This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730280.

ROCK Sustainable Event Guidance

Factsheet 1: Sustainable Food & Produce

Developed by Julie's Bicycle, as part of the 'ROCK Sustainable Events' series.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 730280.

Call: H2020-SC5-2016-2017

TABLE OF CONTENTS

DISCLAIMER

The sole responsibility for the content of this publication lies with the ROCK project and in no way reflects the views of the European Union.

ABOUT THE ROCK PROJECT

ROCK aims to support the transformation of historic city centres afflicted by physical decay, social conflicts and poor life quality into Creative and Sustainable Districts through shared generation of new sustainable environmental, social, economic processes. ROCK develops and applies an innovative circular systematic approach to connect different actors, places of cultural heritage value and systems, at a European level as well as at a local level, facilitating the innovation process and the adoption of environmentally and socially sound solutions to achieve sustainable growth.

In 2014, the International Union for the Conservation of Nature's IUCN World Heritage Outlook declared climate change to be the most serious potential threat to natural World Heritage sites worldwide. The effects of climate change – from sea-level rise and higher temperatures to increasingly frequent extreme weather events such as floods and droughts – all threaten to rapidly degrade the natural and cultural heritage of humankind.

There is an urgent need for environmental support and resources to encourage cultural heritage leaders and practitioners to take action on climate change and the environment in order to safeguard cultural heritage and protect wider society from the effects of environmental breakdown. The safe-guarding of cultural heritage not only aims to protect heritage (including crucial habitats and biodiversity) – but also heritage as a driver for new and greener products, services, skills, and finance that can enhance the economic, social and cultural value which cultural heritage brings.

SCOPE

These guides will equip cultural heritage & event professionals to begin their journey towards environmental action. The guides are focused on developing both environmental knowledge, as well as best practices, and include the key steps for both environmental governance and operations for events in cultural heritage city centres. The 'ROCK Sustainable Events' series covers the following topics:

1. Sustainable Food & Produce
2. Understanding and eliminating problem plastics

This guide is for directors, managers and practitioners of cultural heritage and events who are looking to integrate environmental governance and practice within their event designs and operations.

1. Introduction

- Portugal is Europe's largest consumer of seafood, and the third largest in the world, with a consumption of 61.5 kg per person per year - almost 3 times that of the global average [1].
- The Portuguese national dish, Bacalhau (salted cod), can no longer actually be found in Portugal - the fish is mostly imported from Iceland or Norway, after overfishing in the 1970's and 80's killed off most of the local populations [1].
- 40% of the world's population works in agriculture and farming, making it the single largest employer in the world [2].

2. Why make food sustainable?

1. Farming and livestock are responsible for up to 30% of global greenhouse gas (GHG) emissions making agriculture one of the world's most significant carbon emitting industries. [3] [4]
2. Cattle, lamb and other animal-based products have some of the highest carbon footprints of all food groups - the result of excessive water and land needed for grazing, growing food, transport for slaughtering and processing meat into other food products [5].
3. The use of harmful chemical pesticides, wasteful practices and intensive industrial farming is driving the pollution and destruction of the environment, increasing the production of GHGs, and accelerating the impacts of climate change [6].
4. Intensive agriculture has driven extensive land-use change, one of the main factors contributing to biodiversity loss, for example, mass deforestation and removal of hedgerows to make way for crops and grazing land. Further environmental impacts of intensive agriculture include deterioration of soil quality, chemical and water pollution [6].
5. The overconsumption of red and processed meat has been linked to rising levels of obesity and the associated health issues of being overweight in recent studies, particularly in western diets [7] [8].
6. Of the 5000+ species of crops available, 75% of all human calories come from just 12 varieties, while just 3 - rice, maize, and wheat - account for half. This standardisation puts our agriculture systems at

[1] The Ellen MacArthur Foundation (2019) Cities and Circular Economy for Food: Porto, Portugal. https://www.ellenmacarthurfoundation.org/assets/downloads/Focus-City-Porto-Portugal.pdf

[2] GIAR (2012) Agriculture and Rural Development Day 2012: Lessons in Sustainable Landscapes and Livelihoods. https://www.fanrpan.org/archive/documents/d01339/ardd/ARDD_communique-Sustainable_landscapes_and_livelihoods_2012.pdf

[3] Tukker, Huppes, Guinée et al. (2006) Environmental Impact of Products (EIPRO). Analysis of the life cycle environmental impacts related to the final consumption of the EU-25. https://ec.europa.eu/environment/ipp/pdf/eipro_annex.pdf

[4] WWF (2009) How low can we go? An assessment of greenhouse gas emissions from the UK food system end and the scope to reduce them by 2050 http://assets.wwf.org.uk/downloads/how_low_report_1.pdf

[5] Ellen MacArthur Foundation (2019) Cities and Circular Economy for Food. https://www.ellenmacarthurfoundation.org/assets/downloads/Cities-and-Circular-Economy-for-Food_280119.pdf

[6] IPCC (2019) IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse gas fluxes in Terrestrial Ecosystems – Summary for Policymakers https://www.ipcc.ch/site/assets/uploads/2019/08/Edited-SPM_Approved_Microsite_FINAL.pdf

[7] You & Henneberg (2016) Meat consumption providing a surplus energy in modern diet contributes to obesity prevalence: an ecological analysis https://bmcnutr.biomedcentral.com/articles/10.1186/s40795-016-0063-9

[8] University of Adelaide (2016) Meat consumption contributing to global obesity https://www.worldatlas.com/articles/countries-who-consume-the-least-meat.html

threat from disease, changing climates and extreme seasonal weather events, providing the right conditions for food shortages and sudden rises in food prices [9].

These points depict our food systems as no longer fit for purpose, requiring large scale, systematic change. Our agricultural systems would need to increase their output by some 50-100% in order to nutritiously feed the 9 billion people expected in the world by 2050 [9]. We must rapidly improve our food systems to become more sustainable, diverse and nutritious, in order to meet our growing food demands in a sustainable way.

This includes being more efficient with our food from ground to grave. Around a third of all food produced in the world goes uneaten or thrown away - largely due to aesthetic issues i.e. the wrong shape, size, colour or other imperfections, from otherwise perfectly edible food [5].

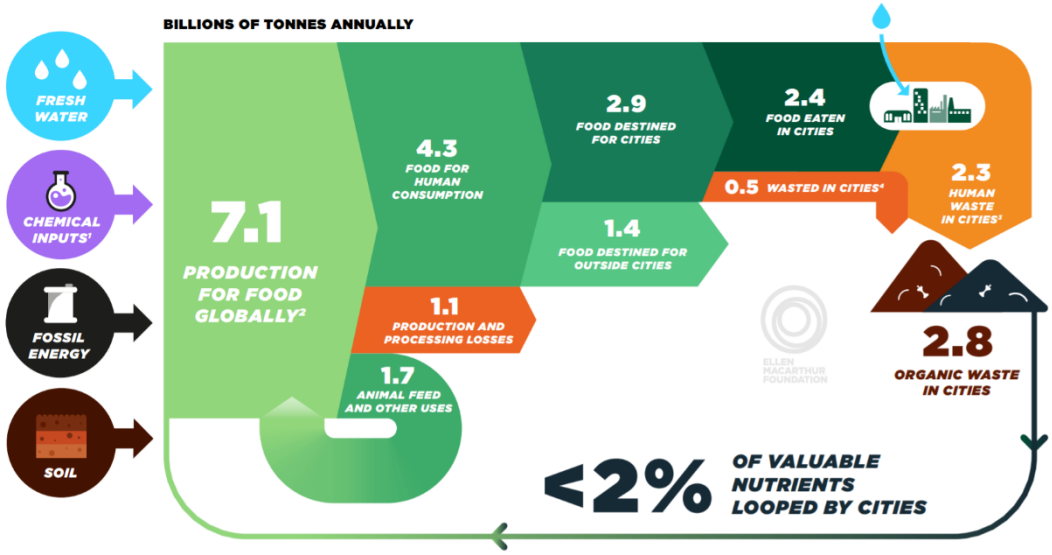


Image 1. Source: Ellen MacArthur Foundation (2019) Global food production and waste in cities

2.1 The Environmental and Social Benefits of Making Food Systems Sustainable

- By improving the variety and diversity of our foods and diets, we can make our crops more resilient to disasters such as diseases, extreme weather events and changing climates, thereby avoiding unnecessary food shortages or spikes in food prices[9].
- Trends suggest that consumption of animal products are likely to increase another 25 - 50% if current practices continue, resulting in a further 80% increase in GHG emissions from the sector by 2050. Cutting the amount of beef, lamb and other carbon-intensive products, by switching to a more plant-based diet, will be essential in managing both environmental impacts, and improving the quality of our diets [10].
  Although reducing the volume of meat and dairy is one of the easiest ways to reduce the carbon impact of our diets, some plant-based foods still have moderately higher carbon and water impacts from intensive growing conditions and processes, as well as transportation impacts from freight e.g. avocados, soy, almonds, rice etc.

[9] FOA UN (2019) The State of the World's Biodiversity for Food and Agriculture. United Nations. http://www.fao.org/state-of-biodiversity-for-food-agriculture/en/

[10] Smith (2014) New Research Says Plant-based Diet Best for Planet and People. United Nations University. https://ourworld.unu.edu/en/new-research-says-plant-based-diet-best-for-planet-and-people

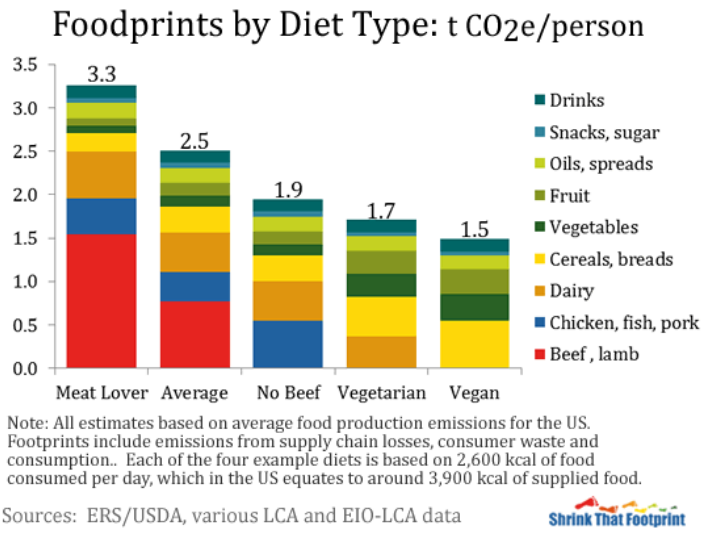


Image 2: source: ShrinkThatFootprint.com

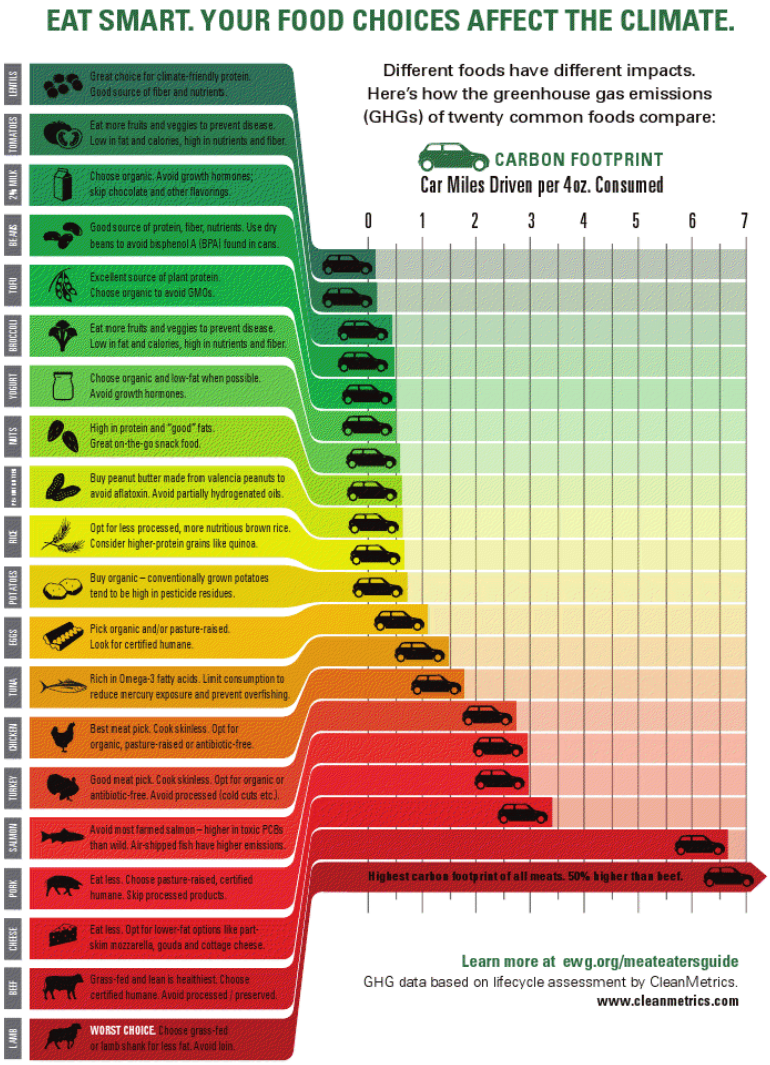


Image 3: source: EWG.org

- Adapting to a more circular food system with locally sourced, seasonal foods will reduce the greenhouse gases from food production, transport and storage. By doing so, this could save up to 4.3 billion tonnes of greenhouse gases globally, avoiding the destruction of 15 million hectares of land, and saving 450 trillion litres of fresh water a year [5].
- Every minute the area of 27 football pitches is cut down from our forests [11] and over 1 million species are currently at risk of extinction as a result of deforestation and climate change[12]. Adopting sustainable agriculture methods, such as local and urban agriculture systems, crop rotation and agroforestry, utilising heirloom and heritage crops as well as pesticide-free farming can help increase the productivity, variety and nutrition of our foods, whilst reducing the environmental impacts of growing and the need to continuously expand the amount of agricultural land available for development [5]

2.2 The Economic Benefits of Making Food Systems Sustainable

- Up to a trillion USD is lost on food waste every year from growers, retailers and venues – a third of the entire food produced globally. Making our food systems more regenerative and circular will cut the cost of food waste for growers and venues, while opening up new revenue streams for services which focus on sustainability and food waste [5].
- Plastic food packaging has increased significantly in recent years, causing widespread environmental impacts, increasing waste management costs for venues and waste managers. Minimising waste and packaging will help reduce landfill expenses, as well improving recycling rates for venues and local areas [13].
- 'Heritage' or 'Heirloom' foods – species of crop which are traditionally grown in native regions, usually with a large range in variety - offer a local cuisine experience for audiences and tourists. Tourists in particular are likely to spend more, and larger proportions of their budgets on heritage dishes and experiences [14]. In recent years, for example, growers and enthusiasts in India have been harvesting heritage varieties, such as red okra, black and blue corn, purple sweet potato and white- and purple-striped groundnut, with successful uptake from local consumers and farmers. Consumers find these crops exotic, whilst farmers have found these varieties are showing signs of natural pest resistance[15]. Utilising locally grown heirloom foods can provide a new and unique source of income for local retailers and venues to tap into tourism and heritage experiences.
- Food waste is particularly expensive to dispose of, meaning businesses and venues can profit significantly from adopting sustainable food practices and waste prevention measures. Research has shown that for every $1 invested in food waste prevention, $14 of financial benefit can be realised, through measures such as: reducing food waste management costs, increasing the share

[11] World Wildlife Foundation. Threats – Deforestation and Forest Degradation. https://www.worldwildlife.org/threats/deforestation-and-forest-degradation

[12] Leahy (2019) One million species at risk of extinction, UN report warns. National Geographic. https://www.nationalgeographic.co.uk/environment/2019/05/one-million-species-risk-extinction-un-report-warns

[13] The Ellen MacArthur Foundation, World Economic Forum and The McKinsey Centre (2016) The New Plastic Economy. https://www.newplasticseconomy.org/assets/doc/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf

[14] World Tourism Organisation (2012) Global Report on Food Tourism https://urbact.eu/sites/default/files/import/Projects/Gastronomic_Cities/outputs_media/Food_tourism.pdf

[15] Madhvi Sally (2019) Heirloom crops, indigenous varieties are making a comeback. The Economic Times India https://economictimes.indiatimes.com/news/economy/agriculture/heirloom-crops-indigenous-varieties-are-making-a-comeback/articleshow/71457484.cms

of food that is sold, avoiding the cost of unnecessary purchasing, and inventing new product lines or engaging with other organisations who will buy or use food for its value [16].

3. Taking Action

In order to make the case for sustainable food, it's important to know and understand your current practices - establish a baseline. Audit and document your menus and ingredients, preparation methods, any purchasing/ disposal methods and policies, records of sales, as well as the details of suppliers in order to establish a baseline of:

- The variety of products being sold and which are the most popular
- The likely carbon footprint of each dish, using online tools and guides to help such as:
  Eat Low Carbon.org
  The Food Carbon Footprint Index
- Note the preparation, cooking and serving methods (i.e. gas oven, or grill, induction hobs, halogen lights for serving pass)
- The origin of products- calculate the food mileage.
- Are any existing sustainable products already being bought (i.e. certified labelled products, organic, palm oil free)
- The ethical credentials of suppliers & food sources
- How products are disposed of (are they segregated and how? Is food/ drink composted?)
- The volumes and type of packaging and serving dishes/ cutlery (e.g. polystyrene, cardboard, biodegradable plastics etc.)

Then ask the following questions:

- In what way does or could your menu design and food procurement consider environmental sustainability? (i.e. through requiring food labels, organic and local produce, reduce the quantity of red or factory farmed meat, designing out food waste)
- Who decides how much and of what is purchased for menus and serving?
- How are contracts and tenders designed, and do they currently include any aspects relating to sustainable food for bidders?
- Could packaging and crockery/ cutlery be reduced, recycled or composted?

From here you can set yourself a realistic plan, prioritising areas with the highest environmental impact, the areas with potential financial savings and the easiest options to act on.

3.1 Choosing Greener Suppliers

The carbon footprint of different foods is made up of:

- The amount of resources required to produce each food, i.e. the water, fertilisers, nutrients and energy required to grow and harvest
- The operational impact of suppliers, from processing, packaging and transporting
- The preparation and service methods
- Disposal

[16] Champions12.3 (2017) The Business Case for Reducing Food Loss and Waste champions123.org/the-business-case-for-reducing-food-loss-and-waste/

Different foods can therefore have significantly different carbon footprints, depending on where they're grown, processed, transported to, but finding sustainable produce doesn't always mean you have to switch suppliers. Talk to your existing suppliers about what they can offer, and who their suppliers are. Always ask to see their where they source their products from and if they have an environmental policy in place – sourcing produce with certified environmental and sustainable labelling is the most effective way to identify sustainable from unsustainably sourced products.
Suppliers can sometimes make unverified claims about their products and services, so look out for signs of 'greenwashing' by:

- Ensuring anything 'certified' should have internationally recognised labels or certificates,
- "Green" or "eco-friendly" claims should be clearly explained and evidenced,
- Any environmental standards or systems should be clearly certified and up to date.

3.2 Top Principles for Sourcing and Serving Food and Drink Sustainably

Choose:

1. Products with certified food labels (Fairtrade, Organic, Rainforest Alliance etc.)
2. Free range, organic, locally produced labelled eggs
3. Fish from the Marine Stewardship Council approved 'fish to eat' list
4. Certified Fair Trade and/or Rainforest Alliance condiments with fully compostable/ recyclable packaging (tea, sugar, coffee, pepper, milk etc.)
5. Products with minimal packaging or packaging that is widely recyclable
6. Certified organic, local, seasonal produce, where possible, with limited GHG emissions from transportation
7. Suppliers with proven environmental policies and reputations e.g. certified health and safety and/or environmental management systems or sustainability strategies in place
8. Produce which can be long-lasting and stored with minimal energy requirements
9. Washable/ reusable (or compostable, if necessary) cutlery, crockery, napkins, storage containers which are aligned with the site's waste management capabilities
10. Seasonal produce (ideally not from artificial greenhouses, as these have significantly higher CO_2 impacts even when factoring in shipping and transport)
11. Alternatives to bottled water (free tap water with reusable cups/glasses and/ or canned)

Consider:

12. Buying only as much as needed: save money and prevent produce from going off unnecessarily
13. Serving a*t least* one vegetarian and (or) vegan meal option
14. Increasing the diversity of produce and ingredients in menus. Consider traditional, local or heritage varieties of ingredients to limit transport environmental impacts
15. Limiting energy requirements by replacing appliances (fridges, grills, ovens, washing machines) with energy efficient equipment (A+++/ A++ rated)
16. Switching all lights to LEDs/ low-energy bulbs
17. Utilising renewable energy technologies (battery storage, solar PV)
18. Purchasing renewable energy supplies (for venues, this could be through electricity procurement, or for traders, ordering Bio LPG gas cannisters)
19. Creating an official sustainability policy and training programme for staff and suppliers
20. Encouraging customers to bring their own serving utensils and hot water cups where possible, for example, through offering a discount, as traditional plastic lined cups can't always be recycled by local authorities or waste contractors.

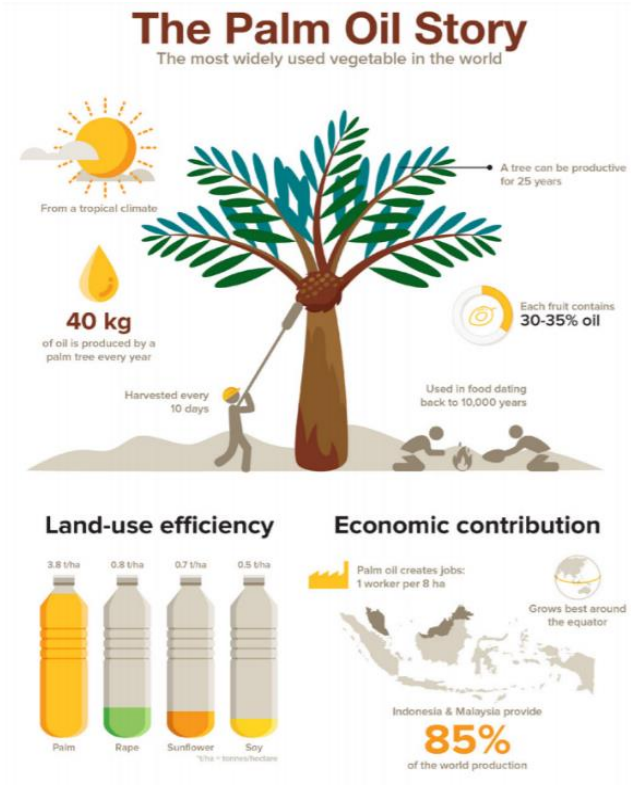
Avoid:

21. ‘Glossy’ and laminated packaging – these can’t be recycled or composted
22. Polystyrene/ oil-based plastic packaging, crockery, cutlery, napkins, cups and condiment tubs
23. Single-serve sachets of pepper, salt, sugar, condiments, milk and plastic straws
24. Buying or selling bottled water
25. Air freighted produce
26. High quantities of red/ processed meat in menu designs

4. Case Study Examples

4.1 Case Study: The Palm Oil Dilemma

Palm oil has become the world’s ‘go-to’ ingredient for consumer products. It’s commonly found in cleaning products, cosmetics, pre-packaged foods, pet food, cooking oil and as a ‘renewable’ biofuel crop. Palm oil has been used for centuries by tropical communities, and remains to be an important source of income and economic development for many rural regions and developing nations. In the last 40 years, global production of palm oil has grown 15-fold, from 4.5 million tonnes in 1980 to 70 million tonnes in 2014, fuelled by the increased demand for commercial and consumer goods in predominantly developed nations[17].



The accelerated demand for palm oil has made it a controversial topic for wildlife specialists, multi-national companies, and consumers. Oil palm trees grow in tropical regions such as Central and Southern America, the tropics of Western and Central Africa and the equatorial countries of Asia. The increasing demand for palm oil has been linked to extensive deforestation in these regions, threatening some of the most biodiversity rich forests and endangered species on the planet. 85% of all palm oil comes from East Asia – particularly Indonesia and Malaysia – where critically endangered species such as the Bornean Orangutan, Clouded Leopard, Malayan Tapir, Asian Elephant and Sumatran Tiger are already facing extinction. IUCN estimates 193 critically endangered, endangered and vulnerable species in total remain threatened by the palm oil industry[17].

Image 4, Source: IUCN Report, Oil palm and biodiversity.

The rapid expansion of oil palm plantations has also fuelled the rise in greenhouse gas emissions, removing critically important carbon stores from rainforests and peatlands, whilst displacing indigenous forest and rural communities from their homes [18].

[17] IUCN (2018) Oil palm and biodiversity, Issues Brief. https://www.iucn.org/resources/issues-briefs/palm-oil-and-biodiversity#why

[18] Rainforest Alliance (2019) The Search for Sustainable Palm Oil https://www.rainforest-alliance.org/articles/search-for-sustainable-palm-oil

Nevertheless, palm oil remains to be an important part of global food security, remaining the most popular vegetable oil for a range of products globally because of its high yields, relatively low land requirements and low maintenance costs. This is particularly important when comparing oil palm trees to other oil-producing crops, such as rapeseed, soy or sunflower. While palm oil accounts for over 35% of all plant-based oil products, plantations only use around 10% of the allocated land for oil crops globally. For this reason, substituting palm oil in favour of other oil-rich crops is not a solution – boycotting palm oil will only likely displace biodiversity loss and deforestation, and intensifying rather than preventing it [19].

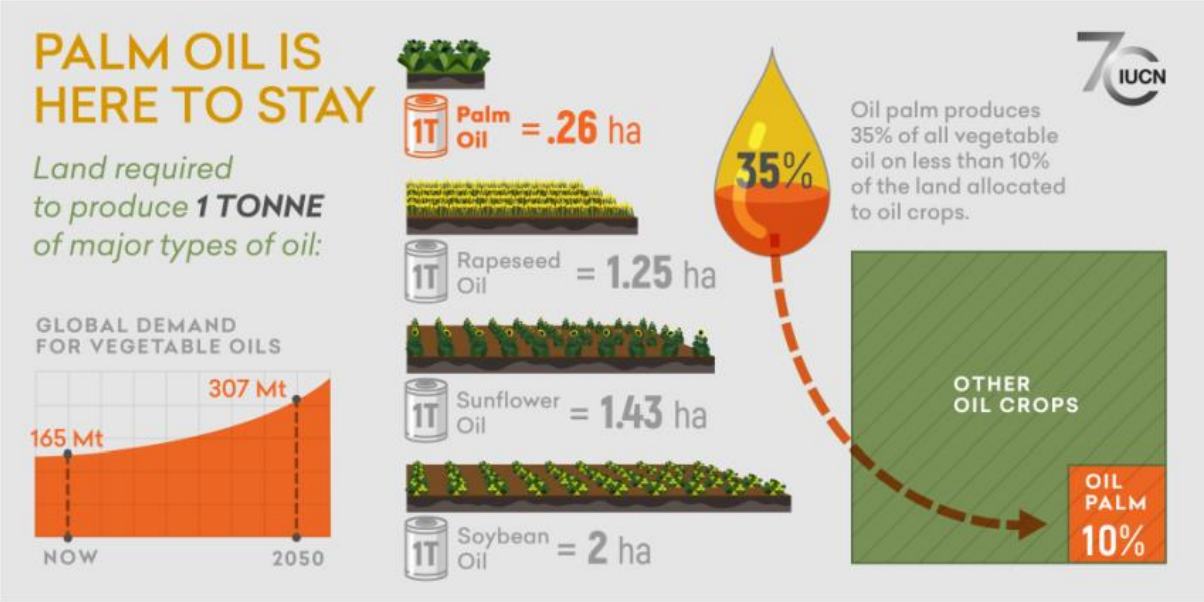


Image 5, Source: IUCN Issues Brief.

The best option available for consumers and buyers of palm oil products, is to choose companies and brands with proven records for sustainably sourcing palm oil. Choosing companies who RSPO (Roundtable on Sustainable Palm Oil) certified will help ensure you're buying from the most ethical and verified sustainable palm oil plantations and traders [20]. Whilst labelling and certifications can provide an indicator of product sustainability, unfortunately, the credentials of some claims remain in question, complicating consumer decisions. Greenpeace published a report in 2018 detailing a number of multi-national corporations who were unable to respond to their requests on disclosing their supply chains for traceable, certified sustainable palm oil sourcing, even though such companies had an existing, self-imposed policy on 'sourcing sustainably' [21]. With this in mind, utilise the existing guides and resources on the best-practice companies and suppliers out there. The Ethical Consumer provides a range of reports, lists and guides on such suppliers, a few of which are provided below.

- The Ethical Consumer - Palm oil & Consumers – guides to ethical shopping & palm oil products
- The Ethical Consumer - The 'Palm Oil Free' companies & products list
- The Ethical Consumer - Companies and Brands to avoid over unsustainable palm oil use

[19] IUCN (2019) Oil palm and biodiversity, full report. https://doi.org/10.2305/IUCN.CH.2018.11.en

[20] Roundtable on Sustainable Palm Oil – RSPO. 'About' https://www.rspo.org/about

[21] Greenpeace (2018) Moment of Truth: time for brands to come clean about their links to forest destruction for palm oil https://www.greenpeace.org/usa/wp-content/uploads/2018/03/momentoftruthREPORT.pdf

4.2 Participatory Food Strategies in Bruges, Belgium

In 2015, Bruges, one of the largest cities in Belgium, began work on a sustainable food strategy after bringing food and agriculture to the top of the environmental agenda. City officials quickly identified food waste as a main driver of CO2 emissions, and the third most effective solution to reduce greenhouse gasses, even before solar farms and plant-rich diets[22], whilst being extremely cost-effective – for every 1 euro invested in food waste reduction, the city could save 8 euros elsewhere[16]. Early studies on the impacts of the city of Bruges identified that over 750,000kg of edible food was being wasted a year by retailers alone – that's 15,000kg a week. Restaurants were the worst offenders, responsible for 43% of the total food waste across the city, with citizen waste making up just under 40%, while retailers making up only 8.1% [23].

The food waste strategy relied heavily on a co-creation and a bottom-up approach. Local stakeholders, including individuals and organisations working in catering and food waste prevention, were the main designers of the strategy, as well as becoming champions in the local community to communicate their actions and impacts. One city official noted "*The participatory approach made all the difference. We don't work top down anymore. We want the input of the citizens. This creates more awareness. Their voice is important to us. They want change, we want change. Together we go for it.*" [23]

The result was a 6-point strategy to encourage, educate and change the habits and approaches to food waste. This included; creating an online 'short chain' map, where people and organisations can easily find farms, restaurants, shops, markets and beekeepers selling local produce; setting up urban gardens and allotments, for communities and residents; setting up and encouraging urban agriculture, encouraging locals to work in commercial farms; preventing food waste, through redistribution to local organisations and causes; encouraging fair trade; through increasing visibility of products in local shops and caterers; and education, including setting up 'The Food Lab' [24].

'The Food Lab', became a central pillar to the strategy, becoming the centre for expert advice, campaigns, workshops and with a hub for managing the various elements of the programme. The hub produced resources and education for locals, for example; emphasising sustainability in cooking schools, managing and mapping the short chain hubs in Bruges, linking supply and demand for food surplus and waste to other organisations and developing a manual on sustainable food for events[23].
The Sustainable Food Manual, launched in 2016, detailed tips, tricks and best practices to sustainably manage food for events in the city – with the Food Lab coordinating advice for event planners and managers. The manual paved the way for the creation of the, now annual, 'Fair and Delicious Bruges' (Heerlijk Brugge) sustainable food festival, with the aims to raise awareness of sustainable food and promote the work of the Food Lab. The launch saw the 'Feeding of the 5000', where 5000 meals were prepared using only food which would have otherwise gone to waste, with not a single dish wasted.

Bruges continues its work on reducing food waste, expanding into the retail, education and healthcare sectors in recent years. The lessons from this example demonstrate that participatory approaches can be one of the most insightful ways to develop a strategy on waste and food waste prevention, using local actors to develop local solutions, while utilising city events and festivals can also be an effective way at engaging and educating locals on the benefits of food waste. Find out more at Zero Waste Europe.

[22] Project Drawdown. Summary of Solutions by Overall Rank https://www.drawdown.org/solutions-summary-by-rank

[23] Rosa & FoodWIN (2018) The Story of Bruges, Case Study #11. Zero Waste Europe https://zerowasteeurope.eu/wp-content/uploads/2018/11/ZWE_CS_11_Bruges_EN.pdf

[24] Agroecocities European Network (2017) Six Priorities of a Sustainable Food Strategy in Bruges http://www.agroecocities.eu/wp-content/uploads/2017/06/BrugesFoodStrategy_.pdf

4.3 Lessons on Improving Food Recycling in Events, Brighton & Hove City Council, United Kingdom

The city of Brighton & Hove organises hundreds of events every year in its open spaces. Through its various events, the city discovered that food waste posed a particular challenge because of the lack of food waste management infrastructure in the local area. It also discovered that food waste was 10 times more expensive to dispose of than dry, mixed recycling, as well as the accompanying plastic packaging proving a particular contaminant for composting and anaerobic digestion.

Because of this, Brighton & Hove council set out to identify key challenges, barriers and driving forces which could reduce its food waste burden at city-run events. The council conducted a trail with a local waste organisation, Brighton Paper Round, with an aim to reduce food waste at 5 of its outdoor events by achieving at least 30% recycling and to recycle at least 5% of all food waste created. The events used a number of initiatives to achieve this, including; working with caterers to encourage the use of compostable food packaging at the event; providing training for event staff on segregating waste; using specific, brightly coloured and informative signs for both audiences and back of house employees; and monitoring waste during both build and break periods for events.

The results of the trail showed that one event achieved recycling rates of up to 55%, 27% being food waste alone, whilst 41% of the total waste produce across all 5 events was recycled, 10% being from food waste. A number of key insights were learnt throughout the process, the main points being that higher back of house recycling rates from food vendors were achieved by preliminarily discussing packaging and food waste with employees and vendor managers – much of the packaging waste was compostable already, but communication on which bin to use was crucial. Back of house recycling was also generally higher than front of house, but the period after event days saw general waste rates rise dramatically. Additionally, training and education were identified as crucially important for those not directly responsible for waste management (e.g. bar staff, construction and maintenance staff) in effectively segregating the waste they produce, especially those breaking down the site after the event. Finally, pre-event planning for organisers to communicate the environmental aspects of the event to audiences, designing the number and placement of bin points and appropriate signage for each event all contributed to higher levels of recycling and lower levels of food contamination.

Additional findings are also interesting for organisers to reflect on the indirect impacts of event design and audience types which impact waste management on site. Food contamination rates increased and recycling rates dropped where higher levels of alcohol was consumed and events were not ticketed, a result of the free movement of people and audiences being able to bring in their own foodstuffs. Also, events with evening activities produced higher levels of waste, and were more likely to increase contamination into the evening [25]. The lessons from these trials establish how indirect factors may influence the levels of recycling and contamination – something that event organisers should take into consideration when designing their events. Direct actions from event organisers is needed to ensure effective recycling and food waste management, from both back of house staff as well as audiences.

The trail was just one of Brighton & Hove council's efforts to demonstrate best practices and create a positive culture for sustainable event management for private and public events in the area. The council became the first UK local authority to achieve ISO 140001 and 20121 standards in environmental management and sustainable event management following the London 2012 Olympics. The incorporation

[25] Siepel and Brighton & Hove City Council. https://www.brighton-hove.gov.uk/sites/brighton-hove.gov.uk/files/Food%20waste%20at%20outdoor%20events%20report%20v4.pdf

of these standards into the council's activities, planning and decision making demonstrates their ongoing commitment to environmental best practices. The council has also developed a range of online resources, videos and guides for event programmers and suppliers, including specific guidance for outdoor events, conferences and exhibitors, as well as a commitment to promote sustainable events in their official events policy online [26]. Providing a positive culture for sustainable event management has also influenced local venues and organisations to follow suit – the Brighton Centre, South England's largest exhibition centre, also follows the council's guidelines providing links and resources from the council to encourage organisers to reduce their environmental impact as much as possible [27].

[26] Brighton Hove & City Council. Sustainability in the City, Sustainable Events. https://www.brighton-hove.gov.uk/content/environment/sustainability-city/sustainable-events

[27] Brighton Centre, The Sustainable Events Programme. https://conferences.brightoncentre.co.uk/the-sustainable-events-programme/