

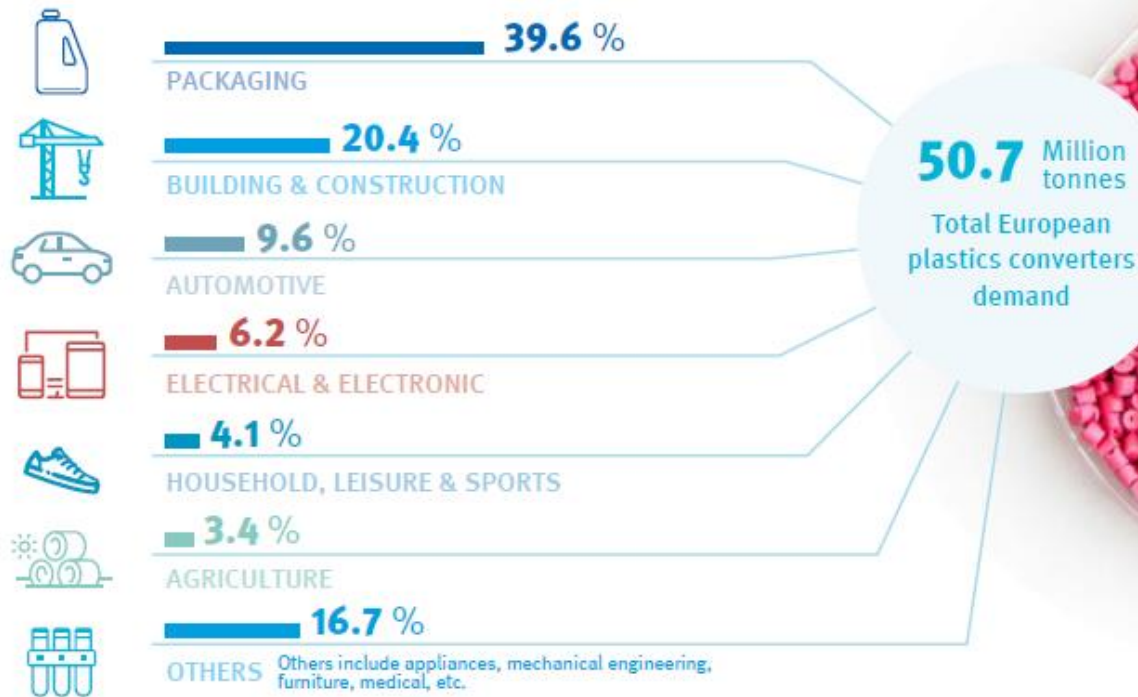
A close-up photograph of a fish, likely a sea bream, lying on a dark, textured surface covered with numerous ice cubes. The fish's scales are detailed, showing a mix of blue, silver, and white. The ice cubes are clear and vary in size, some showing a slight yellowish tint. The overall composition is artistic and emphasizes freshness and sustainability.

Fresh Fish

The sustainable packaging
material for fresh fish

High demand of plastic materials in Europe

Packaging is the largest end user sector of plastic representing 39,6% of the total plastic consume in Europe



Källa: PlasticsEurope, Market Research Group, (PEMRG) and ConversioMarket & Strategy GmbH

Facts about plastic

**MOST PLASTIC
ENDS UP AS
WASTE**



75%

Of all produced plastic since 1950 has ended up as waste

**PLASTIC WASTE
ENDS UP IN
NATURE**



1/3

Of all plastic waste is handled wrong with the risk of polluting nature

**AND IN THE
OCEAN**



>150

Million tonnes of plastic is estimated to float in oceans across the world

**WITH SUBSTANTIAL
IMPACT ON
WILD LIFE**



914

Species are affected by plastic including sea turtles

**WHICH AGAIN
IMPACTS OUR
FOOD CHAIN**



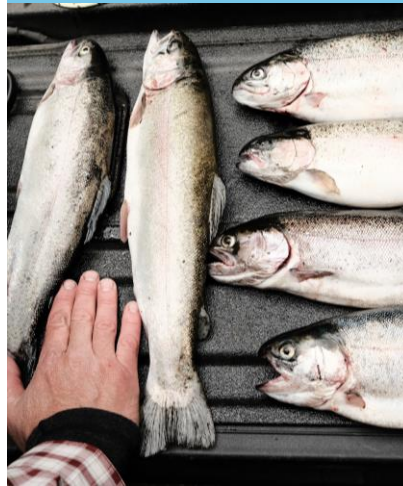
12 of 25

Global fish species was reported to contain micro plastic in 2017

Källa: UN Treaty on Plastic Pollution, WWF, Ellen MacArthur Foundation, Boston Consulting Group, 2020

The pressure to change into a more **sustainable** packaging increases.

Consumer awareness on sustainable packaging increases



Pressure from brand owners and retailers increases



Tax on plastic packaging increases and new laws are implemented



Awareness on sustainable packaging increases

Climate changes

24% of consumers sees this as their biggest worry*

Packaging waste

17% of consumers sees this as their biggest worry*

*Källa: Who cares, who does? Consumer response to plastic waste, Kantar September 2019

Several retailers and restaurants phases out EPS



MEDIA RELEASE / DECEMBER 8, 2020

Amazon announces ban on toxic chemicals and plastics in food packaging

PFAS, phthalates, BPA are among the dangerous chemicals Amazon Kitchen brands now prohibit. Amazon joins a growing trend of companies eliminating toxic chemicals in food packaging.

MEDIA CONTACT
Stephanie Stohler
Communications Director
stephanie.stohler@amazon.com

SEATTLE, WA – Today Amazon announced that it will ban certain toxic chemicals and plastics in the food packaging materials used for its Amazon Kitchen brand. Toxic chemicals PFAS (per- and polyfluoroalkyl substances), phthalates, BPA (bisphenol A) and other bisphenols, and the plastics polyvinyl chloride (PVC), polystyrene (PS), and expanded polystyrene (EPS) are now restricted in certain private-label food contact materials. Amazon's new commitment is the latest update to the chemicals policy it first launched in 2016, which also restricts toxic chemicals in private-label baby, household cleaning, personal care, and beauty products as well as brand-name plastic-reusable products.

Aldi sustainability charter includes packaging recyclability goals

Under its new charter, the company says it will reduce packaging materials by 15 percent and convert all Aldi-exclusive packaging to reusable, recyclable or compostable materials by 2025.

March 12, 2021



Posted by DeAnne Toto

Municipal / IC&I



Restaurant giant Yum Brands to phase out EPS packaging by 2022

After being lobbied by a non-profit organization, Yum Brands – which owns the Pizza Hut, Taco Bell, and Kentucky Fried Chicken global restaurant chains – has also committed to making all of its packaging fully compostable or reusable by 2025.

February 27, 2020 Canadian Plastics

Aldi, with U.S. headquarters in Batavia, Illinois, says its new sustainability charter demonstrates the retailer's commitment to protecting the planet's resources and ecosystems with a series of initiatives that will be achieved between now and 2030. The charter includes efforts in packaging. The company says it will reduce packaging materials by 15 percent and convert all Aldi-exclusive packaging to reusable, recyclable or compostable materials by 2025. The company says its ability to influence packaging is significant because more than 90 percent of the products it sells are exclusive items. Additionally, the retailer will remove expanded polystyrene (EPS) from produce packaging by the end of this year.

*Källa: Canadian Plastics, Plastic News, Safer Chemicals – Healthy Families

Ban and regulations on EPS are implemented across the world

Polystyrene to be phased out next year under Australia's plastic waste plan

Conservation groups welcome aspects of the largely voluntary packaging and recycling targets but warn regulation will be necessary



▲ Australia's National Plastics Plan aims to phase out polystyrene foam and food and beverage containers, and cut pollution from washing machine outflows and cigarette butts. Photograph: cglader/Getty Images/istockphoto

Polystyrene foam commonly used to package consumer goods will be phased out in Australia by mid-2022 as part of a national plan to combat mounting plastic waste.

SUSTAINABLE BUSINESS

Maryland Bans EPS Packaging in Food Service



Food and beverage packaging has gone into effect, making Maryland the first state to prohibit the use of the containers.

FORBUD MOT ENGANGSPLAST FRÅ JULI

Om under fire måneder blir en rekke plast forbudt i Norge.



EU approves tax on nonrecycled plastic

The European Union has approved a plastic tax on nonrecycled plastic waste, which will be implemented Jan. 1, 2021. The plan includes a 0.8 euros per kilogram levy on nonrecycled plastic packaging waste to be paid by member states into the EU budget.


Introduction of a new plastic packaging



BLE OR
PLING

*Källa: The Guardian, Foodtank, WWF, Recycling Today, UK Government

Challenges with current packaging



EPS has traditionally been the preferred choice of packaging in the fishing industry because of its isolating and water resistant properties



There are several challenges related to EPS packaging

- ▶ Fossil material – not degradable
- ▶ Not recyclable but ends up on depots, get burned or other used as building materials
- ▶ EPS can easily crumble and risk ending up in nature or ocean



Norges Lønstatistikkforbønd mener flere enn transportbransje ligger i skylda for at det netter faktisk en fra vordende net av så store som



Nå håper kontroversen at regionale skoler kan bli en del av et nytt skolenettverk.



— Ich kann ich keine macht als challe gesprochen, nemmer als auf freier wasser her
wider auf freier wasser. Challe das gatt, wir haben ungut wasser wasser
wider auf freier wasser, was wasser wasser (Norges Landwässer fortgesetzt, Das
Museum, 1888)

How do I let my cyborg brain-mellic ally at three very tiny robot strike at 100
thousand robot power as a new machine that has a future.



Agrobacterium N6 temperature shift to help control onset of filamentous infection in vegetables.

Rant ut av kjerstevens

Under en kontroll i kongolesiska Södra Kivu regionen 1998, var 10 % av befolkningen medlem i en lokaliserad grupp för att undvika konflikter. 15 % hade varit medlem i en lokaliserad grupp för att undvika konflikter. 15 % hade varit medlem i en lokaliserad grupp för att undvika konflikter.

- Trængsel og enkle vilkårer ingen som svarer i dette spillet. De er det sjældent og det vigtigste som kan hjælpe forbud, og som slet med konsekvenserne. Men når vi dyper os i dette, ser man at de fleste mennesker har et stort behov for at være sammen.

– For det er ydning det som siger at vi skaber en lang og lysket vej. Her

Iskan for høje temperaturer kan den bedste erstatning, vil det næste stykke arbejde være at finde den bedste erstatning, marker Dose Medium.

[illegible]

Mattilynet opplyser til NLRK at så lenge smeltetvannet ledes vekk og det er overskudd av is ved levering, vil ikke frakten påvirkes.

Glad for fire controller

⁵ <http://www.fishbase.org>

- Ismerje a szöveg szerkezetét és a mondatok közötti viszonyokat!

træet k vare ude af institutionen. Det var svært rigtig aktivt, og institutionen havde allerede et stort net af, som lykkedes at få samarbejde med kommunerne. Efter et år blev det MØS.



Figure 10. SEM image of the surface of the polymer film after the removal of the metal layer. The surface is smooth and uniform.

bioRxiv preprint doi: <https://doi.org/10.1101/111111>; this version posted May 1, 2016. The copyright holder for this preprint (which was not certified by peer review) is the author/funder, who has granted bioRxiv a license to display the preprint in perpetuity. It is made available under aCC-BY-NC-ND 4.0 International license.

Journal of Management Education 34(1)

VI. Budgetary impacts should be the subject of

Een branslestandaard

Transpantarens og lignende tekniske løsninger tilsvarende ikke som transpantarens på dette område. Det skal være planen heppen fra

— Dette kan et fliggert raske med risiko. Vi må få riktig temperatur på fiske-
når den ligger ute i vannet, og det er viktig med oppvarming osv.

dokumentationen på at der har rdt og kolerisk temperatur under transporten. I et stort row med delfe, har vi på mange måder løst et stort problem til hus, men vi tror Malm.



KHACHIKIAN Says vegetation, and not daily fire, explains the difference between



*Källa: NRK

A demanding value chain



Fish producers

- Wet environment
- High speed packing
- Effective logistics
- Cooled transport
- Long distances

Retailers & Restaurants

- Large storage space
- EPS disposal
- No return system
- Want sustainable suppliers

Consumer

- Sustainable choices
- Key player in sustainability debates

Do you want
to be
sustainable?



Fresh Fish
The sustainable fresh
fish packaging

Smurfit Kappa Fresh Fish Concept

**CORRUGATED
BOX**



PAPER

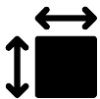


MACHINE SYSTEM





Two models – machine erected or manually erected



Six standard sizes (3, 5, 7, 10, 12 and 20 kg) in white, brown or a combination of brown and white



Inner- Outer liner water resistant



Brand promotion – 0-6 color print



A sustainable packaging increases your brands sustainability profile





The waterproof paper placed in tray



Fish residue, sludge and blood separated from box



Paper to waste – Box to recycling

A cost effective and sustainable solution



- ▶ Corrugated delivered flat on pallet which reduces transportation cost and CO2 footprint
- ▶ Less need of storage space



- ▶ Corrugated is 100% renewable, recyclable and bio degradable
- ▶ Paper protects the box from fish sludge, residues and smell

Fit for purpose packaging

Semi automatic



Fast and easy erected in JIG

Automatic



Standard machines that
integrates in current production
flow

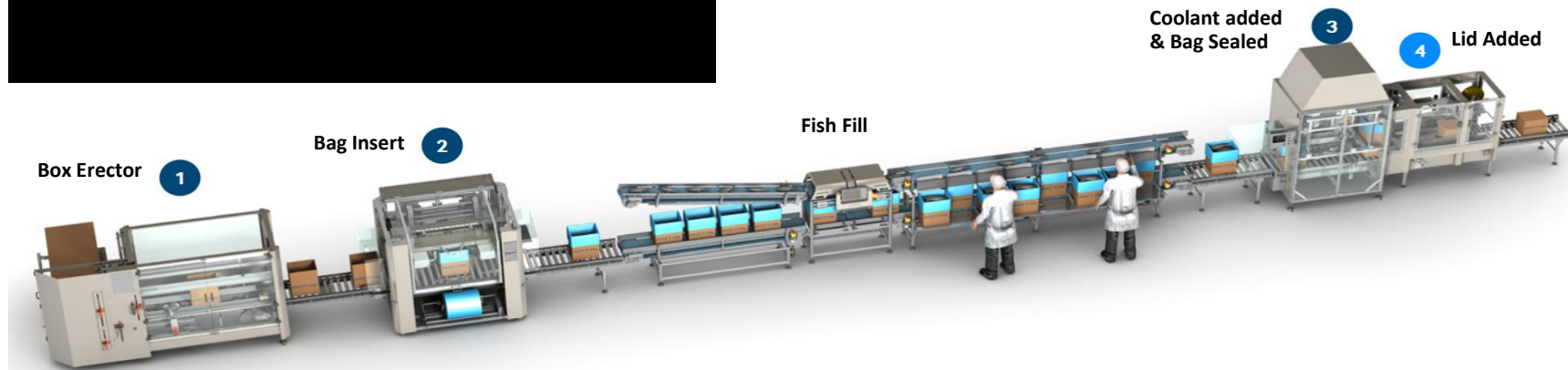
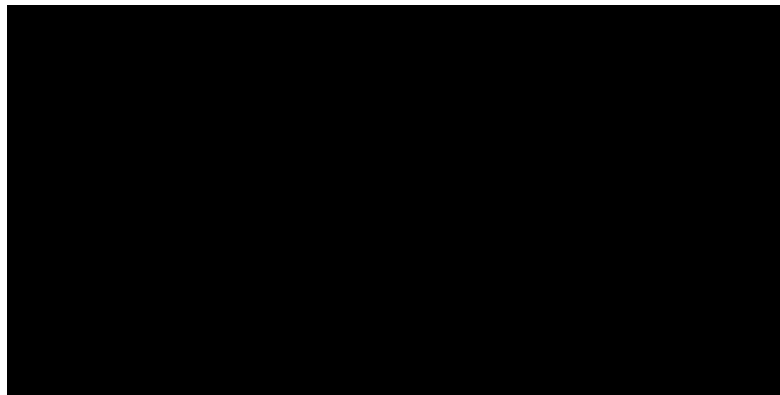
 Smurfit Kappa



Smurfit Kappa Machine Systems
offer “fit for purpose” machines

Paper Based Solution

Automated Production Line



Manual box



Manually erected
- or combined machine/manual



Six standard sizes (3, 5, 7, 10, 12 and 20 kg) in white, brown or a combination of brown and white



Inner- Outer liner water resistant



Brand promotion – 0-6 color print



A sustainable packaging increases your brands sustainability profile

Premium box



Manually erected
- or combined machine/manual



Specially Developed for 20kg fresh fish
800mm x 200mm box



Inner liner water resistant aluminium – keeps cool
Outer liner water resistant



Brand promotion – 0-6 color print
Exclusive look, direct delivery to end customer



A sustainable packaging increases your brands
sustainability profile

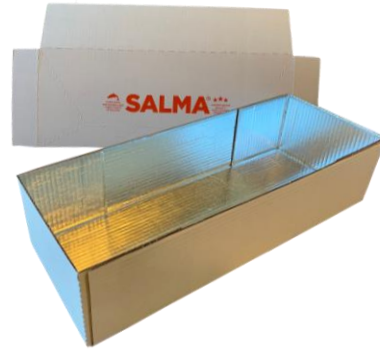
History

Previously – and already implemented solutions



Nor-Box

Substitute EPS, approved for air cargo



Salma

Vacuum packed loins



Paperbased packaging is the future

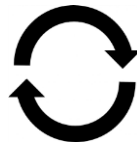
Paper is renewable. Our boxes are FSC®-certified

Renewable



Paper packaging can be recycled 7-8 times.

Recyclable



Recyclable



When the packaging has reached the limit of recycling the fibres can be used for other products than packaging. Paper does not harm nature

**Bio
degradable**



Recovered



All materials are recyclable in theory. The challenge is to secure that recycling actually happens.

In the EU approximately 80 % of all paper-based packaging are recovered

Potential Savings Financial & Environmental

- Inbound Logistics
- Storage
- Outbound Logistics
- Improved Automation
- Co2 Reduction
- Future Ready



Comparison summary

Key sustainability & supply chain criteria

Solutions	EPS	Nor-Box
Insulating Properties	+++	+
Inbound Transport	--	+++
Storage	--	+++
CO2 Produced	--	++
Handling	+	+++
Brand image	---	+++
Price	++	++
Scalability	++	+++
Outbound Efficiencies	+	+++

+/-	OK/Poor
++/--	Good/Bad
+++/--	Perfect/Undesirable



FishBox vs EPS (5kg)

Inbound Logistics – *Example high volume (to allow 1 same load outbound in a 40' container)

Potential Reduction	Trucks	*Transport & Handling Cost	Cost per Unit	CO2 Use
Paper Based Solution - Optimised	1/3	13c ea		245 kg
EPS	1.5	60c ea = 78% ↑		450 kg = 45% ↑

* Based on 1000km trip – 147g Co2 per tonne per km

Extra Storage space available.

- Reduced Costs
- Improved Efficiencies
- Manufacturing Expansion

Reduce your CO2 footprint



**the numbers above are indications from our research in the Norwegian industry.*

FishBox vs EPS (5kg)

Outbound Logistics – *Example high volume (based on full 40'container – 23 pallets)

Figures based on using Gel Packs @ 10% with Fish Box

	Boxes per pallet	Trucks Required	Fish per Truck	Transport Cost per Kg	CO2 Use
Paper Based Solution - Optimised	160 = 54% ↑	1	800kg = 35% ↑ + €65,000	€1.25	2940 kg
EPS	104	1.35	520 kg	€1.69 = 26% ↑	3969 kg = 26% ↑

* Based on 1000km trip to ship same qty – 147g Co2 per tonne per km (Salmon @ €10/kg)



Don't ship water



**the numbers above are indications from our research in the Norwegian industry.*

EPS vs FishBox

Logistics Outbound Example

Space saved due to reduced thickness of solution & different coolant.

Parameter to consider:
load max weight

+54%

104

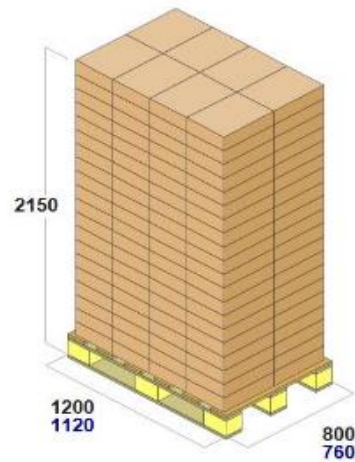
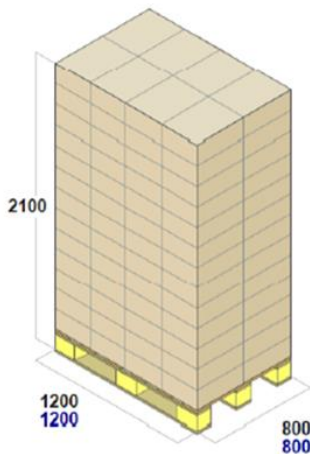
Boxes per pallet (as today
with 1.25 kg ice)

Tray height: 150mm

160

Boxes per pallet (with 0,5 kg
alternative coolant)

Tray height: 100mm



Gel Packs

Postives

- ▶ More space-controllable than ice; more space for fish on the pallet & truck.
- ▶ Is capable of maintaining its cold status for longer than the ice.
- ▶ It can be reused based on the supply chain.
- ▶ No leak, no melt, no excess moisture
- ▶ Relatively cheap and widely available.
- ▶ Non Toxic & Food Safe

Negatives

- ▶ Needs to be put in a freezer to obtain the right temperature.
- ▶ Sustainability: Contents safe, working on recyclable outer.

How to Use

- ▶ Product placed below gel packs.
- ▶ 0.5kg of gel packs for each 0.03 m³ for every 24 hours



CO2 EPS vs FishBox

The numbers indicate the CO₂ value of the material



1,417 kg/t

Reduction of
CO₂ emissions:
440%

=

How many tonnes of
CO₂ for you?



320 kg/t

**the numbers above are indications from our research in the industry.*

Creating Better Packaging for a Better Tomorrow

