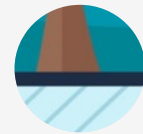


Session topic:

*Value chains of Beach Wrack
management*

Jens Almqvist, Krinova Incubator & Science Park,
Kristianstad, Sweden



Session topic:

Value chains of Beach Wrack management

Sub topic:

*Aspects of value and
value creation in the
beach wrack value
chain*





A background photograph of a crowded beach with people swimming in the ocean and sunbathing on the sand. Overlaid on the left side is a vertical flowchart with five blue rectangular boxes connected by downward-pointing arrows. To the right of the flowchart are four blue arrows pointing left, each associated with a text label.

Removal of beach wrack

Less inconvenience (smell etc.)

Attractive beach

Beach becomes destination

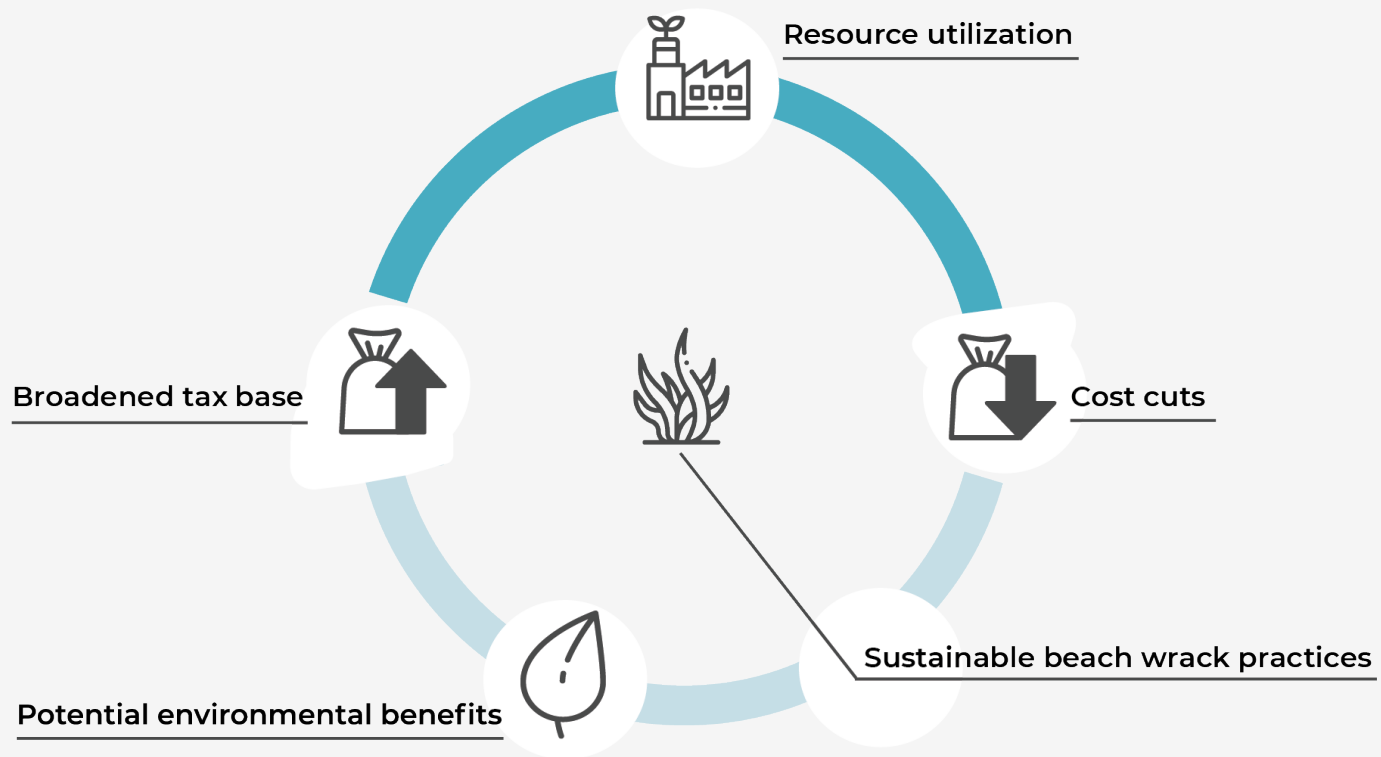
Place marketing

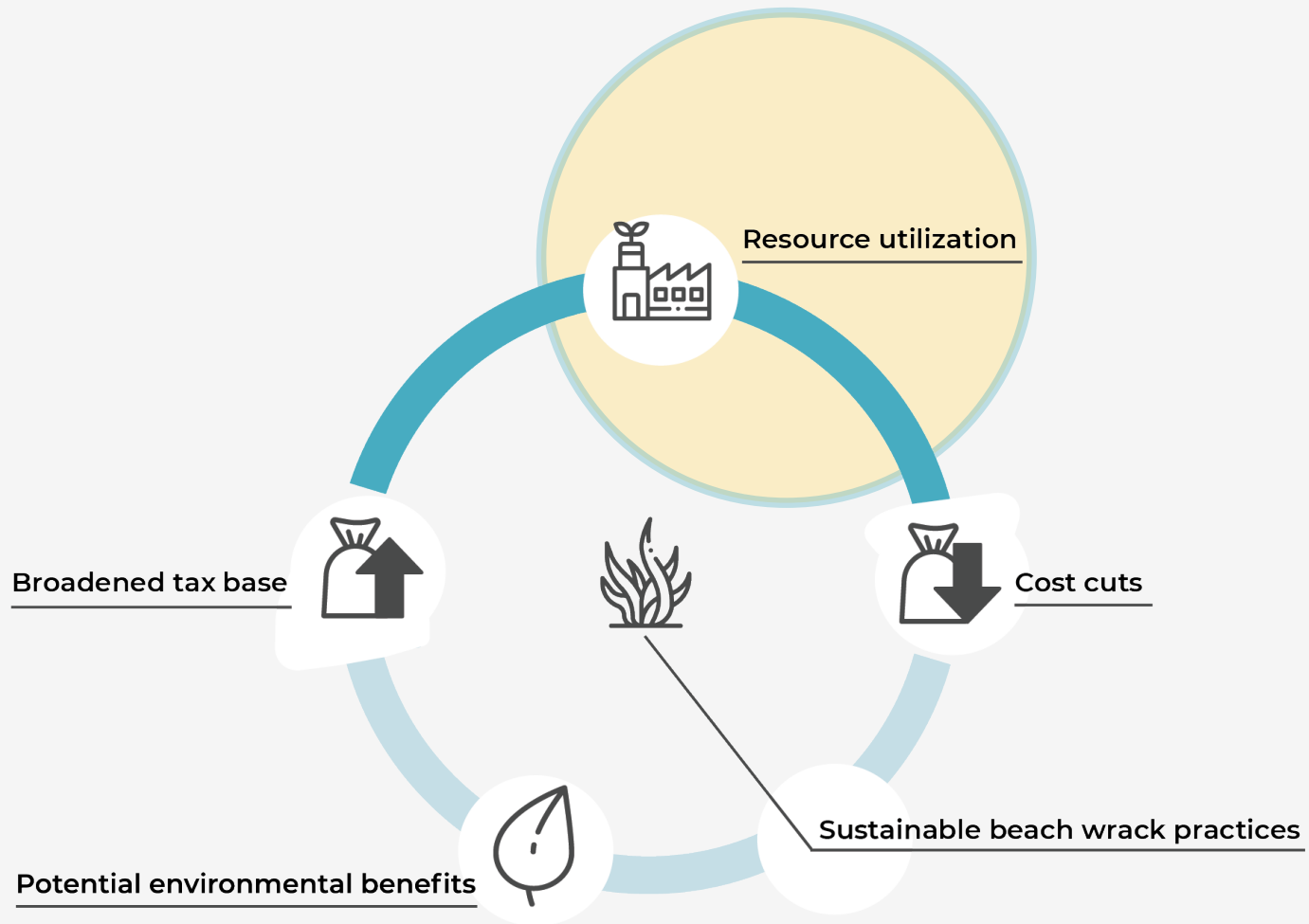
Residents and tourists rally

Recreation

Entrepreneurial possibilities
emerge

Job creation, broadened tax base







Unmanaged beach



Managed beach
- Intention to dispose of



Managed beach
- Intention to utilize



- Push back to sea
 - Dispose of to landfill
- = one-dimensional value

= enables value creation in several dimensions.

Managed beach
- Intention to utilize

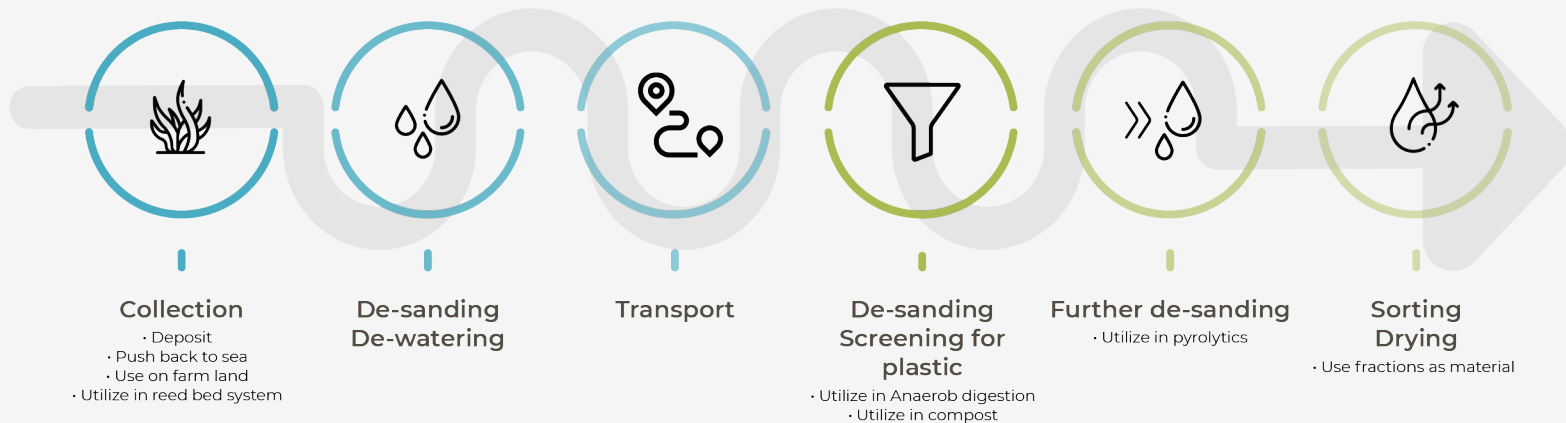


= enables value creation in
several dimensions.

*A collect and utilize mindset
takes the properties of the
material into account and seeks
to maximise the value creation.*

First leg of the beach wrack value chain

- Practices and infrastructure which unlocks the materials properties and value.



Environmental value:

CONTRA case studies offer treatment options in which:

- GHG emissions are mitigated
- Nutrients are relocated to where they are needed (nutrient loop)
- Heavy metals are removed and separated

Economic value:

CONTRA case studies offer treatment options in which:

- The material can be processed into higher value products.
- Treatment facilities can be profitable.
- Costs associated with beach wrack management can be lowered.

Unmanaged beach



Managed beach
- Collection from the beach



Managed beach
- Collection from shallow water



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Sub topic:

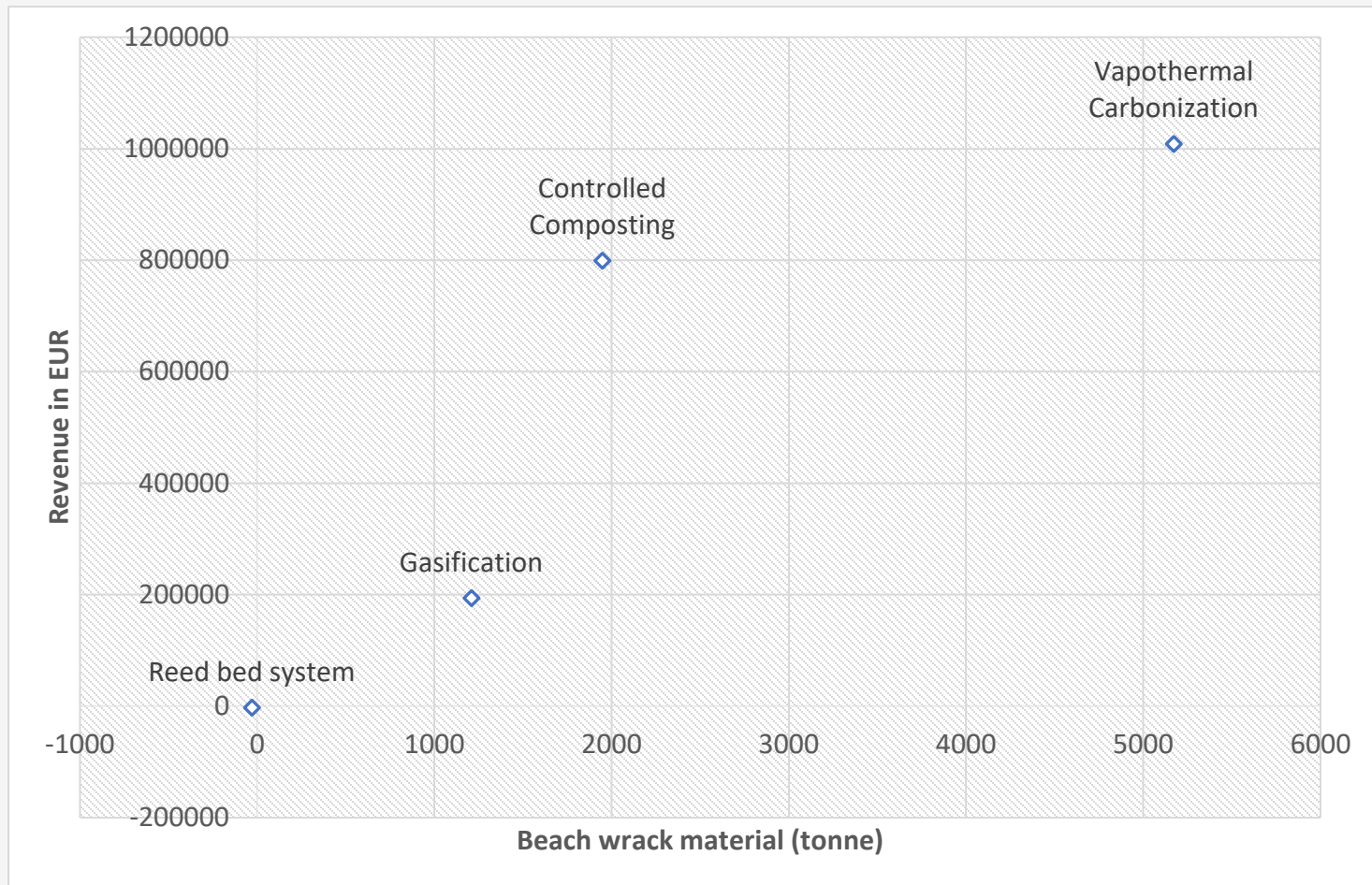
Business models

“Business models, in its essence, can be described as the rationale of how an organisation, creates, delivers and capture value”. Osterwalder (2010)

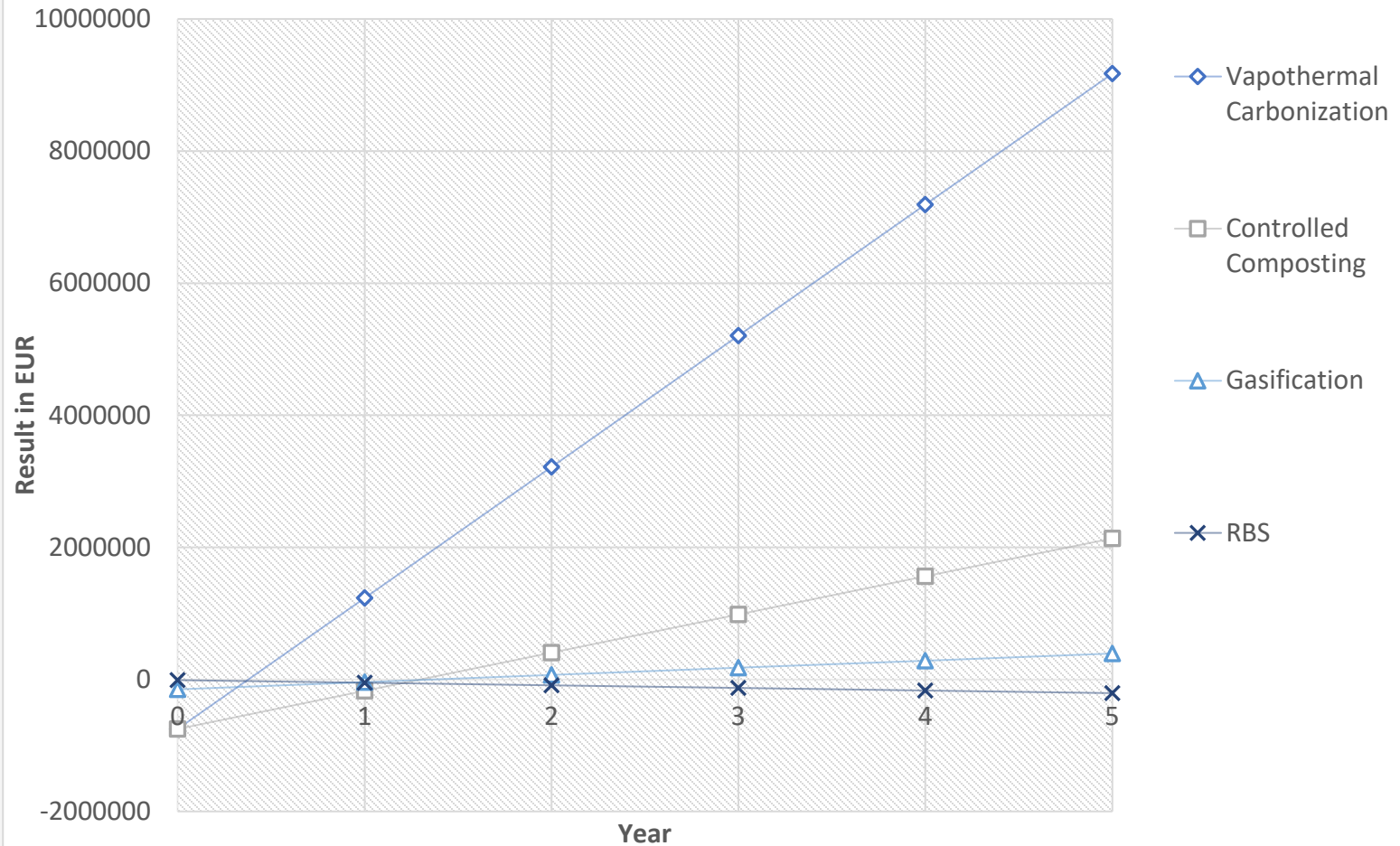
The process:

Step one research and learn

Required volume for break-even



Profit over time



Environmental benefits of the CONTRA treatment options

	Heavy metal separation	Nutrient capture (circular)	GHG mitigation	Carbon sink
Case study 1: Controlled Composting (Germany) Company	No, only a dilution effect by mixing it with terrestrial organic material (greenwaste)	Long-term organic bond of nutrients during the composting process. Results less nutrient leaching on fields	Yes, compared to uncontrolled decomposition, which results in CH ₄ emissions	Probably
Case study 2: Vapothermal Carbonization (Germany) Company	Heavy metals can be found in incineration ash and ash from exhaust gas cleaning. Ash must be landfilled if heavy metal concentration is too high	Maybe, if used for soil improvement. No if used as fuel.	Renewable fuel	Yes, if biochar is built into the ground No if used as fuel
Case study 5: Gasification (Sweden) University	Yes, but mercury release to atmosphere (gas treatment needed)	Removal	Renewable fuel	No
Case study 6b: Reed Bed System (Poland) University	No, but heavy metals are mainly found in stable residual fractions.	Removal	Yes, no methane produced	Probably
Options based on composted material				
Case study 3: Biocover (Denmark) Municipality/University	Removal from sea to landfill. Compost exceeding limits cannot be utilized as material for Biocover	Yes	Yes	Yes
Case Study 4: Use for coastal defence structures (Russia) University	No	Circular use	Slight mitigation but CH ₄ is releasing in the process	Carbon neutral/possible carbon sink in a long-term perspective

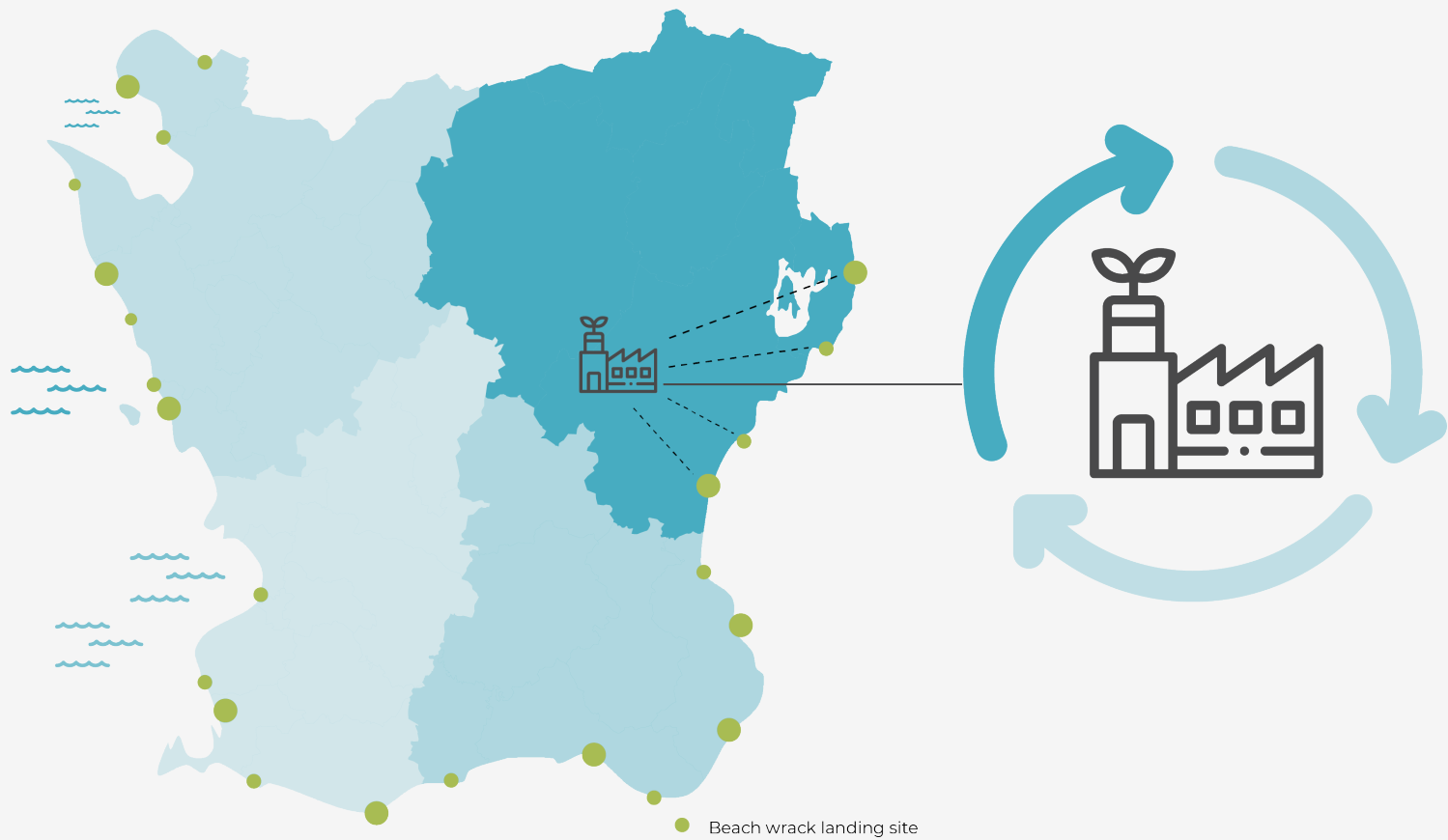
Most important results:

- Lack of knowledge amongst practitioners
- Beach wrack is a complex material
- Access to material is key
- Environmental values can be created
- Socioeconomic values can be created
- Monetary value can be created
- Treatment facilities can be profitable
- Legal aspects are not clear

The background of the slide is split diagonally from the top-left to the bottom-right. The upper-left portion is a solid yellow color, and the lower-right portion is a solid light gray color.

The process:

*Step two – designing
business models*



The PPPCanvas

Business Ecosystem

Regional cooperation

Key Partners

1. Neighbouring municipalities
2. Internal/external Beach management company.
3. Internal/external resource utilization facility, such as pyrolysis plant or composting plant.

Key Activities

1. Monitoring and tracking of beaches and incoming material.
2. Establishing infrastructure.

Value Proposition

1. Access to blue biomass material.
2. Clean and well-managed beaches in regional area.
3. Sustainable and cost-effective solutions for collection and utilization of blue biomass.
4. Regional cooperation aiming to establish sustainable and innovative practices for beach management and utilization of collected material.

Customer Relationships

1. Depending on the specific set-up. For reference, see the models for "Beach management company" and "Soil improvement products".

Customers

1. Partners have customers. Through establishment of infrastructure and steady supply from several landing sites, the partners are able to build a solid business, enabling them to lower their fees for handling the material

Extended Beneficiaries

1. Beach tourists.
2. Local residents.
3. Entrepreneurs:
 - Tourism sector
 - Restaurants
 - Vendors
 - etc.

Governance

1. Organization with experience in organizing and leading regional development and cooperation.
2. common goals to establish sustainable and innovative beach management practices.

Key Resources

1. Employees driving and maintaining the project.

Channels

1. Depending on the specific set-up. For reference, see the models for "Beach management company" and "Soil improvement products".
2. Profiling your beach as attractive, with cleanliness being a key property.

Cost Structures

Depending on the specific set-up:

1. Machinery investments/ machinery hire
2. Consultant fees for collection.
3. Cost for upcycling the material.

Impact

1. Decrease nutrients and heavy metals in the SB
2. Erosion defence
3. Enhanced ecosystem services in cities
4. Attractive beach.
5. Infrastructure for blue biomass utilization.
6. Decrease complaints about smell

Revenue Streams

1. Increased tax income through increased visiting frequency
2. Cost cuts through cooperation and shared contracts/ equipment, etc.
3. Cost cuts through lowered costs associated with disposal of blue waste.

SWOT-analysis

Strengths <ul style="list-style-type: none">• Commitment to sustainable practices.• Shared cost for investments.• Enables sustainable and legal practices.• Lower costs to keep beaches attractive.	Weaknesses <ul style="list-style-type: none">• Public companies are not allowed to make profit.• Political agreement across organizational borders is needed.• Transportation of material from landing to utilization.• Lack of entrepreneurs.
Opportunities <ul style="list-style-type: none">• Investment support through sustainability funds.• Position region as innovative.	Threats <ul style="list-style-type: none">• Decreasing amounts of beach wrack.• Legal changes

Plausible advantages of regional cooperation

- **Infrastructure:** Shared investments in infrastructure make large-scale legal and sustainable utilization of beach wrack material accessible and affordable to several stake holders in one region.
- **Enables innovation:** A scaled operation can support investment (and development) in machinery and innovation projects.
- **Incentives to utilize material:** Beach wrack stakeholders with investment in treatment facilities give incentives to monitor landings and utilize material when it is in good shape.
- **Environmental benefits:** Strengthened beach wrack infrastructure enables environmental benefits.
- **Access existing infrastructure:** Treatment options can be integrated in existing infrastructure, e.g., controlled composting could be carried out in the same facilities where green biomass is handled.
- **Economic benefits:** Could result in lower costs associated with beach management and disposal of beach wrack material.
- **Economic benefits:** Could be the base for establishment of a privately owned treatment facility.

The PPPCanvas

Beach Wrack Business Ecosystem

Beach management company

Key Partners

1. Manufacturer of specialized machinery.
2. Beach health researchers.
3. Companies utilizing Beach wrack in various treatment applications.

Key Activities

1. Contract procurement.
2. Relationship building and lobbying.
3. Beach management.
4. Sales of beach wrack material.

Value Proposition

1. Attractive beach experience.
2. Research-based and environmentally-conciderate beach management service.
3. On-site/beach installations using blue biomass materiaal as building material.
4. Collection of beach wrack material which meets treatment process needs.

Customer Relationships

1. Long-term contracts, steady cooperation.
2. Common sustainability goals.

Customers

1. B2P - Public beach health stakeholders such as municipalities.
2. B2B - Private beach health stakeholders such as camping sites, and hotells.
3. B2B - Companies sourcing pure material such as elgrass.

Extended Beneficiaries

1. Beach tourists.
2. Local residents.
3. Entreprenours:
 - Tourism sector
 - Restaurants
 - Vendors
 - etc.

Governance

1. Common goal and joint effort with beach health stake holders and processing facilities.

Key Resources

1. Staff with experience in professional beach cleaning.
2. Contracts on beach management.
3. Specialized maschinery.
4. Drying and de-watering fascility.

Channels

1. B2B and B2P.
2. Direct contact.
3. Few relationships/partnerships.

Cost Structures

1. Staff and facility costs.
2. Machinery hire/purchase.
3. Staff training.
4. Fees related to upcycling/disposal of material.

Impact

1. Decrease nutrients and heavy metals in the Baltic Sea
2. Erosion defence
3. Enhanced ecosystem services in cities.
4. Attractive beach
5. Increased Tax income through increased visiting frequency.

Revenue Streams

1. Management fees.
2. Sales of beach wrack material.
3. Innovation support/public compensation.

The PPPCanvas

Business Ecosystem

Treatment facility: Controlled composting

Key Partners

1. Municipalities and beach health stakeholders.
2. Agricultural university.
3. Beach management companies.

Key Activities

1. Contract procurement.
2. Production.
3. Marketing and sales of product.
4. Scientific testing and development of product.

Value Proposition

1. Excellent gardening and household plant care.
2. Sustainable soil improvement products with recycled nutrients.
3. Legal, sustainable and circular handling of blue biomass.
4. Range of organic soil improvement products with proven effects on root growth, water holding capacity and flowering.

Customer Relationships

1. Service and guidelines for best results.
2. Unique product and brand.
3. Sustainability USP.

Customers

1. B2C - Gardeners and households.
2. B2B - Landscaping companies.
3. B2B - Nursery gardens.
4. B2P - Municipalities, department for urban development landscaping.

Extended Beneficiaries

1. Beach tourists.
2. Local residents.
3. Entrepreneurs:
 - Tourism sector
 - Restaurants
 - Vendors
 - etc.

Governance

1. Legislators.
2. Authorities.

Key Resources

1. Staff and experience in professional controlled composting
2. Contracts on waste management of blue biomass and green waste.

Channels

1. Pick up at facility.
2. Resellers.
3. Online sales.
4. Potentially newsworthy product.

Cost Structures

1. Investment in facilities/ rent.
2. Running staff and facility costs.
3. Machinery hire/purchase.
4. Sales & marketing costs.

Impact

1. Decrease nutrients in the Baltic Sea, add nutrients where they are need.
2. Improved soil health in gardens and cities = enhanced ecosystem services.

Revenue Streams

1. Sales of soil improvement products.
2. Blue and green waste management fees.
3. Public innovation and investment support targeting green/sustainable innovation.

Take-aways:

- A holistic approach includes several aspects of value.
- Research supports a shift towards a collect and utilize mindset.
- Site specific prerequisites should be the starting point of any project.
- Building business models based on knowledge have the potential to create value and lower costs associated with beach management.