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BIOGENIC CARBON UTILIZATION POTENTIAL IN THE CENTRAL BALTIC VIA AGRICULTURAL BIO-CCU VALUE CHAINS

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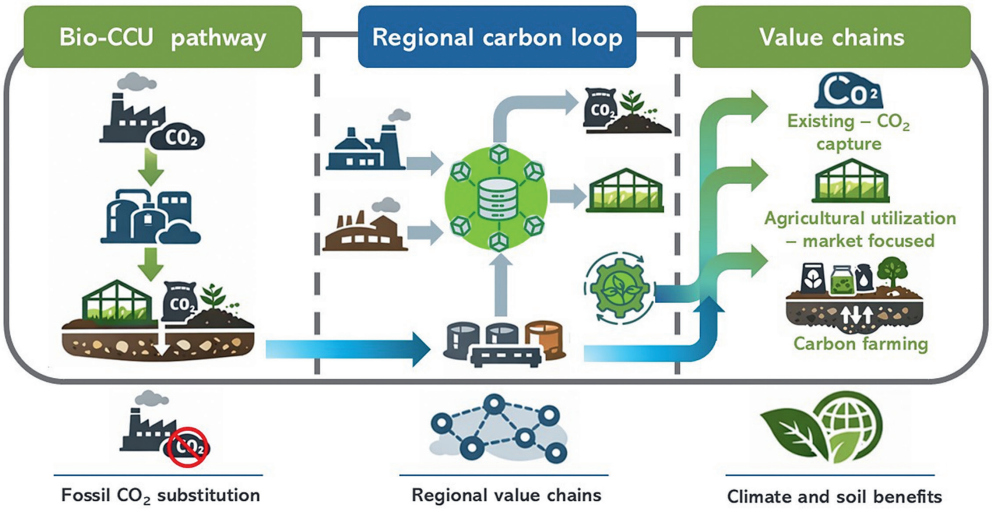
Abstract – Energy independence and resilience are closely tied to security and climate change mitigation. The European Union has set the goal of reducing GHG (greenhouse gas) emissions by at least 90 % by 2040 relative to 1990, and the development of the 2040 framework to achieve this aim has begun. To achieve this goal, reducing reliance on fossil fuels and switching to renewable energy sources are needed. The Renewable Energy Directive (RED) sets out binding targets for reaching 42.5 % or larger share of renewables in the energy mix by 2030. It will not be possible for the EU to reach climate neutrality by 2050, if all sectors do not rightly contribute to meeting this target. The agricultural sector in Latvia is still one of the most challenging sectors to reduce GHG emissions, ranking third after the energy sector (32.7 %) and transport (31.4 %), with 21.3 %. Carbon dioxide (CO_2), regardless of its origin, is used either as a product or an input material in various industrial applications. Globally, about 230 Mt CO_2 is emitted each year, with fossil CO_2 from natural gas reforming still dominating. Within the Central Baltic (CB) area, the use of CO_2 as an industrial gas largely depends on imported fossil fuels. The study aims to explore the potential of utilizing biogenic carbon (Bio-CCU) through regional agricultural Bio-CCU value chains and extend the CO_2 utilization into agriculture, a sector central to the CB region. Carbon farming can act as a demand-side pull for biogenic CO_2 utilization in agriculture, transforming waste CO_2 streams into verified carbon removals and promoting climate-smart farming practices.

Keywords – Bioeconomy; fossil carbon substitution; industrial symbiosis; regional value chains



Utilization of Bio-CCU via agriculture