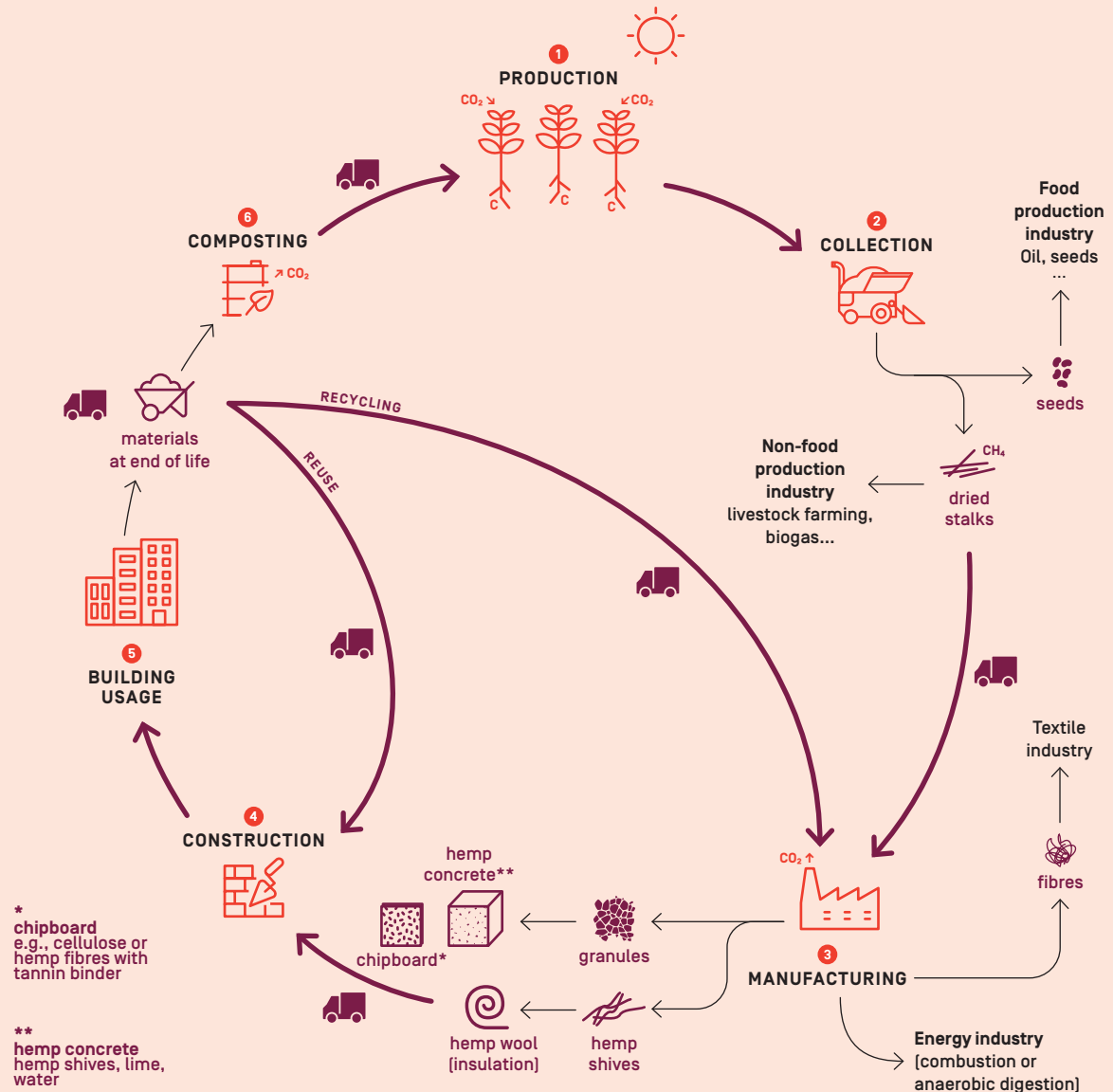


Life cycle of biobased materials: the example of hemp

SEVERAL DECADES OF CO₂ STORAGE AND SMALLER ENVIRONMENTAL IMPACTS



Via photosynthesis **1**, plants transform atmospheric CO₂ into organic compounds. Some of the resulting carbohydrates are metabolised to fuel growth. Some are released into the soil, and yet others are stored in plant parts [e.g., stems and fibres]. In the latter case, CO₂ is only fully released if the plant burns. Decomposition results in partial release. When plant stalks are collected and used in various materials **2**, the carbon they contain remains trapped for the

material's lifetime, currently estimated at 50 years. Depending on their condition, it may be possible to reuse these materials without prior transformation at the end of life. They may also be directed towards new uses via recycling; undergo natural composting [provided they remain 100% composed of plant matter] or industrial composting; or be used to produce energy by means of combustion or anaerobic digestion **6**. In the latter two cases, the carbon stored in

the plant matter returns to the atmosphere and completes its life cycle. In addition to bolstering carbon storage, the use of agricultural residues or forestry resources as replacements for traditional construction materials helps reduce the GHG emissions and environmental pollution caused by the extraction, manufacturing, and recycling of non-renewable resources [e.g., fossil fuels, sand, minerals]. **3 4 5**.