

BirdLife Europe Position Paper: Feeding the world whilst saving biodiversity—policy asks on diet, bioenergy and food waste

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Executive summary

Whilst BirdLife Europe's agricultural policy work had focused for many years on the production side, scientific evidence and years of political campaigning have made it clear that—if we want to see biodiversity declines halted and reversed, and to tackle climate change—we must also challenge unsustainable consumption patterns, particularly in more industrialised regions of the world.

Consumption has been identified as one of the most important drivers of pressure on biodiversity. In particular, what, and how much we eat or consume directly affects what, and how much is produced. In Europe and globally, food production is driving biodiversity loss, environmental pollution and depletion of essential natural resources. There are many issues associated with global consumption patterns and the impact they have on nature, but in this position, we have identified three main actions that the evidence suggests would make the biggest difference in terms of bringing consumption patterns within planetary boundaries, whilst feeding and nourishing a growing global population:

- 1. A dramatic shift from animal- to plant-based diets**
- 2. An immediate halt of burning food for bioenergy**
- 3. Eliminate or drastically reduce food waste**

For each action, this paper offers scientific evidence and practical policy recommendations, with a focus on the European level.

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Introduction: From ‘feeding the world’ to ‘feeding the world *sustainably*’

“We’ll never grow our way into food security: the more food we produce, the more we’ll waste and over-consume, degrade the environment and issues of equity and access will remain. To solve these problems, we need to recognise local and planetary boundaries and grow food sustainably within them...”

2014 Tim Benton, Global Food Security Champion

Introduction and context

Debates about how to feed the world, or how to ensure ‘food security’, are often dominated by the **assumption that food production must be increased** in order to address current global hunger and malnutrition and to feed future generations. Such assumptions are used to justify further intensification and expansion of the unsustainable ‘high input, high output’ model, and, in Europe at least, the exporting of meat and dairy to meet growing global demand. This term was used particularly effectively by the agriculture lobby in the 2014-2020 CAP reform process.

There are several reasons why such narratives around increasing production in order to feed the world issues are flawed and need to be challenged:

1. We already produce enough calories to feed the world’s population.¹ However, what is produced is not shared equitably - in 2017, nearly 821 million people were classed as undernourished, 672 million adults were classed as obese (as were 38.3 million children).² The picture has been further complicated by the coexistence of undernutrition with obesity which is commonly referred to as the “double burden” of malnutrition.³ Simply producing more will not solve the political and economic issues that are already preventing us from feeding, and nourishing, the world today.
2. Globally, humans are consuming more and more meat and dairy, a very inefficient form of calories that requires far more land and resources to be dedicated to agriculture than would otherwise be the case. Livestock production, including feed production, accounts for a third of the land surface use across the planet, and an estimated 71% in Europe. As much as 36% of the world’s crops are fed to domesticated animals that are raised for human consumption, but this only makes a 12% contribution, in terms of calories, to the human diet. The move to grass-fed systems must still be accompanied by a dramatic reduction of total numbers of livestock to avoid agricultural expansion.
3. Unsustainable and unhealthy consumption patterns are also having a negative impact on public health. High-meat-high-carbohydrate ‘western style’ diets are contributing to high levels of non-communicable diseases such as diabetes and cancer. In 2010 the ‘western style diet’ was estimated to cost the world over \$1.4 trillion in health care costs and lost productivity.⁴

¹ <http://www.fao.org/docrep/x0262e/x0262e05.htm>; <http://www.fao.org/docrep/005/AC911E/ac911e05.htm>

² http://www.fao.org/fileadmin/templates/faoitay/documents/pdf/pdf_Food_Security_Concept_Note.pdf

³ <http://www.fao.org/3/I9553EN/i9553en.pdf>

⁴ <http://www.fao.org/docrep/018/i3300e/i3300e00.htm>

4. Demand for bioenergy driven artificially by government policy means bringing even more land globally into production and thus further conversion of natural habitat. Already in 2013 almost 10% of global crop calories, such as maize, rapeseed or sugar cane, were used for biofuels and other industrial uses. This figure is likely to be significantly higher today. This is a lose-lose: it exacerbates competition for land, causing indirect deforestation, it is not even beneficial for fighting climate change, its ostensible *raison d'être*, and it is fuelling ecosystem destruction.
5. We are wasting a huge amount of food. Between a third to one half of food calories are lost or wasted post-harvest or at the retail and consumer stage. An estimated 20% of total food produced in the EU is lost or wasted⁵, costing some 143 billion euros in 2012. Food that is produced but not eaten unnecessarily uses land, water and other inputs as well as adding 3.3 billion tonnes of greenhouse gases to the planet's atmosphere.

The good news is that demand is not unalterable, but fluid, as evidenced by the declining consumption of meat in high income countries.⁶ Rather than try to make up for this declining market by expanding the demand outside Europe for meat and dairy, we must instead use the opportunity to steer agriculture on a more sustainable path. Luckily, **there are many win-wins for nature and health in the solutions we propose** in the following sections of this paper.

Action #1: A dramatic shift from animal to plant-based diets

Introduction and context

As incomes rise in the developing world, there is a trend to move to the so-called 'western style' diets, characterised by increased consumption of meat and dairy products. This is often referred to as the 'nutrition transition' and is putting huge pressure on the global food system and the world's ecosystems.⁷ Research by Cassidy et al. suggests that by growing food exclusively for human consumption—rather than using cropland to produce livestock feed and biofuels—global calorie availability could be increased by as much as 70%, feeding an additional 4 billion people.⁸

Intensive livestock production is extremely environmentally polluting. Livestock production accounts for a major share of global greenhouse gas emissions from farming, with recent analysis suggesting that meat and agriculture could emit more than the energy sector when all unaccounted emissions are considered.⁹ Livestock (including the water footprint of feed) accounts for a third of the world's agricultural water use.¹⁰ The water footprint of meat is far higher than that

⁵ <https://www.eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf>

⁶ <http://science.sciencemag.org/content/361/6399/eaam5324>

⁷ <http://www.fao.org/3/a-i7658e.pdf>

⁸ <http://iopscience.iop.org/article/10.1088/1748-9326/8/3/034015/pdf>

⁹ https://www.forbes.com/sites/jeffmcmahon/2019/04/04/meat-and-agriculture-are-worse-for-the-climate-than-dirty-energy-steven-chu-says/?mc_cid=3c2b6a2ec1&mc_eid=2b5e0116c4#37796e1911f9

¹⁰ <http://science.sciencemag.org/content/361/6399/eaam5324>

of plants: twenty times larger per calorie of beef compared to cereals and starchy roots, and 1.5 times larger for eggs, milk and chicken compared to pulses.¹¹

In the European Union (hereafter, EU), the livestock sector covers 71%¹² of European agricultural land and equates to 40% of total agricultural output for the union. It is the biggest single source of methane emissions in the EU¹³ and 94% of ammonia emissions stem from agriculture¹⁴, the majority coming from intensive animal farming activities. The average European consumes approximately 61kg of soy per year (largely indirectly through the animal products that they eat) indicating that a huge proportion of the meat and dairy consumed is coming from animals raised in feed-based—as opposed to extensive, grass-based—systems.¹⁵

In addition to the impact on the environment there are also a number of compelling health arguments in support of shifting to a more plant based diet. Unhealthy diets are one of the leading risk factors for cancer.¹⁶ Also, intensive livestock production systems tend to be heavily reliant on the usage of large amounts of antibiotics which can contribute to antimicrobial resistance. In Europe two thirds of antibiotics are used on farm animals, undermining antibiotics' ability to cure life-threatening infections in people.¹⁷ Reducing meat consumption to recommended healthy levels and increasing the amount of fruit and vegetables instead can help reduce unnecessary deaths¹⁸, and deliver significant economic benefits to governments by reducing health treatment costs and productive days lost.¹⁹ A landmark 2019 study by over 30 world leading scientists, and published in the leading medical journal *The Lancet*, classified a healthy diet as one that 'largely consists of vegetables, fruits, whole grains, legumes, nuts, and unsaturated oils, includes a low to moderate amount of seafood and poultry, and includes no or a low quantity of red meat, processed meat, added sugar, refined grains, and starchy vegetables'.²⁰

The role of extensive grazing

The reduction in overall volumes of livestock production should go hand in hand with a shift to extensive grazing. Grazing at low stocking densities has a role to play in maintaining many High Nature Value (HNV) systems. Grazing is important for healthy grasslands that create favourable habitat for many species (e.g. species such as the starling, little owl and red kite which rely on

¹¹ <https://research.utwente.nl/en/publications/the-green-blue-and-grey-water-footprint-of-animals-and-animal-pro>

¹² <https://storage.googleapis.com/planet4-eu-unit-stateless/2019/02/83254ee1-190212-feeding-the-problem-dangerous-intensification-of-animal-farming-in-europe.pdf>

¹³ https://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_greenhouse_gas_emissions

¹⁴ https://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_ammonia_emissions

¹⁵ https://www.wwf.org.uk/sites/default/files/2017-10/WWF_AppetiteForDestruction_Summary_Report_SignOff.pdf

¹⁶ <https://www.who.int/news-room/fact-sheets/detail/cancer>

¹⁷ <https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2017.4872>

¹⁸ http://apps.who.int/gb/ebwha/pdf_files/WHA70-REC1/A70_2017_REC1-en.pdf#page=27

¹⁹ <http://www.fao.org/docrep/018/i3300e/i3300e00.htm>

²⁰ [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(18\)31788-4/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)31788-4/fulltext)

open areas, others such as curlew and lapwing require tussocky swards). A tailored approach is needed to provide a diversity of habitats for different species. In some areas this may mean reducing stocking density, but in others it may require an increase in livestock numbers to address under-grazing. The influential 2018 report by the RISE foundation²¹, finds that the vast majority of EU countries would need to reduce their stocking densities—in many cases to less than 30% of their current level—to stay within safe operating space in terms of climate change, nitrogen and public health. The report classified sustainable stocking density limits for achieving biodiversity benefits as between 0.5 and 1 livestock units per hectare.²²

Whilst the cultural importance of some low-intensity grazing systems should not be overlooked, recent experiments with rewilding show that wild herbivores can play the same role as domesticated animals in maintaining habitats that require grazing to maintain the biodiversity interest of a site or an area. In some areas, this may be preferable from the biodiversity angle, given that maintaining grazing with domesticated animals such as sheep can also raise other biodiversity issues such as the persecution of predators (such as wolves). Again, a tailored approach is therefore needed when designing solutions for grassland species.

Solutions

A 2018 study by the RISE Foundation on how and how much the EU should reduce its meat and dairy production to align with planetary boundaries, highlights that mere efficiency savings and improved technology will 'not offer the step change required'. The report points to several studies, which call for halving consumption of meat (all types) by 2050, which would lead to an estimated 23% decrease in cropland required in the EU.²³ The even more recent EAT Lancet study concluded that to stay within planetary boundaries we will have to reduce foods like red meat and sugar by over 50% and double global consumption of fruits, vegetables, nuts and legumes by 2050.²⁴ So, what are the solutions we need to effect this change?

A restructuring of the livestock sector will be required to reduce the overall number of livestock. Those remaining should be fed on pasture, crop residues, by products and unavoidable food waste. We therefore need to reverse the trend to grain-fed from grass-fed systems and ensure that those grass-fed systems are extensive rather than intensive and designed to deliver synergies for nature through appropriate stocking densities. These were the conclusions of a recent study which found that if we ended grain-fed livestock production, leaving only existing grass-fed production (and cut food waste in half), we could feed the world on organic agriculture.²⁵

²¹ <http://www.risefoundation.eu/>

²² http://www.risefoundation.eu/images/files/2018/2018_RISE_LIVESTOCK_FULL.pdf

²³ <https://www.theguardian.com/environment/2018/sep/15/europe-meat-dairy-production-2050-expert-warns>; http://www.risefoundation.eu/images/files/2018/2018_RISE_LIVESTOCK_FULL.pdf; Similarly, A 2016 paper in the Journal Food Policy, suggests that that a 50% reduction in the consumption of beef (and mutton) will be required if the EU climate targets are to be met²³.

²⁴ <https://eatforum.org/eat-lancet-commission/eat-lancet-commission-summary-report/>

²⁵ <https://www.nature.com/articles/s41467-017-01410-w>

This would compensate for the fact that organic is generally less productive than conventional agriculture but better for the environment and generally more sustainable in the long run.²⁶

However, in reducing the numbers of livestock in the EU, we must prevent this simply being replaced by imports of animal products from elsewhere. Precisely due to a lack of effective consumption-side interventions, the EU's emission reductions have been offset, at least in part, by increased production outside the EU.²⁷ Where meat from grazing animals is imported it should be from animals reared on natural pasture rather than converted rainforest.

At the level of individual citizens, healthy diets need to be encouraged through a combination of 'carrot' and 'stick'. Carrots or 'soft' interventions can involve education; promotion of sustainable and healthy diets, behavioural interventions e.g. offering more low- or no-meat options, changing how these options are described to promote uptake (e.g. tasty rather than healthy²⁸) and reducing the amount of meat in classic meat dishes. The 'sticks' could include reallocating subsidies from intensive livestock farming to more sustainable systems and shifting to food systems which incorporate environmental costs. As this will mean higher food prices (or at least much higher meat and dairy prices), such a shift will have to be supplemented by social food policies, including promotion of sustainable and healthy diets to ensure good healthy basic nutrition to all, and fiscal policies which ensure that all citizens can afford to purchase safe and healthy foods, in particular vulnerable groups in society. It has been shown that fiscal policies, such as taxes, need to be part of a wider programme that delivers visible advantages to citizens.²⁹

Although cultural eating patterns can be deeply engrained, attitudes are already shifting, for example in Portugal vegetarianism rose by 400% in the last decade.³⁰ The rise in alternative protein sources is also helping drive this cultural shift.³¹ There has also been a growing trend towards 'flexitarianism'; people who are reducing their meat consumption. In the UK, the meat alternatives market grew by 63% between 2012 and 2017. This illustrates that people's attitudes to dietary preferences are more fluid than once thought.

²⁶ <https://phys.org/news/2017-11-agriculture-world-meat-food.html>

²⁷ https://ec.europa.eu/eurostat/statistics-explained/index.php/Agri-environmental_indicator_-_greenhouse_gas_emissions

²⁸ <https://www.eating-better.org/blog/language-takeaways>

²⁹ https://www.foodethicscouncil.org/uploads/publications/180522_Meat%20tax%20-%20Business%20Forum%20write-up_.pdf

³⁰ <http://theportugalnews.com/news/number-of-vegetarians-in-portugal-rises-by-400-percent-in-10-years/43482>

³¹ https://www.theguardian.com/business/2018/dec/19/unilever-joins-meat-free-revolution-after-buying-the-vegetarian-butcher?CMP=share_btn_tw

Policy recommendations for shifting to predominantly plant-based diets

1. **End active support and promotion of livestock and dairy** sectors in the EU's Common Agricultural Policy.³²
2. **Transform CAP into Common Food and Land Use policy**, which also addresses demand side issues in order to boost consumption of, and markets for, sustainable produce. This integrated policy would be focused on promoting a coordinated transition across production, distribution, retail, consumption to make those shifts happen faster.
3. **Help farmers to transition** from livestock and dairy production to plant-based commodities and extensive systems, and do not reward those who convert or intensify permanent grasslands.³³
4. **Ensure that the agricultural sector contributes to international and EU GHG reduction targets** via improvements to accounting rules. The agricultural sector should aim, as with other sectors, for net-zero emissions by 2040.
5. Ensure that any reductions in meat production in Europe are not simply replaced through imports from elsewhere, both through **controls on trade in these products** and on **demand side measures**.
6. **Ensure that the price of food reflects the true environmental costs**, for example through taxation of negative environmental impacts or emissions.
7. **Implement social policies** to ensure all people are able to afford and have access to good healthy food.
8. **Promote sustainable and healthy diets**, including reduced meat consumption amongst consumers, and through green public procurement and behavioural interventions.

³² The EU's Common Agricultural Policy (CAP) is supporting meat through promotion, price intervention and direct payments which favour intensive meat and dairy. Investment aid can also go to intensification of animal production (such as purchase of intensive housing for animals or milking machines). A 2019 report by Greenpeace found that between € 28.5 billion and € 32.6 billion of the CAP goes to go to livestock farms or farms producing fodder for livestock—between 18 % and 20 % of the EU's total annual budget <https://storage.googleapis.com/planet4-eu-unit-stateless/2019/02/83254ee1-190212-feeding-the-problem-dangerous-intensification-of-animal-farming-in-europe.pdf>

³³ Ensure that cross-compliance prevents the conversion and intensification of grasslands, which is still not the case in various EU member states. Cross-compliance is a mechanism that links direct payments to compliance by farmers with basic standards concerning the environment, food safety, animal and plant health and animal welfare, as well as the requirement of maintaining land in good agricultural and environmental condition.

Action #2: An immediate halt of burning food for bioenergy

Introduction and context

Already in 2013, almost 10% of global crop calories, such as maize, rapeseed or sugar cane, were used for biofuels and other industrial uses. This figure is likely to be significantly higher today.³⁴ Biomass is an incredibly inefficient way to produce energy: 1 MW biogas plant requires roughly 450-500 hectares of land whereas the average wind mill today has the capacity of 4 MW.³⁵ If *all* of the world's harvested biomass (currently used for food, fibre, wood, clothing etc.) would be used for energy it would only produce around 20% of estimated 2050 energy use (or 33% of today's global energy use).³⁶

In the EU, renewable energy policies have led to an artificially high demand for bio-based raw materials, including agricultural crops which are burned, either for biodiesel (usually from palm oil or oilseed rape) or biogas (often from crops such as maize). 60% of the rapeseed grown in Europe goes to produce biodiesel.³⁷ Half of the resources used for biogas production are food crops (mostly maize). Biogas production is leading to vast areas being used to produce food for energy, which competes with food production, in the same way growing crops for liquid transport biofuel does. BirdLife's work on the environmental risks of biofuel production and ILUC resulted in the EU ruling to limit the use of food based biofuels in the transport sector.³⁸ The same cannot be said for the biogas sector.³⁹

A national level example: Germany

Fuelled by subsidies for biogas production, in recent years Germany, which leads the European biogas industry, has seen an area of around 216,500 hectares converted to maize production.⁴⁰ At the same time the conversion of biodiversity-rich grasslands to maize fields has led to so called 'maize-deserts', void of almost any wildlife and prone to soil-erosion and worsening flood risks.⁴¹ This increased competition for land threatens food supply, and harms biodiversity: in 2011, for the first time in 25 years, Germany did not produce enough grain to meet its own needs⁴², and a

³⁴ <http://iopscience.iop.org/article/10.1088/1748-9326/8/3/034015/pdf>

³⁵ <https://www.monbiot.com/2014/03/14/the-biogas-disaster/>

³⁶ www.wri.org/sites/default/files/avoiding_bioenergy_competition_food_crops_land.pdf

³⁷ <https://www.transportenvironment.org/sites/te/files/publications/Reality%20check%20-%2010%20things%20you%20didn%20know%20about%20EU%20biofuels%20policy.pdf>

³⁸ https://www.birdlife.org/sites/default/files/attachments/201409_Little-Book-Biofuels.pdf

³⁹ https://ec.europa.eu/energy/sites/ener/files/documents/ce_delft_3g84_biogas_beyond_2020_final_report.pdf

⁴⁰ <https://www.destatis.de/DE/ZahlenFakten/Wirtschaftsbereiche/LandForstwirtschaftFischerei/FeldfruechteGruenland/Tabellen/FeldfruechteZeitreihe.html>; Other sources have estimated the conversion to be far higher; up to 800,000 hectares, see <https://www.soilassociation.org/media/4671/runaway-maize-june-2015.pdf>

⁴¹ <https://www.eubioenergy.com/2018/10/12/eu-re-run-biofuels-disaster-biogas/>

⁴² <https://www.spiegel.de/international/germany/biogas-subsidies-in-germany-lead-to-modern-day-land-grab-a-852575.html>

2014 study estimated that the increase of farmland for maize cultivation in Germany may result in a significant decline of farmland bird population by 2050 of around 10%, or up to 0.4 million breeding pairs.⁴³

Demand for bioenergy crops leads to indirect land use change; as agricultural land is converted to bioenergy production (because such commodities are made more profitable by policy incentives), the agricultural products that have been displaced need to be grown elsewhere, leading to the clearing of more land for agriculture expansion, often at the expense of biodiversity rich habitats such as rainforests, or conversion of other valuable habitats such as grasslands, peatlands and marshlands. This is especially associated with deforestation in the tropics for palm oil cultivation, but it also occurs in Europe. Demand for liquid biofuels in Europe has also been associated with 'large scale' land grabbing in many other parts of the world.⁴⁴

A 2014 study by the IEEP showed that—based on the (limited) available data—the potential land area for growing biofuels in Europe could at best supply 0.5-1% of current EU road transport energy consumption, and this would come with 'significant environmental impacts', namely significant biodiversity loss and probably carbon loss.⁴⁵ A more recent assessment concluded that from the climate perspective there is no such thing as 'spare land' for bioenergy, due to the fact that such land could always be better used for carbon sequestration (by restoring natural vegetation).⁴⁶

Solutions

We therefore need to reduce the demand for bioenergy, including the artificial drivers of that demand stemming from legislation and subsidies.

To ensure that any bioenergy production that occurs is genuinely sustainable, comprehensive safeguards need to be strengthened to ensure that bioenergy is truly low carbon while at the same time transitioning, ideally, to an EU energy system based entirely on renewable energy, like wind and solar.⁴⁷ It is also essential to ensure that these other types of renewables respect nature conservation objectives. Renewable forms of fuel, electricity, or heating should only come from bioenergy when the source is waste and residues that have no other purposes.

Policy recommendations to stop food being used as biofuel

To avoid serious negative consequences for carbon emissions, biodiversity and land conflicts, the EU should introduce five main safeguards for biofuels and bioenergy:

⁴³ <https://onlinelibrary.wiley.com/doi/full/10.1111/gcbb.12146>

⁴⁴ www.srfood.org/images/stories/pdf/officialreports/20140310_finalreport_en.pdf

⁴⁵ https://ieep.eu/uploads/articles/attachments/0f3187f4-2646-4c61-a31b-1be1e700d1af/IEEP_2014_Space_for_Energy_Crops.pdf?v=63664509851

⁴⁶ <https://www.nature.com/articles/s41586-018-0757-z>

⁴⁷ http://www.birdlife.org/sites/default/files/a_new_eu_sustainable_bionenergy_policy_2016.pdf

1. Phase out the use of food crops used for biofuels and biogas by 2030.
2. Phase out of any dedicated use of land for energy, except in the context of habitat restoration in which biomass harvesting can be part of biodiversity friendly management (e.g. harvesting of reed beds on restored wetlands).
3. End support for biofuels from high-ILUC feedstocks such and palm oil and soy immediately.
4. Ensure efficient and optimal use of truly sustainable bio-resources such as wastes and residues, in line with the principle of cascading use, while reducing primary energy demand.
5. Introduce correct carbon accounting for biofuels and bioenergy, including ILUC, foregone sequestration and carbon stock changes.
6. Within the CAP, ensure that the policy does not subsidise bioenergy production from agriculture and forestry where the sources are not strictly limited to wastes and residues.

Action #3: Eliminate or drastically reduce food waste

Introduction and context

The current global food system results in huge amounts of waste. Roughly one third of the food produced in the world for human consumption every year—approximately 1.3 billion tonnes—gets lost or wasted.⁴⁸ In the EU, this figure is around 20%, or 47 million tonnes.⁴⁹ The available data—although suffering from serious data gaps—suggests that 50% of food waste comes from households, and around 30% from the production and processing sectors, with the remainder from food service and retail sectors.⁵⁰ However, varying estimates from different sources reflect the need for improved measurement of the individual sources of food waste. Every year, consumers in rich countries waste almost as much food (222 million tonnes) as the entire net food production of sub-Saharan Africa (230 million tonnes). In low-income countries, food loss is prevalent at the production and post-harvest stages of the value chain, while in middle- and high-income regions, food waste at the retail and consumer levels tends to be higher.⁵¹ Addressing this issue is therefore an important part of bringing production and consumption within planetary boundaries.

The impact this has on the environment

Food waste creates unnecessary additional pressure on land, water, fuel and other resources needed to grow food. The FAO estimates that it takes an area greater than the size of China to grow the food wasted or lost.⁵² In Europe, a 60% reduction in food waste by 2030 would reduce Europe's land-use burden by an area larger than Croatia.⁵³ Food waste also causes a significant amount of unnecessary carbon emissions. According to the FAO, food waste has a global carbon footprint of about 8% of all anthropogenic greenhouse gas emissions.⁵⁴

It is estimated that food that is harvested but ends up being lost or wasted accounts for around a quarter of all water used by agriculture every year⁵⁵; more than 66 trillion gallons.⁵⁶

⁴⁸ <http://www.fao.org/save-food/resources/keyfindings/en/>

⁴⁹ https://ec.europa.eu/food/safety/food_waste/stop_en

⁵⁰ <http://www.eu-fusions.org/phocadownload/Publications/Estimates%20of%20European%20food%20waste%20levels.pdf>

⁵¹ <http://www.fao.org/3/a-i7657e.pdf>

⁵² https://champions123.org/wp-content/uploads/2018/09/18_WP_Champions_ProgressUpdate_final.pdf

⁵³ https://eeb.org/publications/151/fact-sheets/93275/fs9_reducing-food-waste_finaleu.pdf

⁵⁴ <https://ieep.eu/uploads/articles/attachments/64e06bc1-6c2e-4b94-bc93-9150725093ac/Think%202030%20Feeding%20Europe.pdf>

⁵⁵ <https://www.sciencedirect.com/science/article/pii/S0048969712011862>

⁵⁶ <https://www.worldwildlife.org/initiatives/food-waste>

Dramatically reducing food waste, in combination with a shift to predominantly plant-based diets, would relieve much unnecessary pressure on land, allowing for more extensive and diversified production models, as well as ensuring that the remaining wild or natural areas are not converted to agriculture.⁵⁷

Solutions

As food waste happens on many levels, the solutions will be varied according to the type of food waste. Even for one type of waste, such as household waste, a combination of ‘hard’—such as regulation and taxes—and ‘soft’ approaches—such as awareness raising and provision of infrastructure e.g. composting facilities—should be used.

The issue of food waste is relatively high on the political agenda. The EU has signed up to the Sustainable Development Goals, which includes the target of halving per capita food waste at the retail and consumer level by 2030, and reduce food losses along the food production and supply chains.⁵⁸ The 2017 Progress Report on this target found that more progress towards this goal had been made in the private sector than by governments, although the report failed to provide quantitative estimates.⁵⁹ The EU’s Waste Framework Directive, revised in May 2018 to incorporate food waste, requires EU countries to reduce waste at each stage of the food supply chain through the preparation of food waste prevention programmes, monitor food waste levels and report back regarding progress made. The Directive also requires the Commission to propose a 2030 EU target for reducing food waste. However, the Commission’s proposed methodology for assessing food waste does not count harvest food waste, which could account for up to a third of food losses.⁶⁰

Nevertheless, a 2017 report by the European Court of Auditors found that: “the action to date has not been sufficient and that the EU strategy on food waste has to be strengthened and better coordinated.”⁶¹ The Auditors recommended that the Commission “should explore ways of using existing policies to better fight food waste and loss”.⁶²

Policy recommendations to address food waste

1. **Introduce a clear definition of food waste in EU legislation** which includes food wasted at the level of primary production.
2. **Commit to a binding target of cutting food waste by 30% by 2025 and 50% by 2030** from farm to fork at Member State level. This means that it should include not just retailer and

⁵⁷ See for example the previously mentioned study on organic agriculture <https://www.nature.com/articles/s41467-017-01410-w>

⁵⁸ https://ec.europa.eu/food/safety/food_waste/eu_actions/eu-platform_en

⁵⁹ https://champions123.org/wp-content/uploads/2018/09/18_WP_Champions_ProgressUpdate_final.pdf

⁶⁰ <https://tinyurl.com/ydhmb4ox>

⁶¹ <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=40302>

⁶² *Ibid.*

consumer food waste, but also food wasted at the primary production, manufacturing and distribution levels.

3. Establish recommended **EU guidelines** on how to meet EU food waste reduction targets and develop a common methodology not just for measuring, but for preventing food waste.
4. **Implement the Waste Framework Directive and the 'cascading use' principle** properly in the Member States.
5. Ensure that the strategies for reducing food waste set out in the Circular Economy Package are strengthened to **address the root causes of over-production and over-consumption**, and **implement the circular economy and waste hierarchy principles in the food and agriculture sector**.
6. **Removal of subsidies that can cause overproduction**, such as coupled payments under the CAP.⁶³
7. Initiate a **re-design of supply chains** as a strategy to tackle waste and introduce policies to promote short supply chain initiatives which can help to combat food waste in the long term by helping to refocus attention on the value of food rather than simply volume, therefore removing incentives to produce surpluses.
8. **Addressing retail drivers** regarding use-by labelling, promotions that encourage over consumption, and packaging and damage requirements that cause suppliers to reject 'ugly' or non-conformist products.
9. Other 'soft' policies such as encouraging and enabling food donation.
10. Changing the rules on what food waste can be fed to animals, such as pigs.
11. **Include waste reduction provisions in public procurement rules**, including implementing measurements and developing measures to reduce food waste in public catering (e.g. school and university canteens, kindergartens, hospitals, care facilities).
12. **Improving consumer awareness and education** related to food waste and what each individual could and should do.

⁶³ As recommended by the Court of Auditors in their 2017 report on food waste <https://www.eca.europa.eu/en/Pages/Doctem.aspx?did=40302>