

*Trans-Atlantic Bright Black Future  
Opportunities of Biochar Collaboration –webinar 20<sup>th</sup> of January 2023*

# Black Future of North-Karelia

**BLACKGREEN**  
North-Karelia Biochar Programme



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*Kestävää kasvua ja työtä -ohjelma*

Leverage from  
**the EU**  
2014–2020



# North Karelia

- North Karelia is a province of Finland and the easternmost region of continental Europe
- Population 163 000
- Number of municipalities 13, of which 5 are towns
- Regional centre Joensuu is a university city
- Total area 21,585 km<sup>2</sup>, of which 70% are forests
- Koli is the highest point of Southern and Central Finland (347 m)
- Distance to Helsinki, capital city, is 450 km which is covered e.g. with one hour flight or five hours by car.
- Everyday language is Finnish but most Finns speak English as well



Briefly about

# North Karelia Forest Bioeconomy

- Forest covers 89% of the land area (1.6 Mha)
- Annual growth of forests is 9.9 Mm<sup>3</sup>
- Annual harvesting is about 7 Mm<sup>3</sup>
- Growing stock is 210 Mm<sup>3</sup>
- 5% protected in different programs
- 21 400 private forest owners
- 1 650 employees (2.5%)
- 6% of GDP
- Pankoski and Enocell pulp mills (wood use 3 200 000 m<sup>3</sup>)
- 3 big sawmills and about 10 small ones
- 1 cardboard factory
- 1 plywood factory
- 1 pyrolysis oil factory
- More than 20 energy plants using wood as a fuel
- Renewable energy share 67%

# What's Going on in North Karelia

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- Forest bioeconomy is the strategic focus area of North Karelia's future scenarios. Local stakeholders are collaborating vigorously and scouting new investments.
- Local development platform **Green Hub** "heard a rumour" in 2020 that group of investors is seeking place for a big biochar factory. **Green Hub** activated four organizations, UEF, Luke, Business Joensuu and Karelia UAS and they planned the North Karelia Biochar Program **BlackGreen**. Regional Council and EU funded the program and BlackGreen started in late 2020 one month prior to investment decision of Joensuu Biocoal Ltd.
- After starting the **BlackGreen**, also another biochar investment project took place in North-Karelia and both two are under construction currently.
- **BlackGreen is producing public information** for supporting the development of biochar sector and finding ways to increase added value for the product.
- One interesting local synergy comes from **Novactor Ltd. activated carbon factory**, which is using peat as a feedstock for high quality carbon products. In the future, renewable feedstock, like local biochar, is a relevant option. The **BlackGreen** project is building competence and a knowledge base to enable and support this development.

## Biochar production line will be integrated with this existing 200MW CHP-plant



*Photo: Savon Voima Ltd.*

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# The BlackGreen programme's work packages

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WP1 BIOCHAR PRODUCTS AND MARKETS

WP2 BIOCHAR PRODUCTION AND CHARACTERISTICS

WP3 BIOCHAR RAW MATERIALS AND THEIR AVAILABILITY

WP4 BIOCHAR LOGISTICS

WP5 BIOCHAR LCA AND CLIMATE IMPACT

WP6 CIRCULAR ECONOMY SOLUTIONS AND NEW BUSINESS

WP7 BIOCHAR COMMUNICATION

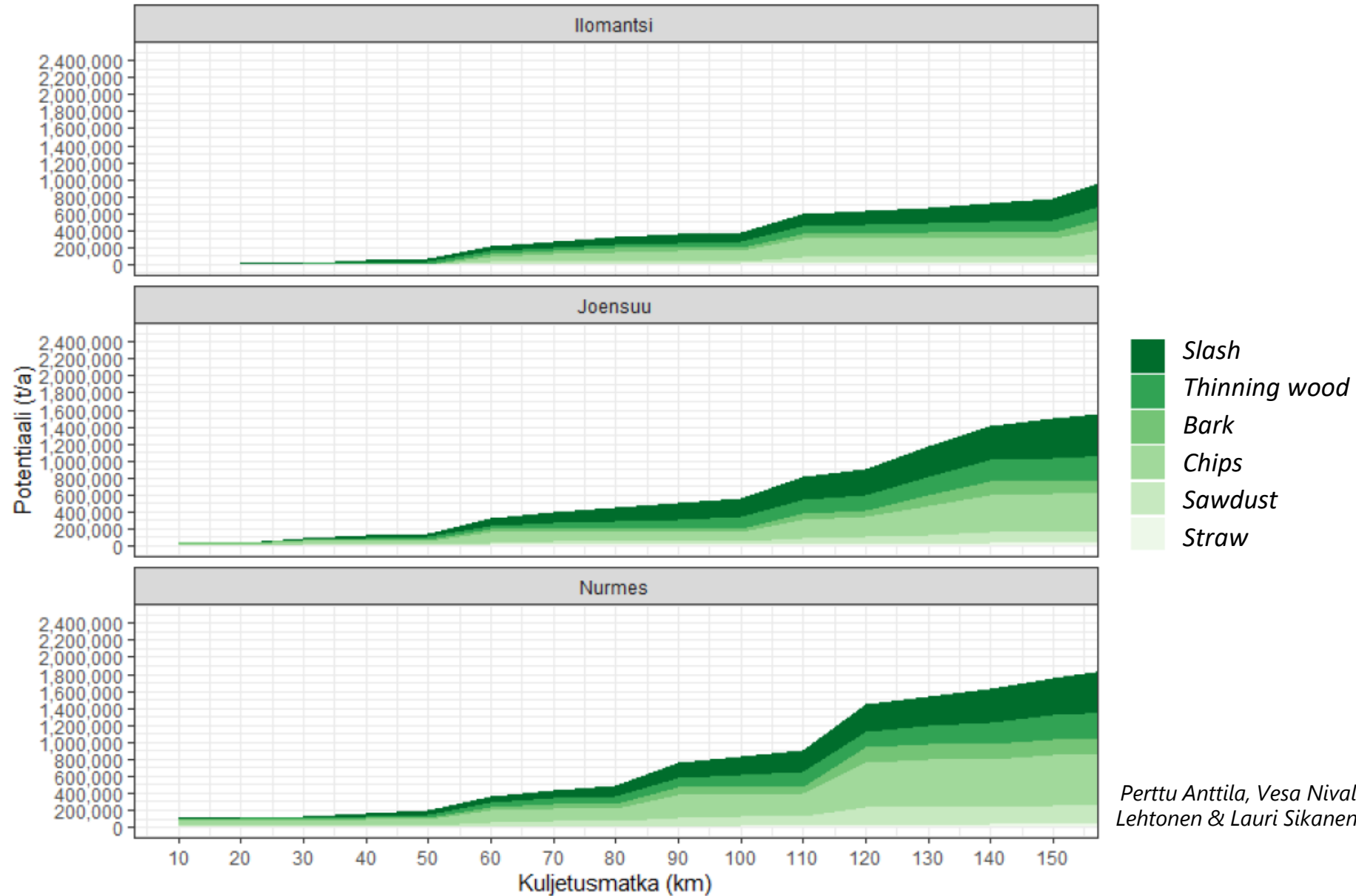
# Some examples of the BLACKGREEN work

## Market outlook

Tuote	Markkinan koko, tn/v	Trendi	Markkinan sijainti	Huom!
Metallurginen hiili	300 000		Suomi+pohjoismaat	Paras Volyymi
Kasvualustahiili + viherrakennushiili	10 000		Suomi + naapurimaat	Potentiaalinen
Suodatushiili	10 000		Suomi + pohjoismaat	Epävarma arvio mutta potentiaalinen
Aktiivihiihi	200 000		Eurooppa	Potentiaalinen
Energiahiili	Rajaton		Globaali	Halpaa

- Finnish biochar is too valuable for traditional energy use and for traditional agricultural soil improvement
- Metallurgic carbon has a remarkable potential in Northern Europe
- Filtering biochar market is relatively small but growing

# Availability of Biochar Raw Materials



Perttu Anttila, Vesa Nivala, Juha Laitila, Eeva Lehtonen & Lauri Sikanen. 2022



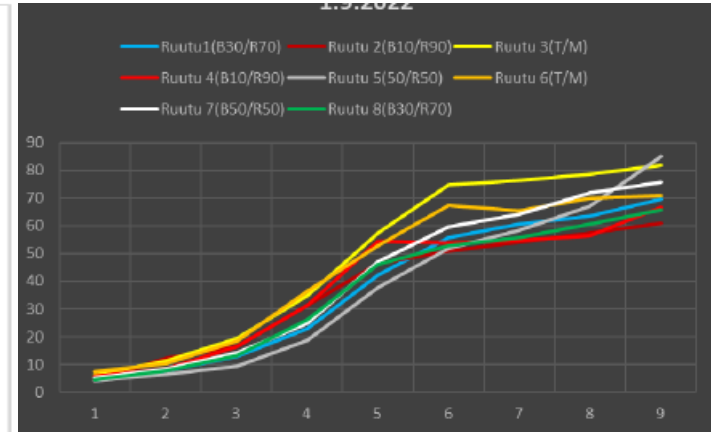
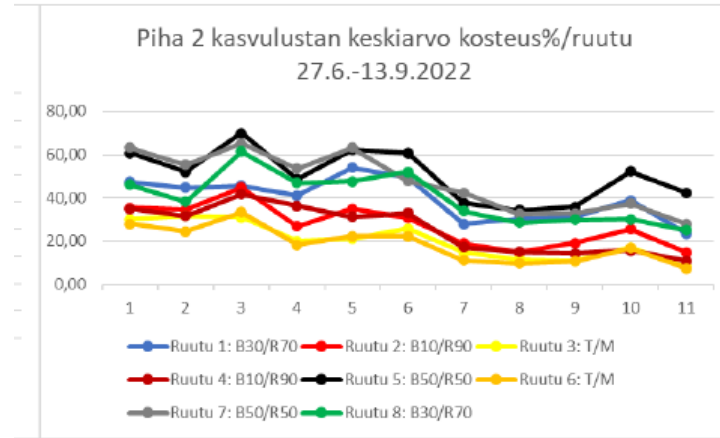
# Tackling the Sustainability Challenges of Golf Courses by Biochar

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- BlackGreen is testing biochar in and under of greens at local Golf Course to decrease irrigation need and nutrient flush.
- Local Golf Club is very keen to collaborate.



# Peat Free Growing Media Product for Gardening



Reed canary grass – biochar mix works almost like peat  
Biochar helps a lot if we want to save water

# Other things under development in BlackGreen

- Filters for agricultural and urban water fluxes
- Production feasibility calculator with production parameters and connection to value chain
- 100% biodegradable technical air filters (biochar composites)
- Integrated Yakisugi-biochar production line
- LCA



# BlackGreen II planning has started

- More focus on value added products and value chains
- Special attention to activation methods and technologies



*BlackGreen/Mia Lähtenmäki*

# BLACKGREEN



***Thank you for your attention***