

# Chapter 7

## Sustainable Consumption



**Keywords** Ecological footprint · Ecological overshoot · Behavioral economics · Nudging · Cost transparency

### This Chapter's Learning Goals

- You know the relevance of consumption for the sustainability of a country.
- You know how the Ecological Footprint can be measured in practice.
- You know the key drivers of the carbon footprint of consumption.

## 7.1 SDGs and Sustainable Consumption

The SDGs, as mentioned earlier in Sect. 2.4, are blueprints for improving society's quality of life. The SDGs serve as guiding principles for the transformation to a more sustainable society. Especially relevant for this chapter is SDG 12 "Ensure sustainable consumption and production patterns." This SDG focuses on achieving economic growth and sustainable development, which requires that we urgently reduce our ecological footprint by changing the way we produce and consume goods and resources.

There is an urgent need to encourage industry, businesses, and consumers to adopt more sustainable consumption patterns. To achieve SDG 12, a much more efficient use of resources will be necessary. For example, this requires a reduction of the amount of waste in general, and especially a reduction in food waste. The world population currently consumes more resources than the ecosystems can provide. Therefore, fundamental changes are needed in the way societies, businesses and individuals produce and consume their goods and services.

SDG 12 calls for the implementation of the UN 10-year framework of programs on sustainable consumption and production patterns, which includes:

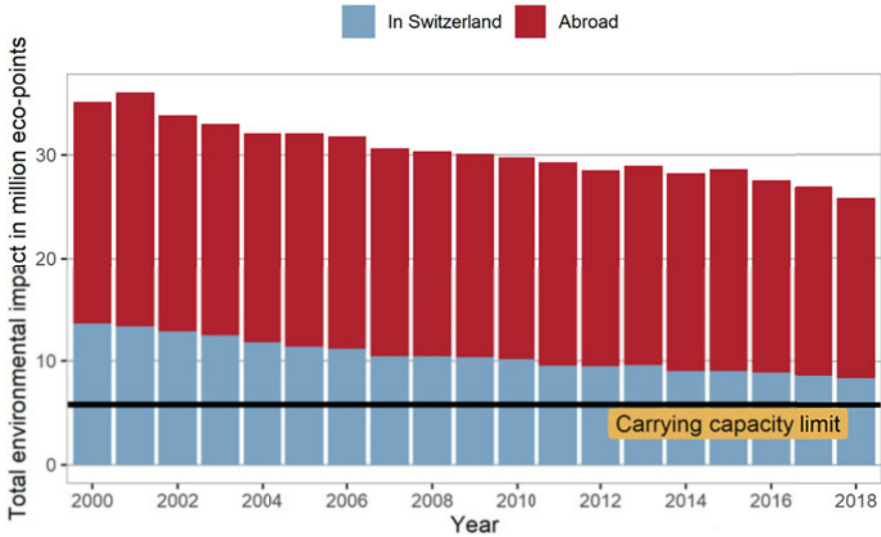
- Environmentally sound handling of chemicals and all waste.
- Significant reduction of waste through, for example, repair, reuse, upcycling, and finally recycling at the end of the life cycle.
- Halving per capita food waste at the retail and consumer levels, while also reducing losses elsewhere in the value chain including production and post-harvest.
- Encouraging companies to adopt sustainable practices, such as energy efficiency, efficient water use, reducing wastewater, reducing climate emissions, implementing clean design in products, etc.
- Promoting sustainable procurement practices, such as the implementation of sustainability criteria in procurement and purchasing.
- Promotion and dissemination of relevant information on sustainable consumption and raising awareness.

### ***7.1.1 The Relevance of Consumption in a Globalized World***

The consideration of the sustainability of consumption is especially important in today's globalized world. In a closed economy all goods that are produced within a country are ultimately consumed there. In such a closed system the sustainability of consumption and production would therefore be intrinsically linked. Citizens' consumption in this closed economy causes increases the impacts of production. In an open economy like Switzerland the picture is significantly different, its inhabitants' consumption consists of many imported goods, which means their consumption influences the sustainability of foreign production. The same goes for exports, many goods produced in Switzerland are consumed abroad and therefore do not influence the sustainability of Swiss consumption. Due to the search for ever higher profits, plus political and social pressure energy-intensive and environmentally harmful production has increasingly been outsourced from western countries to less developed countries. As a result, more and more products with high environmental impact are imported from abroad. As the example of Switzerland shows, it is therefore possible that environmental impact of consumption generated domestically is significantly smaller than the impact generated abroad (see Fig. 7.1). The foreign share has increased from 61% in 2000 to 68% in 2018. The total global environmental impact of consumption has decreased by 26% over this period but is still well above the environmental carrying capacity limit. There is still a long way to go.

### ***7.1.2 Consumption of Natural Resources Over Time***

In the 2019 SDG Report, António Guterres, the Secretary-General of the United Nations, claims that “progress is being made in some critical areas, and that some favorable trends are evident” (United Nations, 2019). Nonetheless, SDG 2019 report



**Fig. 7.1** Development of the total environmental footprint per person, according to impacts generated domestically and abroad, 2000–2018 (source: Nathani et al., 2022). Notes: Eco-points are an indicator for measuring a country’s environmental footprint. An eco-point is the unit of measure of the environmental impact of a unit, product, or material

states that “we continue to use ever-increasing amounts of natural resources to support our economic activity. Globally, the generation of waste is mounting. About one third of the food produced for human consumption each year is lost or wasted, most of it in developed countries. Urgent action is needed to ensure that current material needs do not lead to over-extraction of resources and further degradation of the environment. Policies must be embraced to improve resource efficiency, reduce waste and mainstream sustainability practices across all sectors of the economy” (United Nations, 2019). In doing so, we need significant improvements at the production level (see Chap. 9 on circular economy), but also at consumption level.

The **material footprint** refers to the total amount of raw materials extracted to meet the final demand of consumers. As such, the material footprint provides an indication of the pressure exerted on the Earth’s ecosystems to support economic growth and meet the material needs of the people on this planet. As already discussed in Sect. 1.4, the global monitoring of this indicator indicates that the global material footprint continues to grow at the same pace as population and GDP at the global level (see Fig. 1.8). In other words, we have not yet seen a decoupling of economic growth and natural resource use.

## 7.2 What Is Sustainable Versus Unsustainable Consumption?

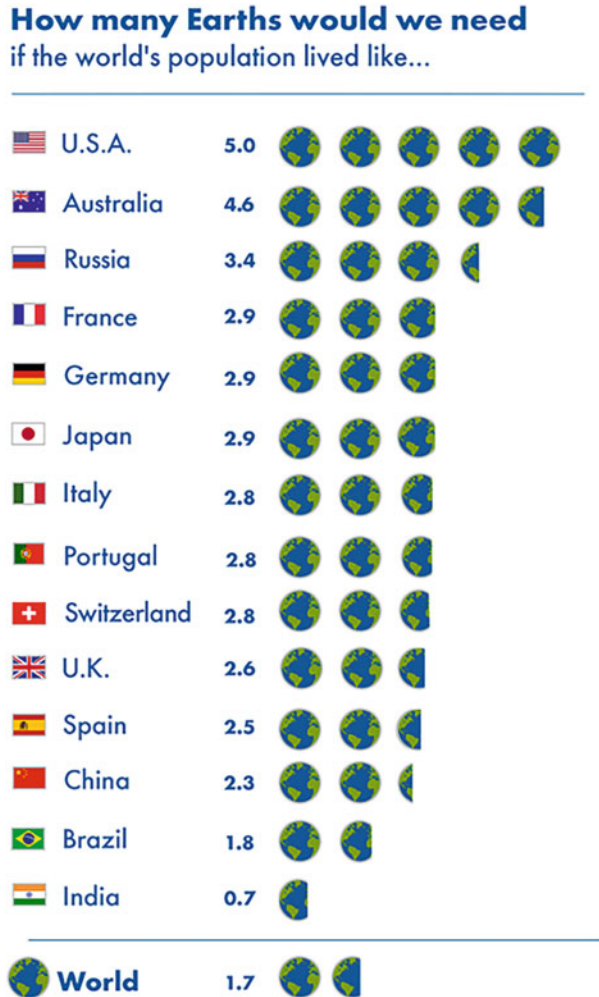
The material footprint of the world population has a negative impact on the environment. However, it is very difficult for individuals to understand the impact of their individual consumption. Therefore, several organizations (e.g., [Global Footprint Network](#), WWF) have been working to develop and promote a methodology for measuring the impact of human activities on the earth. Simply stated, it is the amount of the environment necessary to produce the goods and services needed to support human life and lifestyles (WWF, 2020). The indicator developed is called the **ecological footprint** and enables individuals to understand the impact of their consumption and waste on the planet. The Footprint Calculator provided on the WWF website calculates your personal footprint using the information and data you provide about your personal lifestyle and consumption. Analyses of the impacts of key areas such as nutrition, housing, mobility/transport, etc., are provided along with suggestions on what measures would help to move towards more sustainable consumption.

**Sustainable consumption** means that the ecological footprint is not greater than the corresponding biocapacity, i.e. consumers in a given area (e.g., a specific country) do not consume more resources than the area naturally produces and do not produce more waste/emissions than the area can naturally absorb. Consequently, sustainable consumption respects environmental boundaries (see also Sect. 1.2 on planetary boundaries). In contrast, consumption that exceeds these limits and leads to an ecological deficit, a so-called **ecological overshoot**, is called unsustainable consumption.

To achieve the goal of a world population living within the limits of our planet's resources, the **global ecological footprint** would have to correspond to the available biocapacity of the planet. Instead, we observe that we consume globally the resources of 1.7 earth (see Fig. 7.2), which is clearly not sustainable in the long run. Moreover, the amount of the earth's resources used for consumption varies greatly—and as such consumption can be more or less sustainable. The most developed industrialized countries use more than 2–4 planets to satisfy their consumption. The ecological footprint of Switzerland, i.e., the sum of the consumption of the Swiss population, for example is 2.8 Earths. Hence, an average Swiss consumer used the resources of 2.8 earths to satisfy his or her needs in 2020; the ecological capacity of the planet is significantly exceeded. This is only possible because other, poorer countries consume significantly less resources (Wackernagel & Beyers, 2019).

As discussed in Sect. 2.1, sustainable consumption has already been defined by the World Commission on Environment and Development in the report “Our Common Future” as “the use of material products, energy and immaterial services in such a way that it minimizes the impact on the environment, so that human needs can be met not only in the present but also for future generations” (World Commission on Environment and Development, 1987). More generally, sustainable

**Fig. 7.2** Ecological Footprint comparison, 2021 (source: Global Footprint Network, 2021)



consumption is understood as an “umbrella term” that encompasses numerous aspects, starting with meeting the needs of consumers and improving their quality of life while improving resource efficiency, increasing the use of renewable energy sources, minimizing waste, taking a life-cycle perspective of the goods and services consumed, and the equity dimension.

The purpose of sustainable consumption is to consume goods and services to meet consumer needs and bring better quality of life, while continuously reducing damage and risks to the environment and human well-being and health (see also discussion on sufficiency in Sect. 2.3). The transformation towards more sustainable consumption therefore involves first and foremost a change in **consumption patterns**, i.e. substituting inefficient, harmful goods and services for less damaging

ones. Secondly, reduction in **consumption levels** i.e. consuming less services and lower volumes of goods.

### 7.2.1 Sustainable Consumption Impact Areas

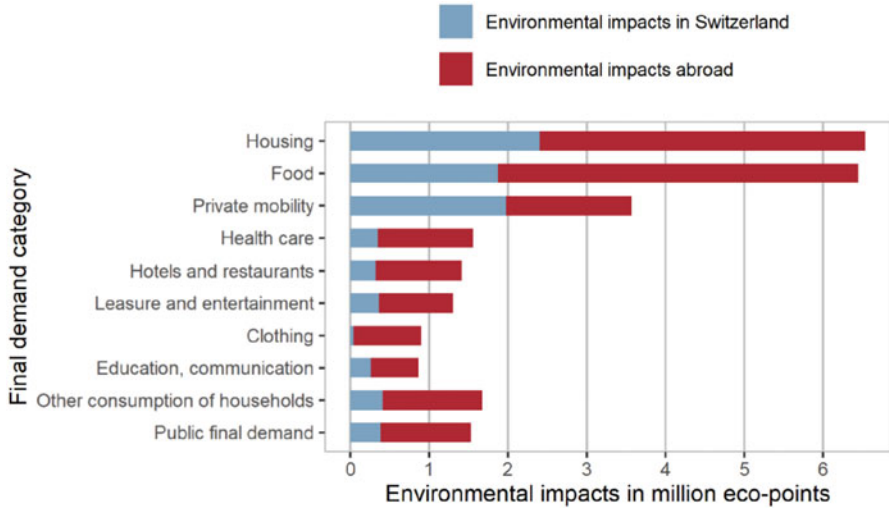
To understand the drivers of sustainability of consumption, the individual ecological footprint can be divided into different areas of consumption, such as food, goods, mobility, the so-called **impact areas**.

A study carried out by the European Commission to assess the consumer footprint in the European Union (see Sala & Castellani, 2019) highlighted that **food** consumption—especially agricultural production, is responsible for a large part of the footprint. Another key driver is **housing and mobility**. Particularly in relation to climate change, the formation of photochemical ozone, the use of fossil resources, and the use of mineral and metallic resources. Household goods significantly drive the depletion of mineral and metal resources but create less of an impact in the other components of the total consumer footprint (see Sala & Castellani, 2019).

Similarly, a European project, which analyzed the environmental impact of products consumed by households, concluded that 70–80% of the total impact is related to food and drink consumption, housing (including household energy consumption), and transport (including commuting, leisure, and vacation travel) (see Tukker et al., 2005). Kerr (2012) comes to a similar conclusion in his study British consumers' carbon footprint distribution.

Nathani et al. (2022) analyze the ecological footprint of Swiss consumption (see Fig. 7.3). Similar to the studies mentioned before, they find that housing (including housing construction and furniture and household appliances) and food each accounts for about 25% of the total footprint of demand. Private mobility makes 14% of the total footprint. Thus, these three categories make up 64% of total consumption related impacts. Spörri et al. (2022) investigate the ecological impact reduction potential for specific consumption activities in Switzerland. They also conclude that the greatest potential lies in the areas of nutrition, building/housing, and private mobility. The ecological impact reduction potential of the consumption of electrical appliances and clothing is comparatively lower. This is also because the focus in Spörri's study is primarily on savings that can be attributed to efficiency gains (i.e., weak sustainable consumption), and less on consumption reduction (i.e., strong sustainable consumption). Specifically, the greatest ecological potential is found in the following fields of action:

- **Nutrition:**
  - Change to an environment-/health-conscious diet (insect-based food, cultured meat, vegetable proteins)
  - Reduction of end consumers' food waste



**Fig. 7.3** Total environmental footprint per person by final demand category in Switzerland, 2018 (source: Nathani et al., 2022). Notes: Eco-points are an indicator for measuring a country’s environmental footprint. An eco-point is the unit of measure of the environmental impact of a unit, product, or material

- **Building/housing:**
  - Reduction of living space requirements per person
  - Reduction of room temperature/adapted room climate
  
- **Private mobility:**
  - Reduction of car mileage (passenger cars), i.e. reduction of distances traveled (e.g., way to work)
  - Reduction of air travel
  - More economical passenger cars (lighter, smaller, alternative driving systems)

**7.2.2 How to Achieve More Sustainable Consumption**

Starting with the areas with the greatest potential, some specific actions to make individual consumption more sustainable include:

- **Food and drink:** buy and eat local and seasonal food, eat less meat
- **Mobility and travel:** reduce miles, reduce high impact means of travel (flights), use public transport

- **Housing and home energy:** use renewable sources of energy, choose environmentally friendly and energy-efficient housing, reduce living space
- **Waste:** reduce waste by sharing, reusing, upcycling, or recycling, reduce your food waste
- **Shopping:** think twice before shopping and use labels. Choose organic, fair trade, or other labels that protect environmental and social sustainability. You find an overview of sustainability labels [here](#).

Further recommendations on what to do to reduce your footprint and move towards more sustainable consumption can be found on the [WWF website](#).

## 7.3 Encouraging Sustainable Consumption

If we accept that we need to change our consumption patterns to reduce our impact on the environment, why do we not just change them? The list above is not particularly complicated or surprising. However, as we know, adapting our consumption patterns is not easy. Most people have a justification in mind when they make their decisions: they increase their living space because they want more privacy, they travel by plane because they want to explore the world, they eat meat because they like it. Changing consumer behavior is usually very slow processes and cannot be achieved from one day to the next. So how can this change be encouraged or possibly even sped up?

### 7.3.1 Behavioral Economics

**Behavioral Economics** is a discipline that examines how people make decisions. It emerged as a critical response to the classical economic assumption that humans always act rationally. This assumption is founded on the view that human beings are able to select the best choice in accordance with their preferences. To be rational means that human beings:

- Always seek to maximize their utility
- Possess unlimited willpower that enables them to pursue their optimum
- Are only self-interested and the well-being of others does not play a role in their decision-making (Beck, 2014).

In his work Herbert A. Simon argues that humans are not able to be completely rational since it is impossible to fulfill all these prerequisites, i.e. possess all the information in the world. As a response he developed the concept of “bounded rationality” stating that humans are not always fully rational decision-makers, on the contrary their rationality is often limited due to various factors such as emotions, weaknesses, temptation, limited information, values, beliefs, etc. (Simon, 1972).



Behavioral economics studies human decision-making whilst taking bounded rationality into consideration and acknowledging the existence of anomalies in rational choice. These behavioral anomalies show that humans often do not act in accordance with standard economic theory. They want to maximize their utility, yet their choices sometimes do not represent this desire (Just, 2013).

Human behavior and decision-making are dependent on two cognitive systems (Thaler & Sunstein, 2008). System one is defined as the automatic system which decides using rapid intuition and feeling with no thinking required. It is mostly used for daily decisions. System two, the reflective system, processes decisions with logic and reasoning and is mainly used for important decisions.

Decisions are made using the following three areas: logic, information, and heuristics.<sup>1</sup> Many decisions are made with system one since it requires less mental energy. System one is therefore prone to biases and heuristic decision-making. System two, on the other hand, while it uses logic and information it can also be manipulated and is fallible (Kahneman, 2011).

Thus, behavioral economics and bounded rationality accept that humans may simplify decision-making in complex situations (Furnham & Boo, 2011). People simplify otherwise too complicated and complex tasks by relying on heuristics. One of the most often used mental shortcuts is habit: humans repeat the same action in response to a certain situation. Another is default behavior which means people use the “standard, predefined” option to repeat decisions well-known to them even if the situation has changed.

When aiming to increase the sustainability of consumption, peoples’ decisions and choices need to be shifted towards more sustainable choices. This is where the behavioral economics and its findings can be insightful.

This deliberate shifting of choices is known as **nudging**. The concept of nudging introduced by Richard Thaler and Simon Sunstein uses the choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives. This means that the consumers are “gently nudged” to choose an alternative (more sustainable) option.

How can nudging be used? Firstly, it can be used at the company level. For example, reducing plate sizes in all-you-can-eat restaurants lead to less food waste (Freedman & Brochado, 2010) or changing the default setting on a printer to double sided leads to reduced paper consumption (Egebark & Ekström 2016). Often these kinds of interventions are very similar to what marketers have been doing for many years—they are the green equivalent of putting the chocolate next to the cashier to increase sales. The second area of nudging is in policy. The UK government even had a so-called Nudge Unit (Quinn, 2018), and while not primarily involved in improving sustainability its experimental approach showed how nudges can alter people’s behavior. These insights could be applied to government policies to steer people in a more sustainable direction.

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<sup>1</sup>A Heuristic defined as “. . . a simple decision rule or rule of thumb that may be used to approximate rational optimization when decision resources are limited” (Just, 2013).

### 7.3.2 *The Role of Policy*

Nudging is one possible policy measure. However, one of the key problems is that time is pressing if society wishes to even have a chance of limiting global warming to 1.5 degrees. Therefore, other more significant changes to political frameworks and policies need to be undertaken (see also Chap. 6).

A prime illustration of the need for urgent policy action is the meat industry in Switzerland and many other Western countries. While CO<sub>2</sub> taxes are planned or have already been introduced to some extent they are rather piecemeal; e.g. meat production in Switzerland is still massively subsidized (see also real-world example). From an environmental point of view, these subsidies have a similar effect as if Switzerland were to subsidize the processing of fossil fuels. To make a step towards **cost transparency**, meat subsidies should be eliminated as quickly as possible. As long as the actual production costs are not directly visible to consumers, it is unlikely that the majority of people will make the more environmentally friendly purchasing decision. Moreover, for complete **cost truth**, instead of subsidies, taxes would also have to be introduced which internalize the external costs incurred in meat production (see Sect. 6.1.1). If all these costs are internalized, environmentally and health-conscious nutrition will become price-competitive, and new economic incentives to invest in this area will also arise on the supply side. It is also clear that such price increases only make sense if the import of cheap meat products from abroad is prevented at the same time by introducing tariffs on environmentally unsound products.

#### **Real-World Example: True Costs of Food in Switzerland**

The food system has an impact on biodiversity, health, and environment. To get an idea of the true costs of food, such externalities must be added to the retail prices. It turns out that the true costs can be substantially higher:

- The true costs of most vegetables and fruits are larger than the retail prices (e.g., potatoes: +17%), and only some are smaller (e.g., apples: -178%).
- The true costs of animal-based products, however, are mostly much higher than retail prices (chicken: +38%; cheese: +53%; beef: +125%).

Source: Perotti (2020)

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