

# ECONUT project

Deliverables and Results by 2026-01-15

<p>Deliverable 2.1</p>	<p>Nutrient cycling approach, methodology and work plan development</p>
<p>Results 2.1</p>	<p>The Baltic Sea region has abundant biomass resources, such as algae, macrophytes, mussel shells, and beach wrack. These resources offer strong potential for recovering and reusing nutrients to support sustainable food production. Using marine biomass as both a fertilizer and an adsorbent for nutrient recovery supports the circular economy principles by preventing nutrient loss into the environment while enhancing coastal biodiversity and protection.</p> <p>The ECONUT project is guided by the three core principles of the circular economy: eliminating waste and pollution, keeping materials and products in use at their highest value, and supporting natural regeneration.</p> <p><b>The ECONUT approach and methodology</b> grounded in sustainability and circular economy principles, provides a structured framework for the project’s research activities. It incorporates literature reviews, field and laboratory testing, GIS-based mapping, evaluation of results, and validation.</p> <p>On-site sampling is a core component of the methodology, and analytical methods are applied to determine the quality and quantity of beach wrack. The nutritional value of the biomass and its potential impact on climate change in coastal project areas are also evaluated.</p> <p>Quality assessments of raw beach wrack, composted beach wrack, final soil amendment (dune stabilizer) and grown crops and plants are comprehensive and include testing for heavy metals (Cr, Cd, Cu, Al, Zn, Pb),</p>

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	<p>organic pollutants (oil products, phthalates, PAH's) contamination, and Caesium-137 radioactivity. All analyses will be conducted in laboratories according to the standards.</p>
<p>Deliverable 2.2</p>	<p>Mapping of coastal zone areas of nutrient concentration and biomass sampling</p>
<p>Results 2.2</p>	<p>The creation of nutrient cycle methodology includes mapping potential coastal zone areas of nutrient flows and the development of the methodology of marine biomass pre-treatment technologies for soil amendment and dune slope stabilization as well as the creation of biodiversity hotspots at beaches.</p> <p>The mapping focuses on the exposed coastlines of the southern and southeastern Baltic Sea, covering the South Baltic Programme region, which includes Lithuania, Poland, Germany, Denmark, and Sweden. In addition, Funen Island (Denmark) was included in the mapping due to the location of a Danish beach wrack sample site, even though it lies outside the official programme area.</p> <p>Beach wrack mapping was conducted using satellite data over a five-year period, from September 2020 to September 2024, covering a total of 1490 days. The analysis used imagery from the Sentinel-2 Multispectral Instrument (MSI).</p> <p>Here, you can explore the occurrence of beach wrack by country from September 2020 to September 2024:</p> <ul style="list-style-type: none"> <li>• Lithuania (<a href="#">link</a>)</li> <li>• Poland (<a href="#">link</a>)</li> <li>• Germany (<a href="#">link</a>)</li> </ul>

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	<ul style="list-style-type: none"> <li>• Denmark (link)</li> <li>• Sweden (link)</li> </ul>
Deliverable 2.3	Analysis of methods for collection and treatment of bio-substrate
Results 2.3	<p>The effective collection and treatment of beach wrack is crucial for protecting coastal ecosystems and reducing the environmental impact of organic waste accumulation and climate change. Collection methods combine manual and mechanical approaches to efficiently remove beach wrack while minimizing disturbance to wildlife.</p> <p>For the ECONUT pilot projects in Lithuania and Poland, biological composting was chosen as the most environmentally friendly option because it produces high-quality compost that is rich in organic matter and key nutrients, such as phosphorus (P) and nitrogen (N). Two composting technologies will be used: container composting and outdoor pile composting. The research will use the COMPOSTER 220 ECO composter, which has a 200-liter capacity and an operating temperature range of +10°C to +70°C. Thanks to its heated structure and ventilation system, the COMPOSTER 220 ECO is suitable for all year-round composting. Container composting will produce small quantities (5–15 kg) of compost within 1.5–2.5 months for laboratory and field experiments. Outdoor pile composting, conducted during the autumn - winter period, will generate larger volumes (150–250 kg) to be used in experiments on regional private farms.</p> <p>ECONUT pilot in Germany focuses on dune stabilization using beach wrack as the dune core, without the need for pre-treatment. The beach wrack core will help to stabilize sediments, support dune development processes and enhance coastal biodiversity.</p>
Deliverable 5.1	Market analyses for each of the pilot cases' technologies developed in the project

## Results 5.1

The key conclusions are that fertilizer based on composted beach wrack is a product with relatively low market value. Pricing can be expected to be on the same level as cow manure. The costs of collecting, transporting, composting, marketing, and selling such a product will be substantial and significantly higher than the expected sales price. Indications suggest that the costs for the above-mentioned stages in the production, logistics, and sales chain will amount to more than five times the expected sales price. There are opportunities to develop higher-value products, but this would also require more research and likely larger investments in equipment, marketing, and sales. For a finished product based on composted beach wrack to be developed and sold, an entrepreneur must take on the task and further concretize and deepen the various components of the business model. Investing in such a company would be a gamble, and the challenges would be considerable in several parts of the value chain.