

Future challenges, recommendations and next steps from a CONTRA perspective

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What is beach wrack?

- **Beach cast** = mixture of all kinds of material washed up on the beach, generally be found in the swash zone, in lines along the foreshore, sometimes at the back (after storms)
- often consisting of diverse biogenic material: seaweed/macroalgae, seagrass/eelgrass, shells, crustaceans, driftwood, dead animals, but also litter...
- **Beach wrack** = all organic/biogenic material
- amounts vary depending on weather conditions, currents, location (near-shore vegetation)



Its ecological role

Biodiversity and habitats

- Species-rich habitat for beach shrimp, insect larvae, insects & various animal species
- Feeding & breeding ground for shorebirds

Coastal Protection

- Reduces wave energy, reduces the flow
- Protects the beach from wind and wave erosion

Sediment storage

- Catches sediment, promotes sand accumulation, which in turn helps dune formation
- Source of nutrients for dune stabilizing plants

⇒ **quantities and composition vary both locally and seasonally, sometimes very fast**

⇒ **few national studies and no cross-border international long-term studies in the Baltic Sea Region**



When cleaned...

Some methods of biomass „removal“



Piles on the beach or a nearby stretch



Pushing it back to the waters

Environmental issues:

- dump biomass and potentially pollutants/litter in areas close to the shore (e.g. enhanced eutrophication)
- rotting: Greenhouse gas (GHG) emissions and destroyed value/resource of the biomass

⇒ **since numerous environmental legal regulations pragmatic attempts are not accepted anymore**

Collection and transport logistics are challenging



- unpredictable compositions/amounts
- inhomogeneous material (+ different stages of degradation)
- high contents of sand (30-90%) and salt
- esp. fine fragmented macroalgae difficult to collect

⇒ **difficult to use this material in economy effectively**

Storage facilities and collection machinery are costly



- temporary storage facilities and collection machinery costly to maintain for local authorities
- leakage water must be disposed of at extra cost
- e.g. Germany, government grants (county level) available for the purchase of such facilities, but maintenance is left for local authorities
- budget & time pressure

⇒ **limited resources of municipalities to tackle all these problems**

No specific legislation for beach wrack use



- various terms/definitions for beach cast/wrack exist in different countries
- falls under waste regulations in certain Baltic Sea countries (=organic waste)
- confusing framework: no specific legislation concerning the use of beach wrack mixture nor respective species for marketable products
- beach wrack issues are not included in particular in existing policies



- ⇒ **no regulations or monitoring regarding removal or use**
- ⇒ **products may have a lower value due to it is "waste"**

Lack of knowledge



A lot of research is needed...e.g.

- beach wrack quantities, composition, levels of contamination: how this varies spatially and temporally
- no comparative studies of cleaning activities or “beach management” at all
- ecological role: how much biomass can be removed without ecologically damage?

⇒ **so far few scientific studies about the beach wrack issue**

⇒ **spare cooperation between municipalities, authorities, companies and research**

Online published at the latest by the end of June this year



Five main reports:



Socioeconomics

- Socioeconomic impacts of bw management



Ecology

- Best-practice report for sustainable bw management solutions



Business

- Compiling options of bw use
-
- **Tool kit:** a practical guidance for conversion of recent beach wrack management schemes to more sustainable solutions

-> a preview of a draft is published online

⇒ within CONTRA the knowledge of these many aspects was compiled for the first time and across six Baltic Region countries

Documents policy brief and legal aspects

Policy Brief | Towards sustainable solutions for beach wrack use and recycling

Highlights
Beach wrack collected from managed beaches in the Baltic Sea Region could be used as a valuable resource in the blue bioeconomy. Seven CONTRA case studies show highlighted viable uses for beach wrack and the effect of beach wrack removal on the local environment. This brief recommends policy which:
• supports beach wrack, that is collected from managed beaches, being defined as an organic resource and not as a waste product,
• encourages local authorities to develop more sustainable beach wrack management strategies,
• encourages local authorities to cooperate with local recycling companies and,
• provides research and development on possible beach wrack uses.
This brief recommends that beach wrack that is already removed from managed beaches. The CONTRA project recommends that beach wrack on natural unmanaged beaches, generally remains untouched, unless it poses a concern.

What is beach wrack?
Beach wrack is any marine generated organic material that is washed up onto the beach by waves and currents. It can generally be found along the edge of the water, along the beach, and sometimes at the back of the beach especially in the case of beach wrack that is found on any local beach. The result of what grows offshore, currents and the weather conditions. In the Baltic Sea it usually consists of torn off sea grass, macroalgae (brown, red and green species) and shells.
Beach wrack is a natural occurrence along the coast of the Baltic Sea countries. It plays an important role in protecting a beach from erosion caused by wind and wave action, providing a habitat and feeding ground for certain species and is also an essential nutrient source for dune vegetation.

Beach wrack management in the Baltic Sea
Large amounts of beach wrack on Baltic Sea beaches are even as a nuisance by tourists and residents. Beach wrack can obstruct access to the sea and can give off an unpleasant odour when decomposing at the water's edge. Local authorities therefore remove beach wrack from managed beaches, often at a great cost. Some common beach wrack practices used by coastal municipalities are:
• to collect, temporarily store, and then push the beach wrack back into the sea;
• to collect and move beach wrack further up the coast or inland to decompose away from the main tourist beach area;
• to remove it from the beach and dispose of it as waste;
• or to remove it from the beach and give it to farmers/landowners to use as fertilizer or soil improvement.
These management methods are not always ideal from an environmental perspective. They do not adequately take advantage of beach wrack as a resource or potential for coastal water quality improvement. Little attention is given to the possibilities of using beach wrack.

CONTRA – Converting Beach Wrack from a Nuisance to a Resource and Asset
The Interreg BSR funded project CONTRA addresses the challenges associated with beach wrack in the Baltic Sea region. Read more about CONTRA here: www.beachwrack-contr.eu

published online

LEGAL ASPECTS OF BEACH WRACK MANAGEMENT IN THE BALTIC SEA REGION

Document has been developed within the Project CONTRA - Conversion of a Nuisance To a Resource and Asset Interreg Baltic Sea Region Programme Project Number: #R090.

2020

published online

Identification of national, regional and EU regulations with respect to beach wrack

By Katarina Viik, Adviser at the Department of Marine Environment, Ministry of the Environment of Estonia, Tallin (in April 2021)

Most of the existing national legislation of the EU member states does not cover the specific issue of beach wrack. This issue may however be incorporated into existing policies of the national legislation e.g. those that deal with aquatic resources and renewable biological resources, tackling collection, storage, processing of organic material into chemicals, fertilizers or biofuels, as well as their marketing, depending on the intended and practical use of beach wrack after collection. These belong to different policy areas and are implemented through different legal instruments.

This document provides a non-exhaustive list of regulations on EU, national and regional level that govern beach wrack removal, collection and processing.

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Furthermore published online at the end of June:

- Stakeholder awareness and acceptance of beach wrack: Analysis Report
- Environmental aspects of beach wrack removal

Published reviews/studies



- Chubarenko et al (2021): **Converting beach wrack into a resource as a challenge for the Baltic Sea (an overview)**. Ocean & Coastal Management. Vol. 200. 105413.
- Kupczyk et al. (2019): **Solving the beach wrack problems by on-site treatment with reed beds towards fertilizer amendments**. Journal of Ecological Engineering 20(8), 252–261.
- Stenis et al. (2021): **An Economic Instrument to address beach wrack**. Applied Economics and Finance 8 (1), 50-58.
- Sterr et al. (2019): **Eelgrass and beach wrack -Well-known beach resource newly discovered** Coastline Reports 2019-26, 126 pp. [in German]

to be expected (certainly not finished):

- Schätzle et al. „Beach wrack landings (species composition, amounts and seasonality)”
- Kotwicki et al. „Macro-&Meiofauna and decomposition of beach wrack”

...

Participation at several conferences/workshops etc. (examples)

- INTERREG-projects: GRASS and COASTALBiogas-conferences
- Linnaeus Eco-Tech 2020
- Baltic Sea Science Congress 2019
- EGU General Assembly 2021
- diverse Networking events (national and international)

...

CONTRA output



- ⇒ **first cross-border comparison of ecological issues: e.g. composition and amounts, pollutant release**
- ⇒ **show and discuss possibilities for the use of beach wrack mixture**
- ⇒ **first socio-economic studies on acceptance**
- ⇒ **recommend options for a sustainable beach wrack management**

Develop a policy for beach wrack management

- encourage a **use-oriented collection** of beach wrack (e.g. improvement of collecting procedures)
- address the **environmental impacts** of beach cleaning and refer to beach wrack as a **valuable resource**
- decision to clean a beach and thus to collect beach wrack should involve the **consultation of environmental scientists**



Develop legislation which is flexible to intended use of beach wrack

- **legal frameworks specified and targeted** to the specific organic biomass in particular relating to **collection, storage, transport and processing**
- enabling **flexible treatment options** depending on biomass composition/amounts and corresponding local infrastructure
- prevent **unsustainable harvesting** from natural unmanaged beaches
- definition of **indices** describing a “good status” of beach wrack on beaches
- harvest regulation includes a definition of **appropriate compensation possibilities** (e.g. -> use for coastal protection)



Consider beach wrack in other legislation frameworks

- e.g. for use as organic fertilizer and soil conditioner
- **further research** and analysis on the advantages and disadvantages
- particular attention should be paid to the presence of **heavy metals, litter and other pollutants**



Allow for direct use of beach wrack for coastal protection

- of **certain amounts** of beach wrack on a local beach
- amounts should **not be larger than the natural land loads** on the respective beach
- include depositing **small piles** of beach wrack **at the back of the beach** for soil improvement or fencing for dune restoration



Encourage cooperation with businesses

- for long-term planning important to have a **business basis**
- local authorities should **be encouraged to cooperate** with beach wrack processing companies
- include a focus on providing **long-term contracts** on the supply of beach wrack to ensure companies have a reliable material source
- **collection technologies** need to be **improved** to make collection more efficient, less fuel consuming and reduce the amount of collected sand



Encourage more research and development

- **for different uses of beach wrack** in particular of respective species (e.g. to protect the wild stands and prevent their harvesting)
- should promote **geographically specific research** to support local decision-making processes
- **seasonal and spatial monitoring** of beach wrack amounts and composition on a wider scale than before on the coasts
- **nutrient and pollutant release** (water, sediments and soils)
- **impact of beach wrack removal practices on the local environment**



...and CONTRA has set the foundation

- **legal clarification: beach wrack, that is collected from managed beaches, is defined as an organic resource, and not as a waste product**
- **local authorities include more sustainable beach wrack management strategies**
- **local authorities cooperate with local recycling companies**
- **economy promote the generation of higher value products out of beach wrack**
- **more research and development on ecology and possible beach wrack uses**
- **stepping out more from the Baltic Sea region and cooperate with other networks**

Thank you for your attention!

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