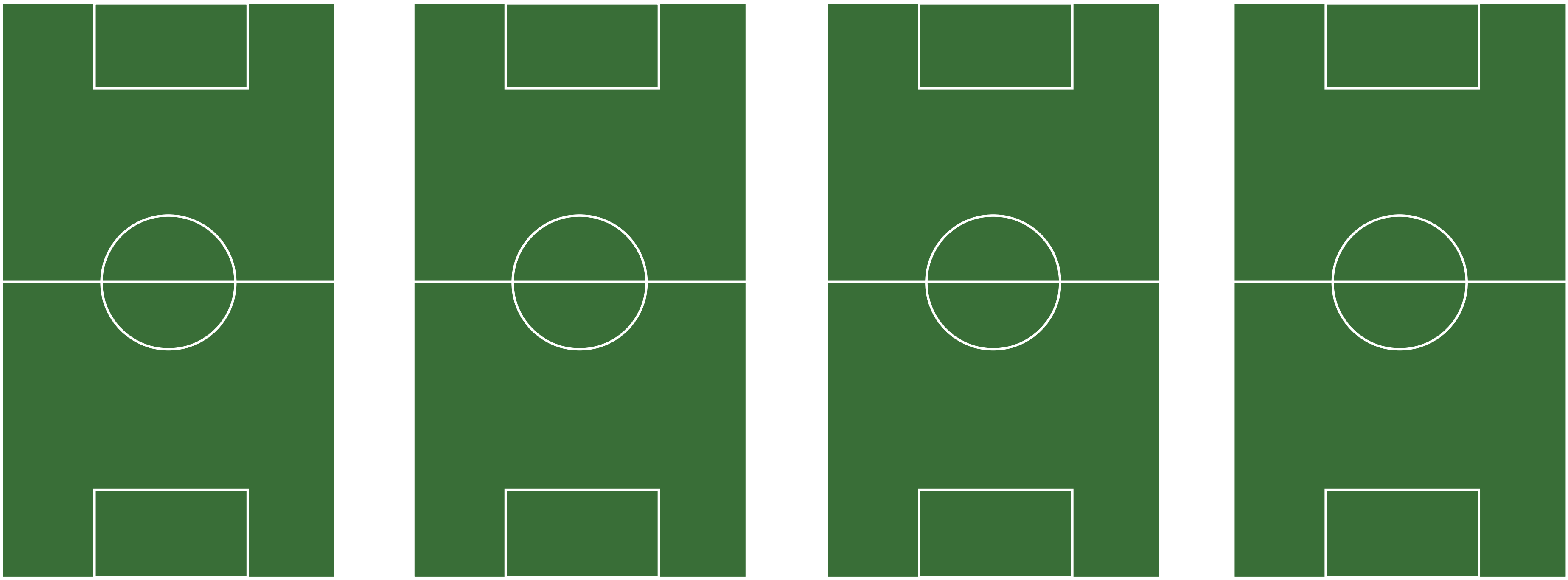


# Soil protection is climat protection

The soil represents an essential foundation for human life. Healthy soil is important for food production, biodiversity, protection against erosion and flooding, carbon sequestration, and the provision of other ecosystem services.<sup>1</sup>

## Land use / Land consumption

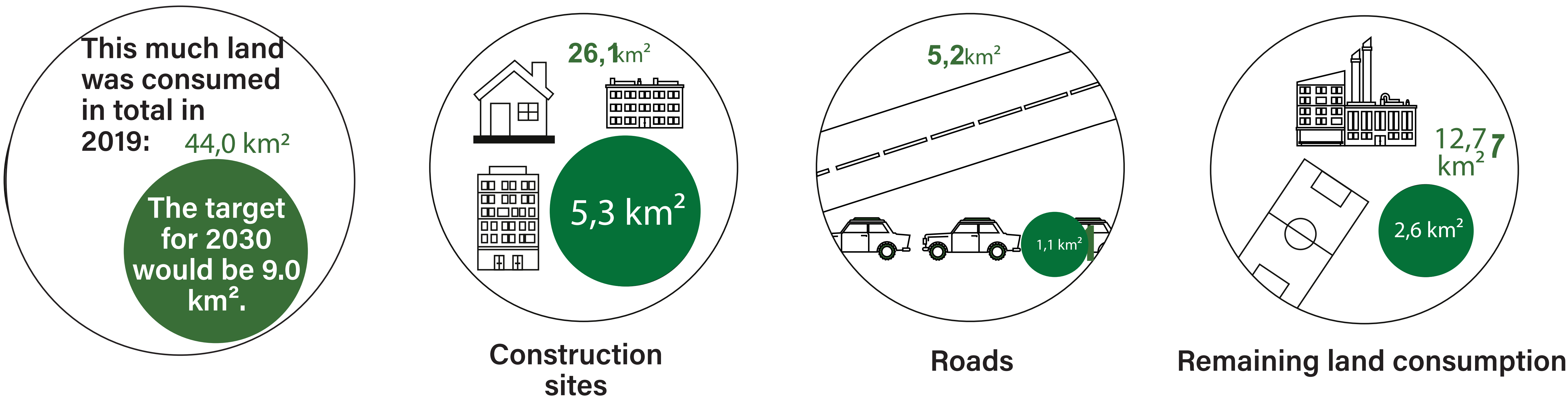
Currently, we are not treating soil with care. Every day, 11.3 hectares (ha), or 113,000 m<sup>2</sup>, are used in Austria for the construction of buildings, roads, and other infrastructure. Almost one-third of this is in Styria: roughly 4 football fields (about 2.77 ha) per day.<sup>2</sup> This means that Styria uses more land than the Austrian federal government (2020-2024) set as a target for the entire country, namely 2.5 ha per day.<sup>3</sup> The supermarket on the greenfield site symbolizes this development. The relocation of many functions to the outskirts of municipalities has caused the decline of town centers.<sup>4</sup> Additionally, the high proportion of single-family homes in Styria (about 70%)<sup>5</sup> makes climate-friendly living more difficult, for instance, due to dependency on private cars.<sup>6</sup>



The daily land consumption of Styria

## Targeted reduction of land consumption by 2030

Annual land consumption is to be reduced by 80% by 2030. The lower circles show the increase in land consumption in square kilometers per year. The land is used for construction sites, roads, or other purposes. Annual land consumption in Austria is to be reduced to 9 km<sup>2</sup> by 2030 (green circles).<sup>7</sup>



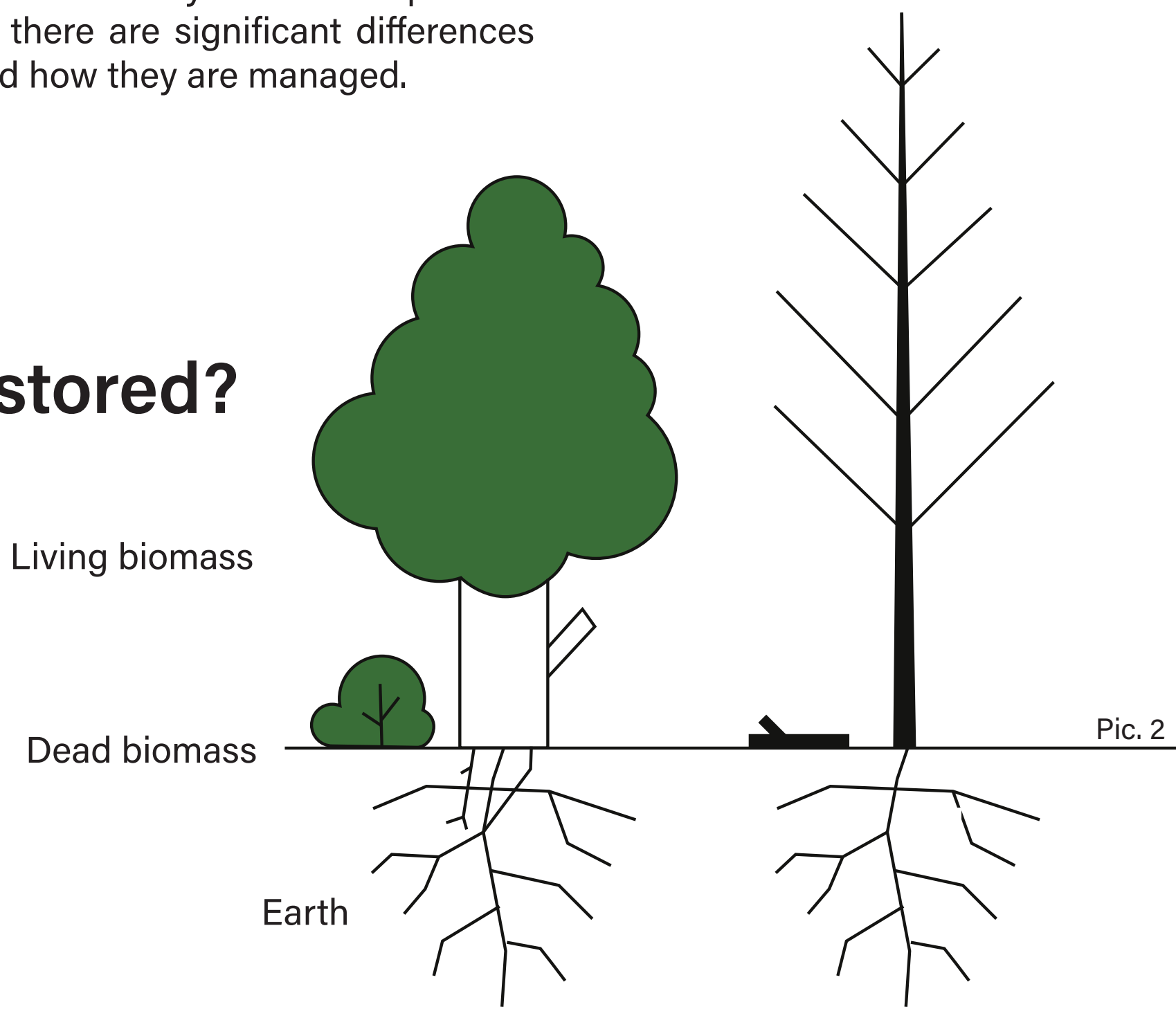
## The importance of soils for the (global) climate

In addition to reducing greenhouse gas emissions, we also need to re-bind CO<sub>2</sub>. Between 1850 and 2019, soils accounted for 32% of CO<sub>2</sub> storage as carbon sinks, making them more significant than the oceans (24.4%) – the rest remained in the atmosphere.<sup>8</sup>

The largest carbon storage areas worldwide are wetlands, such as peatlands and floodplains. Per hectare, they store the highest amount of carbon.<sup>9</sup> <sup>10</sup> However, the development of wetlands as carbon sinks has taken a long time.

The largest annual amounts of CO<sub>2</sub> are stored by forests. This process is called sequestration.<sup>11</sup> Naturally, there are significant differences depending on the types of trees and how they are managed.

## Where is carbon stored?



## Housing: Significantly reduce land sealing

Choosing the right place to live can significantly reduce our carbon footprint: living in a space-efficient apartment building, centrality in a (small) city, accessibility of key destinations within a 15-minute radius on foot or by bike, and proximity to public transport.<sup>13</sup> <sup>14</sup>

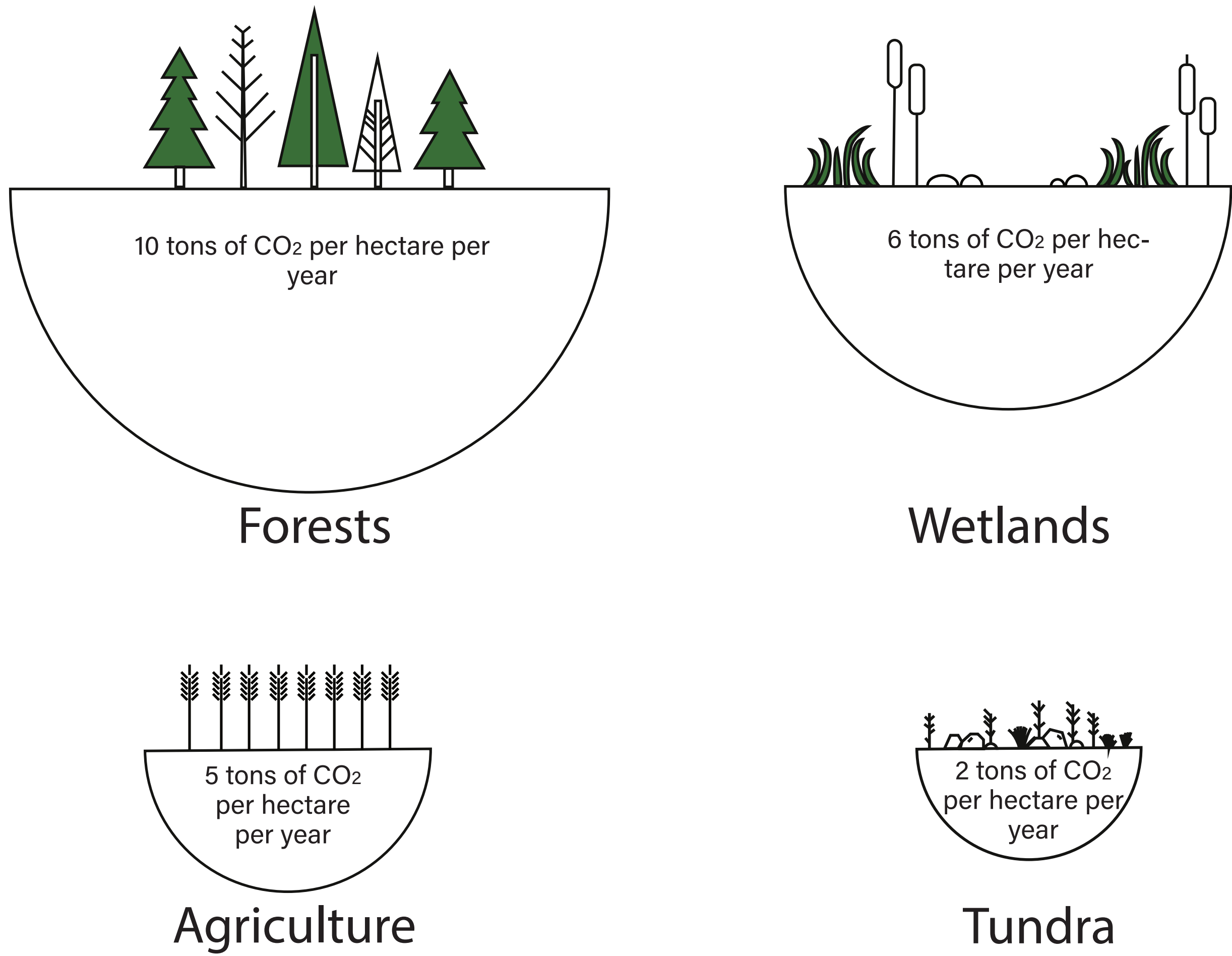
We can actively contribute to soil protection by reducing our own demand for sealed surfaces. Instead of new construction on greenfield sites, it would be more sensible to build vertically, use existing vacant buildings, and recycle sealed surfaces. This applies to large-scale spatial planning and zoning as well as our choice of housing on a smaller scale: do I want to live in an apartment or a single-family home? Do I need to build a new house, or can I move into an existing one?

Walking, cycling, and using public transport also reduce the need for space and protect the soil, as does lowering speed limits.<sup>15</sup> The freed-up space could be used for planting trees, which in turn store CO<sub>2</sub>. The location choice of businesses or the expansion of their premises is also crucial for soil protection, provided no new land is sealed in the process.

## The ability of different ecosystems to bind CO<sub>2</sub><sup>12</sup>

The type of soil is crucial for how much CO<sub>2</sub> it can bind on average per year and per hectare.

Pic. 1



## Agriculture: Build up soil

In addition to reducing land use, the way soils are managed is another significant lever. The use of heavy tractors and other agricultural machinery, plowing, and improper timing of soil cultivation lead to humus depletion and soil compaction. Heavy rainfall can then cause flooding because the water cannot penetrate the soil. The loss of humus and nutrients in the soil also reduces soil fertility.<sup>16</sup>

The water protection farmers have responded to these issues – an initiative in the central Styrian region (districts: Graz, Graz-Umgebung, Voitsberg). They provide knowledge and advice to farmers on how to manage their soils sustainably and protect water.

Regenerative agriculture, with significantly reduced pesticide use and the elimination of fossil fertilizers as in organic farming, supports soil life and biodiversity. The reduced productivity of organic farming can be offset by cultivating, for example, vegetables for direct human consumption on land currently used for fodder production. In this sense, our dietary habits are also a significant influencing factor.<sup>17</sup>

<sup>1</sup> vgl. UniNEIZ, 2019, S. 2

<sup>2</sup> vgl. UBA, o. J. a - Der aktuelle Wert bezieht sich auf den Durchschnitt der drei Jahre 2018-2020 - 11,9 km<sup>2</sup> Steiermark, 41,8 km<sup>2</sup> Österreich. Der Versiegelungsgrad in der Steiermark liegt bei 40 %.

<sup>3</sup> vgl. Bundeskanzleramt, 2020, S. 104  
<sup>4</sup> vgl. Svanda & Zech, 2022, S. 1  
<sup>5</sup> vgl. Statistik Austria, 2018  
<sup>6</sup> vgl. Svanda & Zech, 2022, S. 1

<sup>7</sup> vgl. VCO, 2020b, S. 8  
<sup>8</sup> vgl. IPCC, 2021, S. 699  
<sup>9</sup> vgl. IPCC, 2000  
<sup>10</sup> vgl. EEA, 2022a

<sup>11</sup> vgl. EEA, 2022b  
<sup>12</sup> vgl. EEA, 2022b  
<sup>13</sup> vgl. VCO, 2018a, S. 11f.  
<sup>14</sup> vgl. Svanda & Zech, 2022, S. 10

<sup>15</sup> vgl. VCO, 2021, S. 28  
<sup>16</sup> vgl. Lindenthal & Schlatter, 2020, S. 22f.  
<sup>17</sup> vgl. Lindenthal & Schlatter, 2020, S. 34

Pic. 1: Eigene Darstellung basierend auf EEA, 2022b  
Pic. 2: Eigene Darstellung basierend auf BML, o. J.