INSIGHTS TO ANALYSIS OF POTENTIAL CO_2 EMISSION COMPENSATION MEASURES FOR ESTONIAN PEAT PRODUCTION INDUSTRY

Ulrika Hurt and Jaana Merisaar
Department of Business Administration
Tallinn University of Technology

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TOPICS TODAY

- ✓ Insights to the ongoing study on the measures and combinations for CO_2 emission compensation for the Estonian Ministry of Climate

- ✓ Status, goals, methology of the study
- ✓ Research gap
- ✓ Review of measures and combinations for CO_2 emission compensation under observation
- ✓ Main contradictions
- ✓ Preliminary assessments and recommendations

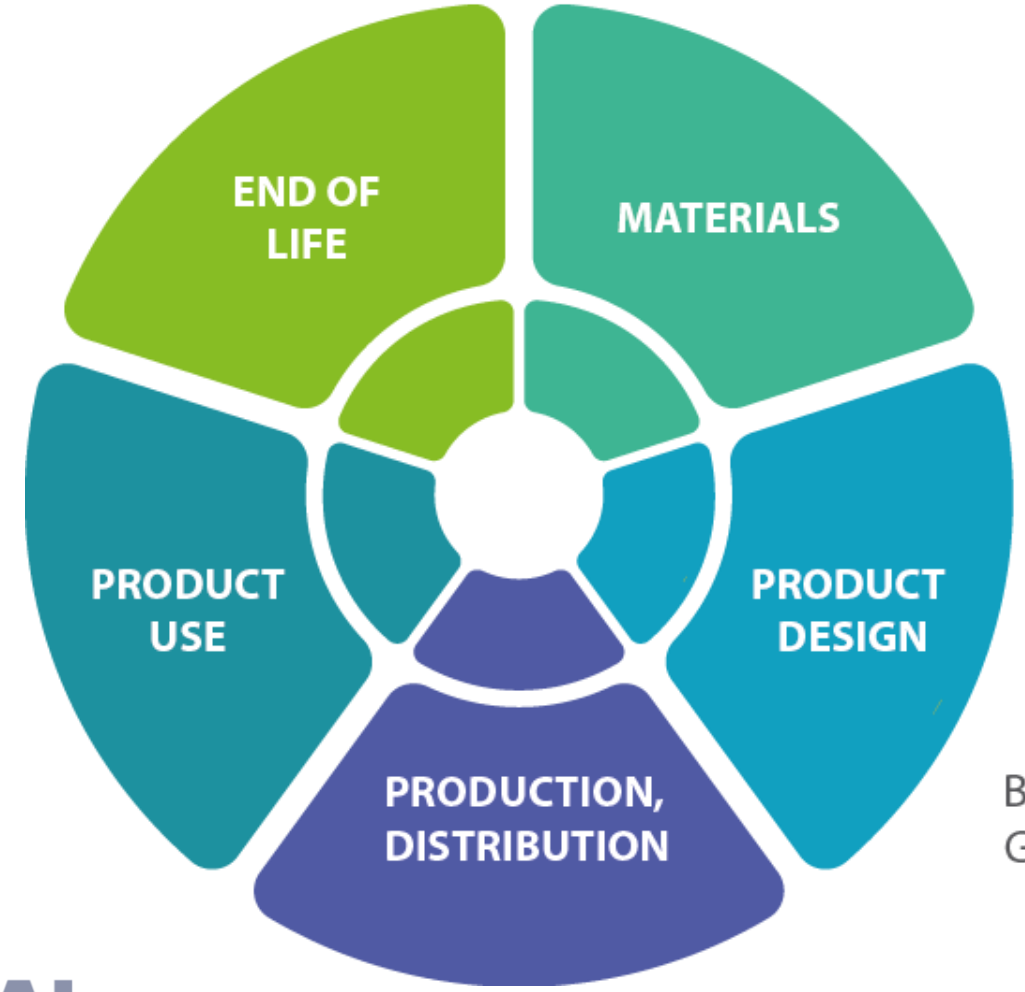
ULRIKA HURT

JAANA MERISAAR

STUDY IN A NUTSHELL

- National goals to **reduce GHG emissions** in the Peat Industry 12% by 2030, 50% by 2040 and 100% by 2050 (compared to the average in 2018-2022) with usage of different compensation measures
- **9 pre-selected measures are to be analysed**
- The purpose of the analysis is to **provide input to how the state can direct the Estonian peat sector** in such a way that the contribution to the Estonian economy, employment in rural areas and reducing carbon emissions is optimally balanced
- The study includes both comprehensive **qualitative analysis** engaging all relevant stakeholders in peat production as well as **numerical analysis** taking into account business and public data.
- The analysis is carried out in cooperation with geology, mining, business and economic analysis researchers and is finalised within Q4 2024.

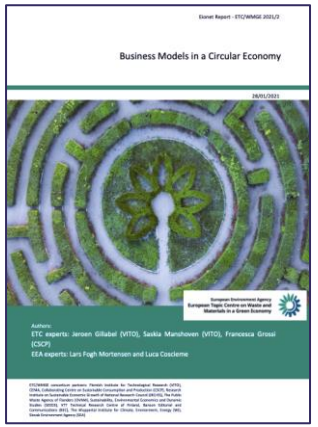
CIRCULAR ECONOMY BUSINESS MODELS TO KEEP IN MIND



INNOVATION FACTORS:
BUSINESS MODEL INNOVATION
TECHICAL INNOVATION
SOCIAL INNOVATION

EXTERNAL ENABLERS:
POLICY ENABLING FACTORS
EDUCATIONAL, BEHAVIOURAL FACTORS

Based on: EEA and ETC/WMGE (2021)
Graphics by SmartUp for TalTech (2021)



LINK

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INDUSTRY REVIEW

TALLINNA TEHNIKAÜLIKOOL

CURRENT SITUATION

- In 2020 90,8 mln € total value added to the economy (E&Y, 2022)
- About 800 people in employment in 2022
- In 2022 GHG emissions 1133,4 kt CO_2 ekv (with the current methodology and emmission rate 1,09 CO_2 per 1 ton on peat)

- Amount of areas permitted for mining ~21 K hectares
- Mining in Estonia 993,3 K t = 5,1 M m3 (2023)
- The annual possible rate of peat extraction 2850 K t (highest in Pärnu county 840 K t)
- Global growth substrate market 67 M m3 (2017) - Europe ~27 M m3 (peat based)
- Cut-over peatlands 8878 hectares

- By 2050 growth substrate market increase 260% for vegetables 490% for ornamentals
- Europe total 70 M m3

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ESTONIAN PEAT EXPORT 2022

		K tonnes
1	Netherlands	413,1
2	China	163,1
3	Germany	130,8
4	Spain	96,6
5	France	85,5
6	Belgium	77,8
7	Latvia	42,5
8	Poland	26,9
9	Turkey	25,5
10	Morocco	17,4

Table. Export of peat products from Estonia to 10 main export countries in 2022 (TalTech, Statistics Agency database)

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THE MEASURES ANALYSED IN THE STUDY

1: (Faster) restoration of depleted peat extraction areas *(e.g. rewetting, afforestation, conservation, paludiculture)*

2: Minimizing emissions from areas with existing extraction permits until the start of extraction

3: Increasing the amount of added value products

4: Reduction of extraction volumes

5: Terminating energy use of peat from 2030

6: Increasing environmental fees

7: Implementation of CO_2 tax

8: Linking the granting and renewal of extraction permits with compensatory measures *(e.g. restoration of cut-over peatlands)* to reduce CO_2 emissions

9: Contributing to the compensation fund for the restoration of former cut-over peatlands and depleting extraction sites

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CO_2 MEASURES ANALYSED IN THE ONGOING STUDY

Measure	Positive factors	Restraining factors
1. (Faster) restoration of depleted peat extraction areas (e.g. rewetting, afforestation, conservation, paludiculture)	Increasing biodiversity and CO_2 accumulation	Processing time for the conditions of restoration County quotas for yearly extraction volumes
2. Minimizing emissions from areas with existing extraction permits until the start of extraction	Reducing CO_2 emissions (limited)	Producers are extracting peat according to market demand
3. Increasing the amount of added value products	Economically beneficial and efficient	Chain of Custody is international Lack of investment certainty
4. Reduction of extraction volumes	Fulfilling national goals for CO_2 reduction statistically	Economical loss for all stakeholders Lack of substitudes (for growing media)
5. Terminating energy use of peat from 2030	Direct impact on CO_2 emission reduction	Used for heating marginally in Estonia (2%), sometimes needed in cogeneration plants
6. Increasing environmental fees	Funds for env restoration, local municipalities compensation	Unfair competition
7. Implementation of CO_2 tax	National lever for reducing extraction or export of raw peat	Unequal competition CO_2 real emission unknown (growing media)
8. Linking the granting and renewal of extraction permits with compensatory measures (e.g. restoration of cut-over peatlands) to reduce CO2 emissions	Faster restoration of cut-over peatlands	Extraction time and quantities limited Restoration time due to permits long
9. Contributing to the compensation fund for the restoration of former cut-over peatlands and depleting extraction sites	Restoration of abondoned cut-over peatlands from soviet era	Inflation, Unfair for current producers Uncertanty about the usage of collected funds

PRELIMINARY AND QUALITATIVE EVALUATION OF THE ANALYSED MEASURES

TALLINNA TEHNIKAÜLIKOOL

SUMMARY OF STAKEHOLDER ASSESSMENT FOR THE EFFECTIVENESS OF THE PROPOSED AND ANALYSED MEASURES (BASIS OF EXPERT AND FOCUS INTERVIEWS)

QUALITATIVE ASSESSMENT							
Measures	Public sector inc local municipalities	Producers	Peat Association	Horticulture and others	Other associations	Scientists	Env org
1: (Faster) restoration of depleted peat extraction areas (e.g. rewetting, afforestation, conservation, paludiculture)							
2: Minimizing emissions from areas with existing extraction permits until the start of extraction							
3: Increasing the amount of added value products							
4: Reduction of extraction volumes							
5: Terminating energy use of peat from 2030							
6: Increasing environmental fees							
7: Implementation of CO_2 tax							
8: Linking the granting and renewal of extraction permits with compensatory measures (e.g. restoration of cut-over peatlands) to reduce CO2 emissions							
9: Contributing to the compensation fund for the restoration of former cut-over peatlands and depleting extraction sites							

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Source: TalTech 2024

NOTE: Consider this chart to be illustrative as it might be subject to adjustments in the final report

QUALITATIVE ASSESSMENT - PESTEL-FM

	P	E	S	T	E	L	F	M
Measures	**Political**	**Economic**	**Social**	**Techno-logy**	**Environ-ment**	**Legal**	**Financial**	**Maine**
1: (Faster) restoration of depleted peat extraction areas (e.g. rewetting, afforestation, conservation, paludiculture)								
2: Minimizing emissions from areas with existing extraction permits until the start of extraction								
3: Greater on-site (domestic) upgrading /valorizing of peat								
4: Reduction of extraction volumes								
5: Termination of validity of heating/energy peat mining (permits) from 2030 onwardws								
6: Increasing environmental fees								
7. Implementation of CO_2 tax								
8: Linking the granting and renewal of extraction permits with compensatory measures (e.g. restoration of cut-over peatlands) to reduce CO2 emissions								
9: Contributing to the compensation fund for the restoration of former cut-over peatlands and depleting extraction sites								

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Source: TalTech 2024

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PRELIMINARY NUMERICAL RESULTS

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NUMERICAL ANALYSIS EXAMPLE

PROSPECTIVE MEASURE:
increase the volume of Value-added products from 50% -> to 100%

- TOTAL ESTIMATED IMPACT : 220 700 Mio €

- Categories:
  - Direct and indirect socioeconomic impact
  - Production levels
  - Value-adding
  - Employment costs
  - Employment rate
  - National taxes
  - Salary-related taxes

DISCLAIMER:
- All calculations are approximate, providing review of volumes!
- A number of simplifying assumptions have been made when creating the model!

Muutus sisend-väljundmudelis:	222,720	miljonit eurot
MUUTUSE SOTSIAALMAJANDUSLIK MÕJU		
Toodang		
..otsene ja kaudne mõju	**310,279**	miljonit eurot
ehk	*0,404%*	*toodangust*
..otsene, kaudne ja kaasnev mõju	**399,227**	miljonit eurot
ehk	*0,519%*	*toodangust*
Lisandväärtus		
..otsene ja kaudne mõju	**142,431**	miljonit eurot
ehk	*0,423%*	*lisandväärtusest*
..otsene, kaudne ja kaasnev mõju	**164,234**	miljonit eurot
ehk	*0,488%*	*lisandväärtusest*
Tööjõukulu		
..otsene ja kaudne mõju	**65,708**	miljonit eurot
ehk	*0,865%*	*tööjõukulust*
..otsene, kaudne ja kaasnev mõju	**75,894**	miljonit eurot
ehk	*0,865%*	*tööjõukulust*
Hõive		
..otsene ja kaudne mõju	**1637**	töökohta
ehk	*0,236%*	*hõivest*
..otsene, kaudne ja kaasnev mõju	**2098**	töökohta
ehk	*0,302%*	*hõivest*
Riiklikud maksud		
..otsene ja kaudne mõju	**32,142**	miljonit eurot
ehk	*0,260%*	*riiklikest maksudest*
..otsene, kaudne ja kaasnev mõju	**40,769**	miljonit eurot
ehk	*0,330%*	*riiklikest maksudest*
Tööjõumaksud		
..otsene ja kaudne mõju	**22,681**	miljonit eurot
ehk	*0,278%*	*tööjõumaksudest*
..otsene, kaudne ja kaasnev mõju	**27,075**	miljonit eurot
ehk	*0,332%*	*tööjõumaksudest*

NUMERICAL ANALYSIS EXAMPLE

PROSPECTIVE MEASURE:
Reduction of mining amounts 25% by 2040

- TOTAL ESTIMATED IMPACT : 100 000 Mio €

- Categories:
  - Direct and indirect socioeconomic impact
  - Production levels
  - Value-adding
  - Employment costs
  - Employment rate
  - National taxes
  - Salary-related taxes

Muutus sisend-väljundmudelis:	103,670	miljonit eurot
MUUTUSE SOTSIAALMAJANDUSLIK MÕJU		
Toodang		
..otsene ja kaudne mõju	**154,300**	miljonit eurot
ehk	*0,100%*	*toodangust*
..otsene, kaudne ja kaasnev mõju	**162,116**	miljonit eurot
ehk	*0,105%*	*toodangust*
Lisandväärtus		
..otsene ja kaudne mõju	**65,490**	miljonit eurot
ehk	*0,097%*	*lisandväärtusest*
..otsene, kaudne ja kaasnev mõju	**68,716**	miljonit eurot
ehk	*0,102%*	*lisandväärtusest*
Tööjõukulu		
..otsene ja kaudne mõju	**30,192**	miljonit eurot
ehk	*0,181%*	*tööjõukulust*
..otsene, kaudne ja kaasnev mõju	**32,385**	miljonit eurot
ehk	*0,181%*	*tööjõukulust*
Hõive		
..otsene ja kaudne mõju	**365**	töökohta
ehk	*0,054%*	*hõivest*
..otsene, kaudne ja kaasnev mõju	**409**	töökohta
ehk	*0,061%*	*hõivest*
Riiklikud maksud		
..otsene ja kaudne mõju	**12,632**	miljonit eurot
ehk	*0,051%*	*riiklikest maksudest*
..otsene, kaudne ja kaasnev mõju	**13,663**	miljonit eurot
ehk	*0,055%*	*riiklikest maksudest*
Tööjõumaksud		
..otsene ja kaudne mõju	**10,215**	miljonit eurot
ehk	*0,063%*	*tööjõumaksudest*
..otsene, kaudne ja kaasnev mõju	**11,129**	miljonit eurot
ehk	*0,068%*	*tööjõumaksudest*

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RECOMMENDATIONS BASED ON QUALITATIVE ANALYSIS

- To resolve the bottleneck of slow issuance of restoration conditions
- To oversee the division of county mining quotas
- To enable and encourage partial restoration of cut-over peatlands
- To create an official overview/register of the volumes of the areas under the extraction permit and the current status of the respective areas
- To conduct further research in calculating peat CO_2 emission factor
- To analyze carbon cycle in peat products (e.g. growing media), possible CO_2 fixation rates
- To raise environmental fee, but to analyse level of tax rates impact on competiveness
- To offer innovation and development support for investments
- To ensure stability for producers with legally binding long-term commitments with the sector

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THANK YOU!

CONTACTS:
Jaana.Merisaar@taltech.ee
www.taltech.ee

ULRIKA HURT

JAANA MERISAAR

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