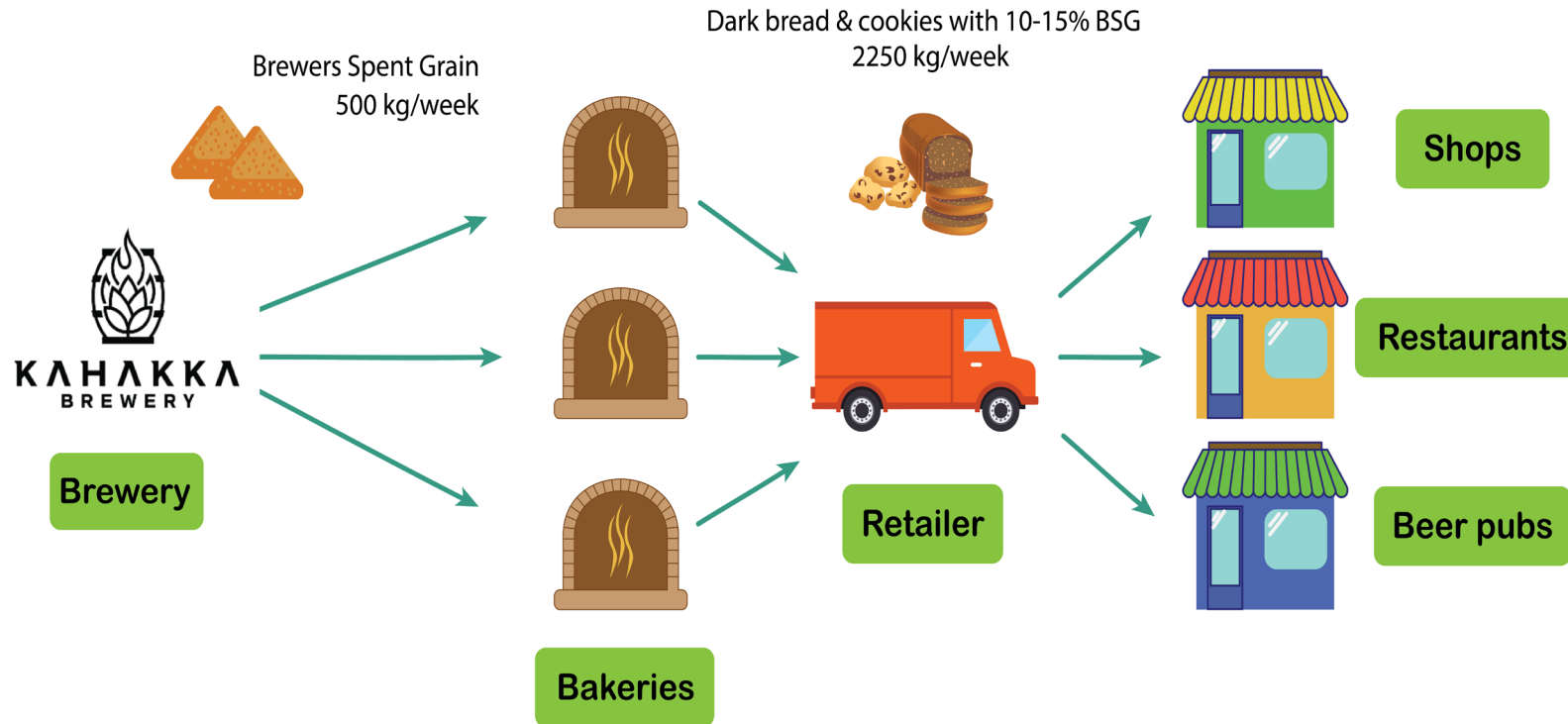


Spent grain to replace flour in bakery products



Background and feasibility facts

- Currently spent grain is picked up by a farmer and fed to cattle. This operational model saves the company about 70 €/week, 3500 €/year
- Consumption of dark bread in the Kokkola region is approximately 15 tonnes /week.
- 500 kg of wet spent grain can replace 150 kg of flour, with that amount 2,25 tonnes of bread would be produced weekly, which is 15 % of all consumption in the Kokkola region.
- 500 kg of spent grain value in replacing virgin flour is about 15-20 €/batch, 750-1000 €/year.



Key partners, activities and resources

Local brewery (Kahaka brewery, Kokkola)

- waste handling according to food grade raw material regulations
- preservation
- Storage and logistics

Local bakeries

- *Integration of spent grain into baking process*
- *New product development*
- *Branding and marketing*



Value propositions

Brewery

Value for beer producer is imago of being conscious and utilising edible high quality raw material for highest hierarchy products – food.

Bakery

Addition of spent grain would increase protein amount in product and possible decrease amount of sugars. With suitable marketing product price can be increased or new products created, e.g. snack bars.

Social benefits

- Improved use of locally available resources
- Local value chains boosts local prosperity



Customer segments and product selling channels

- Supermarkets
- Restaurants
- Beer pubs could make the fried bread sticks as snacks to beer



Cost structure

- Preservation and logistics of spent grain
- Storage of spent grain
- Product development costs



Revenue streams

- Sales of bread



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Challenges



The main challenge is economic, gain is too low to implement any more advanced than current waste utilisation related measures:

- Fresh BSG is spoiling fast, needs to be used within few days; preservation reduce the monetary gain.
- Bakeries in near proximity are small, BSG needs to be shared with several bakeries, increased handling, packaging and logistics costs
- The effort to discard side streams in a manner suitable for further use in food production would reduce the monetary gain or could even change it to negative comparing to current use – start up costs to improve facilities, effort of staff in handling food grade streams.

The scenarios, when using of spent grain in bakery, is economically feasible:

- Established bakery in the instant proximity with the capacity to utilise all the stream;
- Stringent legislation which forces the use of edible side streams in the food value chain;
- Farmers are restricted to feeding spent grain to cattle and the waste handling costs are becoming considerably high, so it becomes economically feasible to preserve the spent grain and sell it to local bakeries;
- Prices of primary production of grain products are increased so much, that spent grain becomes wanted raw material by the food industry;
- Other than monetary values matters – branding, marketing message.



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