



Slovenia's Ecological Footprint

Technical Report on the Ecological Footprint and Biocapacity of 12 Slovenian Regions

June 30, 2020 | *Updated: October 1, 2020*

Republic of Slovenia Ministry of
Environment and Spatial Planning
Slovenian Environment Agency



Global Footprint Network®
Advancing the Science of Sustainability

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Executive Summary

In 2018, the Slovenian Environment Agency implemented the first phase of the project, "The Ecological Footprint of Slovenia – Analysis of Data, Driving Forces, and Contributions by Sectors". Carried out by the Ministry of the Environment and Spatial Planning of the Republic of Slovenia (MOP) in collaboration with Global Footprint Network, the purpose of the project was planning and monitoring Slovenia's Ecological Footprint reduction policies. In 2020, the second phase of the project began with an emphasis on the Ecological Footprint calculations of twelve Slovenian statistical regions and the integration of the Ecological Footprint into regional environmental development. This second phase contributes to Slovenia's Ecological Footprint reduction efforts in accordance with the objectives of the Slovenian Development Strategy (SDS) 2030, specifically *Goal 9 – Sustainable Natural Resource Management*.

In the first phase of the project, Ecological Footprint accounting¹ was applied at the national level as a tool for monitoring resource dependency and resource security, and climate change mitigation. The comparison between resource consumption and generation shows that Slovenians consume much more energy products, food, and raw materials than what the country can provide, leaving Slovenia in a biocapacity deficit. The carbon Footprint is the largest component (62%) of Slovenia's Ecological Footprint and presents the greatest opportunity for transition to a resilient, resource-secure economy that supports a thriving society.

Implementing change is difficult if it is not monitored and analysed, thus the Ecological Footprint approach is critical for monitoring Slovenia's national resource consumption.

In order to support the environmental objectives of the Slovenian Development Strategy 2030 (SDS), these regional Ecological Footprint and biocapacity results for the twelve statistical regions of Slovenia were calculated using a top-down methodology and inform regional development programs for the 2021-2027 period. The initial results support two primary goals:

- informing regional development planning policy by identifying priority development areas (the main report)
- improving local capacity to develop accurate regional Ecological Footprint and biocapacity accounts by identifying data gaps (Annex A) and training of a national representative(Annex D).

Over the course of this project, national scenarios and projections of the carbon component of the Ecological Footprint of Slovenia were also verified and a Slovenian national representative was trained on the Ecological Footprint methodology to support the regional development programs and the realization of SDS's environmental objectives. Details on both these latter activities are reported in the annex section (Annex B).

The initial results provided clear indications of the distribution of biocapacity and consumption footprints across Slovenia. Nine of twelve regions show a biocapacity deficit, meaning their residents consumed more biocapacity to support their daily life than what was available in that respective region in 2016; three regions show a biocapacity reserve. Variations in absolute Ecological Footprints are largely explained by the differences in total population of each region; together, the three most populated regions account for over 50% of the biocapacity consumed in Slovenia.

The process of preparing regional results revealed major gaps in standardized consumption data at sub-national levels, and a lack of detailed economic proxy data (Annex A). The low resolution of input data support conclusions made on total results by region, but per-capita results lack a degree of resolution and allow only ordinal conclusions. The

¹ Also compare with "Ecological footprint of European countries" from EEA, published on 20 April 2020, available at <https://www.eea.europa.eu/data-and-maps/indicators/ecological-footprint-of-european-countries-2/assessment>. It provides top-level national results for ecological footprint and biocapacity of all European countries.

addition and improvement of key statistics in the categories of transportation, housing, and energy are a priority for improving results.

Key to this analysis is that Ecological Footprint and biocapacity accounting is an understanding that biological resources are the underlying basis of all economies and economic success. By focusing on this biological context, the analysis promotes long-term success by emphasizing the building blocks of thriving, sustainable economies. The recommendations herein provide a framework for measuring, monitoring, and approaching long term regional development. Recommendations include:

- Focus on investments with long lifespans, including infrastructure decisions, especially in Koroska, Osrednjeslovenska, and Obalno-kraska.
- Prioritize forest management and regenerative agricultural practices to preserve and enhance biocapacity. Continued priority needs to be given to forest management, especially in forest-rich regions of the south.

1. Introduction

According to the UN (UN, 2019), the world population is likely to grow to 9 billion people by 2050, 65% of which are expected to live in urban areas. Cities and regions critically contribute to direct and indirect global impacts related to energy use, changes in land use and climate, and increases in resource consumption. They also represent ideal solution spaces through innovative and sustainable planning, participatory governance, economies of scale, and smart, local resource management (Bettencourt et al 2007, Galli et al., 2020). It is becoming increasingly important to address resource security at regional and municipal levels because population centres depend on ecosystems to sustain life, health, and all economic activities. Regional development, which shapes how people live and move, produce, and consume, largely determines resource consumption (Baabou et al., 2017). As such, sustainability planning and resource management is particularly relevant at the local and regional level.

The COVID-19 pandemic has highlighted various important aspects of our economies and how we respond to challenges. The rapid spread of disease and the resulting shocks to the global supply chain has highlighted that we are biological in origin and all interconnected. Ultimately, resilient economies will emerge from disruption events to be successful economies. As we proceed, it is pertinent to identify which development strategies will lead to success.

We know the future playing field in which our economies will compete - it is a world without fossil-fuel based energy, and a world which will experience more frequent extreme weather events. In this world of over 9 billion people, the total supply of biological resources increasingly limits humanity, and is further complicated by supply chain disruptions. Our current overuse of biocapacity only increases the severity of future disruptions.

Slovenia has already taken steps to secure a successful economy in this future context. This leadership is critical because economies that invest into their own long-term success also make it more likely for others to succeed. Slovenia's success leads the way and helps others, creating a positive-sum game. Ecological Footprint accounting is a tool that helps economies succeed in a time of increasing uncertainty.

Ecological Footprint accounting builds on the premise that the planet's biological capacity to generate biological resources and ecological services is the most limiting factor to the human economy (Wackernagel et al. 2019). It tracks all the competing demands on the biosphere's regeneration (Wackernagel, 2019). These include the use and consumption of biological resources, the occupation of productive land for buildings and roads, and the absorption of waste such as carbon dioxide emissions from fossil fuel. Since the Earth is a limited planet, with physically defined borders, it has a finite capacity to provide natural resources and ecosystem services. The Ecological Footprint is a quantitative framework to assess the extent to which human consumption activities are demanding the natural resources and ecosystem services available on the planet (Isman et al., 2018).

The regional analysis presented in this report is calculated following a top-down approach based on national Footprint data supplemented with local data (e.g. Baabou et al., 2017; Pearson, 2013); this approach allows for consistent comparisons with national Footprint and biocapacity results, and avoids time and cost constraints of extensive local data collection and/or life cycle assessments. This approach is based on the research and applications of Global Footprint Network and grounded in its National Footprint and Biocapacity Accounts (Lin et al., 2018; Wackernagel et al., 2019).

The aim of this report is to present a first set of regional Ecological Footprint and biocapacity results, developed in coordination with Slovenian representatives in support of regional objectives around the key indicator. This study acknowledges that, beside known merits, there are also known limitations in the top-down approach used for the assessment, some of which could be overcome over time via the set-up of regional processes for bottom-up footprint assessment. Additional development and collection of detailed regional statistics is required to improve on results; therefore, this report provides a technical description of the methodology and results, documentation on the selection

and training of a national representative on sub-national methodology, and technical guidance on data gaps and needs for the further development of regional Ecological Footprint and biocapacity accounts (Annex A).

1.1 The current situation: global biocapacity and Ecological Footprint

The management of sustainability ultimately considers the planet’s capacity to support human societies. Living within the means of the planet is the starting point to creating a future society where all people can thrive. “One planet” is not a goal, but rather it is our context: a reality which we must acknowledge and manage.

The challenge is multi-faceted. Policy makers are faced with an expanding global population while addressing legitimate growth aspirations. Simultaneously, they are charged with phasing out fossil fuels within a few decades and protecting the integrity of the planet’s ecosystems and biodiversity. International platforms exist to address these cross-cutting challenges, including the Paris Agreement, Aichi Targets and Sustainable Development Goals. However, in the absence of strong agreement and implementation, regional entities that do not take global and national Ecological Footprint and biocapacity trends into account may be putting themselves at even more risk. In the context of regional development, the assessments introduced in this technical report are an opportunity to evaluate these trends to identify priority areas for action, potential gaps in their implementation capacity, and suggested next steps.

The Ecological Footprint is one of the most widely used and recognized integrated sustainability indicators for human pressure on ecosystems. It measures the sum of all human demands that compete for biologically productive surfaces and compares this demand with the amount of biologically productive surfaces available. The measurement unit used in this accounting metric are “global hectares” which are biologically productive hectare with world average productivity (see Box 2.1 for additional details). Using such a common measurement unit enables these accounts to compare not only different productive sectors or consumption activities within an economy in terms of the pressure they generate on the environment, but also to contrast them across geographies and time.

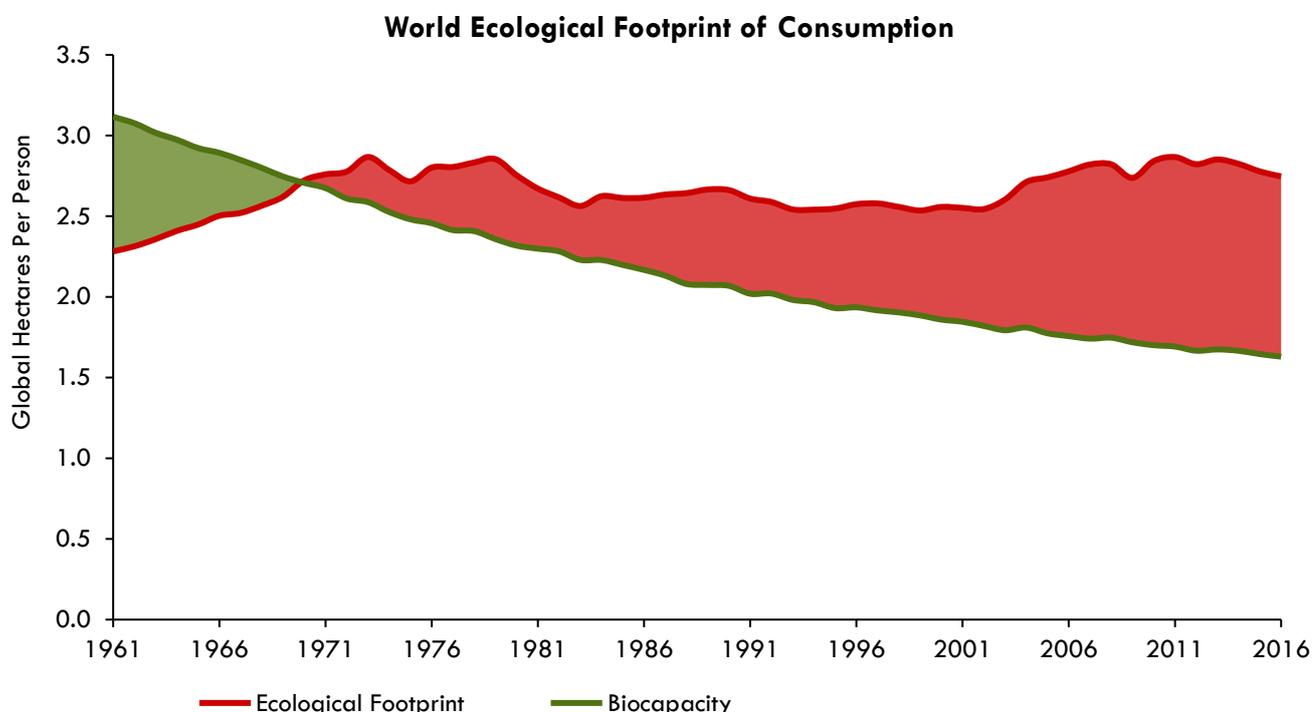


Figure 1.1 Per capita Ecological Footprint and biocapacity for the World, 1961-2016. In 2016, humanity’s per capita footprint and World biocapacity were 2.8 gha and 1.6 gha, respectively.

Framing the environmental side of sustainability with an overarching metric such as the Ecological Footprint informs users of the overall human demand on ecosystems. According to the most recent Footprint accounts, humanity’s demand has surpassed the Earth’s biocapacity since the 1970s. By 2016, humanity’s Ecological Footprint has grown to approximately 1.7 Earths (Figure 1.1). This indicates that natural resources and ecological services are used at a much faster rate than the planet is able to regenerate them, leading to natural capital liquidation. Furthermore, it is worth stressing that humanity needs to demand significantly less than one Earth to also maintain biodiversity, a key factor supporting the integrity and function of our ecosystems. In order to accommodate other species, E.O. Wilson suggests we reserve half the Earth (Wilson, 2016).

The loss of natural capital through deforestation and overfishing, the accumulation of CO₂ in the atmosphere, or the transgression of planetary boundaries (Rockstrom et al. 2009) are all manifestations of ecological overshoot. Despite international cooperation and global efforts, ecological overshoot has continued to grow at an average rate of 2% per year in recent decades,² mainly driven by increases in the Carbon and Cropland footprint components (Figure 1.2). As of 2016, carbon comprised 60% of the world’s total Ecological Footprint. This is a significant increase over the 44% contribution in 1961 or the estimated 1% contribution of the pre-industrial revolution period (Ritchie and Roser, 2018).

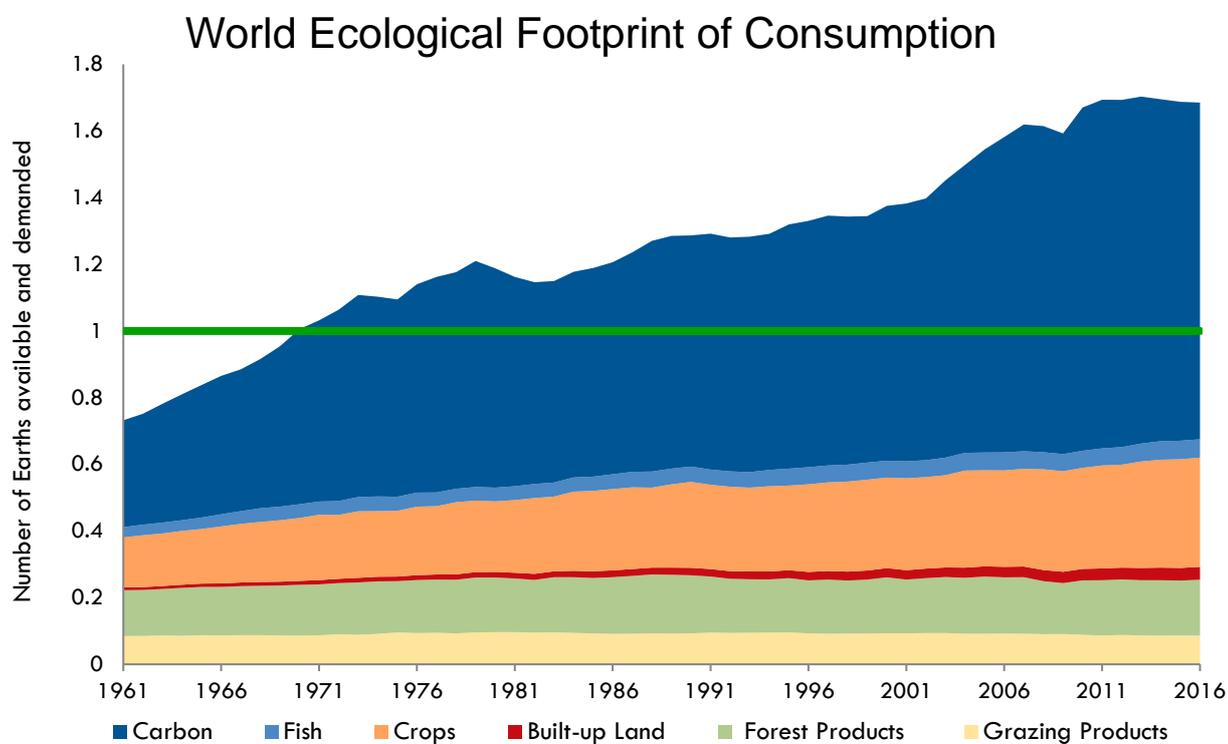


Figure 1.2 Contribution of land use types to global Ecological Footprint from 1961 to 2016. Ecological Footprint values in this graph are normalized to World biocapacity (indicated by the green line). In other words, the Ecological Footprint here is measured in *number of Earths* rather than in *global hectares*.

In 2020, the COVID-19 pandemic forced countries into “lock-down” leading to a reduction in resource demand – at great human and economic cost. This type of footprint reduction—as the result of a crisis—is not the type advocated for by policy makers seeking to improve the sustainability and well-being of their constituents. By contrast, the goal of

² Because of the COVID-19 pandemic and the associated lockdowns, Global Footprint Network estimated, using preliminary data, that at least for the first half of 2020, humanity’s footprint dropped to 1.56 Earths. The estimate is documented in Lin et al., 2020.

sound resource management is to identify pathways that increase wellbeing and combat ecological overshoot, enhancing regional resource security.

Moving from recognition of the challenges into action requires more refined tools. One way to get more helpful information out of Ecological Footprint accounts is to break the results into consumption categories. Such detailed analysis allows decision makers to highlight inefficiencies and set actionable footprint and biocapacity targets, as this report will show for twelve Slovenian regions.

Sustainability is a trans-disciplinary issue and no single metric exists that alone can address the full complexity of sustainability. The same holds true for the Ecological Footprint as will be indicated throughout this report. On the contrary, it is an overarching metric best used to identify problem areas and alongside explanatory metrics.

2. Methodology

2.1 Overview: Ecological Footprint Accounting

Economic activities fundamentally depend on the capacity of the planet's ecological assets to provide primary resources and life-supporting ecological services, including the sequestration of carbon emissions (Mancini et al., 2018). Ecological Footprint accounting measures humanity's use of ecological assets by answering a simple research question: How much of the planet's (or a region's) regenerative capacity does a specific activity (or a set of activities) require from nature?

To measure and map human dependence on biocapacity, Ecological Footprint accounting relies on two principles: additivity and equivalence.

Additivity: Given that human life competes for biologically productive surfaces, these surface areas can be summed. The Ecological Footprint adds up all human demands on nature that compete for biologically productive space, such as providing natural resources, accommodating urban infrastructure, or absorbing excess carbon from burning fossil fuels. The Ecological Footprint then becomes comparable to the available biologically productive space, or biocapacity.

Equivalence: Biologically productive areas vary in their ability to produce biological flows (i.e., biological resources and services used by people). Therefore, areas are scaled proportionally to their biological productivity. As such, the unit of measurement for Ecological Footprint accounting, the global hectare (gha), represents a rate of biological regeneration equal to that of a world-average biologically productive hectare (see also Box 2.1). This regenerative productivity can be used for resource production, waste sequestration, or physical occupation, which are mutually exclusive (e.g., urban infrastructure can occupy productive areas).

BOX 2.1 - What is a global hectare?

A global hectare (gha) is an area-equivalent unit representing the capacity of a hectare of land with world-average productivity. Dividing the total biocapacity of Earth by the total number of bioproductive hectares yields the value of an average "global hectare." A gha is a measure of the inherent capacity of the biosphere to produce biomass that is appropriated by humans.

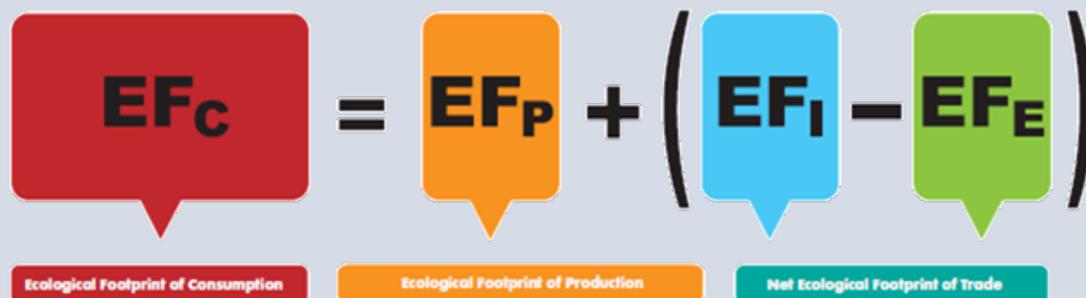
A parallel with the unit CO₂eq can further clarify the nature of this unit. The release of one ton of CO₂eq does not mean that this amount has actually been released. Rather, it means that various greenhouse gases with the equivalent global warming potential of one ton of CO₂ have been released. Similarly, having an ecological footprint of 2.8 gha does not mean that 2.8 ha of physical land are used. It rather means that the equivalent capacity of 2.8 ha of land with world average productivity is needed to produce (via photosynthesis) the resources and services one demands – this biocapacity could be anywhere in the world and could be originating from an actual land area smaller or larger than 2.8 hectares.

Source: Galli, 2015.

The most widely used application of Ecological Footprint accounting is the National Footprint and Biocapacity Accounts (NFAs), a framework published annually by Global Footprint Network that incorporates continuous improvements and implementations in science and accounting methodology (Lin et al., 2018). NFAs provide annual accounts of biocapacity and Ecological Footprint for the world and nearly 200 countries with historical data reaching back to 1961.³ Each NFA edition provides updated results for the entire accounting timeline based on the latest methodology.

³ National Footprint and Biocapacity Accounts data for all countries of the world are freely available on-line at: <http://data.footprintnetwork.org/>

BOX 2.2 - Tracking production, consumption, and net trade with the Ecological Footprint



The Ecological Footprint of consumption indicates the consumption of biocapacity by a country's inhabitants.

In order to assess the total domestic demand for resources and ecological services of a population, we use the Ecological Footprint of consumption (EF_C). EF_C accounts for both the export of national resources and ecological services for use in other countries, and the import of resources and ecological services for domestic consumption.

EF_C is most amenable to change by individuals through changes in their consumption behavior.

The Ecological Footprint of production indicates the consumption of biocapacity resulting from production processes within a given geographic area, such as a country or region.

It is the sum of all the bioproductive areas within a country necessary for supporting the actual harvest of primary products (cropland, pasture land, forestland and fishing grounds), the country's built-up area (roads, factories, cities), and the area needed to absorb all fossil fuel carbon emissions generated within the country.

This measure mirrors the gross domestic product (GDP), which represents the sum of the values of all goods and services produced within a country's borders.

The Ecological Footprint of imports and exports indicate the use of biocapacity within international trade.

Embedded in trade between countries is a use of biocapacity, the net Ecological Footprint of trade (the Ecological Footprint of imports minus the Ecological Footprint of exports). If the Ecological Footprint embodied in exports is higher than that of imports, then a country is a net exporter of renewable resources and ecological services.

Conversely, a country whose Footprint of imports is higher than that embodied in exports depends on the renewable resources and ecological services generated by ecological assets from outside its geographical boundaries.

The Ecological Footprint associated with each country's total consumption is calculated by summing the Footprint of its imports and its production and subtracting the Footprint of its exports. This means that the resource use and emissions associated with producing a car that is manufactured in China, but sold and used in Slovenia, will contribute to Slovenia's rather than China's Ecological Footprint of consumption.

For each country included in the NFAs, data on the amount of natural resources demanded (or carbon dioxide released) is first divided by the yield (or average carbon sequestration) of the ecological assets providing such resource (or sequestration services). The values obtained are then multiplied by equivalence factors and summed together to generate final national Ecological Footprint values in terms of hectare-equivalent units (i.e. global hectares, gha), according to the additivity and equivalence principles mentioned above. Since it takes a consumer perspective⁴, the Ecological Footprint of a country is estimated by calculating the Footprint of all that is produced within that country, adding the Footprint embedded in imports and subtracting that embedded in exports (see Box 2.2).

⁴ Please note that the Ecological Footprint methodology applies a consumption approach according to which the environmental impact of any given product/activity is assigned to the end consumer of that product/activity, irrespective of where the product/activity is produced. This is opposed to the more common producer approach in which the impact of a given product is assigned to the place in which the production activity took place, irrespective of where that product ends up being consumed.

Similarly, the total availability of biocapacity within each country is calculated as the sum of the biocapacity supplied by each ecological asset available in that country, i.e. the rate of resource supply and effluent waste disposal that can be sustained by that asset under current technology and management schemes.

(Full details on the Ecological Footprint and biocapacity calculations are provided in the Appendix.)

2.2 National Footprint and Biocapacity Accounts

National Footprint and Biocapacity Accounts (NFA) are produced annually by the Global Footprint Network and provide Ecological Footprint and biocapacity values for over 200 countries, regions, and the world. This continuously updated framework is based on United Nations (UN) data sets of up to 15,000 data points per country and year. Data points are individual numbers that describe resource production and use within a country, such as tonnes of apples harvested or hectares of forest land. Furthermore, the footprint can be disaggregated into demand types (Figure 2.1). See Lin et al., 2018 for a detailed review of the methodology and history of National Footprint and Biocapacity Accounts.

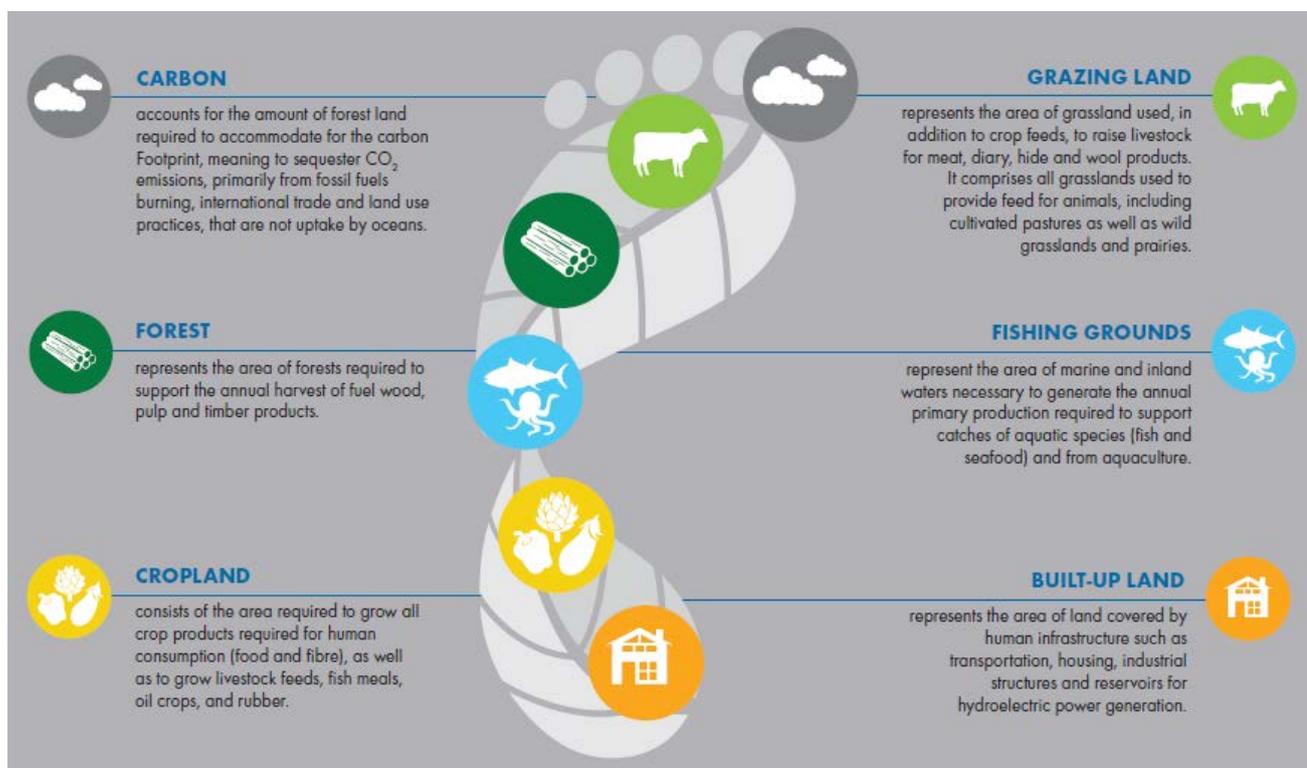


Figure 2.1: Major categories in Ecological Footprint and biocapacity accounting.

For a given country, the Ecological Footprint measures the ecological assets (i.e., the biologically productive land and sea areas) required by the population of that country to produce the biological resources and services it consumes. This includes plant-based food and fibre products, livestock and fish products, timber and other forest products, waste absorption (CO₂ from burning fossil fuels), and space for urban infrastructure (Borucke et al., 2013). The Ecological Footprint is then compared to the biocapacity of that country, which is a measure of the ecological assets available within the national borders (including forest lands, grazing lands, cropland, fishing grounds and built-up land) and their capacity to produce renewable resources and ecological services (Mancini et al., 2018). Ecological footprint and biocapacity are both expressed in global hectares (Galli et al., 2007).

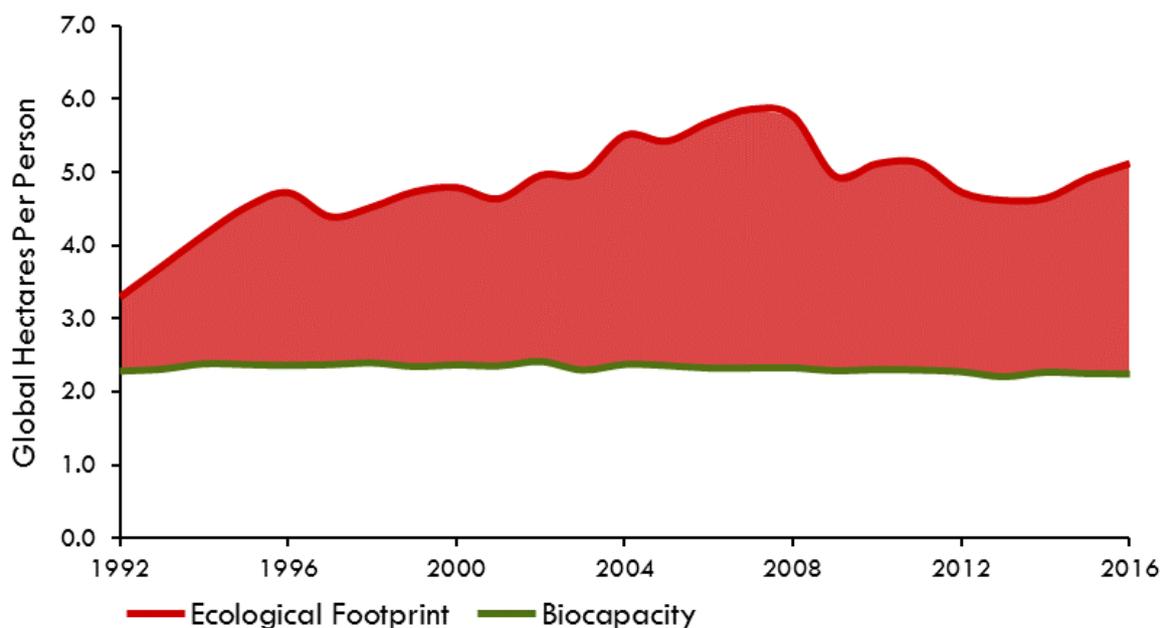


Figure 2.2 : Slovenia's Ecological Footprint and biocapacity 1992-2016

When a country's consumption of natural resources and services is greater than the capacity of its ability to supply them, a situation of biocapacity deficit is determined, which can occur through three different modes: 1) a country can import the natural renewable resources that it consumes but does not produce; 2) a country can overharvest its own resources for a time through unsustainable agricultural practices, overgrazing, overfishing, or deforestation, and 3) a country can emit more CO₂ in the atmosphere than it has the capacity to sequester. By importing biocapacity from other nations and by exploiting the global commons, nations can consume more than their local ecosystems can renew without degrading or depleting their local biocapacity.

2.3 National Ecological Footprint and Biocapacity Projections for 2030

Building upon the NFA data calculated for Slovenia (Annex G), projections were made in a separate report to analyse specific policy interventions (Annex C). A thorough review was conducted of the Stritih Consulting report "Ecological Footprint of Slovenia – Calculation of Projections and Scenarios for the reduction of Ecological Footprint for selected measures" (Stritih Consulting), herein referred to as the "2019 Ecological Footprint Projections and Scenarios". The project was reviewed and verified for appropriate technical and conceptual applications of projections and scenarios associated with selected policy measures and their effects on the Ecological Footprint of Slovenia.

The 2019 Ecological Footprint Projections and Scenarios assessment focused on four Ecological Footprint reduction measures and compared each to business-as-usual (BAU) or baseline projections for 2030 (Table 2.1). The baseline scenarios were based on current trends and applied a set of explicit assumptions to arrive at the best estimate BAU scenario. Subsequently, the report analysed the following scenarios:

1. Sustainable management of forests (increased biocapacity/reduced Ecological Footprint calculations)
2. E-mobility and energy self-sufficiency of single-family homes
3. Energy savings measures for public and commercial buildings
4. Reduction of F-gas emissions

Table 2.1 Key findings from Ecological Footprint projection study

Measure	Baseline 2030 scenario		Scenario with additional measures	
	Net impact [gha]	Net impact [%]	Net impact [gha]	Net impact [%]
Increased biocapacity on account of sustainable management of forests ⁵	+623,020	+13%	+174,000	+3%
Reduced Ecological Footprint on account of sustainable management of forests	0	0%	-740,000	-7.5%
Reduced Ecological Footprint through the introduction of E-mobility and energy self-sufficiency of single-family homes	+44,000	+0.49%	-440,000	-4.5%
Reduced Ecological Footprint in public and commercial buildings due to energy savings	-15,000	-0.15%	-27,000	-0.28%
Reduced Ecological Footprint due to expected reduction of emissions of F-gases	-32,000	-0.34%	-32,000	-0.3%
Total Ecological Footprint reductions	-3,000	-0.003%	-1,239,000	-12.6%

Source: Stritih Consulting, 2019. "Ecological Footprint Slovenia – Calculation of Projections and Scenarios for the Reduction of Ecological Footprint for Selected Measures."

Execution of the policies identified and measured in the assessment add up to a cumulative 12.6 percent decrease (at best) in Ecological Footprint compared to baseline, falling short of that goal. The National Development Strategy 2030 (adopted in December 2017) identified the Ecological Footprint as one of the leading indicators to assess the use of natural resources with a goal to reduce the national Ecological Footprint by approximately 20 percent by 2030 (from 4.7 gha/person in 2013 to 3.8 gha/person in 2030). Regional development measures built on these policy recommendations have the potential to improve this situation and make additional progress toward national targets. To achieve the 2030 goals, the detailed recommendations and specific measures proposed for national adoption ought to be implemented to an even greater degree while considering and optimizing for regional differences.

2.4 Consumption Land Use Matrix

Footprint results in the NFAs do not reveal which economic activities are demanded but rather the consequences, in terms of land appropriation, of demanding the outputs of economic activities (Mancini et al., 2018). However, attributing the overall demand on nature to human activities is essential to then be able to act upon such demand and requires an additional analytical step beyond basic Ecological Footprint accounting (Galli, 2015). For specific study at the national level, Environmentally Extended Multi Regional Input-Output Analysis can be applied to derive Ecological Footprint values broken down into major categories of consumption⁶ (Wiedmann et al., 2006). This is done by calibrating National Footprint and Biocapacity Accounts data with Multi Regional Input-Output (MRIO) tables from the

⁵ Increase of biocapacity does not reduce the ecological footprint; however, it changes the environmental deficit, which is the difference between biocapacity and ecological footprint.

⁶ The "Classification Of Individual Consumption According to Purpose" (COICOP) is the internationally agreed classification system for reporting household consumption expenditures. It is published by the United Nations Statistics Division for use in expenditures classification, National Accounts, Household Budget Survey and the Consumer Price Index.

Global Trade Analysis Project (GTAP) database⁷. The result is a Consumption Land Use Matrix (CLUM) for the country under study (Weinzettel et al., 2014).

Since statistical offices track how households, government, and industry spend their money, we can use these estimates to translate land-based Ecological Footprint results into activity-based Ecological Footprint results, shifting the analysis from *where* human pressure is being placed to *which* human activities are responsible to such pressures (Galli et al., 2017). The CLUM for Slovenia is shown in Table 2.2.

Table 2.2 Consumption Land-Use Matrix (CLUM) , 2016. See official COICOP classification for further details on each individual category. The CLUM presents Ecological Footprint per capita of each consumption category broken down by land-use.

Consumption Category or Sector							
[gha person ⁻¹]	Cropland	Grazing Land	Forest Products	Fishing Grounds	Built-up Land	Carbon	Total
Household subtotal	0.59	0.17	0.81	0.03	0.01	2.18	3.80
Food and non-alcoholic beverages	0.44	0.13	0.03	0.02	0.00	0.21	0.83
Alcoholic beverages, tobacco and narcotics	0.03	0.00	0.01	0.00	0.00	0.05	0.09
Clothing and footwear	0.02	0.02	0.03	0.00	0.00	0.12	0.19
Housing, water, electricity, gas and other fuels	0.01	0.00	0.55	0.00	0.00	0.47	1.03
Household furnishings, equipment and maint.	0.00	0.00	0.08	0.00	0.00	0.04	0.13
Health	0.01	0.00	0.00	0.00	0.00	0.03	0.04
Transportation	0.01	0.00	0.04	0.00	0.00	0.92	0.97
Communication	0.01	0.00	0.01	0.00	0.00	0.04	0.06
Recreation and culture	0.02	0.00	0.03	0.00	0.00	0.09	0.14
Education	0.00	0.00	0.00	0.00	0.00	0.01	0.02
Restaurants and hotels	0.03	0.00	0.01	0.00	0.00	0.06	0.11
Miscellaneous goods and services	0.01	0.01	0.02	0.00	0.00	0.14	0.18
Government subtotal	0.05	0.01	0.06	0.00	0.00	0.32	0.45
Fixed capital formation subtotal	0.03	0.01	0.16	0.00	0.01	0.67	0.88
Total Ecological Footprint	0.66	0.19	1.03	0.04	0.02	3.17	5.13

The *household consumption* component refers to consumables paid for by households and can be also disaggregated into 12 consumption categories and related footprint values. *Government* refers to the consumables paid for by government, such as school supplies in public schools, police equipment, and paper for public administration. *Gross Fixed Capital Formation* refers to lasting goods and assets, such as construction of buildings, roads, factories, and associated equipment.

2.5 Sub-National Ecological Footprint and Biocapacity Accounting

Calculation of sub-national Ecological Footprints can refer to any sub-national territory, such as a region, state, or city. The feasibility and accuracy of sub-national calculations are generally limited by the availability of data, and therefore either require extensive data collection efforts at the sub-national level or a top-down approach based on national data. Global Footprint Network recommends beginning with a top-down methodology for calculating sub-national Ecological Footprints, following the basic calculation framework explained by Baabou et al. (2017) as well as by Isman et al. (2018).

Within such framework, national CLUMs serve as starting point, providing per capita national average Ecological Footprint values for each consumption category⁸. Supplemental data (see Annex A) is then used to calculate the

⁷ Global Trade Analysis Project (GTAP 10 Data Base) consists of 65 sectors – 12 of which are agricultural – and includes 141 countries and regions (Narayanan and McDougall, 2015).

⁸ The number of consumption categories ranges from five categories (Food, Transportation, Housing, Goods, Services) in the most aggregate form, to more than 40 (see Classification of Individual Consumption According to Purpose (COICOP) <https://unstats.un.org/unsd/classifications/>). The amount of disaggregation depends on the availability of consumer expenditure data for each country.

difference in consumption between the sub-national and the national populations and derive scaling factors for the appropriate consumption sub-category. For example, housing statistics may indicate that residents of a specific region live in 15% smaller buildings than the national average, and that the CO₂ intensity of municipal electricity generation is 10% greater than national average. These supplemental data would then be used to calculate scaling factors for the carbon and built-up Footprint associated with housing in the region. A top down approach allows a low-cost calculation with comparable results across regions. This methodology allows the accurate calculation of consumption footprints where data is available and assumes a national average consumption where detailed supplementary data is unavailable. Biocapacity values for sub-national territories are calculated using GIS data as described in section 2.5.2.

2.5.1 Regional Ecological Footprint Calculation

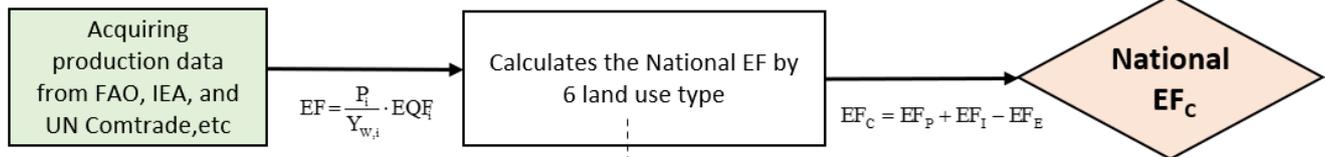
The Ecological Footprint results for the 12 Slovenian regions from 2011 to 2016 are calculated following the top-down approach described above. The national dataset used as the base for the sub-national calculation is the CLUM for Slovenia for the year 2014, which is produced by applying the NFA 2019 Edition Ecological Footprint results as an environmental extension to the GTAP version 10 model (see explanations in section 2.4). The top down approach to calculating Ecological Footprints is ideal for situations with multiple entities, such as the 12 statistical regions of Slovenia, as well as situations where data may be limited. This is primarily because the analysis is relatively low cost, and missing data automatically defaults to the national average. Incremental improvements in data will improve accuracy over time. With data intensive bottom-up approaches, major data gaps can result in major underestimates because the completeness of the analysis can be difficult to determine.

The primary data source used to differentiate consumption of regions from national average is national household expenditure for the same period – provided by Purchasing Power Parity (PPP) from Oxford Economics (Oxford Economics, 2014) for each region compared to the Slovenia benchmark, set at 100%. This dataset was chosen because it provides comparable and consistent results for Slovenian NUTS 3 regions disaggregated to 41 detailed consumption categories. Further, the dataset allows for international comparisons because it follows the UN COICOP classifications.

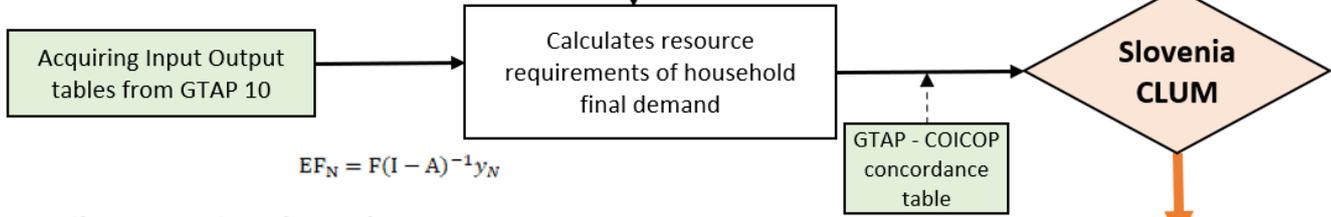
Using the expenditure data with detailed sub-category resolution, values are calculated for each region based on the relative contribution of each detailed category to the total expenditure at the related NUTS 3 level for each year during the period 2011-2016. Finally, annual scaling factors were calculated for each region and for each detailed consumption category as the ratio between the region and the national expenditure value. Such scaling factors were used to calculate the final Ecological Footprint of each detailed category for each region in 2016. The whole calculation process, from the assessment of the National Ecological Footprint value of Slovenia to that of each region is reported in Figure 2.3.

Notably, Tourism is a key industry for Slovenia and accounted for 10.8% of national GDP in 2019 (*Slovenia Economic Impact Report*, 2020). National and regional data do not currently allow separation of the Ecological Footprint associated with tourism, and as a result, the Ecological Footprint values for regions may be slightly overestimated.

1. National Footprint and biocapacity account



2. Environmental Extended MRIO Analysis



3. Scaling Procedure (NUTS)

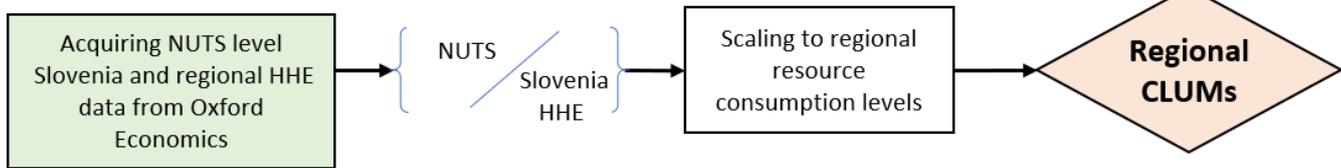


Figure 2.3 Regional Ecological Footprint: visual calculation flowchart. National Footprint and biocapacity account: EF = Ecological Footprint, P_i = The amount of each primary product i , $Y_{w,i}$ = The annual world average yield of the production of commodity i , EQF = The equivalence factor for the land use type producing products i , EF_c = Ecological Footprint of consumption, EF_p = Ecological Footprint of production, EF_i = Ecological Footprint of import, EF_e = Ecological Footprint of export; 2. EE-MRIO: EF_N = country's EF embodied in total national final demand for biomass products y_N , F = the environmental extension matrix derived from EF of production, I = the identity matrix, A = technical coefficients matrix which reflects the monetary exchange between each sector in order to produce one currency unit worth of output from a specific sector of the economy $(I - A)^{-1}$ = the Leontief inverse equation and gives the total output from each sector for one unit of final demand from a specific sector; 3. Scaling Procedure: HHE = Household Expenditure survey data by COICOP categories.

2.5.2 Regional Biocapacity Calculation

Biocapacity at the sub-national level was calculated for the twelve regions reported below in Table 3.1, following the NFA calculation methodology, where biocapacity is calculated as the area of each land type multiplied by the yield factor (YF) and equivalence factor (EQF) for each land type. Area of each land type was calculated from the latest national Land use database produced by the Ministry of Agriculture, Forestry and Food. Each of 25 land use/land cover categories was classified into appropriate NFA land type for calculation (Figure 2.4).

To calculate the YFs for each district and region, a spatially explicit assessment of the bio-productivity was performed in ArcGIS on the basis of the average Net Primary Productivity (NPP) for Cropland, Grazing Land, and Forest land types. The calculation of YF for remaining biocapacity categories (Built-Up, Inland Water, Marine Areas) and derivation EQF values adhered to standards for sub-national calculation (GFN, 2009) in order to maintain consistency and comparability to global hectare values for Ecological Footprint and biocapacity in the NFA; Built-up land YF was set equal to cropland, Inland water was given a YF of 1.00, Marine Area YF was given Slovenia's YF value, 0.79, and EQF

values were consistent with those calculated in the NFA 2019 Edition. See appendix A for detailed yield factors and equivalence factors used in the calculation.

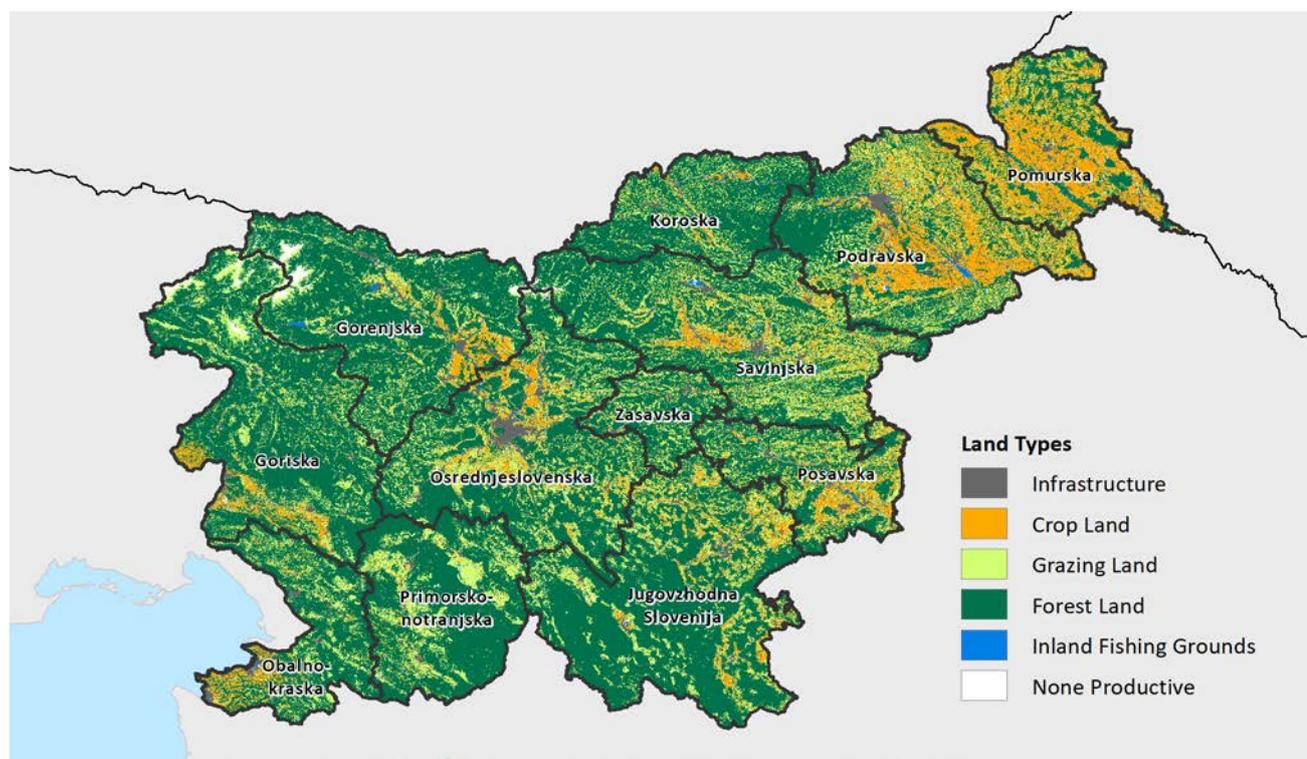


Figure 2.4 Land cover map of Slovenia grouped by biocapacity land types and delineated by statistical region

3. Results

3.1 Regional Ecological Footprint and Biocapacity

This section summarizes Ecological Footprint and biocapacity results for the twelve statistical regions. See Appendix B for detailed results by region.

Across all the statistical regions, the variations in absolute Ecological Footprints are largely explained by the differences in total population of each region (Figure 3.1); together, the three most populated regions, Osrednjeslovenska, Podravska, and Savinjska account for over 50% of the biocapacity consumed in Slovenia.

After the 2008 financial crisis, the Ecological Footprint of Slovenia decreased to its lowest point in 2013 and has since 2016 increased 5.7% (Figure 2.2), reaching a value of 5.2 gha per person. Increases in the carbon Footprint and forest products Footprint, Slovenia’s two largest Ecological Footprint subcomponents, are the largest drivers of this increase. For all statistical regions, the carbon and forest products Footprint were also the largest components.

The results in this study suggest that the per capita Ecological Footprints do not vary widely between regions. The similarities between regions may be the result of inadequate input data, but also likely reflect some degree of similarity in consumption among populations. With the current state of data, the degree of each effect cannot be determined without additional consumption data. See Annex B for a more detailed discussion on data gaps and recommendations.

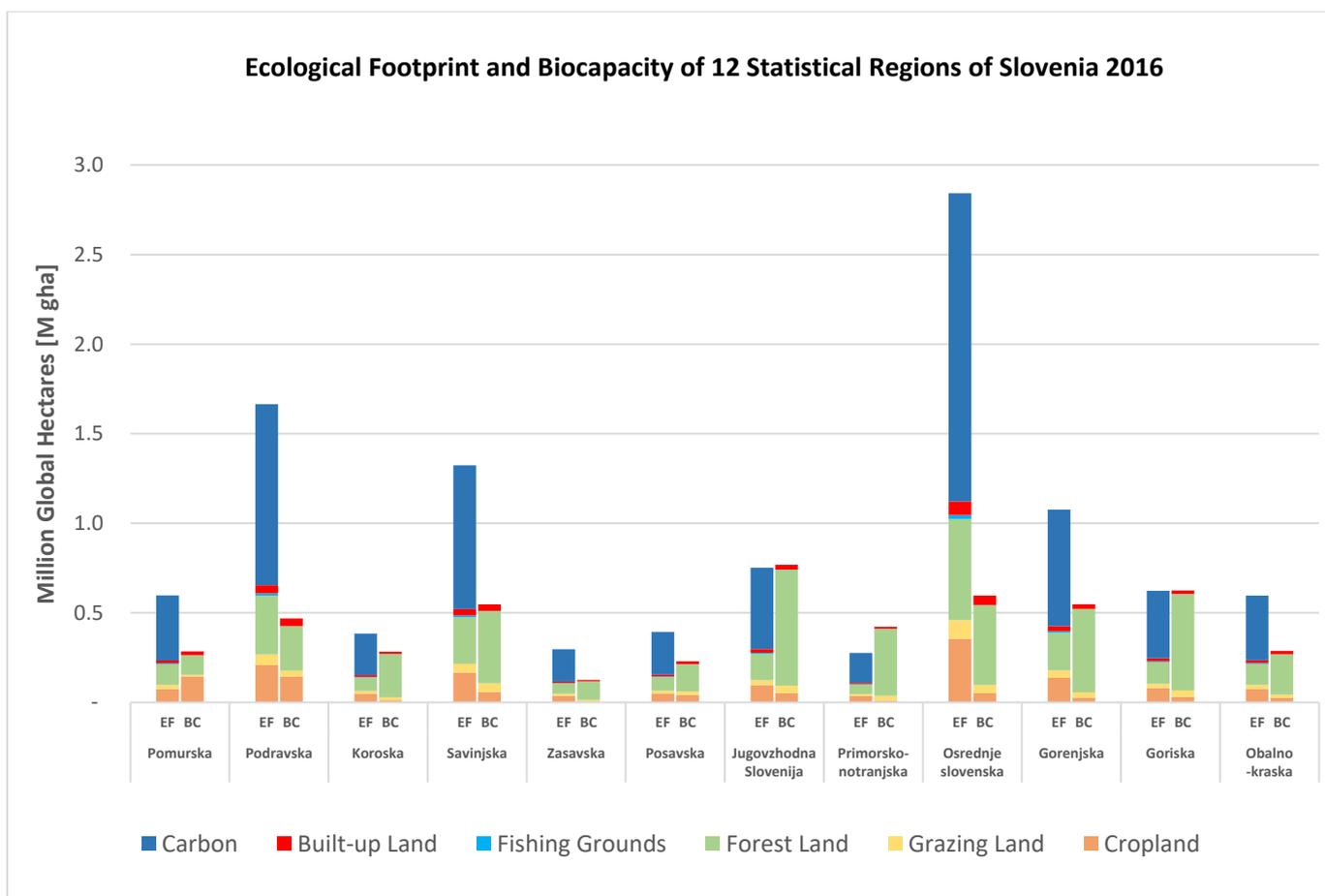


Figure 3.1 Ecological Footprint and biocapacity of Slovenian Regions

Intuitively, regions with thriving cities may appear to consume more resources per capita while others may appear to consume less. However, there tends to be more variation within regions and across socio-economic strata. A high cost of living can appear relate to larger consumption footprints, but this is not always the case, and in fact, cost of living often is more variable than consumption footprints. In support of this, Baabou et al. (2017) for instance found that a 1% increase in household expenses on food determines a 1.4% increase in the household footprint (as it represents a basic need, food makes up for the biggest part of households' resource requirements) while for all other macro-categories of consumption (e.g., housing, transportation, etc), a 1% increase in expenditure determines an increase in the Footprint value between 0.4% and 0.6% thus providing that higher expenditure do not necessarily lead to footprint increases. Additionally, regions size should also be considered when interpreting results and Slovenian regions are rather small with an average population of 155,000 (4 regions have less than 80,000 inhabitants and 8 regions less than 150,000).

Table 3.1 Biocapacity per hectare of Slovenia and regions

NUTS3 Region		Biocapacity per hectare (gha/ha)				
		Crop Land	Inland Fishing Grounds	Forest Land	Grazing Land	Total
	Slovenia	2.56	0.37	3.21	0.87	2.58
SI031	Pomurska	2.29	0.30	2.46	0.74	2.10
SI032	Podravska	2.44	0.33	2.77	0.80	2.18
SI033	Koroska	2.80	0.38	3.19	0.91	2.70
SI034	Savinjska	2.65	0.38	3.07	0.86	2.40
SI035	Zasavska	2.80	0.37	3.13	0.88	2.56
SI036	Posavska	2.57	0.34	3.11	0.84	2.37
SI037	Jugovzhodna Slovenija	2.84	0.42	3.44	0.93	2.91
SI038	Primorsko-notranjska	3.08	0.41	3.50	0.95	2.91
SI041	Osrednjeslovenska	2.84	0.41	3.28	0.91	2.62
SI042	Gorenjska	2.85	0.39	3.15	0.82	2.59
SI043	Goriska	2.82	0.41	3.29	0.83	2.69
SI044	Obalno-kraska	3.00	0.30	3.44	0.94	2.82

The Slovenian landscape is dominated by forest cover, which on average, contributed 75% of regional biocapacity⁹. Pomurska was the only region where forest biocapacity was not the largest. Across regions, the total amount of biocapacity is largely explained by the total size of each region; in other words, larger regions had greater biocapacity. However, there are notable differences in regional productivities. The southern regions of Jugovzhodna Slovenija and Primorsko-notranjska are proportionally the richest in forest biocapacity and had the highest biocapacity per hectare (Table 3.1), while Pomurska and Podravska in the northeast, by contrast, have higher proportion of croplands and the lowest biocapacity per hectare. These findings are relatively unexpected because, generally, regions with more

⁹ Biocapacity reflects the ability of bio-productive areas to generate resources. Some countries have more diverse ecosystems (drier or wetter parts, high mountains versus flat lands) which can make the productivity per region quite distinct. But this does not seem to be the case at the regional level in Slovenia.

cropland tend to be more productive on a per-hectare basis.¹⁰ As expected, inland fishing grounds contributed less than one percent of the biocapacity of each region, while grazing lands contributed between 4 and 9%. The biocapacity occupied by infrastructure was more variable, ranging from 2% in Primorsko-notranjska to 9% in Podravska.

Nine of twelve regions show a biocapacity deficit (Table 3.2), meaning their residents consumed more biocapacity to support their daily life than what was available in that respective region in 2016, while three regions show a biocapacity reserve. Ecological reserves and deficits represent the degree to which consumption can be met by the biocapacity within a region. Highly urbanized regions tend to be in deficit and draw upon biocapacity from outside their borders.

In Slovenia, the regions with the largest Ecological Footprints also had the largest biocapacity deficits correspond with the largest population and population density. This is especially true for Osrednjeslovenska and Podravska region with two largest cities in Slovenia (Ljubljana in Osrednjeslovenska and Maribor in Podravska region). Working towards reducing the resource demand of the Slovenian residents would thus seem to require a focus on environmental management practices in these two regions. The sectors and daily activities to prioritize are discussed in section 3.2 below.

Table 3.2 Ecological footprint and biocapacity by region. Biocapacity deficit or reserve is calculated as the difference between consumption (Ecological Footprint) and regeneration (biocapacity) in a region. Region equivalent of consumption is calculated as the consumption (Ecological Footprint) of the regional population divided by the biocapacity of the region and represents the number of regions required to supply the equivalent biocapacity consumed by the population of the region.

Region	Total Ecological Footprint (EF)	EF % of Slovenia	Total Biocapacity (BC)	BC % of Slovenia	Biocapacity deficit	Ratio EF/BC
Pomurska	597,040	5.5%	284,442	5.5%	-312,597	2.10
Podravska	1,664,812	15.4%	468,740	9.0%	-1,196,072	3.55
Koroska	383,787	3.5%	282,546	5.5%	-101,241	1.36
Savinjska	1,323,416	12.2%	547,359	10.6%	-776,057	2.42
Zasavska	296,305	2.7%	125,196	2.4%	-171,109	2.37
Posavska	393,110	3.6%	229,550	4.4%	-163,559	1.71
Jugovzhodna Slovenija	751,747	6.9%	768,230	14.8%	16,482	0.98
Primorsko-notranjska	276,371	2.6%	421,757	8.1%	145,387	0.66
Osrednjeslovenska	2,842,183	26.3%	595,875	11.5%	-2,246,308	4.77
Gorenjska	1,076,355	9.9%	547,945	10.6%	-528,410	1.96
Goriska	623,290	5.8%	624,922	12.1%	1,632	1.00
Obalno-kraska	595,802	5.5%	287,573	5.5%	-308,229	2.07

3.2 Ecological Footprint by Household Consumption Category

Consumption-based Ecological Footprints can be allocated into corresponding household consumption categories (see section 2.3 for methodology), which provide a framework more suitable for recommendations targeting consumers, economic sectors, and consumption-based policies. Regional results for Slovenia show a high degree of variation in the biocapacity availability between regions while the differences in Ecological Footprint are much smaller (see

¹⁰ This is a reflection of how fertile different surface areas are. For example, desert has very low biocapacity per hectare while rainforest usually has very high biocapacity per hectare.

appendix). As discussed above, the similarity of per capita Ecological Footprint could either be the result of real-world similarity in consumption or a reflection of limited data resolution (see Annex A for detailed discussion and recommendations). The input data takes cost of living into account, however the variance across detailed consumption categories relies on appropriate resolution in input data. Given the limited data resolution, the following discussion is limited to specific household consumption at the national level.

Three categories of household consumption, namely transportation (25-26%); housing, water, electricity, gas and other fuels (26-27%); and food and non-alcoholic beverages (21-23%), make up 72 to 76 percent of household consumption for all regions.

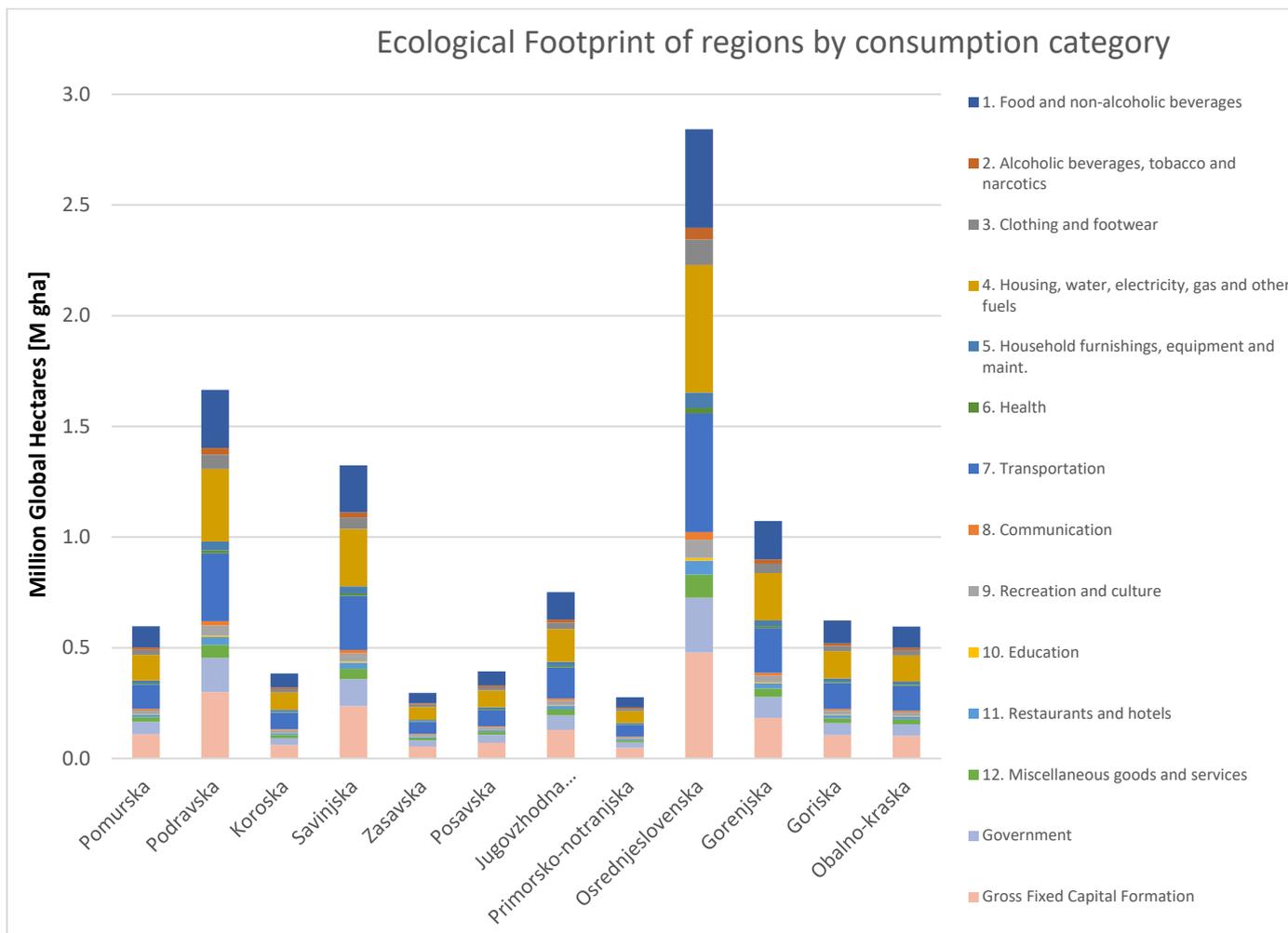


Figure 3.2 Ecological Footprint of regions by household consumption type

4. Recommendations and Conclusions

4.1 Technical Recommendations

To improve regional statistics and build the capacity for monitoring Ecological Footprint and biocapacity accounts, improved input data is required. Most importantly, a combination of economic and physical consumption data can be used to improve the accuracy of results. While the potential data sources available to develop top-down assessments are abundant, several key dataset types have the greatest potential to improve the tracking of Ecological Footprint to the degree that they will be responsive enough to monitor the effect of various policy implementations. These priority datasets must reflect the consumption activity associated with the cross section of the largest footprint category (carbon footprint) and the largest consumption categories (personal transportation and housing). Regional CO2

intensity of energy consumption is a factor that affects all consumption and is crucial to monitor the renewable energy transition. See Annex A for further discussion and detail on specific types of data recommended for improving results.

4.2 Regional Development Priorities

4.2.1 A framework for long-term planning

Given that biological resources provide essential services for our economies, Ecological Footprint and biocapacity provide a context for planning and development strategies intended to secure their long-term success. Ecological Footprint and biocapacity trends for the world, one's own country, and the country's trading partners shape the context for development planning, particularly as resource security is becoming an ever more significant parameter of long-term success.

The analysis of demand by consumption categories provides deeper insight into where the Footprint demand originates. It offers opportunities for identifying interventions. Analytically, it becomes a benchmark that allows policymakers to track changes in various aspects of people's consumption and puts that in the context of the overall demand and can track the overall trajectory over time.

The economies of countries are defined by their structures and economies: energy systems, zoning laws, industries, transportation networks, etc. Each of these is characterized by large time lags. In other words, they cannot be adjusted from one day to the next. To secure long-term wellbeing, we must make sure that infrastructure is able to operate in a future we can anticipate: one with increasing climate change and resource constraints.

Using foresight and innovation, forward-looking decisions enable us to turn around natural resource consumption trends while improving quality of life for all. We identify five key areas that are most significant in defining our long-term trends, and all of them are shaped by both individual and collective choices: *cities, energy, food, planet, and population*.

Cities, and more broadly speaking, our built environment shapes how people live and consume over the infrastructure's lifespan. Transportation infrastructure guides where and how we move and building design greatly affects the energy we need for heating and cooling. The cumulative impact of historic development, hundreds to thousands of years ago, continues to shape societies today. For example, the medieval urban designs still define the inner portions of many European cities.

Energy systems power our economies. They make up the largest portion of our Ecological Footprint globally, in Slovenia and for in all Slovenian regions. Stable and predictable energy systems are key to resilient economy. Ongoing investment into fossil fuel-based energy systems both delay our investment into a resilient economy, but also become stranded assets in the future.

Food is a fundamental service we derive from our environment. We cannot live without food, but we can optimize food systems by breaking down and targeting elements of the supply chain, starting from production all the way to consumption.

Our **planet's** biocapacity supports our livelihood. Management of our productive lands should aim to maintain natural ecosystems and improve cultivated ecosystems. In Slovenia, forests are a vital natural asset; a long history and strong cultural connection exists between forests and Slovenian people. Over 80% of Slovenia's biocapacity is from forest, while the forest products footprint per person, for consumption in Slovenia, is among the 10 highest in the world.

Population is a global factor in sustainability: with smaller populations, more resource capacity, per person, would be available. For instance, if Italian fertility rates were adopted around the world, the world population would, by 2100, shift to just over 4 billion people. The consequence would be about three times as much biocapacity per person as in

the median projection of the UN. As Slovenia may have already experienced, smaller families lead to better educational and health outcomes for their children. This shows how social, ecological, and ecological advantages can go hand in hand.

These five crosscutting categories build upon each other and are key to long-term planning. Some have greater impact in the near term (changes in consumption patterns), while others are changing more slowly but have vast cumulative impact over time (built infrastructure and population, both of which change only slowly over decades). All of them are interrelated and influence a country or region's resource security.¹¹

4.2.2 Opportunities for Intervention

Recommendation #1: Energy-efficient urban planning, including net-zero buildings

Housing and transportation are the two categories that make up the largest portions of Slovenia's Ecological Footprint. Identifying population centres and areas of rapid infrastructure development will be particularly important in setting the stage for Slovenia's success in 2030. Careful planning of infrastructure that reduces energy demand in every-day life, from urban planning to net-zero buildings are a key component of resilient, resource-efficient Slovenia. It also involves retrofitting what already exists, since not all infrastructure can be replaced in time. This energy focus is a priority for regions with the largest per capita transportation and housing footprints such as Koroska, Osrednjeslovenska, and Obalno-kraska.

- **Net-Zero buildings:** New construction should aim for zero net energy consumption, when averaged over the building lifespan. This requires both reducing the energy load of buildings through efficient lighting, heating, and cooling systems, and allowing them to generate their own energy through distributed renewables such as solar panels.
- **Building retrofitting:** New construction makes up only a small minority of buildings. In most cases it is preferable to retrofit existing structures and individually implement energy-saving practices, such as improved insulation and lighting, and more efficient appliances and HVAC systems.
- **Reducing the need for cars with dense and walkable urban areas:** It ought to be possible to enjoy a high individual standard of living, with good access to services and opportunities, without owning a car. Achieving this requires additional investment in public transportation, and the prioritization of walking and bicycling in both existing city centres and in new developments. The latter can be achieved through building standards which encourage density and accessibility.
- **Electric Cars:** Just as focusing on building retrofitting recognizes that new construction cannot be expected to solve the problem on its own, encouraging the adoption of electric cars recognises that most Slovenians are not currently well served by public transportation and will therefore keep using private cars. Widespread adoption of electric cars is necessary to reduce transportation-related emissions, but also requires the widespread distribution of charging stations.

¹¹ These solution areas are explained in detail here: www.overshootday.org/solutions.

Recommendation #2: Transition to low- and eventually no-carbon renewable energy systems

Ongoing investment into fossil fuel-based energy systems both delay our investment into a resilient economy, but also become stranded assets in the future. This is a critical need—early action results enable cumulative benefits and increase the chance to complete the transition in time. Energy systems make up the largest portion of our Ecological Footprint globally, in Slovenia, and for all Slovenian regions. Reduction and transition to carbon-free renewable energy systems are key to achieving the goal set out in the Paris Climate Agreement.

Achieving it requires even more than net zero emissions, since we will also have to find ways to lower the concentration of greenhouse gases already in the atmosphere. More importantly, stable and predictable energy systems are a key to resilient economy.

- **Utility-Scale Renewables:** Hydroelectric power plants, biomass reactors, and arrays of wind turbines and photovoltaics are all examples of utility-scale renewables: large plants which take advantage of economies of scale to provide cheap and clean energy. Slovenia already makes substantial use of nuclear and hydroelectric energy, but there is much room to expand the use of intermittent renewables such as wind and solar.
- **Distributed Renewables:** Rooftop solar panels are an example of distributed renewables. These have the potential to provide clean local energy and improve the resilience of the energy grid. Small-scale hydroelectric plants and biomass reactors also fall into this category. Smarter, more flexible electric grids are necessary to make the most of distributed renewables.
- **Utility-Scale Energy Storage:** The inherent variability of certain forms of renewables such as wind and solar (which do not produce energy at night or when the wind isn't blowing) means that there is a need to smoothen energy production over time. Examples of utility-scale storage include pumping water back into hydroelectric reservoirs, and arrays of batteries. Besides ensuring that energy supply can match demand, utility-scale energy storage eliminates the need for polluting "peaker" plants, which only serve to satisfy spikes in demand.
- **Distributed Energy Storage:** Electric vehicles and standalone batteries can be used for localized energy storage, facilitating the implementation of distributed renewables and net-zero buildings.

Recommendation #3: Increase share of food from domestic production

From a global perspective, Slovenia's Ecological Footprint associated with the consumption of food ranks among the lowest 25% of EU countries. Still, in 2016, Slovenia's biocapacity to support food production (from cropland, grazing land, and fishing grounds) provided less than half the biocapacity demanded by Slovenia's food consumption. Minimizing risks from global supply chain shocks through deeper analysis of trade partners and internationally imported resources will promote stability as extreme weather events increase and global food demand rises. This is particularly important in the northeast regions where Slovenia's cropland is concentrated. These actions can improve resource security in the face of supply chain shocks, as experienced in the current pandemic, and which are becoming more likely in times of growing global climate change.

- **Plant-rich diets:** In an average Slovenian diet, just under half of the overall ecological footprint is the result of animal products. Increasing the proportion of plant-based foods in the average diet will both reduce the average Slovenian's footprint, and increase the proportion of calories which can be satisfied by domestic agriculture.

- **Reduced food waste:** Approximately one third of global food is wasted, meaning that the resources – water, energy, land, emissions - which went into its production are also wasted. Cutting down on food waste both reduces the overall footprint of the agricultural sector and increases the extent to which domestic agriculture can satisfy local demand.

Recommendation #4: Prioritize forest management and regenerative agriculture to preserve and enhance biocapacity

Continued priority needs to be given to forest management, especially in forest rich regions of the south. According to the projections report from Stritih Consulting, sustainable management of forests has the potential to decrease Slovenia's Ecological Footprint by 740,000 global hectares (7.5%) by 2030, compared to baseline projections. As regions update their forest management plans, revisions should incorporate climate change adaptation measures.

Since croplands are primarily located in the northeast (Podravska and Pomurska region contain 48% of Slovenia's cropland), in these regions regenerative practices will improve the biocapacity of the land. This is a critical need to secure Slovenia's future biocapacity. Given current trends, it is inevitable that agricultural capacity will become more limited around the world and the cost of natural resources will increase.

- **Regenerative and Conservation agriculture:** These agricultural practices enhance and sustain the health of soil by preventing erosion and restoring its carbon content. It emphasizes minimizing soil disturbance and maintaining soil cover, enabling high levels of productivity without recourse to fertilizers or other soil-depleting measures. Regenerative practices include crop rotations, the absence of tillage and a diversity of cover crops, and they have the outcome of improving the long-term viability of agricultural lands.
- **Forest Restoration:** Restoring degraded and deforested lands offers substantial climate mitigation opportunities, as young forest regrowth is often rapid and results in high rates of carbon sequestration.

4.3 Economic Relevance

In a world of climate change and resource constraints, running biocapacity deficits becomes an increasing risk, first and foremost for those with low income who are less able to import goods and services. These risks barely appear in financial analyses because natural capital is still incredibly cheap. But since natural capital is so fundamental, inadequate access can make the entire economy lose in value.

The distribution of resources in Slovenia can optimize production and consumption. Running a biocapacity deficit is not necessarily a negative situation, and in most cases, it is expected that consumption is concentrated in population centres. It becomes increasingly important to understand the source of resources and the ability of those producers to continue providing resources for future populations. Not only is the state of international trade partners important, internal optimization and promotion of local production and consumption supports strong regional and interregional sustainability and resilience.

Every country which invests in its own long-term success makes it more likely for other countries (and cities and companies) to succeed – because the success of one leads to the success of others as well. It becomes a positive-sum game. Therefore, careful resource accounting that helps manage a country or region's resource security helps them succeed in a time of increasing ecological constraints. Optimizing inter-regional production and consumption enhances self-sufficiency and resiliency while building on the capital wealth of each region.

4.4 Conclusion

Having established an initial benchmark for Slovenia and its regions, Ecological Footprint accounting can be taken to the next level to actively support decision making. For that, more detailed assessments would be needed. With a baseline now established, the ability to track the performance over time is essential to set meaningful targets, evaluate progress, and identify intervention points. In conjunction with more refined data and tools, it would be possible to assess investments, from infrastructure to programs, in order to determine to what extent it helps to reduce Slovenia's Ecological Footprint.

Testing the country's and the regions' competitiveness strategies would allow Slovenia to assess to what extent various interventions help them reduce their resource dependence. Conventional competitiveness strategies are typically blind to the resource dimension of economies, as exemplified by the World Economic Forum's [Competitiveness Report](#).¹²

Slovenia is a powerful country, relatively well endowed with biocapacity, and with possibilities to generate its energy renewably. Slovenia deserves a thriving future and getting there requires understanding its context and using that to inform its key decisions.¹³ There is no need to wait on a global consensus to take action.

¹² While the WEF Competitiveness Report has started to use the ecological footprint as a "context indicator" the actual measure, made up of over 100 aspects of an economy does not contain one single environmental / resource / energy / climate / water metric describing the future-fitness of a country.

¹³ This is consistent to the recommendations of the EEA's "From Words to Action: How Can EU Policy Drive Sustainability Transitions?" report. This Background Paper for the EEA-EPSC High-Level Workshop on 10 September 2019 is available here: www.eea.europa.eu/themes/sustainability-transitions/how-can-eu-policy-drive-1/from-words-to-action-how/view

About Global Footprint Network

Global Footprint Network is an international sustainability organization that is helping the world live within the Earth's means and respond to climate change.

Global Footprint Network's purpose is to help countries develop their own national and regional calculations and use effective global practices when planning measures to reduce their Ecological Footprint. For example, Global Footprint Network's regional footprint projects demonstrate that Ecological Footprint assessments are not only useful for development purposes and monitoring resource consumption, but also for communicating and raising awareness.

Since 2003 we've engaged with more than 60 countries, 40 cities, and 70 global partners to deliver scientific insights that have driven high-impact policy and investment decisions. Together, we're creating a future where all of us can thrive within the limits of our one planet.

www.footprintnetwork.org

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Appendix A: Yield and equivalence factors for biocapacity calculation of Slovenia and statistical regions

Yield Factors

	Crop Land	Inland Fishing Grounds	Forest Land	Grazing Land	Infrastructure
SLOVENIA	1.02	1.00	2.51	1.89	1.02
Pomurska	0.91	0.81	1.92	1.61	0.88
Podravska	0.97	0.89	2.16	1.73	0.94
Koroska	1.12	1.04	2.49	1.98	1.08
Savinjska	1.06	1.03	2.40	1.86	1.02
Zasavska	1.12	1.02	2.45	1.92	1.03
Posavska	1.03	0.93	2.43	1.83	0.98
Jugovzhodna Slovenija	1.13	1.13	2.69	2.02	1.09
Primorsko-notranjska	1.23	1.11	2.74	2.06	1.11
Osrednjeslovenska	1.13	1.12	2.56	1.97	1.07
Gorenjska	1.14	1.07	2.46	1.79	1.08
Goriska	1.13	1.11	2.57	1.82	1.08
Obalno-kraska	1.20	0.82	2.69	2.05	1.07

Equivalence Factors by footprint type

	Crop Land	Inland Fishing Grounds	Forest Land	Grazing Land	Infrastructure
EQF	2.50	0.37	1.28	0.46	2.50

Appendix B: Ecological Footprint and biocapacity results by statistical region

Pomurska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	75,137	0.65	0.7%	12.6%	50.5%	24.0%	1.24	143,539	Cropland	-68,402	0.59	0.5
Grazing Land	21,872	0.19	0.2%	3.7%	3.8%	3.2%	0.09	10,941	Grazing Land	10,931	-0.09	2.0
Fishing Grounds	4,772	0.04	0.0%	0.8%	0.1%	7.7%	0.00	381	Fishing Grounds	4,391	-0.04	12.5
Built-up Land	16,076	0.14	0.1%	2.7%	7.3%	7.2%	0.18	20,749	Built-up Land	-4,672	0.04	0.8
Forest Products	116,819	1.01	1.1%	19.6%	38.3%	2.8%	0.94	108,833	Forest Land	370,349	3.06	4.4
Carbon	362,364	3.13	3.3%	60.7%								
Total	597,040	5.15	5.5%	100.0%	100.0%	5.5%	2.46	284,442	Total	312,597	-2.70	2.1

Pomurska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.84	0.76	0.73	0.79	0.82	0.83	0.83	0.82
2. Alcoholic beverages, tobacco and narcotics	0.09	0.08	0.08	0.08	0.09	0.09	0.09	0.09
3. Clothing and footwear	0.19	0.18	0.18	0.18	0.19	0.20	0.20	0.19
4. Housing, water, electricity, gas and other fuels	0.77	0.77	0.79	0.87	0.92	1.00	0.99	0.97
5. Household furnishings, equipment and maint.	0.09	0.09	0.09	0.11	0.11	0.12	0.12	0.12
6. Health	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
7. Transportation	0.98	0.92	0.89	0.85	0.91	0.94	0.94	0.93
8. Communication	0.06	0.05	0.05	0.05	0.06	0.06	0.06	0.06
9. Recreation and culture	0.13	0.12	0.12	0.13	0.13	0.14	0.14	0.14
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.10	0.09	0.09	0.10	0.10	0.10	0.10	0.10
12. Miscellaneous goods and services	0.17	0.17	0.16	0.16	0.17	0.18	0.18	0.17
Household Sub Total	3.47	3.30	3.25	3.37	3.56	3.72	3.71	3.65
Government	0.54	0.48	0.46	0.45	0.47	0.49	0.49	0.50
Gross Fixed Capital Formation	1.03	0.93	0.89	0.86	0.91	0.95	0.95	0.97
Total	5.04	4.70	4.59	4.68	4.95	5.15	5.15	5.11

Podravka's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	207,971	0.65	1.9%	12.5%	30.6%	24.0%	0.45	143,620	Cropland	64,351	-0.20	1.4
Grazing Land	60,516	0.19	0.6%	3.6%	7.1%	9.8%	0.10	33,222	Grazing Land	27,294	-0.08	1.8
Fishing Grounds	13,252	0.04	0.1%	0.8%	0.2%	18.9%	0.00	930	Fishing Grounds	12,322	-0.04	14.3
Built-up Land	44,711	0.14	0.4%	2.7%	9.1%	14.8%	0.13	42,486	Built-up Land	2,225	-0.01	1.1
Forest Products	327,825	1.02	3.0%	19.7%	53.0%	6.3%	0.77	248,483	Forest Land	1,089,880	2.90	5.4
Carbon	1,010,538	3.14	9.3%	60.7%								
Total	1,664,812	5.18	15.4%	100.0%	100.0%	9.0%	1.46	468,740	Total	1,196,072	-3.72	3.6

Podravka's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.85	0.76	0.73	0.78	0.81	0.82	0.81	0.81
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3. Clothing and footwear	0.20	0.19	0.18	0.18	0.20	0.20	0.20	0.20
4. Housing, water, electricity, gas and other fuels	0.82	0.80	0.82	0.89	0.94	1.02	1.01	1.01
5. Household furnishings, equipment and maint.	0.09	0.09	0.09	0.11	0.11	0.12	0.12	0.12
6. Health	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
7. Transportation	1.03	0.94	0.92	0.86	0.92	0.95	0.95	0.94
8. Communication	0.06	0.06	0.05	0.06	0.06	0.06	0.06	0.06
9. Recreation and culture	0.14	0.13	0.13	0.13	0.14	0.14	0.14	0.14
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.11	0.10	0.10	0.10	0.11	0.11	0.11	0.11
12. Miscellaneous goods and services	0.19	0.17	0.17	0.17	0.18	0.18	0.18	0.18
Household Sub Total	3.64	3.39	3.33	3.41	3.62	3.76	3.75	3.73
Government	0.51	0.47	0.45	0.44	0.46	0.48	0.48	0.48
Gross Fixed Capital Formation	0.98	0.90	0.86	0.85	0.90	0.93	0.94	0.94
Total	5.13	4.76	4.64	4.70	4.98	5.18	5.17	5.16

Koroska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	49,211	0.69	0.5%	12.8%	4.3%	2.0%	0.17	12,098	Cropland	37,113	-0.52	4.1
Grazing Land	14,311	0.20	0.1%	3.7%	6.2%	5.1%	0.24	17,397	Grazing Land	-3,087	0.04	0.8
Fishing Grounds	3,108	0.04	0.0%	0.8%	0.1%	6.1%	0.00	302	Fishing Grounds	2,807	-0.04	10.3
Built-up Land	10,032	0.14	0.1%	2.6%	4.0%	4.0%	0.16	11,412	Built-up Land	-1,380	0.02	0.9
Forest Products	75,916	1.07	0.7%	19.8%	85.4%	6.1%	3.40	241,337	Forest Land	65,787	5.59	1.3
Carbon	231,209	3.26	2.1%	60.2%								
Total	383,787	5.40	3.5%	100.0%	100.0%	5.5%	3.98	282,546	Total	101,241	-1.43	1.4

Koroska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.91	0.82	0.78	0.83	0.88	0.89	0.89	0.89
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.09	0.09	0.10	0.10	0.10	0.10
3. Clothing and footwear	0.21	0.20	0.19	0.19	0.21	0.22	0.22	0.22
4. Housing, water, electricity, gas and other fuels	0.86	0.84	0.86	0.94	1.01	1.10	1.10	1.09
5. Household furnishings, equipment and maint.	0.10	0.10	0.10	0.12	0.13	0.14	0.14	0.14
6. Health	0.05	0.04	0.04	0.04	0.05	0.05	0.05	0.05
7. Transportation	1.10	1.01	0.98	0.92	1.01	1.05	1.05	1.04
8. Communication	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07
9. Recreation and culture	0.15	0.14	0.14	0.14	0.15	0.16	0.16	0.16
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.12	0.11	0.11	0.11	0.12	0.12	0.12	0.12
12. Miscellaneous goods and services	0.20	0.19	0.18	0.18	0.19	0.20	0.20	0.20
Household Sub Total	3.88	3.62	3.53	3.64	3.93	4.11	4.11	4.09
Government	0.48	0.44	0.42	0.41	0.43	0.44	0.44	0.44
Gross Fixed Capital Formation	0.92	0.84	0.81	0.79	0.82	0.85	0.85	0.86
Total	5.28	4.89	4.77	4.85	5.18	5.40	5.40	5.39

Savinjska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	166,453	0.65	1.5%	12.6%	10.7%	9.8%	0.23	58,467	Cropland	107,986	-0.42	2.8
Grazing Land	48,444	0.19	0.4%	3.7%	8.9%	14.3%	0.19	48,549	Grazing Land	-105	0.00	1.0
Fishing Grounds	10,578	0.04	0.1%	0.8%	0.1%	11.0%	0.00	542	Fishing Grounds	10,036	-0.04	19.5
Built-up Land	35,460	0.14	0.3%	2.7%	6.7%	12.8%	0.14	36,673	Built-up Land	-1,213	0.00	1.0
Forest Products	260,060	1.02	2.4%	19.7%	73.6%	10.2%	1.58	403,128	Forest Land	659,353	3.71	2.6
Carbon	802,422	3.15	7.4%	60.6%								
Total	1,323,416	5.19	12.2%	100.0%	100.0%	10.6%	2.15	547,359	Total	776,057	-3.05	2.4

Savinjska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.88	0.78	0.75	0.79	0.83	0.83	0.83	0.84
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3. Clothing and footwear	0.21	0.19	0.18	0.19	0.20	0.20	0.20	0.21
4. Housing, water, electricity, gas and other fuels	0.84	0.81	0.83	0.90	0.95	1.02	1.02	1.03
5. Household furnishings, equipment and maint.	0.10	0.09	0.10	0.11	0.12	0.12	0.13	0.13
6. Health	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04
7. Transportation	1.06	0.96	0.93	0.87	0.93	0.96	0.96	0.97
8. Communication	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
9. Recreation and culture	0.14	0.13	0.13	0.13	0.14	0.14	0.14	0.15
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.11	0.10	0.10	0.10	0.11	0.11	0.11	0.11
12. Miscellaneous goods and services	0.19	0.18	0.17	0.17	0.18	0.18	0.18	0.19
Household Sub Total	3.76	3.46	3.39	3.46	3.65	3.79	3.79	3.84
Government	0.50	0.46	0.44	0.44	0.46	0.48	0.48	0.47
Gross Fixed Capital Formation	0.95	0.88	0.85	0.84	0.89	0.93	0.93	0.92
Total	5.20	4.79	4.68	4.73	5.00	5.19	5.20	5.23

Zasavska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	37,106	0.65	0.3%	12.5%	4.1%	0.9%	0.09	5,092	Cropland	32,014	-0.56	7.3
Grazing Land	10,800	0.19	0.1%	3.6%	7.6%	2.8%	0.17	9,505	Grazing Land	1,294	-0.02	1.1
Fishing Grounds	2,361	0.04	0.0%	0.8%	0.1%	2.9%	0.00	141	Fishing Grounds	2,220	-0.04	16.7
Built-up Land	7,979	0.14	0.1%	2.7%	5.5%	2.4%	0.12	6,923	Built-up Land	1,056	-0.02	1.2
Forest Products	58,141	1.01	0.5%	19.6%	82.7%	2.6%	1.80	103,534	Forest Land	134,525	3.92	2.3
Carbon	179,917	3.13	1.7%	60.7%								
Total	296,305	5.16	2.7%	100.0%	100.0%	2.4%	2.18	125,196	Total	171,109	-2.98	2.4

Zasavska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.87	0.77	0.73	0.78	0.82	0.82	0.82	0.82
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.08	0.09	0.09	0.09	0.09	0.09
3. Clothing and footwear	0.21	0.19	0.18	0.18	0.19	0.20	0.20	0.20
4. Housing, water, electricity, gas and other fuels	0.84	0.80	0.81	0.88	0.93	1.00	1.01	1.01
5. Household furnishings, equipment and maint.	0.10	0.09	0.09	0.11	0.11	0.12	0.12	0.12
6. Health	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04
7. Transportation	1.06	0.95	0.92	0.85	0.91	0.94	0.95	0.95
8. Communication	0.06	0.06	0.05	0.05	0.06	0.06	0.06	0.06
9. Recreation and culture	0.14	0.13	0.13	0.13	0.14	0.14	0.14	0.14
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.11	0.10	0.10	0.10	0.10	0.11	0.11	0.11
12. Miscellaneous goods and services	0.19	0.17	0.17	0.16	0.17	0.18	0.18	0.18
Household Sub Total	3.74	3.41	3.33	3.39	3.59	3.73	3.75	3.76
Government	0.50	0.46	0.45	0.44	0.47	0.49	0.48	0.48
Gross Fixed Capital Formation	0.95	0.89	0.86	0.85	0.90	0.94	0.94	0.94
Total	5.19	4.77	4.64	4.69	4.96	5.16	5.17	5.18

Posavska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	49,720	0.66	0.5%	12.6%	18.4%	7.0%	0.56	42,149	Cropland	7,571	-0.10	1.2
Grazing Land	14,472	0.19	0.1%	3.7%	8.3%	5.6%	0.25	19,165	Grazing Land	-4,693	0.06	0.8
Fishing Grounds	3,152	0.04	0.0%	0.8%	0.2%	8.9%	0.01	438	Fishing Grounds	2,714	-0.04	7.2
Built-up Land	10,530	0.14	0.1%	2.7%	6.8%	5.5%	0.21	15,676	Built-up Land	-5,147	0.07	0.7
Forest Products	77,009	1.02	0.7%	19.6%	66.3%	3.8%	2.01	152,122	Forest Land	163,114	4.14	2.1
Carbon	238,226	3.15	2.2%	60.6%								
Total	393,110	5.19	3.6%	100.0%	100.0%	4.4%	3.03	229,550	Total	163,559	-2.16	1.7

Posavska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.88	0.79	0.74	0.80	0.84	0.84	0.84	0.85
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.08	0.08	0.09	0.09	0.09	0.09
3. Clothing and footwear	0.20	0.19	0.18	0.18	0.20	0.20	0.20	0.20
4. Housing, water, electricity, gas and other fuels	0.82	0.80	0.80	0.88	0.94	1.01	1.01	1.03
5. Household furnishings, equipment and maint.	0.09	0.09	0.09	0.11	0.12	0.13	0.12	0.13
6. Health	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04
7. Transportation	1.05	0.96	0.91	0.86	0.93	0.96	0.96	0.98
8. Communication	0.06	0.06	0.05	0.05	0.06	0.06	0.06	0.06
9. Recreation and culture	0.14	0.13	0.12	0.13	0.14	0.14	0.14	0.14
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.11	0.10	0.09	0.10	0.10	0.11	0.11	0.11
12. Miscellaneous goods and services	0.19	0.17	0.17	0.16	0.18	0.18	0.18	0.18
Household Sub Total	3.72	3.43	3.31	3.41	3.64	3.78	3.78	3.84
Government	0.50	0.46	0.45	0.44	0.46	0.48	0.48	0.47
Gross Fixed Capital Formation	0.96	0.89	0.87	0.85	0.89	0.93	0.93	0.92
Total	5.18	4.78	4.63	4.70	5.00	5.19	5.19	5.23

Jugovzhodna Slovenija's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	96,249	0.67	0.9%	12.8%	6.8%	8.7%	0.36	51,971	Cropland	44,278	-0.31	1.9
Grazing Land	28,015	0.20	0.3%	3.7%	5.4%	12.3%	0.29	41,836	Grazing Land	-13,821	0.10	0.7
Fishing Grounds	6,076	0.04	0.1%	0.8%	0.1%	8.6%	0.00	421	Fishing Grounds	5,655	-0.04	14.4
Built-up Land	19,938	0.14	0.2%	2.7%	3.6%	9.5%	0.19	27,369	Built-up Land	-7,431	0.05	0.7
Forest Products	147,313	1.03	1.4%	19.6%	84.2%	16.4%	4.53	646,633	Forest Land	-45,164	6.68	0.9
Carbon	454,156	3.18	4.2%	60.4%								
Total	751,747	5.27	6.9%	100.0%	100.0%	14.8%	5.38	768,230	Total	-16,482	0.12	1.0

Jugovzhodna Slovenija's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.91	0.82	0.78	0.83	0.87	0.87	0.87	0.88
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.10
3. Clothing and footwear	0.21	0.19	0.19	0.19	0.20	0.21	0.21	0.21
4. Housing, water, electricity, gas and other fuels	0.84	0.82	0.83	0.91	0.97	1.04	1.04	1.06
5. Household furnishings, equipment and maint.	0.10	0.10	0.10	0.11	0.12	0.13	0.13	0.13
6. Health	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.05
7. Transportation	1.08	0.99	0.96	0.90	0.96	0.99	1.00	1.02
8. Communication	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
9. Recreation and culture	0.14	0.13	0.13	0.13	0.14	0.15	0.15	0.15
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.11	0.10	0.10	0.10	0.11	0.11	0.11	0.12
12. Miscellaneous goods and services	0.19	0.18	0.17	0.17	0.18	0.19	0.19	0.19
Household Sub Total	3.82	3.54	3.45	3.56	3.77	3.90	3.92	3.98
Government	0.49	0.45	0.43	0.42	0.45	0.46	0.46	0.45
Gross Fixed Capital Formation	0.94	0.86	0.83	0.82	0.86	0.90	0.90	0.88
Total	5.24	4.85	4.72	4.79	5.08	5.27	5.28	5.32

Primorsko-notranjska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	35,599	0.68	0.3%	12.9%	1.9%	1.3%	0.15	7,935	Cropland	27,664	-0.53	4.5
Grazing Land	10,365	0.20	0.1%	3.8%	6.8%	8.4%	0.54	28,584	Grazing Land	-18,219	0.35	0.4
Fishing Grounds	2,242	0.04	0.0%	0.8%	0.0%	2.8%	0.00	138	Fishing Grounds	2,103	-0.04	16.2
Built-up Land	7,339	0.14	0.1%	2.7%	2.4%	3.5%	0.19	10,165	Built-up Land	-2,826	0.05	0.7
Forest Products	53,918	1.03	0.5%	19.5%	88.9%	9.5%	7.13	374,935	Forest Land	-154,109	9.28	0.6
Carbon	166,907	3.17	1.5%	60.4%								
Total	276,371	5.25	2.6%	100.0%	100.0%	8.1%	8.02	421,757	Total	-145,387	2.76	0.7

Primorsko-notranjska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.94	0.84	0.79	0.85	0.88	0.88	0.88	0.88
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3. Clothing and footwear	0.21	0.20	0.19	0.19	0.20	0.20	0.20	0.20
4. Housing, water, electricity, gas and other fuels	0.85	0.83	0.83	0.91	0.96	1.02	1.02	1.03
5. Household furnishings, equipment and maint.	0.10	0.10	0.10	0.11	0.12	0.13	0.13	0.13
6. Health	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04
7. Transportation	1.11	1.01	0.97	0.91	0.96	0.99	0.99	1.00
8. Communication	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
9. Recreation and culture	0.15	0.14	0.13	0.13	0.14	0.14	0.14	0.15
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.12	0.11	0.10	0.10	0.11	0.11	0.11	0.11
12. Miscellaneous goods and services	0.20	0.18	0.17	0.17	0.18	0.18	0.18	0.19
Household Sub Total	3.90	3.61	3.49	3.58	3.77	3.88	3.88	3.91
Government	0.48	0.44	0.43	0.42	0.45	0.47	0.47	0.46
Gross Fixed Capital Formation	0.92	0.85	0.83	0.81	0.86	0.91	0.91	0.90
Total	5.29	4.89	4.75	4.81	5.08	5.25	5.26	5.28

Osrednjeslovenska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	355,266	0.66	3.3%	12.5%	8.6%	8.6%	0.10	51,242	Cropland	304,025	-0.57	6.9
Grazing Land	103,309	0.19	1.0%	3.6%	7.7%	13.5%	0.09	45,751	Grazing Land	57,557	-0.11	2.3
Fishing Grounds	22,651	0.04	0.2%	0.8%	0.1%	8.2%	0.00	401	Fishing Grounds	22,250	-0.04	56.5
Built-up Land	75,381	0.14	0.7%	2.7%	8.7%	18.1%	0.10	51,914	Built-up Land	23,467	-0.04	1.5
Forest Products	564,872	1.05	5.2%	19.9%	74.9%	11.3%	0.83	446,567	Forest Land	1,839,009	2.98	5.1
Carbon	1,720,703	3.20	15.9%	60.5%								
Total	2,842,183	5.28	26.3%	100.0%	100.0%	11.5%	1.11	595,875	Total	2,246,308	-4.18	4.8

Osrednjeslovenska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.89	0.79	0.75	0.79	0.83	0.83	0.83	0.83
2. Alcoholic beverages, tobacco and narcotics	0.11	0.10	0.09	0.09	0.09	0.10	0.10	0.10
3. Clothing and footwear	0.23	0.21	0.20	0.20	0.21	0.21	0.21	0.21
4. Housing, water, electricity, gas and other fuels	0.91	0.87	0.88	0.95	0.99	1.07	1.07	1.07
5. Household furnishings, equipment and maint.	0.10	0.10	0.10	0.11	0.12	0.13	0.13	0.13
6. Health	0.05	0.05	0.04	0.04	0.04	0.05	0.05	0.05
7. Transportation	1.13	1.03	0.98	0.90	0.96	1.00	1.00	0.99
8. Communication	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06
9. Recreation and culture	0.16	0.15	0.14	0.14	0.15	0.15	0.15	0.15
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.13	0.11	0.11	0.11	0.11	0.12	0.12	0.12
12. Miscellaneous goods and services	0.21	0.19	0.18	0.18	0.19	0.19	0.19	0.19
Household Sub Total	4.00	3.68	3.55	3.60	3.78	3.93	3.94	3.93
Government	0.46	0.43	0.42	0.42	0.44	0.46	0.46	0.46
Gross Fixed Capital Formation	0.89	0.82	0.81	0.80	0.85	0.89	0.89	0.89
Total	5.35	4.93	4.78	4.82	5.08	5.28	5.29	5.28

Gorenjska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	138,141	0.68	1.3%	12.8%	4.9%	4.5%	0.13	26,741	Cropland	111,399	-0.55	5.2
Grazing Land	40,205	0.20	0.4%	3.7%	5.5%	8.8%	0.15	29,923	Grazing Land	10,281	-0.05	1.3
Fishing Grounds	8,714	0.04	0.1%	0.8%	0.1%	12.3%	0.00	604	Fishing Grounds	8,110	-0.04	14.4
Built-up Land	28,489	0.14	0.3%	2.6%	4.8%	9.1%	0.13	26,174	Built-up Land	2,315	-0.01	1.1
Forest Products	210,890	1.04	1.9%	19.6%	84.8%	11.7%	2.28	464,502	Forest Land	396,304	4.44	1.9
Carbon	649,916	3.19	6.0%	60.4%								
Total	1,076,355	5.29	9.9%	100.0%	100.0%	10.6%	2.69	547,945	Total	528,410	-2.59	2.0

Gorenjska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.90	0.80	0.77	0.82	0.85	0.85	0.85	0.85
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.09	0.09	0.09	0.09	0.10	0.10
3. Clothing and footwear	0.22	0.20	0.19	0.19	0.20	0.21	0.21	0.21
4. Housing, water, electricity, gas and other fuels	0.87	0.84	0.85	0.92	0.97	1.05	1.05	1.05
5. Household furnishings, equipment and maint.	0.10	0.10	0.10	0.11	0.12	0.13	0.13	0.13
6. Health	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.05
7. Transportation	1.11	1.00	0.97	0.90	0.96	0.99	1.00	1.00
8. Communication	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06
9. Recreation and culture	0.15	0.14	0.13	0.14	0.14	0.15	0.15	0.15
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.12	0.11	0.10	0.11	0.11	0.11	0.11	0.11
12. Miscellaneous goods and services	0.20	0.18	0.18	0.17	0.18	0.19	0.19	0.19
Household Sub Total	3.91	3.58	3.49	3.57	3.76	3.90	3.92	3.92
Government	0.48	0.44	0.43	0.42	0.45	0.46	0.46	0.46
Gross Fixed Capital Formation	0.91	0.85	0.82	0.81	0.86	0.90	0.90	0.90
Total	5.29	4.87	4.74	4.80	5.07	5.27	5.28	5.28

Goriska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	79,994	0.68	0.7%	12.8%	4.9%	5.1%	0.26	30,639	Cropland	49,355	-0.42	2.6
Grazing Land	23,281	0.20	0.2%	3.7%	5.8%	10.7%	0.31	36,350	Grazing Land	-13,069	0.11	0.6
Fishing Grounds	5,046	0.04	0.0%	0.8%	0.1%	10.8%	0.00	532	Fishing Grounds	4,514	-0.04	9.5
Built-up Land	16,497	0.14	0.2%	2.6%	3.1%	6.8%	0.17	19,583	Built-up Land	-3,086	0.03	0.8
Forest Products	122,121	1.04	1.1%	19.6%	86.1%	13.6%	4.56	537,818	Forest Land	-39,347	6.72	0.9
Carbon	376,350	3.19	3.5%	60.4%								
Total	623,290	5.29	5.8%	100.0%	100.0%	12.1%	5.30	624,922	Total	-1,632	0.01	1.0

Goriska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.94	0.84	0.79	0.84	0.88	0.88	0.87	0.88
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3. Clothing and footwear	0.22	0.20	0.19	0.19	0.20	0.21	0.21	0.21
4. Housing, water, electricity, gas and other fuels	0.88	0.85	0.86	0.93	0.97	1.04	1.04	1.04
5. Household furnishings, equipment and maint.	0.10	0.10	0.10	0.12	0.12	0.13	0.13	0.13
6. Health	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04
7. Transportation	1.14	1.03	0.99	0.92	0.97	1.00	1.00	1.00
8. Communication	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06
9. Recreation and culture	0.15	0.14	0.14	0.14	0.14	0.15	0.15	0.15
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11
12. Miscellaneous goods and services	0.20	0.19	0.18	0.17	0.18	0.19	0.19	0.19
Household Sub Total	4.00	3.67	3.57	3.62	3.79	3.93	3.91	3.92
Government	0.47	0.43	0.42	0.42	0.44	0.46	0.46	0.46
Gross Fixed Capital Formation	0.89	0.83	0.81	0.80	0.86	0.90	0.90	0.90
Total	5.36	4.93	4.79	4.84	5.09	5.29	5.28	5.28

Obalno-kraska's Ecological Footprint and biocapacity by land use, base year 2016

Ecological Footprint					Biocapacity					Deficit / Reserve		
Demand Category	Total (gha)	Per-capita (gha)	% of National Total	% of Regional Total	% of Regional Total	% of National Total	Per-capita (gha)	Total (gha)	Supply Category	Total (gha)	Per-capita (gha)	Ratio EF/BC
Cropland	75,399	0.67	0.7%	12.7%	8.5%	4.1%	0.22	24,466	Cropland	50,934	-0.45	3.1
Grazing Land	21,938	0.19	0.2%	3.7%	6.5%	5.5%	0.17	18,803	Grazing Land	3,135	-0.03	1.2
Fishing Grounds	4,782	0.04	0.0%	0.8%	0.0%	1.8%	0.00	88	Fishing Grounds	4,694	-0.04	54.1
Built-up Land	15,824	0.14	0.1%	2.7%	6.4%	6.4%	0.16	18,391	Built-up Land	-2,567	0.02	0.9
Forest Products	117,431	1.04	1.1%	19.7%	78.5%	5.7%	2.00	225,825	Forest Land	252,033	4.14	2.1
Carbon	360,427	3.18	3.3%	60.5%								
Total	595,802	5.26	5.5%	100.0%	100.0%	5.5%	2.54	287,573	Total	308,229	-2.72	2.1

Obalno-kraska's Ecological Footprint per capita by Consumption Category and Year

	2011	2012	2013	2014	2015	2016	2017	2018
1. Food and non-alcoholic beverages	0.90	0.80	0.77	0.81	0.85	0.85	0.84	0.83
2. Alcoholic beverages, tobacco and narcotics	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3. Clothing and footwear	0.22	0.20	0.19	0.19	0.20	0.21	0.21	0.20
4. Housing, water, electricity, gas and other fuels	0.88	0.84	0.86	0.92	0.97	1.05	1.04	1.02
5. Household furnishings, equipment and maint.	0.10	0.10	0.10	0.11	0.12	0.13	0.13	0.13
6. Health	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04
7. Transportation	1.11	1.00	0.97	0.90	0.96	0.99	0.98	0.96
8. Communication	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06
9. Recreation and culture	0.15	0.14	0.14	0.14	0.14	0.15	0.15	0.14
10. Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
11. Restaurants and hotels	0.12	0.11	0.10	0.11	0.11	0.11	0.11	0.11
12. Miscellaneous goods and services	0.20	0.18	0.18	0.17	0.18	0.19	0.19	0.18
Household Sub Total	3.93	3.59	3.52	3.55	3.76	3.90	3.86	3.80
Government	0.47	0.44	0.42	0.42	0.45	0.46	0.47	0.48
Gross Fixed Capital Formation	0.91	0.85	0.82	0.81	0.86	0.90	0.91	0.93
Total	5.31	4.88	4.76	4.79	5.07	5.26	5.24	5.20

List of Annexes

Annexes to this report are attached in separate files, indicated below.

Reference	Description	Location
Annex A	Technical Summary and Recommendations	Slovenia_regions_Annexes_A_D.pdf, p. 2
Annex B	Verification of Slovenia's Carbon Footprint	Slovenia_regions_Annexes_A_D.pdf, p. 5
Annex C	Consulting and Verification of Ecological Footprint Projections and Scenarios	Slovenia_regions_Annexes_A_D.pdf, p. 15
Annex D	Selection and training of the National Representative for Calculating Regional Ecological Footprints	Slovenia_regions_Annexes_A_D.pdf, p. 16
Annex E	Ecological Footprint: List of data sources, input data (Oxford Economics), Calculation file, regional results	Annex E_EF_input data and calculation.xlsx
Annex F	Biocapacity Calculation	Annex_F_BC_input data and calculation.xlsx
Annex G	National Footprint and Biocapacity Accounts (NFA) 2019 Edition Workbook, Slovenia, data year 2016.	Annex_G_Slovenia 2016 NFA workbook.xlsx