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Macroalgae consumer market in the Baltic Sea Region

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Supply of macroalgae to the market

Local production in the region is very small (10-100 tons of farmed seaweed in Denmark, 0-500 tons of seaweed harvest in Estonia, small-scale farms in Sweden and Germany).

Therefore macroalgae market in EU-Baltic Sea Region is in almost 100% dependent on imported seaweed.

Edible seaweed import, estimated on the base of Eurostat data amounted to **2 400 tons**, **17 million euro** in 2020. In the last 5 years, we observed **44% increase in import** of edible (fresh, frozen, dried, processed) seaweed in terms of value.

Anyhow this import size is **underestimated** – hundreds of tonnes of products are declared as e.g. „other plant products...” (e.g. CN 20 08 99 99 90 *products manufactured on the basis of seaweed and other algae prepared or preserved by processes not provided for in Chapter 12*).



fot. 123rf.com



fot. 123rf.com



Supply of macroalgae to the market

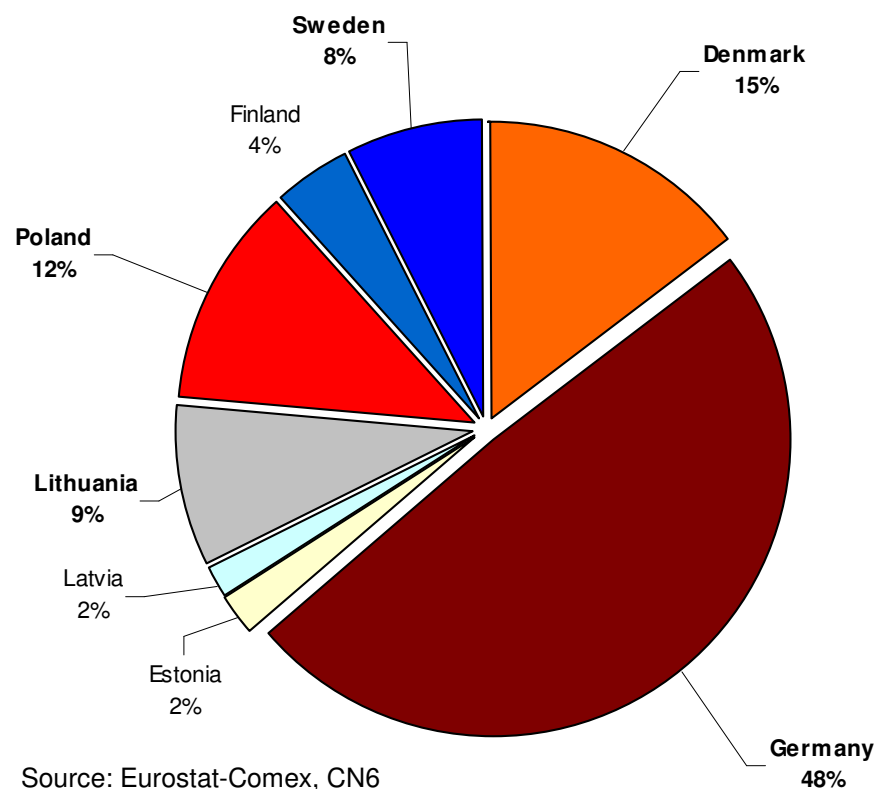
Tab. 1 Seaweed import by product groups (million euro)

Product group	2016	2017	2018	2019	2020
Seaweed for human consumption	11.8	15.4	14.6	16.5	17.1
Seaweed not for human consumption	9.8	9.7	10.0	12.4	11.1
Sub-total	21.6	25.1	24.6	28.9	28.2

Source: Eurostat-Comex

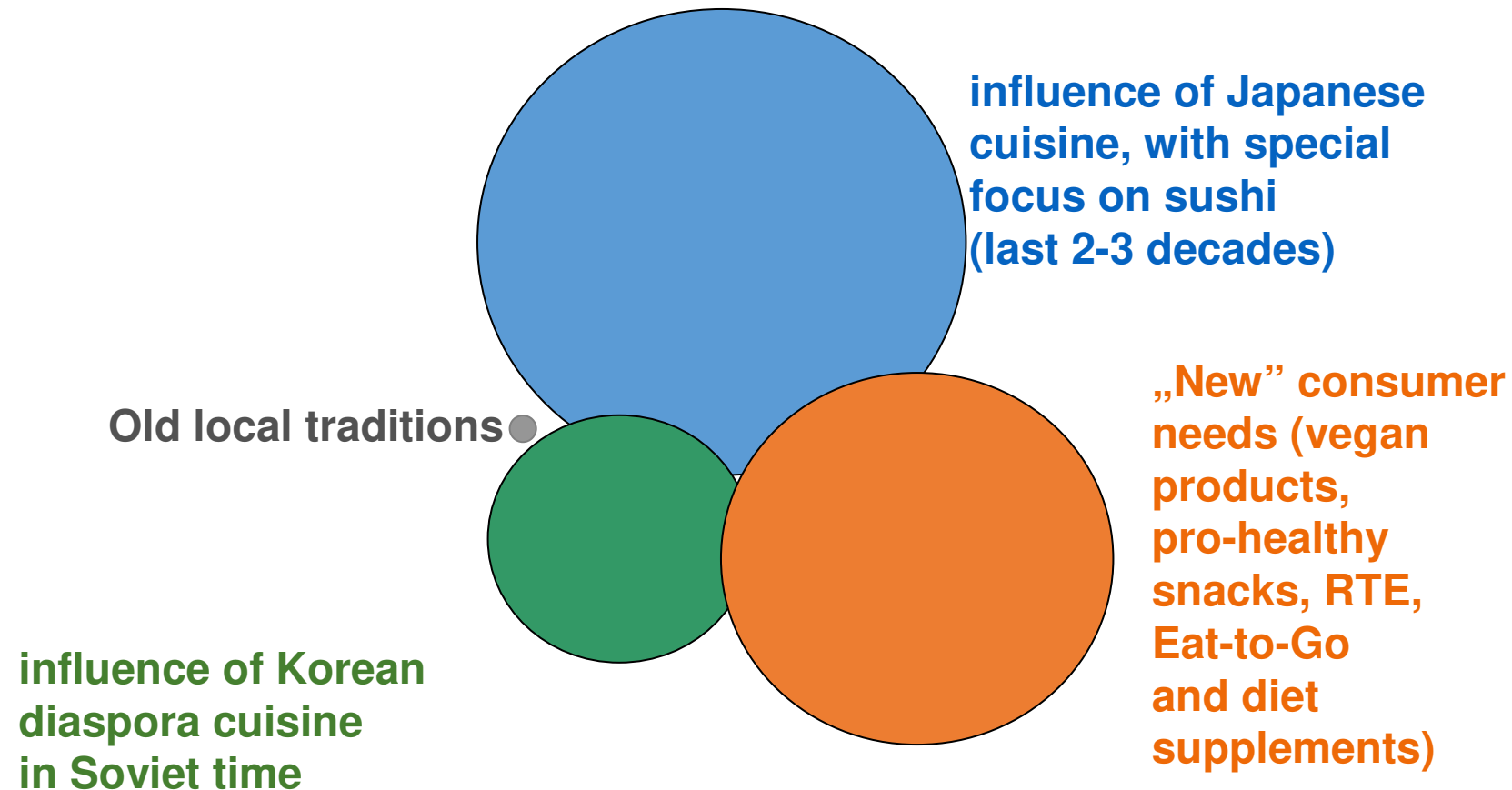
Supply of macroalgae to the market

Fig. 1 Seaweed fit for human consumption import by country (% value), 2020



	Change in import value [2020/2016]
Estonia	+453%
Lithuania	+389%
Germany	+70%
Denmark	+60%
Finland	+6%
Sweden	+1%
Latvia	-8%
Poland	-22%

Why we eat macroalgae in the Baltic Sea Region?



Macroalgae retail market overview



fot. T. Kulikowski

Unpackaged seaweed salads

Mainly on Estonian, Latvian and Lithuanian markets.

The product is intended for traditional consumers (sold under traditional name *sea cabbage* - *морская капуста*). The influence of Korean traditions through Russian and Soviet cuisine. Rather inexpensive products. Mostly **processed outside the region**.

Main raw materials: *Undaria pinnatifida* and *Laminaria japonica*

Macroalgae retail market overview



fot. T. Kulikowski



fot. Lucky Fish



Oriental-style packed chilled seaweed products

Available in all countries in the Baltic Sea Region. Both in HoReCa and retail sector.

The product is intended for modern consumers. The influence of modern oriental cuisine (Japanese – *sushi*, *miso*, Korean - *kimbap*, Hawaian - *poke*) as well as need for healthy snaks, ready-to-eat, eat-to-go trends. Moderately expensive or expensive product.

Mostly [processed and packed in the region](#), based on imported raw material.

Main raw materials for *sushi* (*nori*) is *Porphyra* (incl. *P. umbilicalis*, *P. tenera*). Other important raw materials for Japanese cuisine: *Laminaria japonica* and *Laminaria saccharina*.

For salad: *Undaria pinnatifida* and *Laminaria japonica*.

Macroalgae retail market overview



fot. T. Kulikowski

Dried oriental snacks

Available in all countries in the Baltic Sea Region.

The product is intended for modern consumers. The influence of modern oriental cuisine as well as need for healthy snacks, ready-to-eat, eat-to-go trends. Mostly **processed outside the region**, imported in final retail packages.

Expensive products.

Main raw materials: *Porphyra spp.* (incl. *Porphyra yezoensis*). To a lesser extent: *Palmaria palmata*, *Undaria pinnatifida*, *Laminaria japonica*, *Ulva*, *Pyropia yezoensis*.

Macroalgae retail market overview



fot. producers catalogues

Salad and snacks, not linked to oriental cuisine

Available in some Baltic Sea Region countries. The product is intended for both traditional and modern consumers. Linked to local (Baltic, Nordic) food traditions.

Mostly processed and packed in the region. based on imported raw material.

Both economy and expensive products.

Main raw materials: *Undaria pinnatifida* and *Laminaria japonica*
To a lesser extent: *Saccharina latissima*, *Phaeophyceae*, *Alaria esculenta*, *Himanthalia*,
Furcellaria lumbricalis, *Codium fragile*

Macroalgae retail market overview



Special food. Dietary supplements

Available in all Baltic Sea Region countries. Mostly **processed outside the region**.

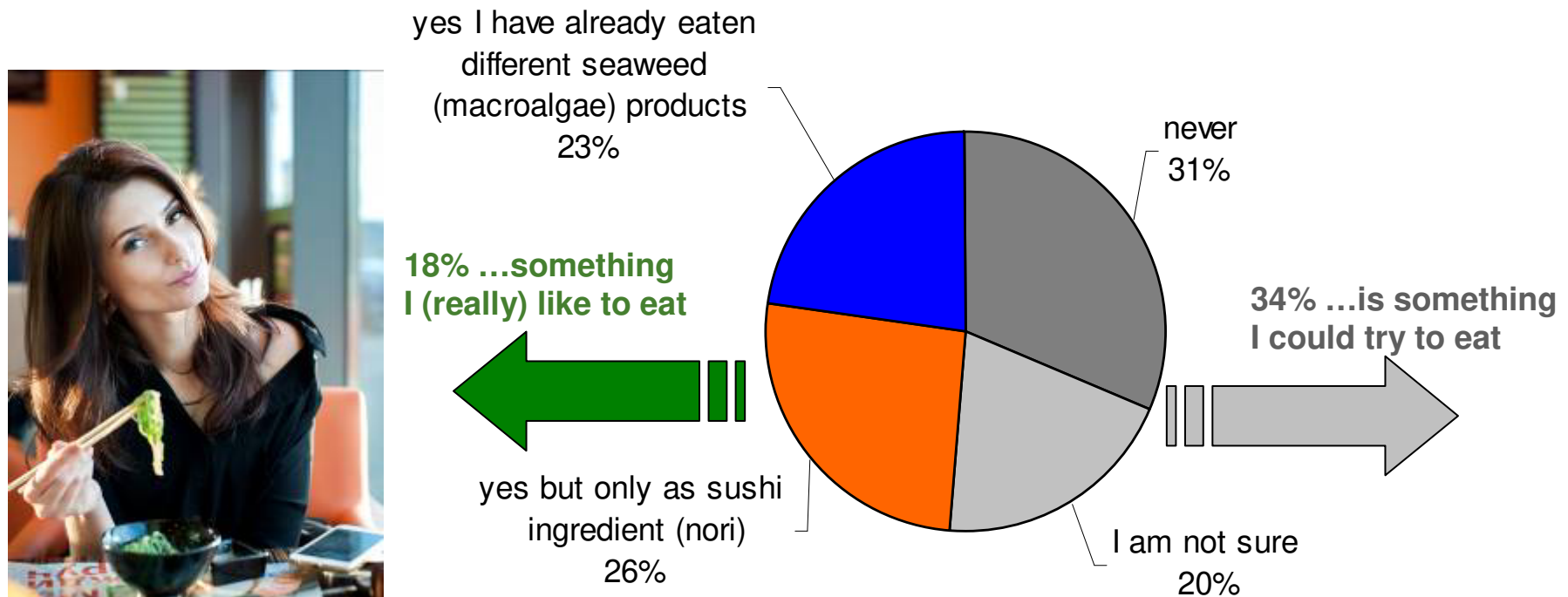
The product is intended for modern consumers. Related to the trend of looking for pro-health food and vegan alternatives to nutrients from marine animals.

(Very) expensive products.

Main raw materials: *Laminaria ochroleuca*, *Laminaria digitata*, *Lithothamnium calcareum*, *Fucus vesiculosus*, *Ulva lactuca* and many others

Consumer acceptance & market penetration

Fig. 2 Consumers contact with seaweed food products and their willingness to try



source: CAWI consumer panel, n = 2040, provided by IMAS International for NMFRI, October 2019

Consumer acceptance & market penetration

- The **largest percentage of consumers who ate macroalgae in different forms** (not only sushi) [above 30%] - **Estonia, Lithuania,**
- The largest percentage of consumers who ate but only in the form of sushi (above 30%) - Sweden, Denmark and Finland,
- Most declarations „**I could try to eat it**” (above 30%): **Finland, Latvia, Germany, Denmark,**
- The largest percentage of people who have not eaten seaweed - among the youngest consumers aged 18-24 (36% ver. 31 in whole population),
- **30%** consumers believe seaweed is something that are **very healthy**,
- for 17% consumers it is potential alternative for seafood (fish).

source: CAWI consumer panel, n = 2040, provided by IMAS International for NMFRI, October 2019



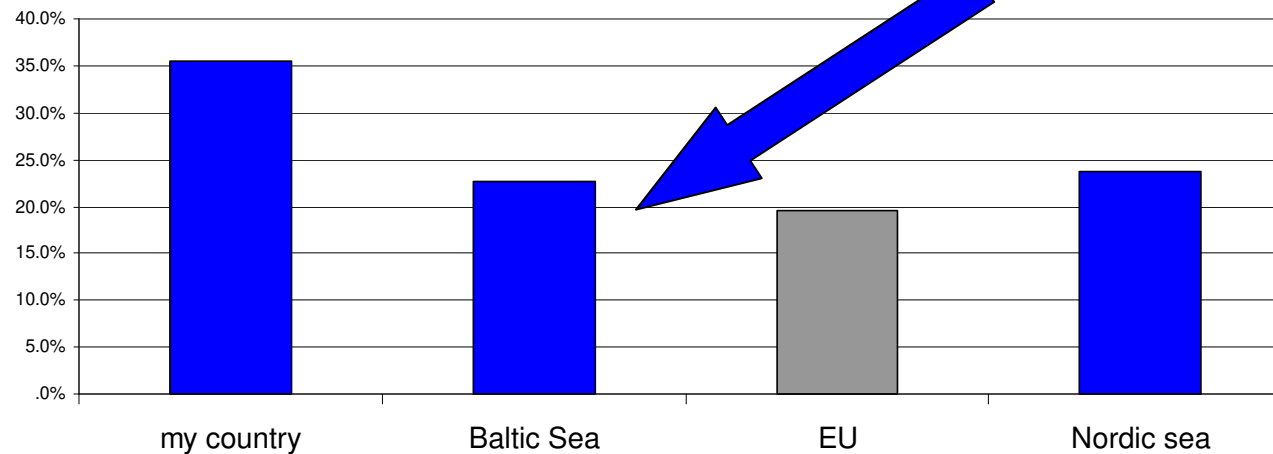
New bar in Gdynia will be open in May 2021...

Fot. T. Kulikowski

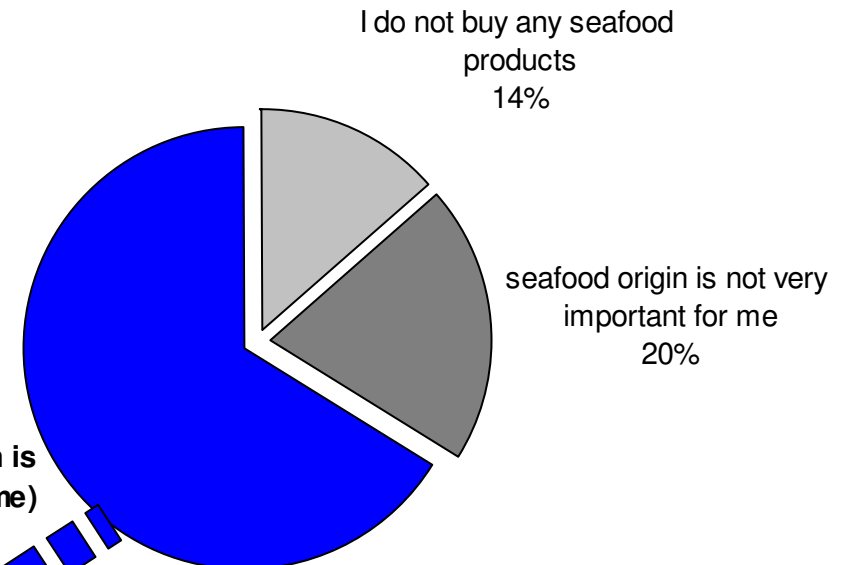
Consumer acceptance & market penetration

Fig. 3 Importance of the origin of seafood products for consumers

The most **ethnocentric** consumers: Finland (48%), Denmark (40%), Estonia (37%), Poland (37%), Latvia (36%)



(seafood origin is important for me) 66%



The most **„pro-Baltic”** orientated consumers: Northern Germany (31%), Poland (31%), Latvia (26%).

The most **„pro-Nordic”** consumers: Finland (35%), Sweden (34%)

Not only food



More than [40 producers in the Region](#) produce cosmetics based on seaweed or with the addition of seaweed.

Seaweed cosmetics are already recognised by [25% consumers](#) in the Region, as „something that are [very healthy for my body/skin](#)”.*

Another [46% consumers](#) declare it is something they [could try to use](#).*

For now, in the marketing of cosmetics producers, informing about the origin of the raw material plays a small role. Manufacturers are also reluctant to declare actual seaweed content.

* source: CAWI consumer panel, n = 2040,
provided by IMAS International for NMFRI, October 2019

Conclusions

- quite high market penetration (over 50% of consumers have already tried, and over 25% - also in a form other than sushi)
- the interest of many other consumers (34%) to try macroalgae products in the future
- fairly broad belief in the pro-health benefits of seaweed
- new consumer trends accelerating market (including vegetarianism, searching for new types of healthy snack food)
- innovative processors in the region who create new types of products (food, cosmetics and others)
- slow but steady growth in the availability and sold volume of seaweed products in last decades

Conclusions

Taking into account the above factors, the development potential of the macroalgae consumer market in the Baltic Sea Region should be assessed **as high** with continuing single-digit annual growth rates in the next decade.

Once production (farming) of macroalgae in the **Baltic Proper and adjacent basins** will start, the biggest challenge will be to introduce products from **macroalgal species (*Ulva*, *Fucus*)** that consumers practically do not know and to obtain **a price level** of these products, adequate to the anticipated, at the beginning high, production costs.

GRASS

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