

SUSTAINABLE BUILDING BLOCKS FOR THE FUTURE

*Recommendations on materials for
packaging, textiles and products with a
long time span*



Det Nationale

BIOØKONOMI

Panel

February 27 2020

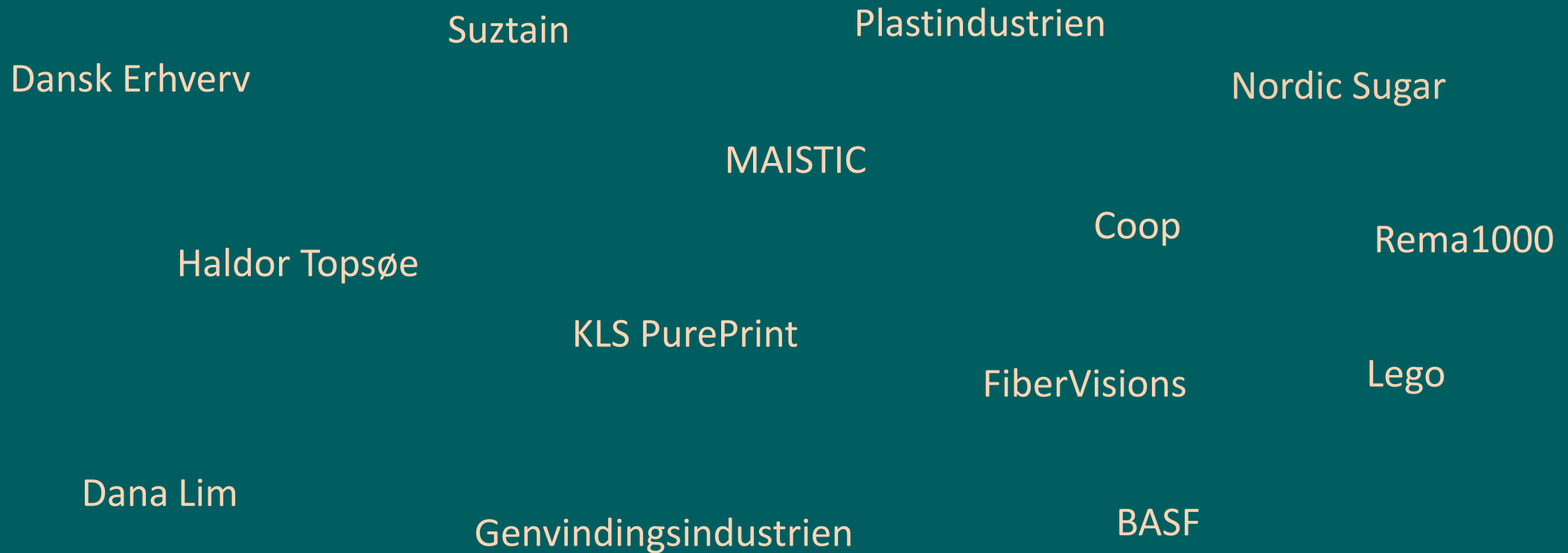
Asbjørn Børsting

Chair of The National Bioeconomy Panel

Members of The National Bioeconomy Panel

- Cha Asbjørn Børsting, Direktør DAKOFO
- Louise Bünemann, Chefkonsulent, Dansk Industri
- Claus Crone Fuglsang, Senior Vice President, Novozymes
- Kristine van het Erve Grunnet, Chefkonsulent, Dansk Energi
- Anne Maria Hansen, Innovationsdirektør, Teknologisk Institut
- Niels Henriksen, Senior Advisor, Ørsted
- Bo Jellesmark Thorsen, Instituttleder IFRO, Københavns Universitet
- Ib Johannsen, Adjunkt Professor, Institut for Ingeniørvidenskab, Aarhus Universitet
- Uffe Jørgensen, Leder af Center for Cirkulær Bioøkonomi, Aarhus Universitet
- Lene Lange, Direktør, LLA-bioeconomy
- Jesper Lund-Larsen, Miljø- og arbejdsmiljøpolitisk Konsulent, 3F
- Rikke Lundsgaard, Landbrugspolitisk seniorrådgiver, Danmarks Naturfredningsforening
- Malene Møhl, Corporate Partnership Manager, WWF Verdensnaturfonden
- Katherine Richardson, Professor, Københavns Universitet
- Mette Skøt, Senior Vice President, Mannaz
- Lars Visbech Sørensen, Direktør, Agro Business Park
- Charlotte Thy, Sustainability Director, Danish Crown
- Henrik Wenzel, Professor, Syddansk Universitet

Private sector advisory body



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Background papers

DTU: Analyse af biobaserede materialer

TI: Analyse af danske styrkepositioner indenfor biopolymerværdikæden

SDU: Vision for en bio-methan og elektro-methan platform for fremtidens kulbrinteforsyning

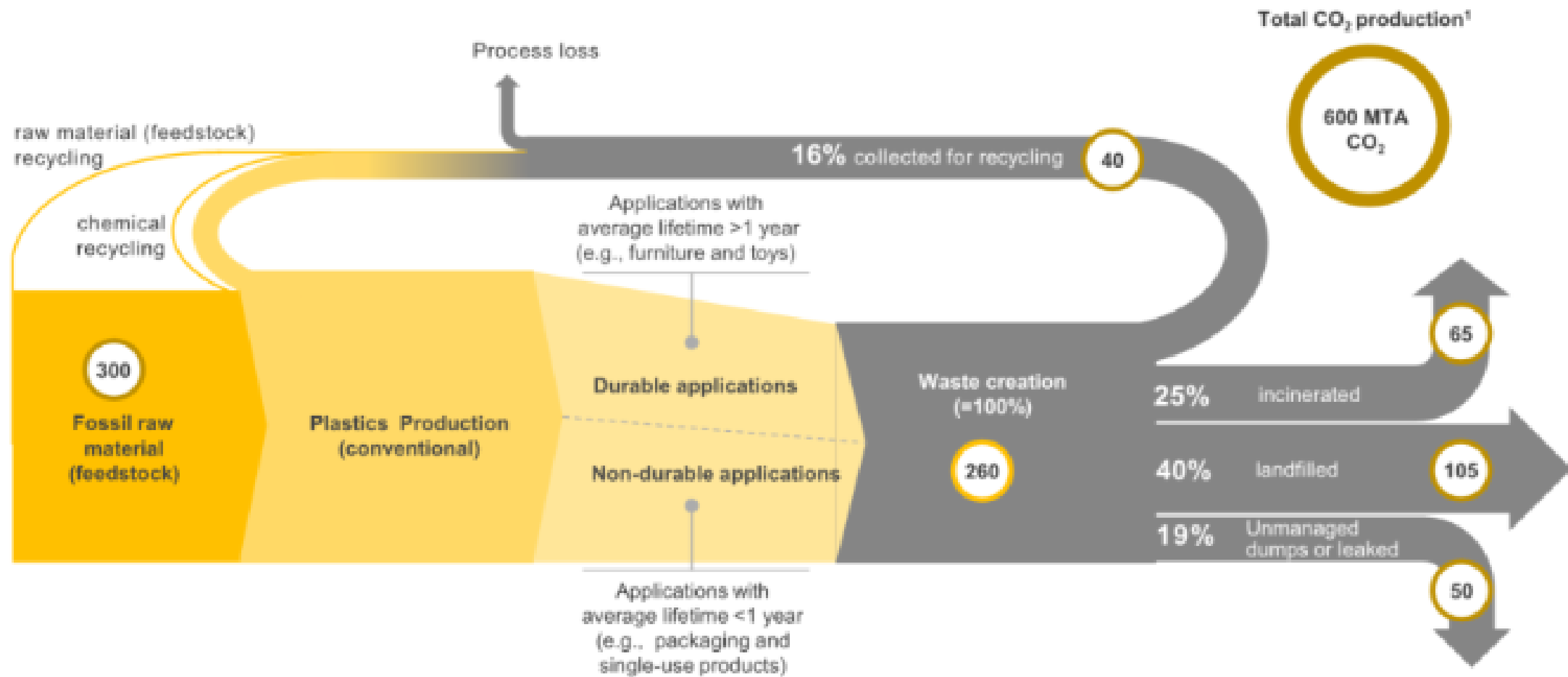
AU: Notat om danske afgrøder der kan være relevante i forhold til produktion af biopolymerer

IFRO: Analyse af det eksisterende og potentielle råvaregrundlag og forarbejdningsteknologier til produktion af biopolymerer

COWI: ”Anbefalinger om biopolymerer”

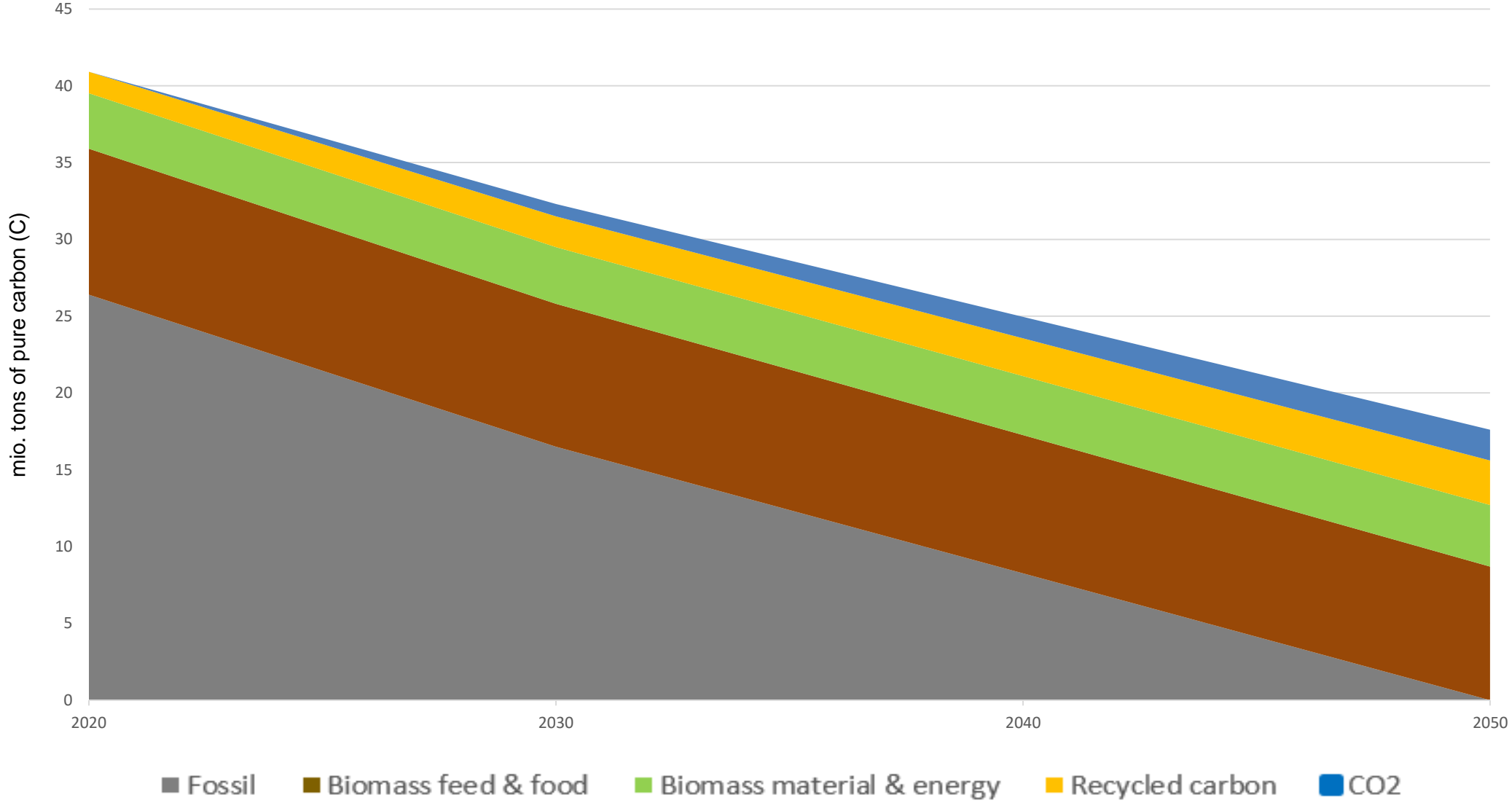
"There is not enough biomass to support all the needs of a future global economy where oil and gas are phased out. Therefore, renewable energy potentials must be utilized optimally. Although biocapacity is increased by new and efficient cultivation systems, reduction of food loss and waste, new varieties and better refining methods, far from enough biobased carbon will be available. The need for carbon must therefore also be covered by other sources of sustainable carbon through the re-use of e.g. plastics, textiles, wood and building materials, and by capturing and utilizing carbon from the atmosphere into new closed material and energy circuits."

Global plastics flows 2016, million tons annually (MTA)

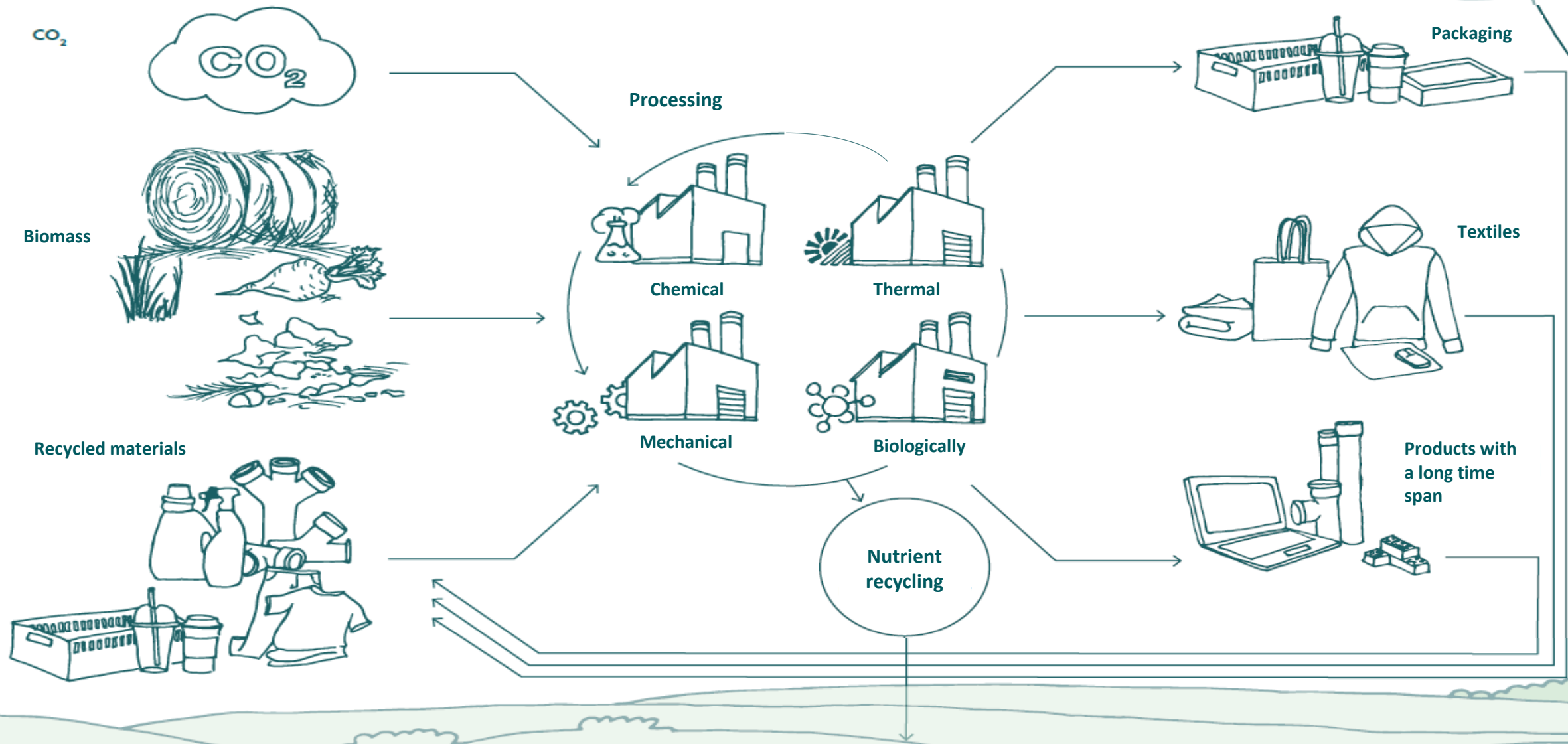


Figur 3 Det globale plastik flow. Kilde: McKinsey (2019)

Vision for carbon consumption in Denmark



Sustainable polymers





1

En national bioøkonomistrategi skal sætte klare politiske mål og skabe grundlag for investeringer.

2

Rammevilkår skal sikre bæredygtig omstilling væk fra fossile ressourcer.

3

Danmark som grøn testnation skal vise vejen til grøn omstilling gennem forskning og innovation, og skabe eksport og arbejdspladser

4

Danmark skal tage aktivt del i at skabe et styrket nordisk samarbejde om bioøkonomi.

5

Færdigheder og kompetencer om grøn omstilling skal styrkes og skabe nye arbejdspladser i hele Danmark.

6

En hvidbog om biomasse skal skabe tværfagligt grundlag for bæredygtig udvikling af den grønne omstilling.

7

Der skal skabes samfundsøkonomisk bæredygtige løsninger ved at udnytte synergier mellem forskellige markedsområder.

8

Genanvendelsessystemer skal medvirke til samfundsøkonomisk optimal anvendelse af vores ressourcer

9

Bæredygtige polymerer skal efterspørges af markedet ved hjælp af blandt andet standarder og offentlige grønne indkøb.

10

Produkter der skal være bionedbrydelige i det miljø, hvor de ender, beskrives på en positivliste.

11

Der skal kommunikeres klart og tydeligt om bæredygtige løsninger inden for emballage

12

Der er brug for analyser, der viser hvordan det fulde potentiale for at genanvende emballageaffald kan nås.

13

Erhvervspotentialet i udvikling og markedsføring af biobaserede specialprodukter skal udnyttes gennem udvikling, test og demonstration.

14

Der skal udvikles teknologier til genanvendelse af affald fra bl.a. tekstilsektoren.

15

Råvarer til nye og genbrugte tekstilfibre skal komme fra bæredygtige kilder.

16

Tidlig indfasning af særskilt indsamling af tekstilaffald.

17

Øget koordinering af forskning og udvikling inden for miljø- og sundhedsvenlige polymerer med særlige egenskaber indenfor for funktion og holdbarhed.

18

Analyser af, hvordan biobaserede additiver kan styrke et produkts samlede genanvendelsespotentiale

Recommendations

1

STRATEGY:

A national strategy for bioeconomy is formulated with the goal to set direction for the role of biomass, such as crops, residues and waste, in the Danish economy. The strategy should assess the potential positive societal effects and contribute towards long-term framework conditions to encourage public and private investments in the bioeconomy. The strategy should focus on the potentials for cooperation with other countries and on the role of Denmark in the global circular bioeconomy.

6

SUSTAINABLE BIOMASS:

A white paper on sustainable use of biomass in the transition towards an economy free of new fossil resources is prepared. The white paper should include all relevant value chains, sectors and ministerial areas and consider global and holistic sustainability aspects of biomass and biomass utilization. The purpose of the White Paper is to establish an increased common understanding to the benefit of future policy developments, including the ongoing development of sustainability criteria. The White Paper should be based on existing knowledge and regulation, and will be prepared in dialogue with the Nordic and other European countries.

Recommendations

10

BIODEGRADABILITY:

A dynamic positive list of products that must be biodegradable in the environment in which they end up is prepared. The positive list describes products that are not collected and recycled but end up in nature as a result of their use. It must be communicated so that it cannot be misunderstood as an invitation to throw biodegradable products into the wild.

Targets - packaging

In order to minimize the negative environmental and climate impact from the production and consumption of plastic packaging, it should be a goal for Denmark to:

- 1) Promote the use of new packaging with as little environmental and climate footprint as possible** within given technological and organizational options. This should be supplemented with bio-based material from residual and side streams from e.g. agriculture and forestry. For example, from wastewater and beet tops.
- 2) Reduce the loss of resources from packaging consumption.** Such a goal can be achieved by 1) better central and decentralized sorting systems and by focusing on design for recycling and reduction of complex packaging types, and by 2) developing and market mature technologies that can recycle packaging waste by mechanical, biological, chemical and thermal process. Guidelines are prepared for companies, authorities and citizens on recognized standards and facts promoting designs aimed at recycling and demand for packaging with as little environmental and climate footprint as possible. The objective is an increased common understanding of concepts such as bio-based polymer, biodegradability, mass balance, compostability and recycling.

Recommendations - packaging

11

COMMON UNDERSTANDING:

Guidelines are prepared for companies, authorities and citizens on recognized standards and facts promoting designs aimed at recycling and demand for packaging with as little environmental and climate footprint as possible. The objective is an increased common understanding of concepts such as bio-based polymer, biodegradability, mass balance, compostability and recycling.

12

LOWEST POSSIBLE ENVIRONMENTAL AND CLIMATE FOOTPRINT:

There is a need for analyses of how the environmental and climate footprint of packaging can be significantly reduced, including how chemical, biological and thermal recycling can complement mechanical recycling in order to achieve the full recycling potential without compromising the functionality of the packaging.

13

SPECIAL PRODUCTS:

A better framework should be created for the development, testing and demonstration of bio-based additives and special products with a better climate, environment, work environment and health profile. This can be done, for example, within glue in packaging and food contact materials

Targets – products with a long time span

In order to minimize the negative impact on the environment and climate, Denmark should aim to:

1. Produce new products with a long life based on sustainable polymers, which are preferably recycled materials or from sustainably produced lignocellulose-containing biomasses such as eg. wood, sugar cane, potatoes, beets or wheat.
2. Achieve the full recycling potential for long-life products through better collection systems, focus on design for recycling and using mechanical, biological, chemical, and thermal processes for recycling.

Recommendations – products with a long time span

17

SUSTAINABLE POLYMERS WITH SPECIAL PROPERTIES:

There must be increased national coordination of research and development in environmentally and health-friendly products with high durability and special functional properties such as epoxy, thermoplastic, adhesives and binders, including in relation to aging studies and repairability.

18

LOWEST POSSIBLE ENVIRONMENTAL AND CLIMATE FOOTPRINT:

There is a need for analyses of how the environmental and climate footprint can be significantly reduced, including how chemical, biological and thermal recycling can complement mechanical recycling in order to achieve the full recycling potential without compromising the functionality of the packaging.

Thank you

Bæredygtige byggeklodser til fremtiden

–Materialer til emballage, tekstiler
og produkter med lang levetid

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www.mfvm.dk/miljoe/det-nationale-biooekonomipanel