Promoting alternative use of biomass and stimulating farming to maintain grasslands in Lithuania: current initiatives, experience, success stories, challenges and lessons learned

By Mr. Žymantas Morkvėnas (Baltic environmental forum Lithuania)

- Grass pellets as animal bedding or heating fuel;
- Grass biomass use for municipal heating boiler house;
- Compost


Pellets made from grass

The problem in a nutshell

AW breeds in a habitat used for farming bussiness

Late mowing of fields create economic losses for farmers

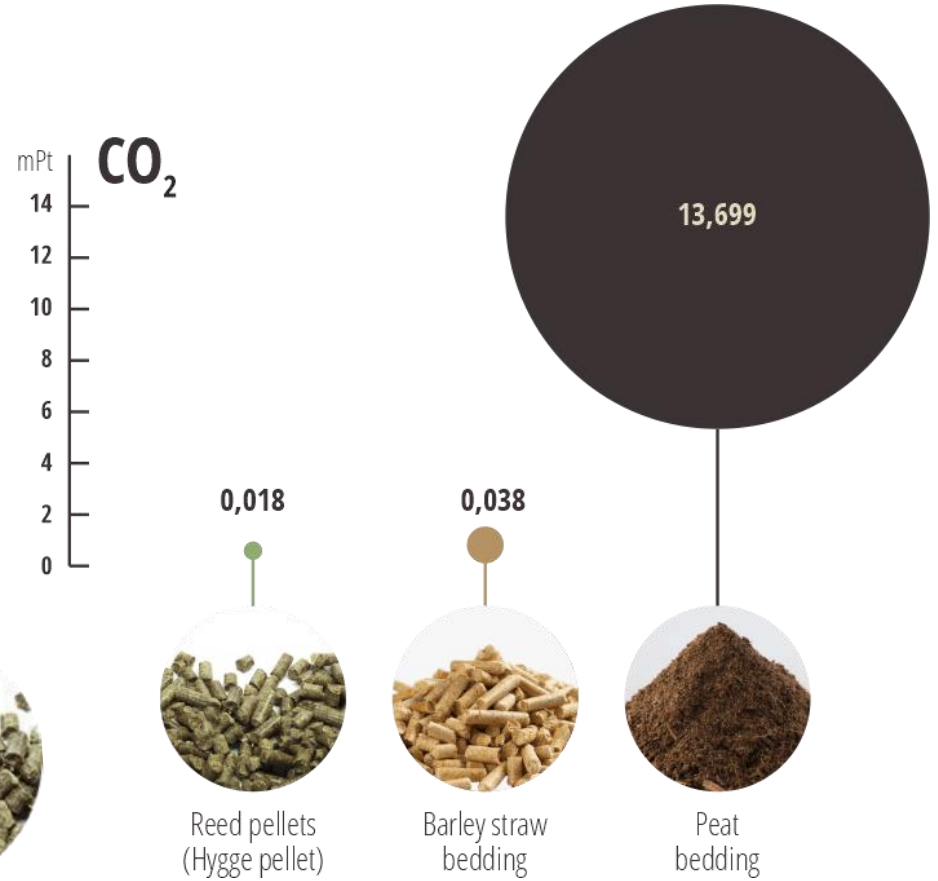
Late-cut biomass is a problematic waste

Capacity: 500-800kg/ha;
Biomass humidity: max 14%
Processes: sedge, reed and other grass;

Grass pellets – farming product from Aquatic warbler breeding habitat

Climate friendly equine bedding

- Saves aquatic warbler
- Climate friendly alternative to the peat bedding;
- No need for artificial monoculture crop fields, watering or fertilization;
- Easy to use: quick spreading, even distribution, remove wet spots only, light packaging;
- Does not cause alergies (little dust, high temperature treated);
- Biodegradable – good fetilizer for the fields



Technological challenges

- fine-tuning consistence;
- Quality and composition of grass material;
- Mould problem
- Too good quality – becomes tasty for horses;

Other issues to deal with, which are not listed in the conservation plan

- Sales logistics – cheap, quick and safe delivery;
- Balancing production in circumstances of no constant produyct demand;
- Making sales, negotiating with the client;
- Finding the right client – retail or wholesaler;
- Changing geopolitical context causing market uncertainty (tunring the bussiness model upside down)

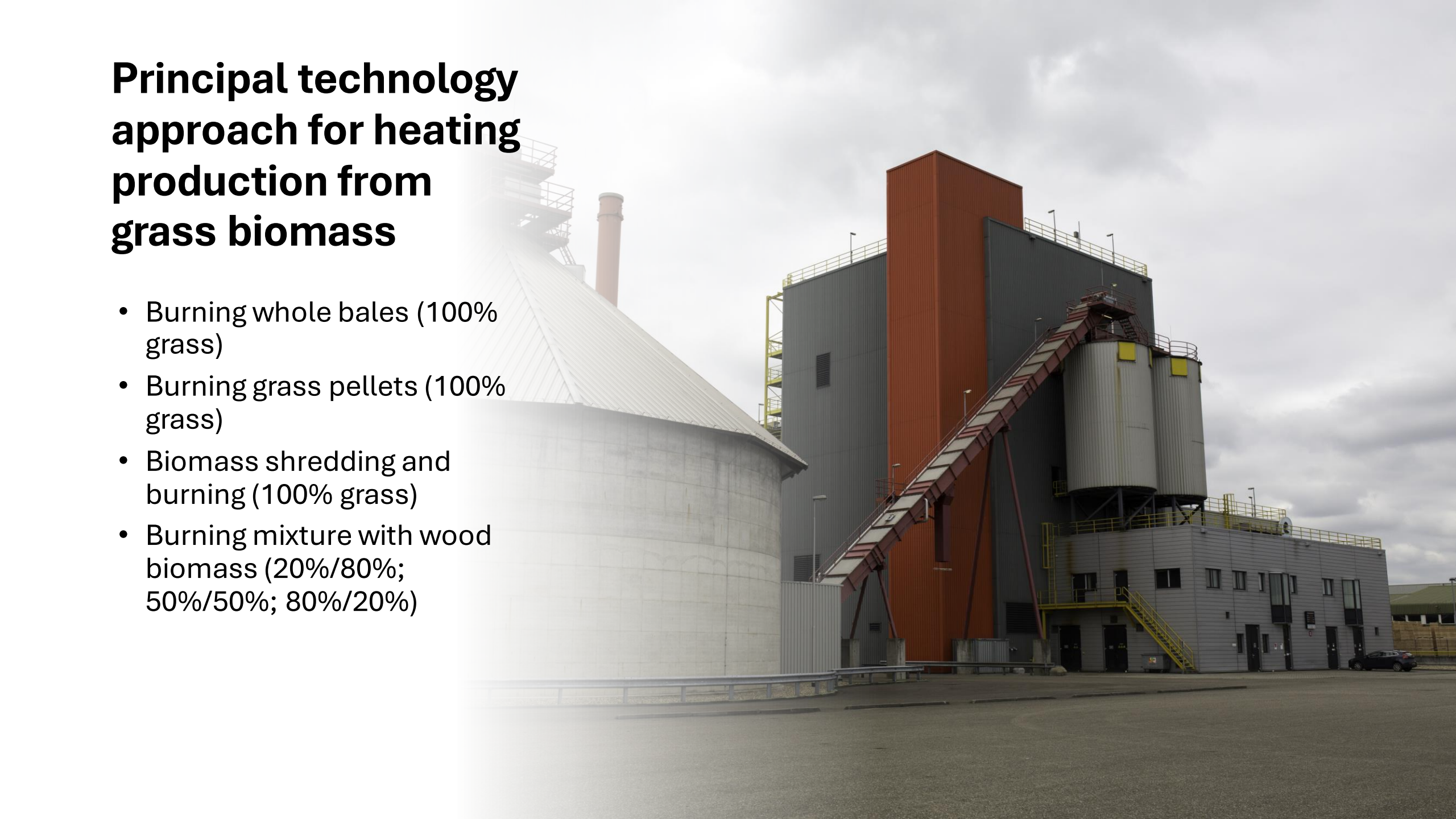
To sum up

- A really good product, which can meet high expectation (returning clients);
- Suitable for fuel, but use for bedding provides more added value;
- Bedding for horses, but suitable also for other animals;
- Market is not yet developped – requires proactive enterpreneoushipand active marketing;
- Grass from semi-natural grassland is a big challenge to produce standard quality;

Grass biomass use for heating

Principal technology approach for heating production from grass biomass

- Burning whole bales (100% grass)
- Burning grass pellets (100% grass)
- Biomass shredding and burning (100% grass)
- Burning mixture with wood biomass (20%/80%; 50%/50%; 80%/20%)



Didžiasalis:
~1000 inhabitants
Energy need 6500 MWh

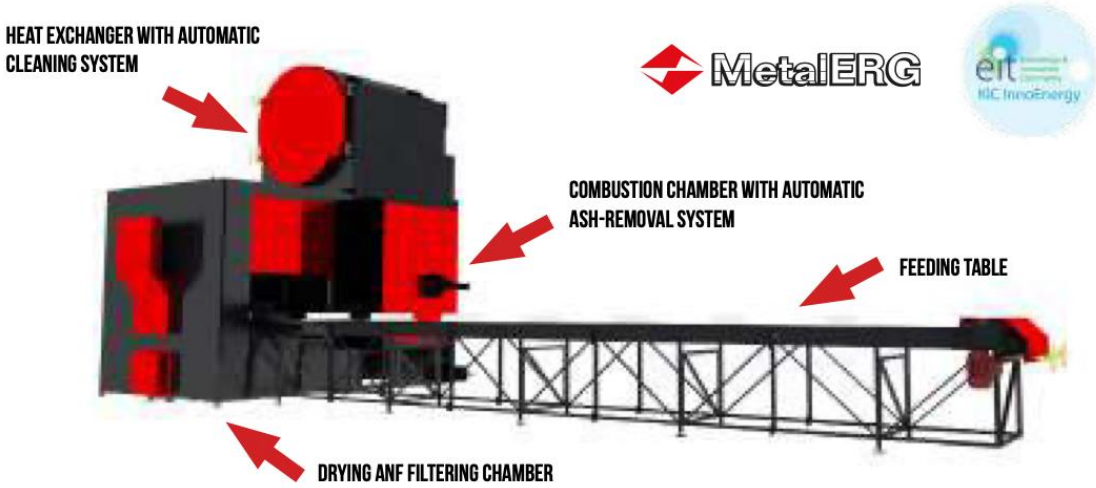
Simnas:
~1100 inhabitants
Energy need app. 3000 MWh

Amount of grassland needed to satisfy energy needs for the towns

Possible biomass harvest:	2 t/ha	3 t/ha	4 t/ha	5 t/ha
Simnas	519,1	346,01	259,5	207,6
Didžiasalis	1082,35	721,57	541,18	432,94

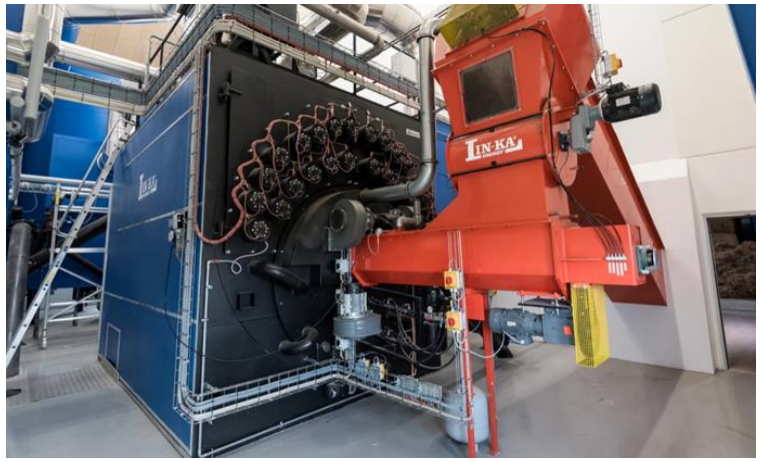
Whole bale burning oven;

- Manual fuel supply and ash removal;
- Low capacity (137-167 kg/h, 340-460 kW);
- Reasonable to use by individual farms, where they have fuel biomass from own fields
- For professional use – there is economic effect compared to wood biomass, but not big



Whole bale burning system with automatic supply

- Capacity: 500-2000 kW

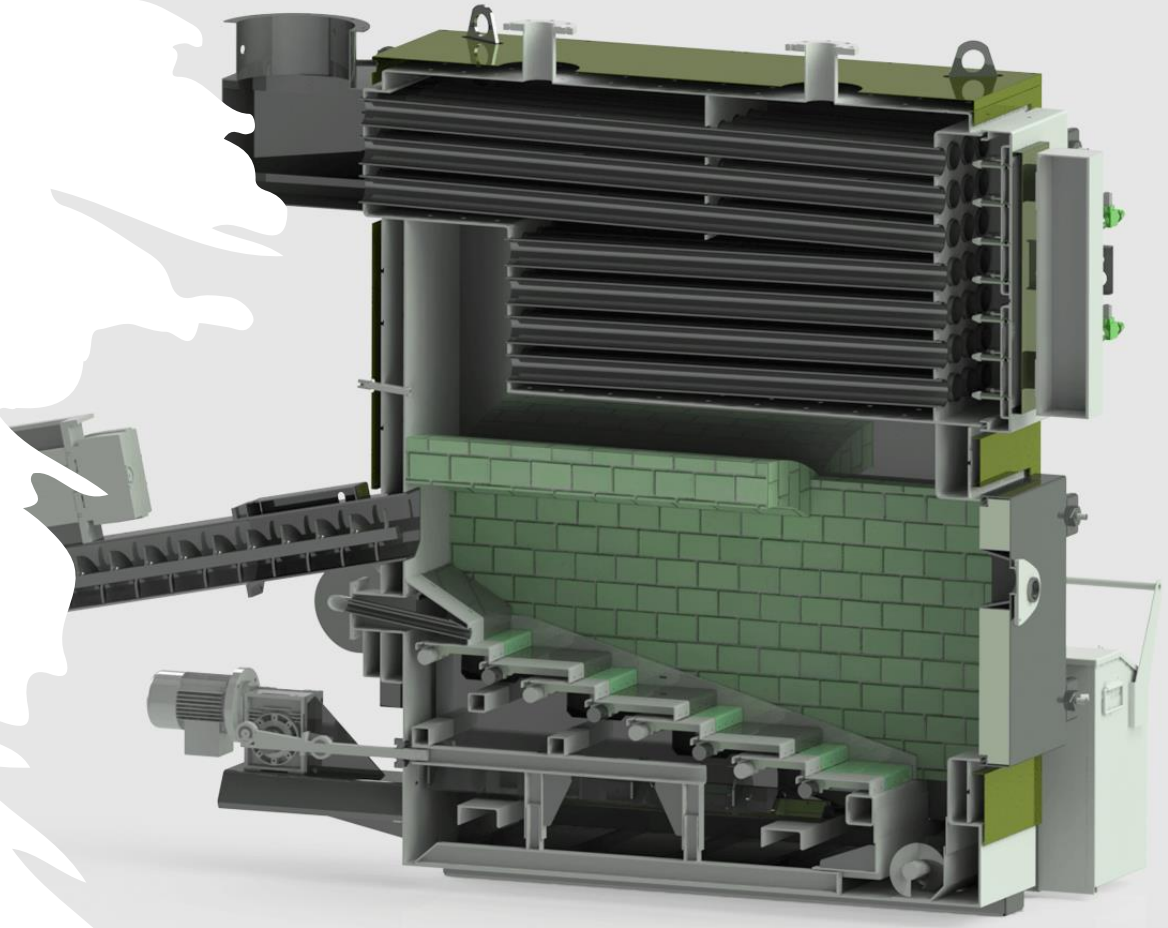


Fully automatic oven for grass biomass

- Automatic supply of biomass, which is shreddered before burning;
- Capacity 1-15 mW

- **Oven for biofuel coming from agricultural activities**
  - Suitable for burning agriculture residues, as well as grass to be converted into pellets;
  - Humidity requirement up to 7-10%
  - Capacity 1-20mW
  - Mostly used in individual households, however there are few cases of larger scale use

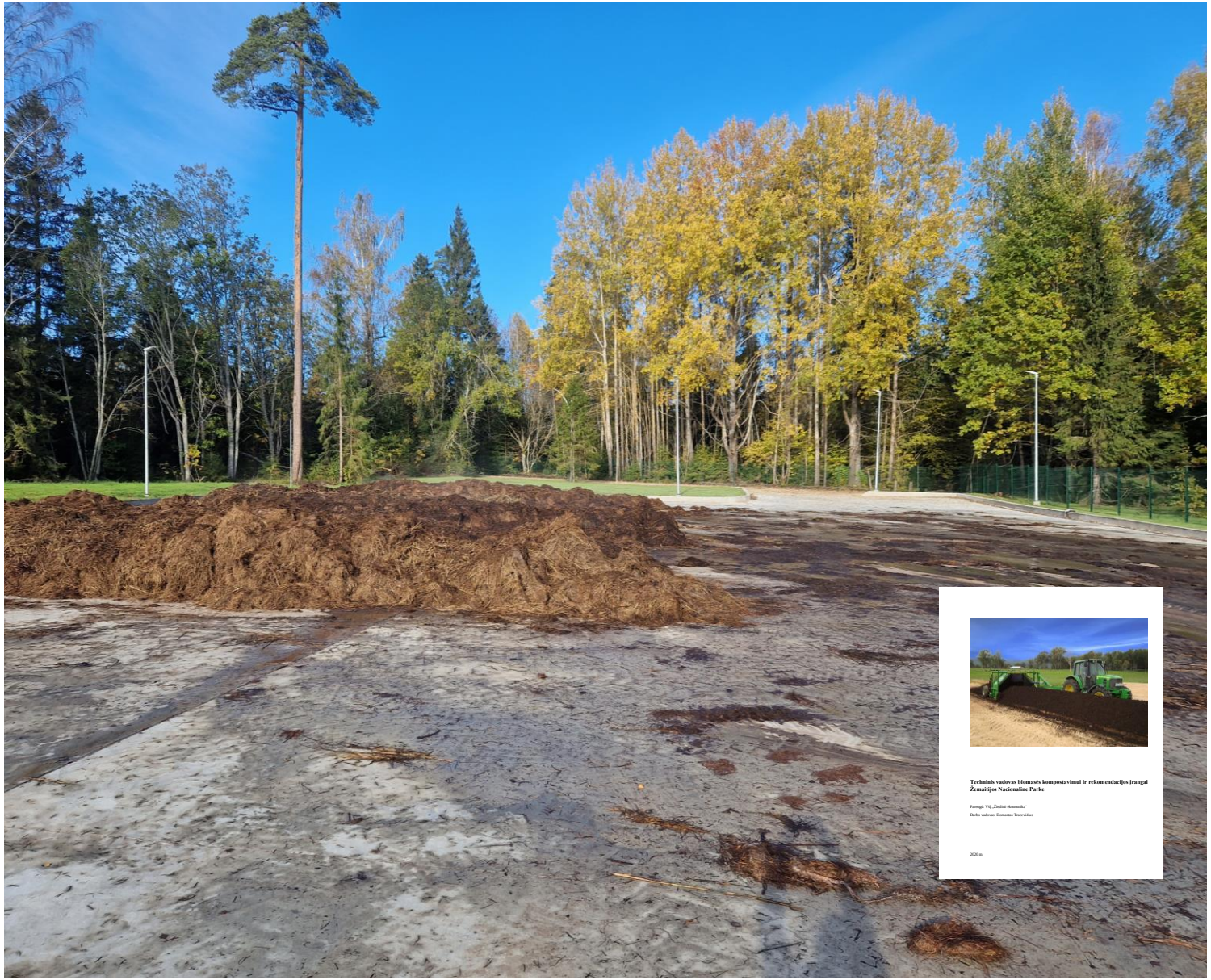
- **Biofuel oven with automatic supply**.
  - Can use pellets, chips, other type of biomass made from wood and/or grass, straw;
  - Due to movable grate, the system is able to work with biofuel generating a lot of ash;
  - Is capable of using biofuel mixture up to 30% of grass
  - Acceptable biofuel humidity 8-35% (or up to 60%)
  - Capacity 250-500kW



Observations by the feasibility study

- Grass burning requires more frequent work labour to clean the oven from residue;
- Location of biomass storage is an important challenge to be solved;
- Ash (bottom and fly ash fractions). Grass has more fly ash containing more hazardous substances, but it can be separated in order to use bottom ash as soil fetilizer for agriculture;
- Biomass harvesting season has an impact to the chemical composition impacting burning quality (late-cut biomass is better)

Compost made from grass



Techninis vadovas biomasės kompostavimui ir rekomendacijos įrangai Žemaitijos Nacionaliniame Parke

Parengė: VšĮ „Žiedinė ekonomika"
Darbo vadovas: Domantas Truncevičius

2020 m.

- Foreseen capacity – up to 2000 tones of biomass;
- Setup of composting area is done, implementation of composting will start in 2024

Possible way forward

- Alternative use of grass biomass is possible to be mainstream – technical sollutions, experience and know-how are available;
- Key bottle necks for the mainstreaming:
  - Economy effect, needs to be more effective compared to burning wood (this situation is currently rapidly changing due to war in Ukraine);
  - Constant and reliable supply chains for biomass;
- To make it working – there is a need of network of such facilities, which could collect grass biomass in up to 50 km radius travel distance (otherwise it is not cost-effective);
- CAP strategic plan interventions can help to promote this sector by:
  - Supporting establishment of such facilities through modernisation interventions;
  - Considering cattle decline, accept biomass as ”waste” and Include grass biomass transport costs for incineration into the payment calculation (increase payment accordingly);


FILA