Food Loss and Waste:
From Commitments to Action

A watching brief on Nationally Determined Contributions

Foreword

We cannot achieve net zero emissions without tackling food loss and waste.

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The global food system is amazing in that it manages to feed so many people. At the same time, it probably causes more damage to the planet than anything else we do.

It is the single biggest cause of biodiversity loss – perhaps as much as 80%[1]. It uses 70% of all freshwater[2] and is a major source of freshwater pollution. It is also the second biggest driver of climate change after energy generation – causing up to 37% of global greenhouse gas (GHG) emissions[3].

On top of all this, we waste around one third of all the food that is produced in the world – as **WRAP's work with United Nations Environment Programme** (UNEP) has shown, nearly 1 billion tonnes of food ended up in the bin in 2019 from households, supermarkets, hospitality and food service sectors.

The GHG emissions associated just with the food that is wasted amounts to around 8-10% of the global total, or more than any country except China and the USA.

Tackling food loss and waste is a huge opportunity to tackle climate change. Creutzig et al (2022)[4] estimate that reducing food loss and waste could reduce global GHG emissions by 2.1 billion tonnes CO_2e per year.

Despite this, only **21** countries have so far included commitments to reduce food loss or waste directly in their Nationally Determined Contributions (NDCs).

There are many mentions of food loss and waste in general, but many more countries need to include specific reduction targets and strategies - just increasing composting won't be enough to tackle the crises in our food system.

WRAP is calling on all governments to commit to delivering United Nations (UN) Sustainable Development Goal 12.3[5] of reducing food loss and halving food waste and to include this in their NDCs.

We are also calling on governments to implement policies (e.g. landfill restrictions), and approaches (e.g. supporting collaborative business action through public-private partnerships, help farmers make good use of everything that is grown and encouraging behaviour change in the home) that have been shown to reduce food loss and waste.

This is an interactive document
The top toolbar allows you to navigate through the different sections of the guide.

Fixing food systems to meet net zero

The world is off track to meet its commitments to net zero and needs effective actions that can be implemented straightaway.

WRAP's **Seven Steps Towards Net Zero report** analysing the potential for the G7 countries to increase their contribution to net zero emissions identified seven strategies, most of which are broadly applicable around the world. A key opportunity is fixing food systems.

The Intergovernmental Panel on Climate Change (IPCC) estimates that food systems contribute up to 37% of global GHG emissions[6]. Even if all other GHG emissions ceased, global food production on its own would push Earth beyond the goal of limiting global warming to 1.5°C.

The huge carbon footprint of our food systems can be reduced in three key main ways: by **cutting emissions from food production**, by **changing the types of food we produce and eat**, and by **reducing food loss and waste**.

Food waste is estimated to contribute 8-10% of total man-made GHG emissions[7]. If food waste were a country, it would be the world's third largest GHG emitter after China and the USA.

Within demand-side agriculture, forestry and other land use (AFOLU) measures, reduced food loss and waste has significant global mitigation potential of up to 2.1 billion tonnes CO_2e per year[8] equivalent to taking 450 million cars off the road for a year[9].

Food loss and waste reduction is feasible anywhere but its potential needs to be understood in a wider and ever-changing socio-cultural context that considers food security and nutrition.

Food loss is the decrease in the quantity or quality of food resulting from decisions and actions by food suppliers in the chain, excluding retail, food service providers and consumers.

Food waste is the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food services and consumers.

(Source: www.fao.org)

Our global food system is also the primary driver of biodiversity loss[10]. The 26th UN Climate Change Conference of the Parties (COP26) saw global recognition that to tackle climate change and biodiversity loss we must work together to tackle the common direct and indirect drivers of both challenges. Addressing food loss and waste is just one opportunity to do this.

This is not just an environmental crisis – it is a health and economic crisis too. WRAP's work with UNEP[11] has shown that 931 million tonnes of food ended up in the bin in 2019, from households, food service, and retail - 17% of all the food that's available to consumers that didn't make it to a mouth.

The Food and Agriculture Organization (FAO) also estimates that 14% of food is lost from harvest. Overall estimates suggest that around one third of food is lost or wasted[12].

The World Economic Forum[13] estimates that food loss and waste costs the global economy $936 billion a year, and that overall, food systems cost society $12 trillion in health, economic and environmental costs.

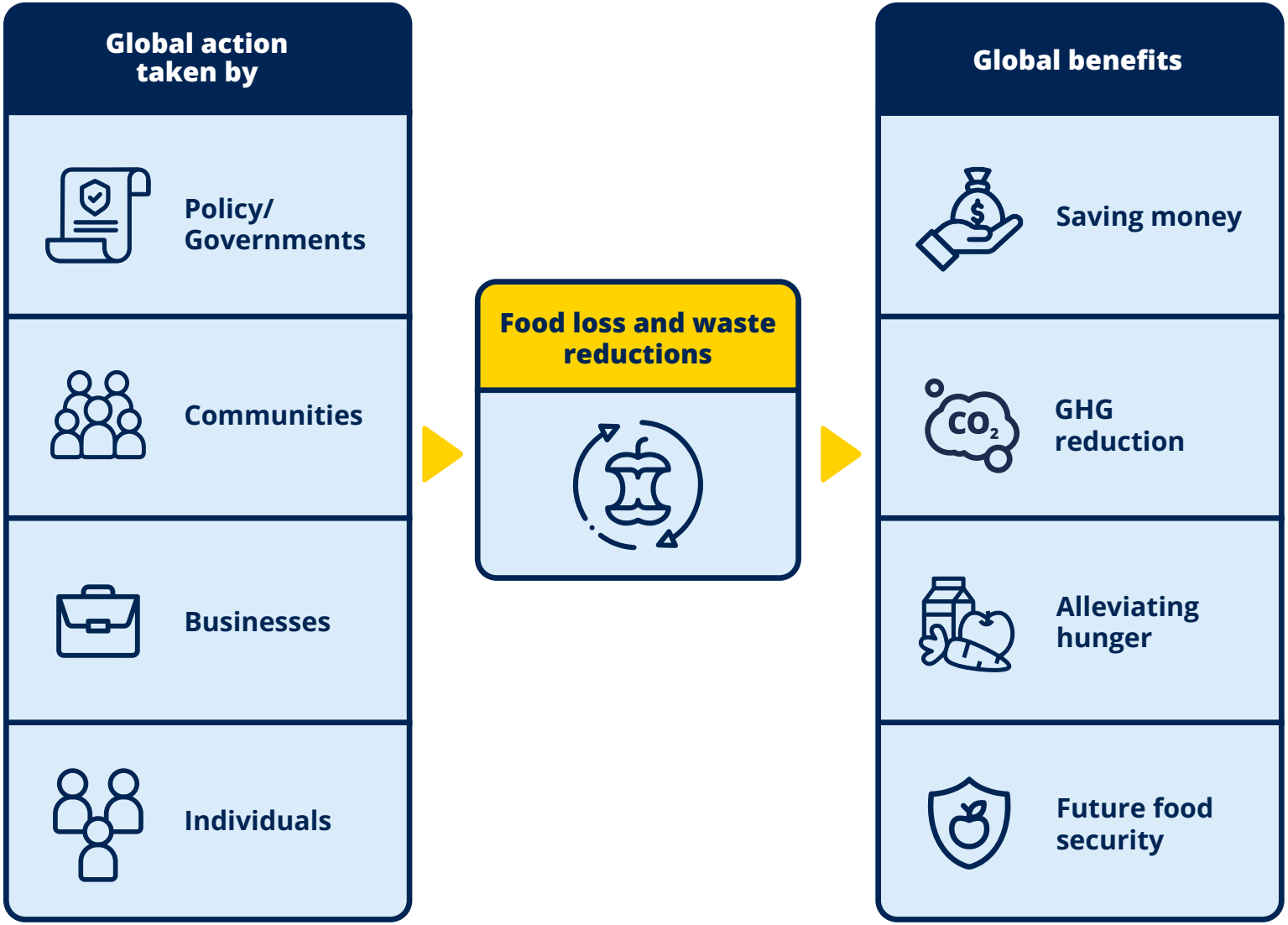
As we deal with a global cost-of-living crisis, there has never been a more urgent need for co-ordinated global action on food loss and waste.

Tackling food loss and waste can happen now, and offers social, environmental and economic benefits to people, businesses and communities. It can be supported in multiple ways; policy changes, individual behaviour and business action.

Progress has been made in communities and by individuals (e.g. through campaigns such as Love Food Hate Waste[14]) and businesses (e.g. through agreements such as the Courtauld Commitment[15], Pacto por la Comida in Mexico[16], GRASP 2030 in Indonesia[17] and the Pacific Coast Food Waste Commitment[18]). However, there is still room for progress and consensus globally in policymaking around reducing food loss and waste.

“As we deal with a global cost-of-living crisis, there has never been a more urgent need for co-ordinated global action on food loss and waste.”

Figure 1: Global action leads to global benefits



The current picture

'Commitments specific to tackling food waste' refers to any policy or indication of schemes or programmes to specifically reduce edible food waste amounts.

Food loss, including supply chain and post-harvest loss, is treated separately in this report unless stated otherwise.

Of **193** countries that have submitted NDCs to the UN as a requirement of the Paris Agreement, only **nine** have commitments specific to reducing food waste directly within this, and even within these, the level of detail on how this will be achieved varies.

There are **14** NDCs that commit to reducing food losses, with **two** of these overlapping with those including food waste reductions.

This means **21** countries in total have committed to reducing food loss and/or food waste, leaving 89% of countries that have submitted no commitments to reducing food loss and waste amounts directly within their NDC.

The language used varies across the NDCs, and the link to Sustainable Development Goal 12.3 is not made clear.

There are several other countries such as the UK and South Africa, as well as some members of the European Union, that refer to secondary policy documents where food loss and waste reduction is discussed but is not directly within their NDC.

This is difficult to quantify accurately due to inconsistencies in how these reports are included and referenced but is estimated to have increased from just **11** in 2020[19]. For these countries there is an immediate opportunity to strengthen the commitments within their NDCs.

There are **39** countries which mention plans to improve food waste disposal and treatment, such as increased composting (of food waste excluding other materials such as manure) and diverting organic waste from landfill.

These are important steps to reduce methane emissions from landfills, improve sanitation and create circular sources of energy and fertiliser, but further GHG savings could be made by reducing the quantity of food which is disposed.

It was also found that in some NDCs, commitments around reducing food loss and waste or increasing food and organics recycling were present in earlier versions but removed from the latest version.

These countries may have missed an important opportunity to tackle this important issue. This leaves a large gap in NDC commitments and therefore in mitigation and adaptation potential by excluding food loss and waste reduction.

Many NDCs discuss in detail concerns around food security (Sustainable Development Goal 2) but with no mention of food loss or waste, potentially missing an opportunity to leverage synergies between these two related issues.

Reducing food loss and waste can lead to reduced GHG emissions, greater food security and improved profitability for businesses, workers and producers across the food system. More reliable distribution networks, better food storage and empowered citizens can help ensure food systems are more resilient to shocks such as extreme weather events.

Food commitments in NDCs

9*
countries

Commit to **reducing food waste**.

14*
countries

Commit to **reducing food loss**.

*Of these, **2** countries commit to reducing both food loss and waste.

21
countries

Commit to **reducing food loss and/or waste**.

Therefore, **89%** of countries have **not committed** to reducing either.

Call to action

By overlooking food waste, NDCs are missing an opportunity to address up to 10% of global emissions[20].

WRAP is calling on all governments to include their commitment to delivering UN Sustainable Development Goal 12.3 into their NDCs, and to implement strategies to tackle food loss and waste.

One way in which we are doing this is by supporting the #123 food loss and waste pledge launching at COP27 (see **Figure 2**).

Tackling food loss and waste can deliver GHG savings within each country, but also internationally, alleviating pressure on biodiversity, water pollution and a host of other issues alongside climate change. There is no time to wait.

Following WRAP research, we have developed suggested best practice guidance on how to include food loss and waste reduction in NDCs.

We are also supporting governments, businesses and organisations around the world to transform food systems, such as through public-private partnerships and behaviour change campaigns, and deliver global change.

Figure 2: #123 Food Loss and Waste Pledge

#123 Food Loss and Waste Pledge

- The #123 pledge is co-ordinated by WRI, UNEP and FAO, to be launched at COP27 and continue towards COP28.
- The pledge is a multi-stakeholder cooperation and action movement with the goal of reducing food loss and waste and its consequential GHG emissions to meet Sustainable Development Goal 12.3.
- It involves governments, businesses, civil society, and international governmental and non-governmental bodies.
- Stakeholders will make new and additional commitments that contribute to the reduction of food loss and waste, and commit to providing annual progress reports to the Food is Never Waste Coalition or the Champions 12.3.

Hosted by: WRI, Champions 12.3, FAO, UNEP, The Food is Never Waste Coalition, Cool Coalition
Supported by: Rabobank, WWF, WRAP

Target 12

Responsible consumption and production

Target 12.3

Halve per capita food waste and reduce food loss

Why commit to food loss and waste reduction?

Producing food requires significant resources including land, energy and water. Globally, around a third of total food produced is lost or wasted, and food waste is estimated to contribute 8-10% of total man-made GHG emissions.

Each year, 1.6 billion tonnes of food, worth over $1 trillion are lost or go to waste[21].

This issue is only growing, with estimates that by 2030, annual food loss and waste could reach 2.1 billion tonnes worth $1.5 trillion[22].

Governments, acting alongside businesses, citizens, and other organisations, have a key role in helping tackle food loss and waste. Governments can ensure that food loss and waste prevention (and diversion) is integral to relevant strategies. This can ensure that not only are there suitable policies for tackling the issue, but there is also policy coherence across government departments on the subject.

Figure 3: Key statistics around global food loss and waste

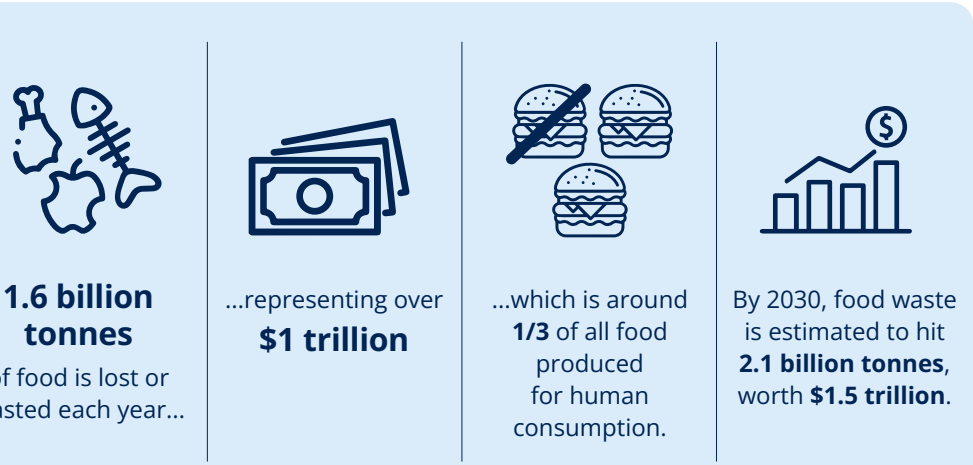
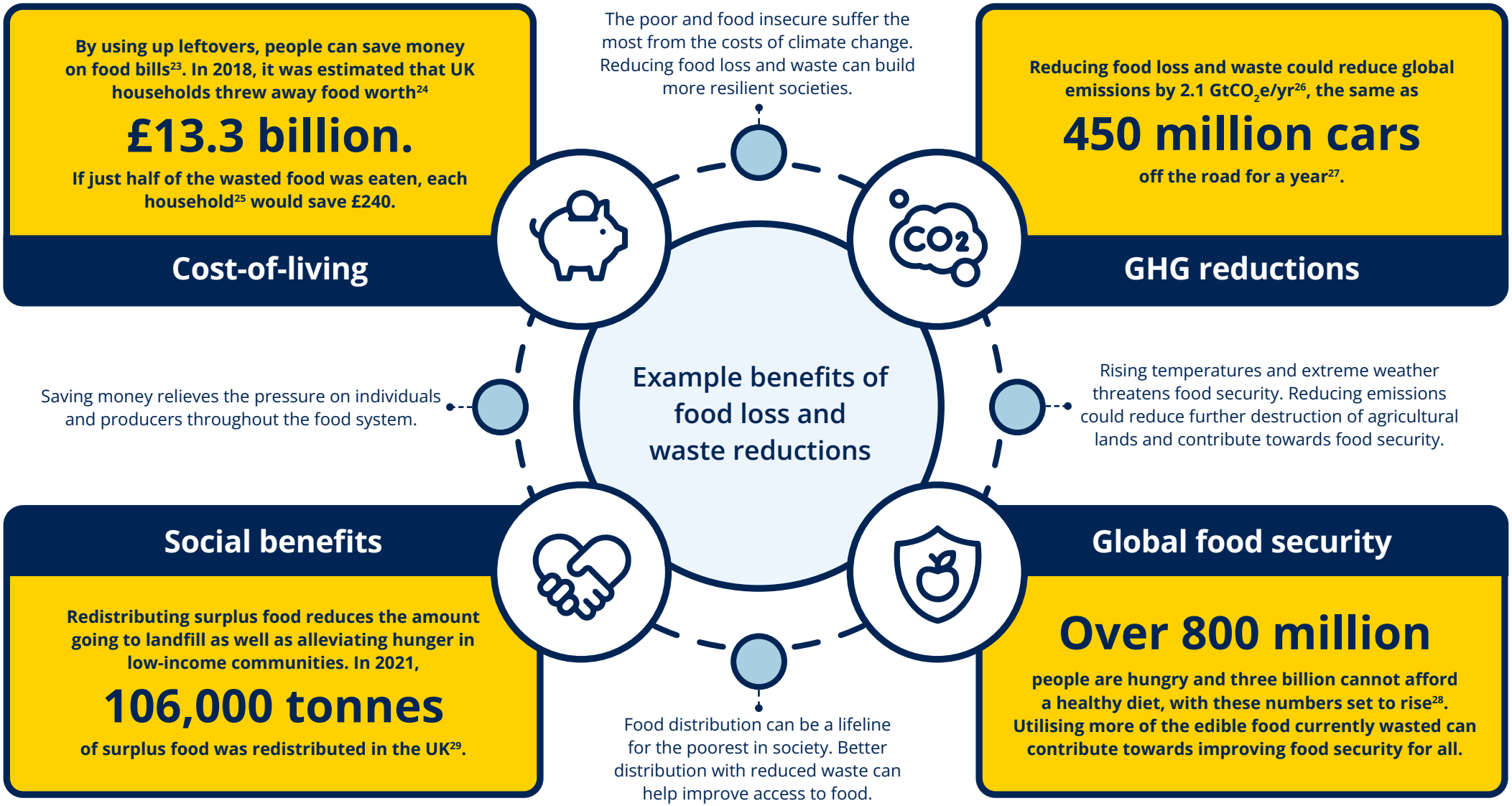


Figure 4: Potential benefits of reducing food loss and waste



Countries leading the way

Who has committed so far?

Only 11% of countries have committed to adopting strategies to reduce food loss and/or waste in their most recent NDC.

Even within this number, the commitments vary in their scope and implementation.

Another 15% of countries mention food waste in terms of managing it more effectively, including increasing the percentage composted, but have no aims to reduce the amount produced. Food loss and waste more generally is included directly in 50 NDCs.

There are countries such as the UK, South Africa and Iceland that refer to secondary policy documents where food loss and waste reduction is discussed but is not directly within their NDC. Other countries, such as Norway, have made commitments in policy documents not referenced in the NDC.

It is a positive step to consider food loss in general but leaves a gap in commitments by excluding food waste reduction.

Some examples follow of commitments within these categories, but these are not designed to be exhaustive lists.

> **“It is a positive step to consider food loss but leaves a gap in commitments by excluding food waste reduction.”**

Examples of direct commitments to reduce food waste within NDCs

Cabo Verde

Plans for improving "means and equipment for solid and organic waste control, **reduction management** and awareness raising among households and communities."

China

"The Code of Conduct for Environmental Protection (Trial) was released to encourage the public across the country to practice low-carbon lifestyles through measures such as energy conservation and green consumption."

The "Clean Plate campaign has been launched nationwide to reduce food waste."

Namibia

Proposed future adaptations in Namibia's blue economy include to "Promote innovations in food processing, food losses and waste" within their adaptation measures.

Sierra Leone

Sierra Leone commits to improving value chains through "technologies and tools for reducing food waste."

The United Arab Emirates (UAE)

The UAE aims to cut food waste by half by 2030.

"The UAE has taken a comprehensive approach to reducing food waste by engaging local residents, government organizations and businesses in initiatives to reduce, and encourage treatment of, food waste."

The nationwide Food Waste Pledge launched in 2018 encourages the UAE's hospitality sector to adopt efficient food production practices.

Examples of food loss and waste commitments made in secondary documents referenced in NDC

Country	Commitments overview	Where was the commitment made?
UK	The Resources and Waste Strategy commits to **food waste** and **carbon footprint reduction**, and meeting the UN Sustainable Development Goal to halve global food waste at consumer and retail levels by 2030.	The Resources and Waste Strategy (2018)
South Africa	Developing capacity through a specialised programme which upskills agri-stakeholders to **minimise food loss**, and running a consumer awareness campaign to use and consume 'ugly' food, towards saving 245,000 tonnes of food waste to landfill per year.	South Africa Low Emission Development Strategy 2050
Spain	The National Energy and Climate Plan includes aim of reducing food loss and waste across supply chain through **'more food, less waste'** strategy, including information campaigns, voluntary agreements, reviewing legislation and promoting research and innovation.	Integrated National Energy and Climate Plan 2021-2030
Iceland	The Climate Action Plan 2020 includes 48 actions, under a section aiming to reduce emissions that fall under the EU Effort Sharing Regulation - F.3 (under Waste Management) is **reduction in food waste** (already implemented).	Iceland's 2020 Climate Action Plan

Food loss and waste in general and composting examples within NDCs

Reducing post-harvest losses

Burkina Faso

Goal of restoring degraded soils and increased for food production, including through "reduction of harvest and post-harvest losses".

Cote d'Ivoire

Commitment of developing storage and conservation units to limit high post-harvest losses.

Gambia

Aim to reduce food losses through (1) improved harvesting techniques (2) adequate storage (3) applying mobile processing units (4) contractual and aggregation.

Sri Lanka

Action within agriculture to "reduce post-harvest losses and value addition of fruits and vegetables" through management practices.

Improved treatment of organic waste

Canada

Ontario phasing out food and organic waste sent to landfill by 2030.

Manitoba to deliver and expand organics diversion and composting programs.

Comoros

Improvement of collection, the development of biogas and composting.

Guinea-Bissau

Diversion of 10% of food waste to composting.

Rwanda

Increase waste recycling initiatives, including through the use of aerobic biological treatment (composting).

Building best practice

WRAP is calling on all governments to include food loss and waste reduction in their NDCs at the earliest opportunity, and to incorporate this into policies related to business, industry and environment.

There are multiple compelling health, social, environmental and economic reasons to act on the strategies identified in this report, and action can begin today.

In order to take effective action without duplication of effort, a co-ordinated approach is needed. Decisions must be shared so that benefits can be realised globally through co-ordination and consideration of individual countries' circumstances.

Based on this research into how countries have integrated food loss and waste into their NDCs, WRAP has designed a 'best practice' guide for countries looking to include food loss and waste in their NDCs.

This operates on a scale from the lowest ambition to the highest ambition. As a minimum, all countries should identify that food loss and waste is an area for action and make reference to it in their NDC. After identifying the direction, the next step is to identify in broad terms what may be needed to support that aim.

The next level of ambition is to supplement this with policy and strategy documents which detail how food loss and waste reduction can be achieved in the country.

Those seeking high ambition on food loss and waste should integrate specific targets and indicators related to food loss and waste reduction into their NDCs, including commitments specific to reducing food waste amounts.

WRAP is also calling on governments to sign up to the #123 food loss and waste pledge which encompasses the need for specific targets, realistic strategies and robust measuring and reporting.

> **"There are multiple compelling health, social, environmental and economic reasons to act."**

Suggested best practice

Minimum

General statements identifying food loss and waste as an area for action

E.g. reduce food losses, reduce food waste, increase composting.

Specify actions needed to support goals and aims

E.g. **Dominica** commits to **reduce organics to landfill** by increasing public awareness, improving kerbside pickup of organic waste and instating composting facilities.

Support actions with supplementary documents and strategies

E.g. **Iceland's** NDC refers to their **2020 Climate Action Plan** with reducing food waste as an implemented action and banning the landfilling of organic waste as an action in preparation.

Ideal

Specific targets and indicators with strategies to achieve them

E.g. **The UAE** aims to **cut food waste by half by 2030**. This is to be achieved through engaging citizens, government organisations and businesses in initiatives to reduce, and encourage treatment of, food waste (including the 2018 Food Waste Pledge).

Concluding remarks

45% of global emissions can only be tackled by changing the way we make and consume products and food.

Renewable energy will only take us halfway to net zero. Tackling the problems in our food system and creating a circular economy is our biggest untapped opportunity to address the remaining half. It can also reduce pressure on the natural environment and therefore reduce threats to loss of biodiversity.

Governments, businesses, and NGOs need to implement credible actions which will help people around the world with the cost-of-living crisis today, but also help to ward off future crises in our food system.

Taking co-ordinated actions which target, measure and act on the biggest opportunities to tackle food loss and waste is a key priority. We also need to share decisions so that the flow of food across countries can be facilitated to support those in need.

WRAP urges governments and organisations in key sectors around the world to join us to help reduce the amount of food we waste, delivering benefits collectively through our voluntary agreements and our citizen engagement activities.

We need to significantly change the way we consume and waste food to respond to the challenges of climate change.

Ambitious but realistic and measurable targets should be set, with fully developed strategies to drive food loss and waste reduction and produce tangible results.

We need to act now and normalise how we treat and discard food, delivering the lifestyles we want and ensure that similar standards of living can be enjoyed by future generations across the planet.

> **“We need to significantly change the way we consume and waste food to respond to the challenges of climate change.”**

References

1. UNEP. **Food system impacts on biodiversity loss.** 2021.
2. OECD. **Water and agriculture.** 2022.
3. IPCC. **Food Security.** In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. 2019.
4. Creutzig, F., Niamir, L., Bai, X. et al. Demand-side solutions to climate change mitigation consistent with high levels of well-being. Nat. Clim. Chang. 12, 36–46, 2022.
5. Champions 12.3. **United Nations (UN) Sustainable Development Goal 12.3.** 2022.
6. IPCC. **Food Security.** In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. 2019.
7. FAO. **Food wastage footprint: Impacts on natural resources.** 2013.
8. IPCC. **Summary for Policymakers.** In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 2022.
9. US EPA. **Greenhouse Gas Equivalencies Calculator.** 2022.
10. UNEP. **Food system impacts on biodiversity loss.** 2021.
11. UNEP. **Food Waste Index Report 2021.** 2021.
12. FAO. **The State of Food and Agriculture.** 2019.
13. World Economic Forum. **Incentivizing Food systems Transformation.** 2020.
14. WRAP. **Key campaigns: Love Food Hate Waste campaigns.** 2021.
15. WRAP. **The Courtauld Commitment Annual Report 2021.** 2021.
16. **Pacto por la Comida**, Mexico. 2022.
17. **GRASP 2030** (Gotong Royong Atasi Susut & Limbah Pangan di Tahun 2030), Indonesia. 2022.
18. Pacific Coast Food Waste Commitment. **Creating a Sustainable Future Through Food Waste Reduction. 2021 Year-End Report.** 2021.
19. WWF. **Enhancing NDCs for food systems: Recommendations for decision-makers.** 2020.
20. OECD. **Water and agriculture.** 2022.
21. FAO. **Global Food Losses and Food Waste.** 2011.
22. BCG. **Tackling the 1.6-Billion-Ton Food Loss and Waste Crisis** (based on BCG FLOW Model 2015 findings). 2018.
23. Roberts, M. **Citizens, Food Waste and the Rising Cost of Living.** 2022.
24. WRAP. **Food surplus and waste in the UK – key facts.** 2021.
25. ONS. **Families and households in the UK: 2018.** 2019.
26. IPCC. **Summary for Policymakers.** In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 2022.
27. US EPA. **Greenhouse Gas Equivalencies Calculator.** 2022.
28. FAO, IFAD, UNICEF, WFP & WHO. **The state of Food Security and Nutrition in the World 2022.** 2022.
29. WRAP. **Surplus food redistribution in the UK 2015 to 2021.** 2022.

Key reports for achieving net zero

- **Net Zero: why resource efficiency holds the answers**
- **Seven Steps Towards Net Zero**
- **Circular Economy: From Commitments to Action**

WRAP is a climate action NGO working around the globe to tackle the causes of the climate crisis and give the planet a sustainable future.

Our vision is a thriving world in which climate change is no longer a problem.

At WRAP we believe that our natural resources shouldn't be wasted. And that everything we use should be re-used and recycled.

Our mission is to make the world a more sustainable place. We bring people together, we act on the facts, and we drive change.

Our core purpose is to help you tackle climate change and protect our planet by changing the way things are produced, consumed and disposed of.

For more details please see WRAP's terms and conditions on our website at www.wrap.org.uk

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