



## BRANCHES

# Boosting RuAI bioeconomy Networks following multi-actors approaCHES

### Deliverable D2.4: Show-cases summary

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<b>Title</b>	Deliverable D2.4: Show-cases summary
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<b>Description</b>	The deliverable summarises the set of conducted BRANCHES WP2 show-case days in WP2 partner countries.
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The sole responsibility for the content of the show-case day reports stated in the Show-case day Annex lies with the authors of the individual show-case day reports or the hosts of the events. It does not necessarily reflect the opinion of the author of the deliverable, who is not responsible for images, videos or any use that maybe made of the information contained therein.

## 1 Goal of Show-case days

“Show-case days” aim to achieve several goals at one time, and namely:

Showcase days are a fundamental tool to expand the impact of novel solutions at the reach of possible practitioners. The show-case days aimed to increase user acceptance and interest in implementation. They do not only demonstrate the technical solutions, but also the impact of bioenergy on the local economy.

Existing scientific and practical knowledge is deployed through practical demonstration, reformulation, and co-mingling of science-based and practice-based information. Suggestions for novel approaches have been examined by practitioners and experts, against economic and sustainability criteria derived from case study assessments. Benefits to practitioners, e.g., ways to decrease costs in supply chain, ways to improve energy-efficiency etc., have been demonstrated through show-case days in rural areas.

The goal was that show-case days will be arranged in every country to demonstrate best practices with the aim to reach a total of at least 500 participants to accelerate implementation of new technologies. Information from show-case days will be available for the different NTN, e.g., through videos produced of all show-case days and distributed through YouTube, so best practices from one country that could be applicable in others will be shown to practitioners.

## 2 Type of Show-case days

Show cases are a unique method for promoting the understanding and the adoption of innovations. It forms part of BRANCHES multi-actor strategy where practitioners can also realize the cost/benefit aspects of the new practices. Best practices were demonstrated to show the advantages of new methods and techniques to be implemented. Several possible show cases have been identified as suitable for the NTN interests, nevertheless the specific practices shown have been defined after gathering the urgent needs and innovation demands from actors and stakeholders. These cases were mapped, and processes and success key factors have been defined and described in summarized factsheets.

Showcase days may be organized as physical events and they can take place in combination with other events (fairs, tradeshows etc.) or be stand-alone, depending on the target groups or aim of the show-case day. Show-case days were recommended to be conducted in National languages to ensure the BRANCHES bottom-up approach, but they could also be held in English for international events with a wider audience.

## 3 Number of Show-case days

The BRANCHES plan included four show-case days on subjects covered by WP2. That number is divided among each of the participant countries:

- Finland
- Poland
- Spain
- Italy

Until the end of the BRANCHES project in 2023, WP2 has organized or co-organized a total of five show-case days in four countries.

## 4 Practicalities

When organizing a Show-case day, the following practical project guidelines were carefully considered:

- Show-case days refer to the BRANCHES project
- Banners or roll-ups are installed at physical show-case sites to advertise the BRANCHES project.
- Photos or screenshots are taken at each Show-case day
- Attendance lists are compiled, indicating: 1) date and place and 2) name, company, and Country of each attendee.

## 5 Show-case day Reports

A show-case day report has been compiled for each show-case day, to provide an overview of the participation, the topics presented during the show-case days and a summary of the main outcomes.

**In summary**, a total of five show-case days were held and reported in BRANCHES WP2 during the project. Show-case days were held in Italy (IT 1 and IT 2), Spain (ES 3), Poland (PL 4) and Finland (FI 5).

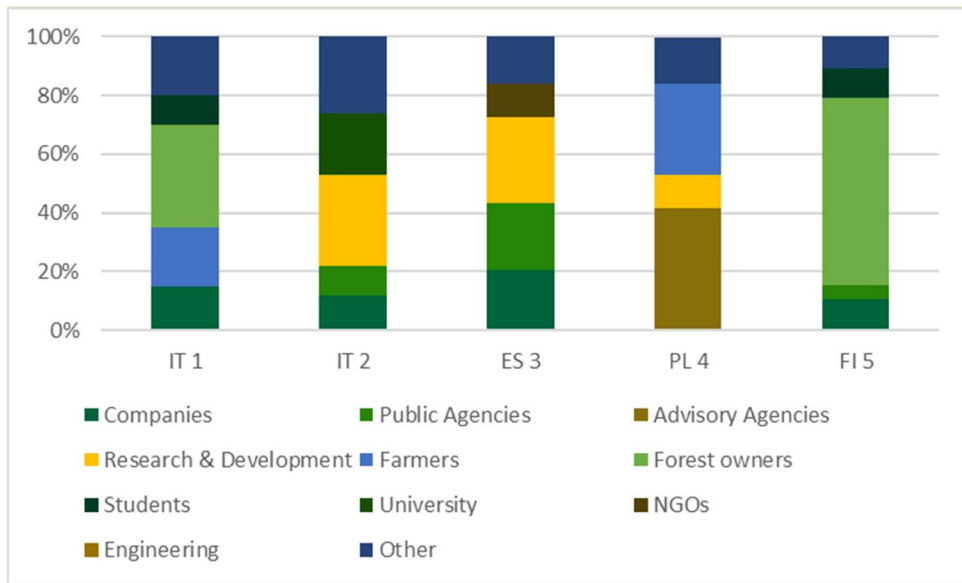
The five show-case days had different goals and scopes: IT 1 focused on new technology for wood biomass extraction and processing, and reached a huge audience, particularly forest owners and farmers, as the event was organized in conjunction with the EIMA agricultural machinery fair. IT 2 focused on power and heating from olive grove residue management; this event particularly reached research & development, ministry labs, farmers and other stakeholders. ES 3 focused on business model keys at local level fostering the bioeconomy in the Ebro Valley and reached mainly research & development, public administration, and companies. PL 4 focused on the acquisition and logistics of biomass from marginal land, including agricultural land overgrown with self-seeding trees and shrubs as well as a municipal ecological heating plant in Frombork; this event particularly reached advisory agencies and farmers. FI 5 demonstrated an entire energywood supply chain from harvesting to forwarding, chipping and transport of forest chips, particularly to show the capacity of an innovative energywood supply technology that was considered especially suitable for mobilizing forest biomass from young or unmanaged thinning stands under the conditions that are typical of Finnish forestry; this event particularly reached a high number of forest owners and farmers.

The different subjects and target audiences also differed in the audience numbers and characteristics. Overall, the five show-case days were attended by 2 430 participants, with a minimum of 44 (ES 3) and a maximum of approximately 2000 (IT 1). IT 2, PL 4 and FI 5 were attended by 92, 70 and 224 participants, respectively.

A pictorial representation of audience composition is presented in the following Figure 1.

Research & development were the dominant presence in IT 2 and ES 3, while obviously primary producers were the main audience in IT 1, PL4 and FI 5. A large share of advisory agencies was present in PL4, whereas a particular large share of forest owners was present in IT 1 and FI 5, given that those events targeted specifically those professional groups. Companies, public agencies & advisory agencies, students

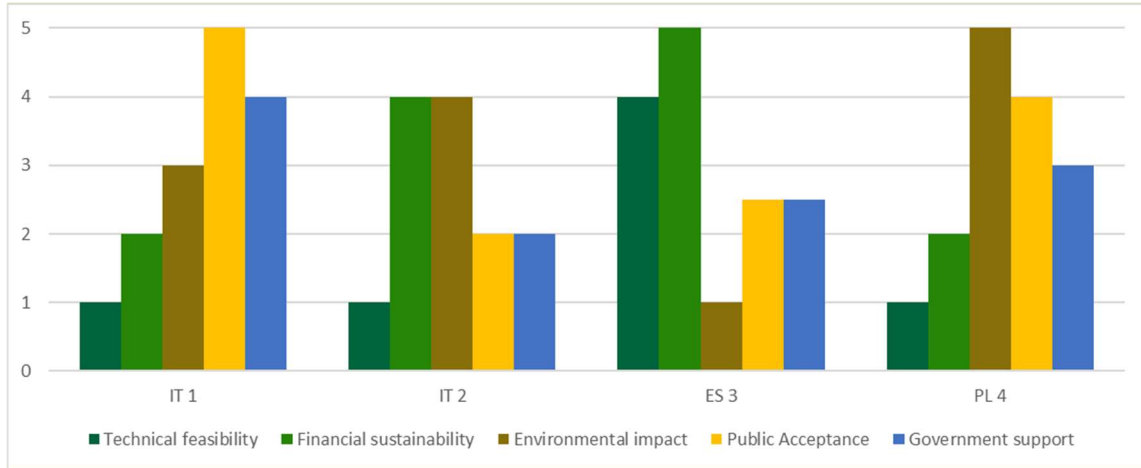
& educational representative, and other stakeholders were present in basically all show-case days, although in various numbers.



**Figure 1** – Participant composition for the Show-case days conducted within WP2.

All show-case days resulted in intense networking. All five show-case days presented some selected best practices and feedback was sought about their replicability within the regional and business environment of participants. Additional feedback about the fundamental requirements for the successful introduction of the proposed innovation, was obtained by using a simple structured questionnaire common to all BRANCHES partners, so as to allow comparison. Results from the four WP2 show-case days IT 1, IT 2, ES 3 and PL 4 held during the project period are reported in Figure 2, which highlights the requirements that audience considers fundamental to successful introduction: the audiences dominated by research & de-

velopment are especially sensitive to financial sustainability, and advisory agencies to environmental impact primary producers to the public acceptance. Primary producers considered public acceptance as particularly important requirements.



**Figure 2** – Ranking of the main requirements for successful implementation as obtained from the audiences of the WP2 Show-case days IT 1, IT 2, ES 3 and PL 4.

The deliverable includes five Show-case day Reports that are attached to this document as Annexes 1 to 5.

## Annex 1 – Show-case day Report “Italy EIMA”

### Name of the show-case day

New technology for wood biomass extraction and processing

**Language of event:** Italian

### Description of the show-case day

The showcase day was jointly organized by Itabia and CNR within the scope of the EIMA Agricultural Machinery Fair, owned and managed by Federunacoma, the Italian Federation of Agricultural (and Forestry) Machine Manufacturers. Federunacoma holds the fair every second year, in concertation with the other two main agricultural machinery fairs in Europe, and namely: SIMA in Paris and Agrotechnika in Hannover. The Fair is held in Bologna – Central Italy – and normally attracts hundreds of thousands of visitors, thus providing an ideal stage for broadcasting any messages from BRANCHES. This year, the event was especially important, since this was the first edition after the pandemic crisis, which heightened expectations and attention. The official statistic reports 270 700 visitors, of which some 25 900 from abroad.

Itabia obtained from Federunacoma an open-air space where biomass technology could be demonstrated live. That guaranteed high visibility and reasonable safety for the public invited to attend the demonstration. Several manufacturers joined the initiative, of which two presented the essential machines for biomass supply, and namely:

- **Novotny** and **Metalagricola** with a light dedicated forwarder (Novotny LVS 720)
- **Pezzolato** with a professional log splitter (TB 900) and chipper (PTH 40.70)

Those manufacturers were given a specific section of the live demo area, where the whole chain could be demonstrated – from extraction of the logs and other biomass to the landing, to processing into bioenergy products (split firewood or chips)-

The showcase included keeping the demo area opened from 09:00 to 17:00 for free demos on the days of 19-23 October 2021 (from Wednesday to Sunday included), while the CNR conducted 4 organized guided tours to the live demos per day. The guided tours were designed to explain the logics behind the demonstration, the process types being demonstrated, the technical characteristics of the machines on show, the benefits of biomass and the goals of the BRANCHES project. All guided tours departed from a stand manned by Itabia and CNR, where the BRANCHES banner was shown and BRANCHES leaflets were distributed.

As an average, about 100 persons followed each guided tour, that is: 100 persons x 4 tours per day x 5 days = 2000 attendees. Many more saw the area and the banners, and briefly stopped to have a look. Furthermore, the event and the project were included in the general advertisement for the fair, received by hundreds of thousands of people, many of whom may have at least read the name BRANCHES.

During the guided tour Itabia and CNR personnel conducted quick informal interviews with members of the audience, recording feedback from 76 of them.

Finally, the demos were recorded on video by Itabia, by the official Federunacoma camera team and by two local private televisions (Telesanterno and Newbusiness Media) for broadcasting on the local TV networks.

Show-case type       online       physical       hybrid       other, please specify: \_\_\_\_\_

Show-case organization       stand-alone

in connection with another event (EIMA 2021 Agricultural Machinery Fair)

other, please specify \_\_\_\_\_

BRANCHES working package:       WP1       WP2       WP3       WP4

other, please specify: \_\_\_\_\_

### Goal of the show-case day

The goal of the Showcase Day was to demonstrate the capacity of innovative biomass supply technology that was considered especially suitable for mobilizing biomass under the conditions that are typical of Italian forestry. In particular.

The forwarder Novotny LVS 720 may offer the ideal compromise between compact dimensions and production capacity. The current trend of forwarder technology is towards increasingly large, powerful and productive machines. Use of those machines allows a dramatic cost reduction, but their deployment in Italian forestry is hindered by their large size, which is often incompatible with the limitations of the existing access trail networks. Simply put, standard forwarders are too wide for entering those trails and/or safely moving along them. Widening the trails is not an option, given the heavy bureaucratic burden required by any roading interventions. The alternative is to use micro-forwarders (e.g. Loglander, Malwa, Vimek etc.), but these are too small for achieving competitive production levels (Payload capacity ca. 4 t vs. 10 t of the smallest conventional forwarder). With its 7.5 t payload capacity and 2.2 m total width, the machine demonstrated by Novotny may offer the ideal compromise and assist with affirming modern mechanization in Italian biomass operations, to the benefit of higher competitiveness and lower site impact. At present, only one professional contractor out of twenty uses a specialized machine for forwarding, while the remaining nineteen use farm tractors equipped with forestry trailers, which are less productive than forwarders and exert a higher ground pressure.

The same compromise concept applies to the PTH 40.70 model chipper demonstrated by Pezzolato. This new model is about one third larger than the standard 300 models, but still compact and cheap enough for acquisition by small logging companies, and not just specialized contractors. That may help equipping the large number of small-scale Italian contractors with their own chipping devices for direct short-chain supply of small-scale local users, while still achieving a high enough productivity for cost-competitiveness. This model is a recent development and can be equipped with a closed or opened drum depending on customer preference.

Finally, the third machine on show was an innovative log splitter designed for splitting very large logs into a variable number of pieces simply by acting on log feeding speed. The new machine represents a reaction to the recent windthrown events occurred in Northern Italy, as a consequence of climate change. Those events have caused the widespread collapse of large and old trees, which are often low quality in the base, due to the presence of rot, stain and other defects. Therefore, the salvage strategy applied to those trees generally aims at recovering timber from all parts that have not been degraded by defects and breakage, while turning all the rest into industry biomass – generally chips. However, turning the base part of such large trees into chips requires the use of a very large chipper or pre-splitting, and both solutions result relatively expensive. Since firewood generally obtains a better price than chips, it would make much sense to turn base degraded logs into firewood, if an efficient and relatively inexpensive machine was available, which is what Pezzolato now offer to their customers.

**Place & region of show-case day**

Bologna, Central Italy
------------------------

**Dates of show-case day:** 19-23 October 2021**Organizers**

<p>ITABIA - <a href="http://www.itabia.it/">http://www.itabia.it/</a>  CNR IBE - <a href="https://www.ibe.cnr.it/en/">https://www.ibe.cnr.it/en/</a>  Federunacoma - <a href="https://www.federunacoma.it/en/index.php">https://www.federunacoma.it/en/index.php</a>  Pezzolato - <a href="https://www.pezzolato.it/en/">https://www.pezzolato.it/en/</a>  Metalagricola - <a href="https://www.metalagricola.it/sito/index.php?id=1">https://www.metalagricola.it/sito/index.php?id=1</a>  Novotny (Czech Republic) - <a href="https://www.loader.cz/en">https://www.loader.cz/en</a></p>
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<p>In particular, the participation of the Czech company received organizational and/or financial support through the BRANCHES project (3<sup>rd</sup> country partnership between CNR and Mendel University at Brno) and the European Fund for Regional Development – Operational Business Programme and Innovation for Competitiveness.</p>
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Number of attendees: ~ 2000

Audience breakdown	Companies	15%
(% of attendees)	Public Agencies	n.a.
	Farmers	20%
	Forest owners	35%
	Engineering	n.a.
	Students	10%
	Other	20%

## Moderator's summary of practitioners' feedback

An informal survey was conducted among the public attending the demonstrations: overall 76 interviews were released. Attendees seemed all aware of the significant potential of new biomass technology, and of its important financial and safety benefit. Professionals working with firewood seemed to be especially interested in all the new technology presented during the Showcase Day, and especially about the forwarder. Most respondents believed that the main obstacles to the affirmation of the proposed technology were financial, rather than technical. Most of them rated productivity and safety as the most interesting benefits of the proposed technology. Price and running cost were also considered very important factors, but secondary after productivity and safety. In particular, financial capacity and performance were not perceived as true limiting factors, and many pointed at the availability of public support measures as a way to overcome any eventual limitations in that domain. In turn, technical limitations were considered less severe than financial constraints.

Recap of issues raised by the audience (rating from 1 to 5 in order of increasing emphasis)

Technical feasibility	1
Financial sustainability	2
Environmental impact	3
Public Acceptance	5
Government support	4

## Photos







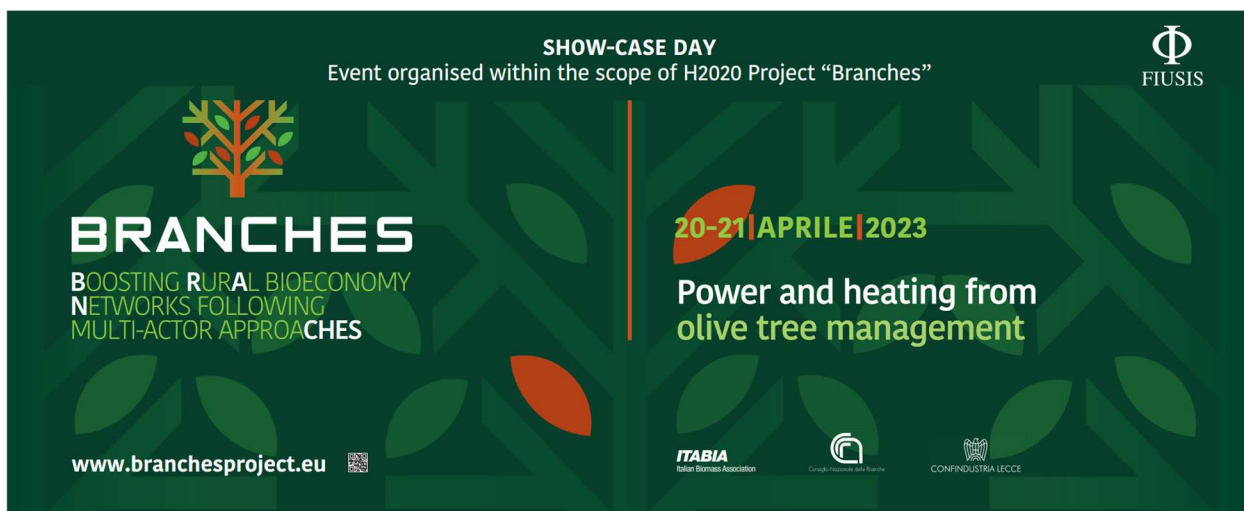
## Annex 2 – Show-case day Report “Italy FIUSIS”

### Title of the show-case day

Power and heating from olive grove residue management

**Language of event:** English

### Description of the show-case day



The showcase day was jointly organized by Itabia and CNR with the purpose of demonstrating the entire value chain for the conversion of olive grove residues into renewable energy, and namely: power fed to the grid and pellets produced with local wood and sold to local residential users.

The showcase day was conducted in the surroundings of Calimera, in the Province of Lecce. Calimera is located in Southern Puglia, in Southeastern Italy, on the heel of the boot, in what is appropriately called “Salento Greece”, due to the strong cultural and economic connection with Greece.

The event spanned over two consecutive days.

On the first day – Thursday April 20<sup>th</sup> – participants visited two distinct harvesting operations in the morning, as well as the power station and the pelleting plant in the afternoon. The morning visits covered both the main supply chains: pruning residues and diseased orchard removal.

Windrowed pruning residues were harvested with a collecting grinder, fitted with an integral high-dumping bin. The whole procedure was demonstrated, from harvesting the windrows to dumping the full bin into a trailer. The orchard removal demonstration included: a tracked excavator for pushing down the dead olive trees and pulling up the roots; the chainsaw teams to separate the stem portion from the rootstock and the branches; the front-end loaders to pile stems and other tree parts into separate piles. Two residue processing systems were also demonstrated: a drum chipper to turn dead olive stems into quality chips and a top-fed shredder to process rootstocks and branches into hog fuel. The shredder discharged directly into a rotary screen for removing soil and fine particles from the main wood particle stream.

In the afternoon, participants visited the cogeneration plant and the pellet factory – the latter fed with waste heat from the cogenerator, which efficiently covered the most expensive component of the pellet manufacturing process: drying the fine wood particles down to a maximum 12% moisture content.

On the second day – Friday April 21<sup>st</sup> - a mixed in-person and online conference was held. After the welcome addresses of the FIUSIS CEO, of Hon. De Castro from Brussels and of the two local mayors, the technical content progressed according to four consecutive sessions, and namely: Session 1 - Supply chains; Session 2 - Power generation; Session 3 – Pellet manufacturing; Session 4 – Ash management.

Each session was introduced by a scientist, followed by a brief video that recapitulated what was demonstrated the day before. The video was cut and edited overnight on Thursday 20<sup>th</sup>, so that it could be used in the next morning’s sessions. A narrator’s description in English was also added during editing, to the benefit of the international audience attending the conference, in person or remotely. After running the video, two 3-minute company pitches were presented by the manufacturers of the machines demonstrated the day before and presented in the video. That was followed by the presentation of a foreign Practice Abstract that would match the specific theme of the session. Finally, a brief debate was moderated by the same scientist providing the introduction. That same routine was repeated four times, once for each Session.

Presentations were offered in person by the Finnish (R. Prinz), German (C. Zinke) and Polish (J. Golaszewski) delegations. Further presentations were offered by Czech (T Zemanek), Turkish (M. Çanacki) and Ukrainian (L. Pshenytska) experts.

25 persons attended the first day, while the second day saw 25 in-person participants and additional 42 remote participants.

During the guided tour Itabia and CNR personnel conducted quick informal interviews with members of the audience, recording feedback from 21 of them.

Showcase day type       online       physical       hybrid       other, please specify:  
in-person only on the first day, hybrid on the second

Showcase day organization     stand-alone  
 in connection with another event  
 other (please specify: \_\_\_\_\_.)

BRANCHES working package:     WP1     WP2     WP3     WP4  
 other, please specify: \_\_\_\_\_

### **Goal of the show-case day**

The goal of the Showcase Day was to demonstrate an effective waste-to-value chain, which can adapt to local needs and turn a problem into an opportunity. Furthermore, the example shown in Calimera demonstrated remarkable flexibility, rapidly adapting to unforeseen changes, such as the olive die-back epidemics and the energy crisis originating from the Russo-Ukrainian conflict. As a matter of fact, FIUSIS quickly realigned their supply chains from the dominant pruning residue feed of the past 10 years to a new dominant dead tree stream, suddenly materialized within less than a year. Similarly, they faced the increase energy costs following the Russo-Ukrainian conflict by setting up a pellet manufacturing plant that could remedy the dramatic shortage of pellet on the local market, while accruing additional revenue that could not be extracted from power sales – since the price of power had been capped by their original feed-in tariff contract (0.28 euros per kWh).

Following the energy crisis, FIUSIS' expenditures increased dramatically. Ancillary energy consumption for the operation of the thermoelectric power plant quadrupled: in 2019, the annual bill was about 13,000 € which grew close to 50,000 € in 2022. Spare parts, lubricants and fuels for the machines (tractors, chippers, excavators, etc.) used in biomass handling also increased dramatically: the price of diesel fuel went from 1.45 €/l to 2.20 €/l (average increase of about 0.40 €/l); the price of lubricants went from 0.12 €/kg to 1.2 €/kg (1000 % increase); the price of ammonia for the flue gas filters went from 0.18 €/l to 1.2 €/l (670 % increase); finally, the price of the plastic film (recycled and recyclable) imported from Germany to bag their pellets went from a € 0.12 per bag to € 0.32 per bag (270% increase).

Against this background, power generation suffered a dramatic drop in profitability, fortunately compensated for by pellet production. The pelletizing plant is very efficient for three main reasons: 1) It sources local raw materials and caters for local markets. That accrues strategic savings on transportation and distribution cost; 2) all the process heat required to produce the pellet is obtained at zero cost, because it is recovered from the power plant; 3) twenty-five percent of the electricity consumption incurred in the pelletizing process is met by the recently installed photovoltaic panels. In the coming years, FIUSIS plans to install additional 250 kW of photovoltaics to cover all the needs of the power plant.

For these reasons, in the middle of the massive pellet shortage (and price peak) FIUSIS could afford to keep pellet prices at € 8 per bag (15 kg), which was well below a national average ranging between €12 and €16 per bag. As a result, the demand for FIUSIS pellets has now increased by 2,000 % and production has rapidly grown from the 600 t/year marketed in 2020 to 1,500 t in 2021. The plan is to further expand capacity to 6,000 t/year in the short term.

Since less than a year, the massive olive dieback caused by *Xylella fastidiosa* – a bacterial infection – has caused a realignment of the supply chain, which has been modified to capture the large amount of opportunity fuel generated by the replanting of damaged orchards. Therefore, the showcase day demonstrated not one, but three integrated value chains: pruning residues, stems from orchard termination, roots, and branches from orchard termination. Those chains use different methods and technologies and generate different products – all capable of supporting the bioeconomy. And that is not the end of olive tree cultivation! After a thorough clean-up of the damaged orchards, new plantations are immediately established using disease-resistant olive tree varieties.

The ultimate goal of the showcase day was therefore to demonstrate a concrete initiative that can solve a waste management problem into an opportunity for local development, while returning most of the benefits it accrues to the same territory from which it has extracted them...and that is flexible enough to rapidly adapt and realign in the face of new challenges, which is the very definition of resilience. FIUSIS matches all those specifications.

For all these reasons, as foreseen by the BRANCHES project, a video was shot (see website [www.branchesproject.eu](http://www.branchesproject.eu)) which summarizes all the main aspects of the FIUSIS technological system, starting from the field up to the energy production plant.

In addition, the workshop carried out on the second day, which lasted about 3 hours, was also entirely recorded and divided into 6 thematic sessions:

1. Opening ([https://youtu.be/hj1\\_GStRDdU](https://youtu.be/hj1_GStRDdU));
2. Supply chains ([https://youtu.be/t6b\\_50mpu4A](https://youtu.be/t6b_50mpu4A));
3. Power generation (<https://youtu.be/lXfHWaKojFo>);
4. Pellet production (<https://youtu.be/18KtRr-dONA>);
5. Ash management (<https://youtu.be/scrm4ftwIW0>);
6. Conclusions (<https://youtu.be/PFgs5Eim35A>).

All this material was uploaded to the project website and social channels.

### Place & region of show-case day

Calimera (Lecce), Southeastern Italy

**Date of show-case day:** 20-21 April 2023

### Organizers

ITABIA – <http://www.itabia.it/>

CNR IBE – <https://www.ibe.cnr.it/en/>

FIUSIS – <https://circulareconomy.europa.eu/platform/en/good-practices/fiuis-energy-and-fuel-pruning-olive-trees>

**Number of attendees:** 92

Audience breakdown	Companies	12%	
(% of attendees)	Public Agencies	10%	
	University	21%	
	Research & Development	31%	(Ministry Labs etc.)
	Other	26%	(farmers, stakeholders etc.)

**Moderator’s summary of practitioners’ feedback**

An informal survey was conducted among the public attending the demonstrations: overall 23 interviews were released.

There was a general understanding that the key success factor for FIUSIS was the connection with the territory, that is the capacity to engage local farmers and the general population. As a result, local farmers guarantee the a steady flow of quality fuel to the power station, while opposition from the general population is prevented. Integration along the whole value chain was recognized as the main success factor, leading to a steady fuel supply and to a remarkable capacity for timely seizing opportunities as they appear.

Further remarks concerned the potential for replication. In the Apulia region alone, olive grove management generates an enormous amount of wood residue, which is estimated at 800 000 t per year. The consumption of a plant such as FIUSIS amounts to 10 000 t per year, meaning that 80 such plants could be supported by the plantations growing in the Apulia region alone. Olive groves are common in many other areas in the Mediterranean region, and therefore the FIUSIS example could be replicated hundreds of times across Southern Europe.

Additional comments addressed the possibility to further improve the harvesting techniques and technologies demonstrated during the showcase day. For instance, the excavators tasked to orchard termination and removal could be equipped with better equipment than just a modified bucket – such as specialized implements for root extraction and size reduction. Similarly, the efficiency of shredding and screening could be further increased through the adoption of newer dedicated equipment, which would allow decreasing fuel supply cost.

Recap of issues raised by the audience (rating from 1 to 5 in order of increasing emphasis)

Technical feasibility	1
Financial sustainability	4
Environmental impact	4
Public Acceptance	2
Government support	2

**Photos**





### Annex 3 – Show-case day Report “Spain Alcarràs”

#### Name of the workshop

Fostering the bioeconomy in the Ebro Valley. Business model keys at local level.

**Language of event:** Spanish

#### Description of the show-case day

The aim of the workshop was to share successful experiences and involve all stakeholders in a dialogue, to develop new circular bioeconomy initiatives at a local level. For this reason, the aims to bring together multiple key agents in the Ebro Valley territory, to learn about successful initiatives such as the Alcarràs Bioproducts Plant contributing to the development of the bioeconomy in the region. Additionally, a discussion was held targeting the operational terms to make other similar initiatives possible. The success case of Alcarràs bioproducts plant had a key role in the journey and the attendants had the chance to visit the plant where a detailed explanation of the problem that triggered the implementation of the project, the process that takes place at the plant, the feedstock, the benefits but also the barriers to overcome. A quadruple helix approach was followed by inviting actors from the administration, the civil society, primary sector, research and academia were invited.

Regarding the showcase, 150 farmers around Alcarràs have joined forces to solve a major problem, the handling and treatment of the solid residues from their farms. The SAT ALCARRÁS BIOPRODUCTORS plant handles the manure from cows and pig farm to transform these solid residues into compost that can be used as solid fertilizers. Currently biomass coming from parks and forest recreation areas are added to the manure seeking to improve the composting process and the final product quality. In addition to the compost plant, administrative steps are already ongoing to add a biogas plant.

This initiative has not only enabled the farmers to find a suitable and sustainable way to address the problems associated to these residues management but also to diversify the business model. Therefore, it represents a success case developed at local level to promote the bioeconomy in the region while contributing to increase the territorial cohesion and decrease the rural depopulation.

Showcase day type  online  physical  hybrid  other, please specify: \_\_\_\_\_

Showcase day organization  stand-alone  
 in connection with another event  
 (The video recording was organized as an stand-alone day )  
 other, please specify \_\_\_\_\_.

BRANCHES working package:  WP1  WP2  WP3  WP4  
 other, please specify: \_\_\_\_\_

### Goal of the show-case day

The goal of the Showcase Day was to share with the attendants the keys for success but also barriers the promoters of the Alcarràs Bioproducts Plant had to overcome and steps along the process. The workshop intended to demonstrate the suitability of the business model implemented by the Alcarràs Bioproducts plant to manage manure and pig slurry and produce a biofertilizer and give the opportunity to the attendants to ask their doubts.

### Place & region of show-case day

SAT ALCARRÁS BIOPRODUCTORS. Alcarràs, Catalonia

Spain

**Dates of show-case day** 21st April 2023

### Organizers

Diputació de Lleida, Ayuntamiento de Lleida, Universidad de Lleida, Transformación económica, Innovarum, AVEBIOM and CIRCE.

AVEBIOM was the promoter and main organizer of the event, through BRANCHES WP4 (TOWS workshop) and BIORURAL projects. CIRCE collaborated in behalf of BRANCHES project to co-organise the showcase. Different project collaborated jointly in the promotion and organisation of the event: Green&Circular Ponent, TANGO Erasmus+, MainstreamBio, BIORURAL y AgriFoodTe. The Lleida Province Council also collaborated in the organisation.

**Number of registered participants:** 44

Registered participants breakdown:	Companies	20.5 %
	Public administration	22.7 %
	Research & Development	29.5 %
	NGOs	11.4 %
	Other	15.9 %

### Moderator's summary of practitioners' feedback

During the visit to the plant different questions were raised. Attendants asked questions about different aspects concerning not only the process that the raw materials undergo at the plant and the general functioning of the facility but also regarding the investment needed, the new plans to add a biogas plant and the barriers faced along the process. One of the key highlighted was the strategic case of Alcarràs as it regroups a large number of farms, therefore there was a significant amount of manure and pig slurry concentrated in a reduced area which was key to optimize the logistic of the raw material to the plant. There was also a consensus on the huge opportunity and the need to mobilise these residues towards bioeconomy. Reaching an agreement that enabled the collaboration among farmers was crucial.

Recap of issues raised by the audience (rating from 1 to 5 in order of increasing emphasis)

Technical feasibility	4
Financial sustainability	5
Environmental impact	1
Public Acceptance	2-3
Government support	2-3

### Dissemination

The dissemination of the event was carried out through different channels (press release, LinkedIn, twitter, INtercamBIOM webpage, and INtercamBIOM communications to the NTN members) and also direct contacts with potential stakeholders.

LINKS:

- Announcement at INtercamBIOM webpage  
<https://intercambiom.org/2023/03/03/jornada-de-bioeconomia-valle-del-ebro-modelos-en-clave-local/>
- Post-workshop news release at INtercamBIOM webpage  
<https://intercambiom.org/2023/05/16/lleida-y-alcarras-marcan-un-hito-el-21-de-abril-en-pos-de-la-bioeconomia-local-y-circular-del-valle-del-ebro/>
- Post-workshop in press  
<https://promocioeconomica.cat/lleida-i-alcarras-marquen-una-fita-en-favor-del-desenvolupament-de-la-bioeconomia-local-i-circular-a-la-vall-de-lebre/>

### Photos





**Agenda: labelled in red the section corresponding to the showcase visit to the plant**

Extendiendo la bioeconomía en el Valle del Ebro  
Modelos en clave local

21/ABR/2023  
LLEIDA  
Y ALCARRÁS

JORNADA PARA AGENTES CLAVE

**PROGRAMA**

Los proyectos Green&Circular Ponent, TANGO Erasmus+, MainstreamBio y BRANCHES co-organizan una jornada enmarcada en el Valle del Ebro. Los proyectos convocan a agentes clave territoriales para conocer la iniciativa local ALCARRÁS BIOPRODUCTORS, la iniciativa regional BIOHUB CAT, y poner en común las claves para tejer nuevas redes e iniciativas territoriales en clave local

[+info](#) [Registro](#)

ACCESO LIMITADO - **REGISTRO PREVIO NECESARIO** (aforo hasta 50 personas)  
Tras la inscripción los organizadores procederán a confirmar la asistencia

RECEPCIÓN y PRESENTACIÓN	
9:00	Bienvenida y recepción con un café
9:30	<p>Iniciativas promotoras y actuaciones en marcha</p> <ul style="list-style-type: none"> <li>Bienvenida – Agenda y objetivo del encuentro <i>Diputación Lleida</i></li> <li>Proyecto Green&amp;Circular – Modelo de innovación abierta para el impulso de la bioeconomía como factor de especialización competitiva de los territorios rurales <i>Diputación de Lleida</i></li> <li>Proyecto Erasmus+ TANGO – Capacitando a una nueva generación de emprendedores para implementar el concepto de economía circular en agricultura y ganadería <i>Universidad de Lleida</i></li> <li>Proyectos BRANCHES y BIORURAL – Redes de intercambio de conocimiento y creación de una Red Europea de Bioeconomía Rural <i>AVEB/OM</i></li> <li>Proyecto MainstreamBio – Fomentando la bioeconomía en áreas rurales a través de soluciones a pequeña escala <i>INNOVARIUM</i></li> </ul>
10:15	Cierre.  → Salida en autobús hacia la visita de caso de éxito
VISITA A INICIATIVA LOCAL	
10:45	<p>Bienvenida y visita a las instalaciones de ALCARRÁS BIOPRODUCTORS <i>SAT ALCARRÁS Bioproductors</i></p> <p>Durante la visita se conocerán las instalaciones de la SAT ALCARRÁS BIOPRODUCTORS, en las cuales se aloja una planta de compostaje y se desarrolla una planta de biogás, entre otros modelos de negocio actualmente en fase de proyecto para, en su conjunto, hacer efectiva la valoración de las deyecciones ganaderas y otros residuos de la actividad del sector primario como modelo de diversificación económica de la actividad agrícola y ganadera y del conjunto del territorio.</p> <p>ALCARRÁS BIOPRODUCTORS es el fruto de la agrupación de 150 familias, que gestionan más de 300 explotaciones ganaderas y agrícolas. Se trata de un caso de éxito de la necesaria acción colectiva para el desarrollo de la bioeconomía en clave local.</p>
11:45	Cierre.  → Salida en autobús hacia el taller



TALLER y PUESTA EN COMÚN	
12:00	<p>En esta sesión los participantes dialogarán en torno a cuatro preguntas clave:</p> <ul style="list-style-type: none"> <li>¿Puede reproducirse una experiencia como la de Alcarriás en sus territorios?</li> <li>¿Qué acciones son necesarias para generar un marco favorable en el impulso de nuevas iniciativas de circularidad en clave local?</li> <li>¿Cuántos los agentes implicados (administración, sociedad civil, sector económico, y actores I+D y formativos) con la orientación y la información necesaria para ello?</li> <li>¿Qué servicios de innovación pueden ser interesantes para la puesta en marcha de este tipo de iniciativas?</li> </ul>
14:00	<p>Cierre, conclusiones y comida - networking</p>
15:30	<p>🚌 → Salida hacia Lérida en Autobús (destino Estación de tren AVE)</p>
<p><small>Para el traslado a cada ubicación a lo largo de la jornada, la organización contará con un autobús para los asistentes. Si tiene algún tipo de movilidad puede utilizar su propio medio de transporte, o comunicarlo a los organizadores para buscar la manera de hacer posible su asistencia.</small></p>	



**PROYECTOS y ENTIDADES ORGANIZADORAS**

**Green & Circular Ponent** | **Diputació de Lleida** | **Generalitat de Catalunya** | **UNO EUROPEA**  
**BRANCHES** | **aveBiom** | **MAINSTREAM BIO** | **innovarum**  
**BiOrural aveBiom** | **TANG circular**

Funded by the European Union

CON LA COLABORACIÓN ACTIVA DE **Transformació Econòmica**

## Annex 4 – Show-case day Report “Poland FROMBORK”

### Name of the show-case day

Presentation of good agricultural practices – workshop and showcases

**Language of event:** Polish

### Description of the show-case day

A hybrid seminar entitled: „Presentation of good agricultural practices – workshop and showcases” was organized on 28-29.03.2023. The main organizers were: The Centre for Bioeconomy and Renewable Energies (CBEO) of the University of Warmia and Mazury in Olsztyn, Poland and The Warmia and Mazury Agricultural Advisory Center located in Olsztyn.

During the seminar, the following subjects were presented and discussed:

- Added value in local renewable energy production systems
- The heat energy supply chain in the district heating system in urban-rural areas
- The example of a municipal ecological heating plant in Frombork
- The added value of biogas plants in the local renewable energy production systems
- Ecological biogas plant in Boleszyn
- Homestead Compact Container Biogas Plant with a capacity of 22 kWe, technologically and functionally integrated with the cattle production system on Ryszard Strug's farm
- Network organization of stakeholders of the sustainable potato market in Poland
- Acquisition and logistics of biomass from marginal land, including agricultural land overgrown with self-seeding trees and shrubs.
- Harvesting perennial energy crops with a bio baler.
- Biological waste as a source of low-temperature heat in hotbeds
- Heat storage device

Later on, Competition results of the 2nd Best Innovative Practice Award in bioeconomy in rural areas were presented – the winning practice was Quercus with “Acquisition and logistics of biomass from marginal land, including agricultural land overgrown with self-seeding trees and shrubs”.

The summarizing part of the first day was the TOWS analysis. Threats, opportunities, weaknesses and strengths in the region of Warmia and Mazury for further expansion and application of innovative practices in the bioeconomy sector were discussed.

During the second day of seminar, two showcases were presented:

- Acquisition and logistics of biomass from marginal land, including agricultural land overgrown with self-seeding trees and shrubs.
- The example of a municipal ecological heating plant in Frombork.

Show-case type  online  physical  hybrid  other, please specify: \_\_\_\_\_

Show-case organization  stand-alone  
 in connection with another event  
 other, please specify \_\_\_\_\_

BRANCHES working package:  WP1  WP2  WP3  WP4  
 other, please specify: \_\_\_\_\_

### Goal of the show-case day

The main goals of the workshop and Showcase days were:

- To present the agricultural practices collected in the Polish Practice Abstracts (PAs)
- To provide information on development of Polish bioeconomy network
- Announcement of the 2nd Best Innovative Practice Award winner (Quercus)
- To provide TOWS analysis for further expansion and application of innovative practices in the bioeconomy sector

The event concluded with two study field trips – to Quercus Pasym (biomass from marginal land) and to heating plant in Frombork (closed circle of biomass).

### Place & region of show-case day

Olsztyn & Pasym & Frombork, Poland

**Dates of show-case day:** 28th-29th March 2023

### Organizers



The University of Warmia and Mazury in Olsztyn  
The Warmia and Mazury Agricultural Advisory Center Located in Olsztyn

Number of attendees: 70

Audience breakdown	Companies	0
(n° of attendees)	Public Agencies (Adm.)	0
	Advisory Agencies	29
	Farmers	22
	Forest owners	0
	Engineering	0
	R&D	8
	Other	11

### Moderator's summary of practitioners' feedback

The TOWS analysis was focused on a biogas plant as the most adequate, universal and innovative solution that is most applicable to farms and entrepreneurship in Warmia and Mazury that also perform other agricultural production. The solution is simultaneously very consistent with the circular economy concept.

The study field trip to Pasym provided the opportunity to observe the biomass harvesting process on site. The study field trip to Frombork on the other hand gave the opportunity to draw inspiration from a practitioner with long-standing commitment to development of the heating plant.

Recap of issues raised by the audience (rating from 1 to 5 in order of increasing emphasis)

Technical feasibility	1
Financial sustainability	2
Environmental impact	5
Public Acceptance	4
Government support	3

### Dissemination

<https://youtu.be/Biv-zzq6jeg>; <https://youtu.be/VyukJhWiMGw>

<https://wmodr.pl/informacje/4788>

<https://nbnpl.uwm.edu.pl/2023/06/prezentacja-dobrych-praktyk-rolniczych-wideorelacja/>

<https://nbnpl.uwm.edu.pl/en/2023/06/presentation-of-good-agricultural-practices-28-29-03-2023-video/>

<https://www.facebook.com/watch/?v=562881772331479>

<https://www.facebook.com/watch/?v=4711996008925214>

<https://www.facebook.com/watch/?v=3476773555918052>

## Photos

### Event invitation

# Presentation of good agricultural practices – workshop and showcases

BY MICHAŁ PYZEL • 2023-03-07



On behalf of the organizers: The University of Warmia and Mazury in Olsztyn and The Warmia and Mazury Agricultural Advisory Center Located in Olsztyn, we cordially invite you to join us during our event:

**Presentation of good agricultural practices – workshop and showcases** which will take place between March 28 and March 29, 2023 in Olsztyn and in the Warmińsko-Mazurskie region

The first part will be **“Good agricultural practices – technologies, value chains, policies” workshop** (in-person and on-line participation) which will be held March 28, 2023 in Hotel HP Park, Al. Warszawska 119, 10-701 Olsztyn.

Next, also March 28, 2023 **study field trip to QUERCUS machines show case** will be held.

During the second event day, i.e. March 29, 2023 there will be organized a study visit to municipal heating plant in Frombork with field demonstration of Miscanthus harvesting.

The event is held within the scope of BRANCHES (Boosting Rural Bioeconomy Networks following multi-actor approaches) – the EU-funded research project.

The event is addressed to practitioners running their business on rural areas, economic activities, associations, R&D units and local self government.

The aim of the event is to disseminate knowledge on local innovative solutions in the field of biomass value chains and renewable energy sources of high implementation potential on rural areas. The meeting will also facilitate determination of drivers and barriers of innovations implementation on rural areas.

The workshop part is hybrid, with both in-person and on-line participation. We particularly encourage you to join us in person and if this is not possible – to participate on-line. Regardless of form, please register your participation in the event.

**Attention!** Study visits attendance list is **limited** – order of registration decides.

We also encourage you to join National BIOECONOMY Network Poland – NBN PL established within the scope of BRANCHES project:  
<http://nbnpl.uwm.edu.pl/>

NBN PL aims at cooperation with entities implementing innovative activities on rural areas, promotion and dissemination of best practices in the field of bioeconomy implemented on rural areas through:

- ➔ Supporting knowledge transfer and encouraging innovations
- ➔ Sharing knowledge
- ➔ Networking and facilitating engagement as well as increasing project opportunities for participants

Download:

 [Event agenda](#)

### Workshop introduction



### Study field trip to Quercus, Pasyrn



### Study field trip to ecological heating plant in Frombork



## **Annex 5 – Show-case day Report “Finland RISUPETO”**

### **Name of the show-case day**

Energiapuutyönäytös

Show-case day of energy wood

**Language of event:** Finnish

**Description of the show-case day**

The showcase day was jointly organized by BRANCHES partners Luke and MTK in cooperation with the organisations/companies Savon energiapuukauppa Oy, Moto Team Tauriainen Oy, Reformet Oy, and MHY Savotta.

The event was organized as a stand-alone show-case day on Thursday 13.4.2023 from 11 to 14 in the village of Mansikkavirta, Sonkajärvi, North-Savo, Finland. The programme included the following parts:

- RISUPETO – harvesting device at work (Reformet Oy)
- Energywood chipping (Moto Team Tauriainen Oy)
- Information & presentation stands:
  - RISUPETO - harvesting device presentation (Reformet Oy)
  - BRANCHES -project presentation (including relevant practical abstracts, Luke)
  - MTK forest owner association and regional forest owner association MHY Savotta
- Coffee and sausages (Mansikkavirta village association)

The show-case day was held at the roadside next to a suitable demonstration forest. The information area included stands presenting information to the participants on the participating organisations and companies. The demonstration of the machines at work took place at the forest site. Participants were able to see all presented machines at work from a safe distance at the roadside.

The demonstrated energywood chain included the entire energywood supply chain. It included the following elements and machines:

- harvesting with the RISUPETO harvesting device mounted on an excavator,
- forwarding of energywood with a forwarder equipped with a specific cutting grapple
- chipping of energywood with a drum chipper at the roadside storage
- transportation of chips with a chip-truck

The showcase included keeping the demo area from 11:00 to 14:00 and the information stand area designed to explain the logics behind the demonstration, additional details and the process types being demonstrated (e.g. BRANCHES practical abstracts), the technical characteristics of the machines on show, the benefits of biomass and the goals of the BRANCHES project.

At least 224 persons attended the show-case day (proven through attendance signature), probably more saw the area and machines, and briefly stopped to have a look. Furthermore, the event included a get-together possibility in the presentation stand area through the offering of coffee and sausages, arranged by the local village association of the Mansikkavirta village. Press representatives were present at the event as well and reported the event in the local news thereafter.

Finally, the demo was recorded on video, which is now available on Youtube through the following link: <https://www.youtube.com/watch?v=Tg3rFXik9ZY>

Show-case type  online  physical  hybrid  other, please specify: \_\_\_\_\_

Show-case organization  stand-alone  
 in connection with another event  
 other, please specify \_\_\_\_\_

BRANCHES working package:  WP1  WP2  WP3  WP4  
 other, please specify: \_\_\_\_\_

## Goal of the show-case day

The goal of the Showcase Day was to demonstrate the capacity of innovative energywood supply technology that was considered especially suitable for mobilizing forest biomass from young or unmanaged thinning stands under the conditions that are typical of Finnish forestry. The aim was to demonstrate the entire energywood supply chain from harvesting to forwarding, chipping and transport of forest chips.

The show-case day included the demonstration of an innovative harvesting solution with the RISUPETO harvesting device. The show-case of that particular machine was the first RISUPETO machine demonstration this far north in the Finnish region of North Savo. The RISUPETO device is a novel felling head for efficient harvesting of small diameter wood biomass both in forests and edge zones of infrastructure.

The RISUPETO felling head cuts standing trees with two parallel disk sawblades and accumulates trees in an upright position to the collecting chamber using rotating collecting arms. The collecting arms are attached to the two vertical cylinders, which rotate at the same speed as the disk sawblades. When the collecting chamber of the felling head is full, the accumulated tree bunch is moved to the pile and dropped out. The unloading of the tree bunch is done by tilting the felling head downward and rotating the disk saws and collecting arms in the opposite direction from that during cutting. The width of the hydraulically powered accumulating felling head is 1.0 m, and the maximum cutting diameter with one cut is 1-30 cm. The accumulating felling head is attached to the boom tip of the medium-sized crawler excavator. The advantages of excavators produced in high volumes include a purchase price lower than that of conventional forest machines such as harvesters and forwarders and, outside the harvesting season, the option of removing the harvesting equipment and using the base machine in the work for which it was originally designed.

A practical abstract of this device was presented during a BRANCHES WP2 workshop. The majority of the workshop participants selected then this machine as a solution with high potential. Consequently, based on the workshop feedback, this device was chosen for the Finnish WP2 show-case. More information on the device can be found from the BRANCHES practical abstract PA4: <http://files.spazio-web.it/3e/57/3e57236d-e15e-4b7b-851c-a3698496dd3f.pdf>

In order to cover the whole chain, the other elements of the show-case day included also the forwarding of energywood, chipping and transportation of chips:

- Forwarding of energywood with a forwarder: this particular forwarder was equipped with a specific grapple that cannot only load the material, but also cut the material to the length that is most desired. The grapple saw Mecanil SG280 RC-M G2, a combination of a grapple with a chainsaw is a product from the company Mecanil Oy Ab. Since during the previous step a whole tree felling unit (RISUPETO) is used, the material has the length of the harvested trees at the moment of felling. This whole tree length might be too long for the efficient handling during forwarding and piling at the roadside. The grapple saw is able to cut the pre-piled material to the desired length. The cutting can happen at the same time when grapping the material from the forest ground or when lifting the grapple load to the forwarder's load space. The material is collected from the pre-piles in the forest site and brought to the roadside for storage.
- Chipping of energywood: a truck-mounted drum chipper comminutes the whole tree material at the roadside storage into wood chips that are directly blown to the chip truck present at

the roadside. The method of roadside chipping is the most common chipping method in Finland. Often, delimbed energy wood is the main energy raw material assortment, but also the provided whole trees work just fine for producing wood chips.

- Transportation of chips: a chip-truck is loaded with forest chips directly blown by the chipping to the loading space of the truck. The comminuted material is then transported typically directly to the end-using facility, in this case a heating plant. The chips are usually brought directly to the plant without further storage, particular during winter months or heating season.

More information on the energywood supply chain can be found from the BRANCHES practical abstract PA5 “Energy wood supply chains organized by forest owners in Finland” (<http://files.spazio-web.it/e9/a9/e9a9024d-d2e5-4194-a91f-9a472473bd33.pdf>)

**Place & region of show-case day**

Mansikkavirta, Sonkajärvi, North Savo, Finland

**Dates of show-case day:** 13 April 2023

**Organizers**

Luke, [www.luke.fi](http://www.luke.fi)  
 MTK, [www.mtk.fi](http://www.mtk.fi)

The show-case day was organized by BRANCHES partners Luke and MTK in cooperation with the organisations & companies: Savon energiapuukauppa Oy, Moto Team Tauriainen Oy, Reformet Oy, and MHY Savotta.

Number of attendees: 224

Audience breakdown	Companies	24
(n° of attendees)	Public Agencies & Research	10
	Farmers & Forest owners	143
	Students & Education	23
	Other	24

**Moderator’s summary of practitioners’ feedback**

Attendees seemed to be really interested about this particular new device, RISUPETO. The show-case made participants more aware of the potential and benefits of this innovative device. Professionals working with thinning operations, particularly energywood harvesting, seemed to be especially interested in the new technology presented during the Showcase Day. Also, the company presenting the innovative device was very pleased with the arrangements, participation and overall interest of practitioners to the machine.

In general, the show-case presenting the entire chain with the harvesting, forwarding, chipping and chip transport seemed to be very attractive to the targeted audience. Despite the remote location, the number of participants exceeded the expectations of the organisers. It was particularly good to

notice that especially practitioners, entrepreneurs and also students learning this particular forest operation were very interested. Also a high number of farmers and foresters visited the show-case day being interested in new solutions.

The good (winter) weather, fresh pot coffee and sausages prepared by the local village association provided a good atmosphere and additional comfort when discussing the main topics and getting informed about the presented solutions and the BRANCHES project. Based on the received feedback, a very positive and well received event hosted by the BRANCHES project.

## Video

<https://www.youtube.com/watch?v=Tg3rFXik9ZY>

Press article in local news (Miilu; in Finnish):

# Tuottamattomat risukot energiaksi

**Satapäinen yleisö** seurasi Sonkajärvellä pidetyssä työnäytöksessä, miten energiapuukoura toimii.

Osku Räsänen

**M**etsänhoidon ammattilaiset sanovat, että Suomi on täynnään hoitamattomia, vesoittuneita taimikoita. Niiden kustannustehokas hoito on vaikeaa. Useimmiten ne ovat liian suuria urakoita metsurille ja vastaavasti liian pieniä motolle.

Ryki tai yski, tekipä urakan kuka tahansa, se käy metsänomistajan lompa-kolle.

Risupeto on iskenyt kyn- tensä tähän markkinara- koon. Sonkajärven Pentalla ihmeteltiin viime torstaina satapäisen yleisön voimin miten tämä kone toimii. Ky- seessä on energiapuukou- ra, joka parturoi ja niput- taa pusikot hakettaviksi. Alustaksi käy metsäkonet- ta edullisempi telakavuri ja kun puomin päähän vai- detaan kauha, palaa kaivuri taas maanrakennustöihin.

Koemaastona oli koivu- valtainen metsälö, joka oli kasvanut käytännössä um- peen. Koivun lisäksi suurim-

mat runkotiilavuudet oli kas- vattanut leppä. Lehtipuiden alla sinnittelivät aluspuiksi jääneet kuusentumpit, män- nyt ja pajukot.

Harvennusratkaisuna poistettiin kaikki muu paitsi parhaat koivut. Kouran toi- minta näyttää tehokkaalta. Laite kerää syleilynsä puu- nipun, katkaisee sen ja siir- tää sivuum. Perässä tulee ajo- kone joka taas kuljettaa ri- sukuormansa operoitavaksi hakettimelle.

**Reformet Oyn** toimitusjoh- taja **Eero Lintukangas** sa- noo, että kehitystyötä on teh- ty vuosikausia ja testitunteja on kertynyt yli 10 000 tuntia eli yli 400 vuorokautta.

– Reformet Oy on perus- tettu vuonna 2020, mutta tuotteiden kehitys on alka- nut jo paljon aiemmin **Jani Karvasen** omistaman Metsä ja Metalli -yrityksen suojissa.

Risupeto ei ole ainoa energiapuukoura Suomen markkinoilla. Niitä on teh- ty niin hakkuukoneiden puo- min päähän kuin kaivurei-



Koura on kerännyt annoksensa, katkaissut sen ja siirtää sen odottamaan ajokonetta.



Kumisiivet kahmivat puu- ta, leuat viimeistelevät ni- pun ja kiekkoterot katkai- sevat.

hinkin. Yleensä ne hoitavat puunipun katkaisun puuk- otterilla tai perinteisesti ket- jusahalla.

Risupeto katkaisee puut kiekkotterilla ja siirtää ne vä- livarastoon nopeasti ja jat- kuvatoimisesti eli runkoja ei tarvitse käsitellä yksittäin. Se poimii tyvihalkaisjaltaan 1–30 senttimetrin paksuiset puut. Kerätty nippu vapautet- taan pyörittämällä teriä vas- takkaiseen suuntaan.

Tehtaan miehet korosta- vat, että heidän konekouran- sa nopeuttaa kokonaisurak- kaa merkittävästi perintei- siin menetelmiin verrattuna.

Tehokkuudesta kertoo, että testeissä saatiin energiapu- sikkoa poikki ja pinoon par- haimmillaan 12 kiintokuutio- metriä tunnissa. Kyllä, kiin- tokuutiota.

**Eräs kouran** eduista on se, et- tä se siivoo kaiken energia- puun hyötykäyttöön. Kunt- takerrokseen kellumaan ei jää korkeintaan kuin pahai- sia oksia. Vastaavasti metsu- rilta saattaa jäädä energia- massaa maastoon jopa 20 000 kiloa hehtaarille.

Energiapuukouraan on is- kenyt silmänsä myös luon- nonvarakeskus Luke. Maa-

ja metsätalousministeriön hallinnonalan alla puuhaava Luke keskittyy kestävään ke- hitykseen uusiutuvien luon- nonvarojen hyödyntämisessä. Tähän kuuluu itseoikeu- tetusti energiapuun.

Tutkija **Anni Harju** ker- toi, että nyt esitellyssä ole- va energiapuun korjuurat- kaisu on tehokas ja käytän- nössä laskee hake-energian hankintahintaa, ja toisaalta antaa paremman tuloksen myös metsänomistajalle.

Mycs konekustannukset niin hankintahinnoltaan kuin käyttökustannuksil- taan ovat järkevällä tasolla.

Hiilinielu on päivän sana. Energiapuun korjuu antaa muulle puustolle mahdolli- suuden parempaan kasvuun ja sitoo ilmakehän hiilidiok- sidiä. Kiitos tarkan korjuujäl- jen, metsään ei jää lahoavaa puumassaa joka puolestaan tuottaisi hiiltä.



Hiilinielu on päivän sana.

Photos (by Robert Prinz, Luke)



