisation of the United Nations (2011) The State of Food and Agriculture 2010-2011: Women in Agriculture - Closing the gender gap for development.

http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/3-28072011-AP/EN/3-28072011-AP-EN.PDF – accessed 1 June 2012), then annual apple consumption is estimated at 973,345 MT in the UK and 709,948 MT in Spain. This calculation assumed that apples are wasted in Brazil, India, Spain, the Philippines, and the USA in line with the average regional consumer waste rates of fruit and vegetables, quoted in Gustavsson, J., Cederberg, C., Sonesson, U., van Otterdijk, R. and Meybeck, A. (2011) *Global food losses and food waste* (FAO) as around 10 per cent in Latin America; 7 per cent in South & South East Asia; 19 per cent in Europe; and 28 per cent in North America. Using these waste rates gives 109,500 MT of apples wasted annually in Brazil, 129,500 MT in India, 5,250 MT in the Philippines, 614,299 MT in the USA, and 134,890 MT in Spain. In the UK, Quested, T. and Johnson, H. (2009) *Household food and drink waste in the UK* (WRAP) show that 260,000 tonnes of apples are lost as consumer food waste per year. Across these six countries, 1,253,439 MT of apples are wasted out of 6,897,220 MT purchased; in other words, the proportion of apples wasted out of those purchased by consumers is 18 per cent or just over one in six.

Over 5.3 billion apples could be saved every year:

Assuming that apple waste is evenly spread across all households, then the amount of apples wasted annually in urban households is 95,265 MT in Brazil, 38,850 MT in India, 3,465 MT in the Philippines, 503,726 MT in the USA, 234,000 MT in the UK, and 103,865 MT in Spain – in total, 979,171 MT/year. Assuming that an apple weighs 182g (Foodfacts.com (2002-2012) Nutrition Facts and Information for Apple with skin.

http://www.foodfacts.com/NutritionFacts/Apples/Apple-with-skin-Medium-275-diameter-182-g/2013 – accessed 21 June 2012), 5,380,060,852 apples are estimated to be wasted each year in urban households.

Enough apples, lined up side by side, to stretch more than nine times around the Earth:

According to Foodfacts.com (2002-2012) Nutrition Facts and Information for Apple with skin (http://www.foodfacts.com/NutritionFacts/Apples/Apple-with-skin-Medium-275-diameter-182-g/2013 – accessed 21 June 2012), the diameter of a medium to large apple is 6.985 cm. NASA (2012) Solar system facts and figures (http://solarsystem.nasa.gov/planets/profile.cfm?Display=Facts&Object=Earth – accessed 21 June 2012) gives the equatorial circumference of the earth as 40,030.2 kilometers. 5,380,060,852 apples would therefore stretch 9.39 times around the globe.

These wasted apples alone would be responsible for as many greenhouse gas emissions as burning 10 million barrels of oil:

King, R. (2009) *4-a-week: Changing food consumption in the UK to benefit people and planet* (Oxfam GB) states that "Every tonne of household food waste is responsible for 4.5 tonnes of carbon dioxide equivalent (CO_2e)." The 979,171 metric tonnes of apples wasted by urban households each year therefore equate to 4,406,270 tonnes of CO_2e. A barrel of oil results in 0.43 metric tonnes of CO_2 (United States Energy Protection Agency's Greenhouse Gas Equivalencies Calculator. Calculations and references. http://www.epa.gov/cleanenergy/energy-resources/refs.html#oil – accessed 21 June 2012.) and the emissions impact of these wasted apples is therefore equivalent to 10,247,138 barrels of oil.

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http://england.lovefoodhatewaste.com/hints-and-tips/storing-apples – accessed 21 June 2012.

What if... when we treated ourselves to chocolate, we made sure it was Fair Trade chocolate?

Notes

29. Fairtrade Foundation (2009) *The global food crisis and Fairtrade: Small farmers, big solutions?* This report states that "the vast majority of households in developing countries, including small farmers, are net buyers of food (they spend more on food than they earn from selling it) who spend 60 per cent-80 per cent of their income on food" and "only a minority of small farmers are net sellers of food".

30. According to CAOBISCO International Confectionery Association (2010) *The world cocoa economy: past and present*, in the UK, the equivalent of 16.5 50g bars of chocolate confectionary are eaten per person, every month; in the USA, 8.2 bars; in Spain, 5.3 bars; and in Brazil, 4.0 bars. eSpatial's (2012) *A Valentine's Day map: World chocolate consumption* (http://www.espatial.com/articles/a-valentines-day-map-world-chocolate-consumption/ – accessed 21 June 2012) illustrates chocolate consumption in these countries and others.

31. World Cocoa Foundation (2010) *Cocoa market update May 2010* (http://www.worldcocoafoundation.org/learn-about-cocoa/documents/CocoaMarketUpdateasof5.18.10.pdf - accessed 21 June 2012) states that close to 50 million people are dependent on cocoa for their livelihoods. Fairtrade Foundation (2011) *Fairtrade and cocoa: Commodity briefing* notes that many cocoa farmers and workers are among the 2.1 billion people living on $2 a day. In World Fair Trade Organisation (2011) *10 Principles of Fair Trade* (http://www.wfto.com/index.php?option=com_content&task=view&id=2&Itemid=14 – accessed 21 June 2012) the fourth principle is 'Payment of a fair price'.

32. Food and Agriculture Organisation of the United Nations (2011) *The State of Food Insecurity in the World - How does international price volatility affect domestic economies and food security?* This report states that "changes in [farmer] income due to price swings can reduce children's consumption of key nutrients during the first 1,000 days of life from conception, leading to a permanent reduction of their future earning capacity, increasing the likelihood of future poverty and thus slowing the economic development process." Department for International Development (2011) *Scaling Up Nutrition: The UK's position paper on undernutrition*. This report states that many children are born undernourished because their mothers are undernourished, and hunger and undernutrition lead to stunted growth and compromise brain development. The report references a study which found that for every 10 per cent increase in levels of stunting among children, the proportion of children reaching the final grade of school dropped by almost 8 per cent; and another which showed that improving physical growth among children under the age of two resulted in a 46 per cent increase in adult wages when these children grew up.

Calculations

Over the course of a year, those 12.5 billion bars of Fair Trade chocolate would support the people who live and work on over 90,000 small-scale cocoa farms:

If every member of the urban population of Brazil, Spain, the UK and USA purchased two 50g Fair Trade chocolate bars every month, this would equate to 625,668 MT of Fair Trade chocolate per year. UK regulations specify a

minimum of 20 per cent cocoa solids in family milk chocolate (Legislation.gov.uk (2003) *The Cocoa and Chocolate Products (England) Regulations 2003*. http://www.legislation.gov.uk/uksi/2003/1659/schedule/1/made – accessed 21 June 2012). USA regulations specify a minimum of 10 per cent cocoa solids in milk chocolate (National Confectioners Association (2012) *Chocolate Terms and Definitions*. http://www.candyusa.com/FunStuff/CandyType.cfm?ItemNumber=1666 – accessed 21 June 2012) and EU regulations (applied to Spain for the purposes of this calculation) specify 30 per cent (EUR-Lex (2000) *Directive 2000/36/EC of the European Parliament and of the Council of 23 June 2000 relating to cocoa and chocolate products intended for human consumption*. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0036:EN:NOT – accessed 21 June 2012.) A figure could not be identified for Brazil, so the average of 20 per cent was assumed. These chocolate bars would therefore contain a minimum of 97,972 MT of cocoa solids. To produce a conservative estimate of the area required to grow sufficient cocoa for this purpose, this calculation assumes that 100 per cent of the cocoa bean becomes cocoa solids which may contribute to the cocoa solid content of milk chocolate bars purchased. The average yield of cocoa is 350kg/hectare (International Cocoa Organisation (1999) *How many smallholders are there worldwide producing cocoa? What proportion of cocoa worldwide is produced by smallholders?* http://www.icco.org/faq/57-cocoa-production/123-how-many-smallholders-are-there-worldwide-producing-cocoa-what-proportion-of-cocoa-worldwide-is-produced-by-smallholders.html – accessed 21 June 2012) and therefore at least 279,921 hectares would be required to produce 97,972 MT of cocoa solids. International Cocoa Organisation (1999) *How many smallholders are there worldwide producing cocoa? What proportion of cocoa worldwide is produced by smallholders?* (http://www.icco.org/faq/57-cocoa-production/123-how-many-smallholders-are-there-worldwide-producing-cocoa-what-proportion-of-cocoa-worldwide-is-produced-by-smallholders.html – accessed 21 June 2012) states that almost 90 per cent of production of cocoa worldwide comes from smallholdings under 5 hectares. Worldwide, the average area of land that a Fairtrade small-scale farmer devotes to cocoa cultivation is 3 hectares. (Kilpatrick, K. (2011) *Monitoring the scope and benefits of Fairtrade*. Fairtrade Foundation.), meaning that 93,307 farmers would receive an income from these chocolate bars.

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What if... we could save energy when cooking?

Notes

33. Energy Saving Trust (2011) *The elephant in the living room: how our appliances and gadgets are trampling the green dream* states that, despite buying more efficient appliances, people in the UK continue to use more energy in their homes. Davis, L. W., Fuchs, A. and Gertler, P. J. (2012) *Cash for Coolers* examines a large-scale appliance replacement program in Mexico. Since 2009, this scheme has helped 1.5 million households replace their old refrigerators and air-conditioners with energy-efficient models. Although refrigerator replacement reduces electricity consumption by an average of 11 kilowatt hours per month (about a 7 per cent decrease), air conditioning replacement in fact increases electricity consumption by an average of 6 kilowatt hours per

month, with larger increases during the summer. Because energy-efficient durable goods cost less to operate, households use them more. This behavioural response, sometimes called the "rebound" effect, is important for air-conditioners, but not important for refrigerators.

34. Boardman, B., Favis-Mortlock, D., Hinnells, M., Lane, K., Milne, G., Palmer, J., Small, E., Strang, V. and Wade, J. (1995) *DECADE Domestic Equipment and Carbon Dioxide Emissions: Second year report* states that when using a solid electric stove, a pot with a warped bottom reduces heat flows and increases the required cooking energy by half.

35. Oberasher, C., Stamminger, R. and Pakula, C. (2011) *Energy efficiency in daily food preparation*. International Journal of Consumer Studies 35(2): 201-211. A case study of boiling potatoes was used, and the 70 per cent saving represents a comparison between the least favourable method – in which a lot of water is used, the pot is not covered with a lid, and the temperature is not reduced once the boiling point has been reached, and the most favourable method – where a small amount of water is used, the pot is covered with a lid, and the heat is reduced as soon as the boiling point is reached.

36. Boardman, B., Favis-Mortlock, D., Hinnells, M., Lane, K., Milne, G., Palmer, J., Small, E., Strang, V. and Wade, J. (1995) *DECADE Domestic Equipment and Carbon Dioxide Emissions: Second year report* states that "LEEP suggest that hob use is responsible for as much as 49 per cent of total cooker electricity use. Thus it may be that households [in the UK] are moving away from oven cooking towards greater use of the hob. This is supported by qualitative and quantitative research (Parkinson Cowan 1995, Wilson and Rees pers. comm 1995.). It is assumed that the proportion of cooker electricity use attributable to hobs has increased from 33 per cent to 49 per cent over the period 1970 to 1992 where both hob and oven are electric."

37. Energy Saving Trust (2011) *The elephant in the living room: how our appliances and gadgets are trampling the green dream*. Boardman, B., Favis-Mortlock, D., Hinnells, M., Lane, K., Milne, G., Palmer, J., Small, E., Strang, V. and Wade, J. (1995) *DECADE Domestic Equipment and Carbon Dioxide Emissions: Second year report*.

38. Market Transformation Programme (2008) *BNCK01: Assumptions underlying the energy projections of cooking appliances* calculates that in the UK, the average lifespan of an oven is 18.65 years in the MTP modelling. This figure is calculated from the trend in sales necessary to maintain the appropriate level of stock in people's homes.

Calculations

If all urban households in Brazil, India, the Philippines, Spain, the UK and the USA took these simple steps, over 30 million megawatt hours of energy could be saved every year:

The average number of stove uses is drawn from a UK based study by the Market Transformation Programme (2008) *BNCK01: Assumptions underlying the energy projections of cooking appliances*, which assumes 424 uses of the stove per year, with 0.71KWh being consumed at each use (this is the same for gas and electric stoves). Assuming that stove use frequency is similar in the six countries considered, urban households in these countries use 87,977,367 MWh of energy for stove cooking every year. In order to account for the variation in efficiency of stove use, it is assumed that half of all stove uses are already entirely efficient, while the other half are maximally inefficient, and that 70 per cent of energy can therefore be saved in half of total uses of the stove by urban households in these countries. This adds up to a total of 30,790,000 MWh of energy per year.

The benefit for the environment would be greater than if these same households each planted a tree seedling and let it grow for ten years:

Carbon equivalent calculated using The US EPA Greenhouse Gas Equivalencies Calculator (http://www.epa.gov/cleanenergy/energy-resources/calculator.html – accessed 21 June 2012). Assumptions made in this calculation are detailed at http://www.epa.gov/cleanenergy/energy-resources/refs.html#seedlings. Exact figures are 544,395,000 trees, across 292,244,777 urban households, or approximately 1.86 trees per household.

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What if… urban households ate a meat-free meal once a week?

Notes

39. Worldwatch Institute (2011) *Meat production continues to rise*, citing FAO (2007) Livestock's Long Shadow, Environmental Issues and Options. http://www.worldwatch.org/node/5443#notes – accessed 16 May 2012.

40. The National Geographic (2012) *The Hidden Water We Use* (http://environment.nationalgeographic.com/environment/freshwater/embedded-water/ – accessed 16 May 2012) shows that 500g beef takes 6,810 litres of water to produce. In contrast to beef, producing 500g of soya beans requires 818 litres of water.

41. This is the equivalent of a 560 ml (just less than an imperial pint) glass of water.

42. UNEP (2012) Global Environment Outlook: Environment for the Future we Want (GEO5). Nairobi: United Nations Environment Programme. 80 per cent of people live in areas with high levels of threats to water security, including 3.4 billion people in the most severe threat category.

43. UNEP (2009) *The environmental food crisis* estimates that in the next few decades, water use will continue to increase – by 22-35 per cent by 2025, and nearly 100 per cent by 2050. This report notes that although the combined effects of overuse of ground and surface water, glacial melt, poor water-use efficiency, and climate change are difficult to estimate, a 10-30 per cent yield loss in the world's irrigated croplands due to lower availability of water for irrigation (without increased water efficiency) would equate to losses in the range of 4-12 per cent of world cereal production.

44. FAO (2009) *The State of Food and Agriculture – Livestock in the Balance*. In the 14 countries covered by the FAO Rural Income Generating Activities database, 60 per cent of rural households own livestock, and 10 per cent of the total income of all rural households comes from livestock.

Calculations

If we swap that 500g of beef for an alternative, such as beans or lentils, we can save nearly 6,000 litres of water in just one four-person meal. That's the equivalent of seventeen bathtubs filled to the brim, and then some:

The National Geographic (2012) *The Hidden Water We Use* (http://environment.nationalgeographic.com/environment/freshwater/embedded-water/ – accessed 16 May 2012) shows that 500g beef takes 6,810 litres

of water to produce. In contrast to beef, producing 500g of soya beans requires 818 litres of water. A saving of 5,992 litres of water could be made. Assuming a bathtub is 150 cm long, 75 wide and 30 cm deep i.e. 337.5 litres in capacity, this amount of water would fill 17.75 bathtubs.

If urban households in the USA, UK, Spain and Brazil were to eat a meat-free meal once a week, swapping beef for beans or lentils, around nine and a half million fewer cows would need to be reared every year:

This calculation uses Index Mundi (2012) data on beef and veal meat per capita consumption by country (http://www.indexmundi.com/agriculture/?commodity=beef-and-veal-meat&graph=per-capita-consumption – accessed 16 May 2012) which draws on data from the USDA. The figures are: USA 36 kg/capita/year, UK 15 kg/capita/year, Spain 15 kg/capita/year and Brazil 39 kg/capita/year (NB. Data for the UK and Spain use EU-27 data). Assuming an average serving size of 125g of beef, the number of meals per person per week containing beef are 5.5 in the USA, 2.3 in the UK, 2.3 in Spain and 6.0 in Brazil. If the urban population in each of these four countries ate 125g less beef per person each week, the reduction would total 3,389 million kg/year. If the average cow weighs 352.55 kg (taking the average slaughter weight of steers, heifers, bulls and cows from Beef USA from National Cattlemen's Beef Association (2012) *Beef industry statistics* (http://www.beefusa.org/beefindustrystatistics.aspx – accessed 16 May 2012)) and conservatively assuming that the whole cow could be eaten, this reduction equates to 9,612,787 cows.

That would mean over 900,000 tonnes less methane being produced every year making as much of a difference to the environment as taking over 3.7 million cars off the road for a year:

According to US EPA (2007) *Ruminant livestock* (http://www.epa.gov/rlep/faq.html – accessed 16 May 2012), an adult cow produces between 80-110 kg of methane per year. Taking the mid-point of 95 kg/methane/year, 9,612,787 cows produce 913,214,734 kg of methane in a year.

According to the US EPA Greenhouse Gas Equivalencies Calculator (http://www.epa.gov/cleanenergy/energy-resources/calculator.html – accessed 21 June 2012) 913,214,734 kg of methane is equivalent to the annual greenhouse gas emissions (using CO_2 equivalencies) of 3,760,297 passenger vehicles. Assumptions made in this calculation are detailed at http://www.epa.gov/cleanenergy/energy-resources/refs.html#vehicles.

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WHAT IF... WE DIDN'T STOP THERE?

Notes

45. Mintel (2010) *Food Provenance - UK - April 2010* suggests that 14 million people in the UK see food origin labelling as sometimes misleading. http://oxygen.mintel.com/display/479965/ – accessed 22 June 2012.

46. AEAT (2005) *The validity of food miles as an indicator of sustainable development* states that "transport of food by air has the highest CO_2 emissions per tonne, and is the fastest growing mode. Although air freight of food accounts for only 1 per cent of food tonne kilometres and 0.1 per cent of vehicle kilometres, it produces 11 per cent of the food transport CO_2 equivalent emissions." Fairtrade Foundation (2007) *Q&A: Fairtrade, Climate Change and Sustainable Production* states that, in 2005, transportation of Fairtrade products to the UK

accounted for 0.03 per cent of UK food transport emissions and 0.001 per cent of the UK's total carbon dioxide emissions.

47. See e.g. The Vegetarian Society (undated) Vegetarian recipes. http://www.recipes.vegsoc.org/ – accessed 22 June 2012.

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