The pulp industry as the key player in modern bioeconomy

September 2016

Anna Maija Wessman
Secretary General, European Pulp Industry Association AISBL

CONTENTS

- EPIS in brief
- What is ’bioeconomy’?
- Pulp industry
  - Raw material
  - Process
  - Products
- Summary

European Pulp Industry Sector Association AISBL

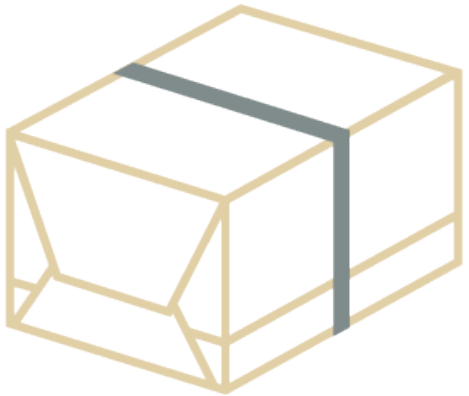
Full members

- BillerudKorsnäs AB
- Burgo Ardennes S.A.
- Celulose Beira Industrial S.A.
- Grupo Empresarial ENCE S.A.
- Mercer Pulp
- Metsä Fibre
- Mondi AG
- Munksjö Aspa Bruk AB
- Rottneros AB Vallvik
- SCA Graphic Sundsvall AS, Östrand Pulp Mill
- Stora Enso Oyj
- Södra Cell International AB
- UPM-Kymmene Corporation

Associate members

- Arauco Europe Coöperatief U.A.
- Canfor Pulp Germany GmbH
- CMPC Celulosa S.A.
- Fibria International Trade GmbH
- Suzano Pulp and Paper Europe

= Market pulp producers



EPIS
European Pulp Industry Sector

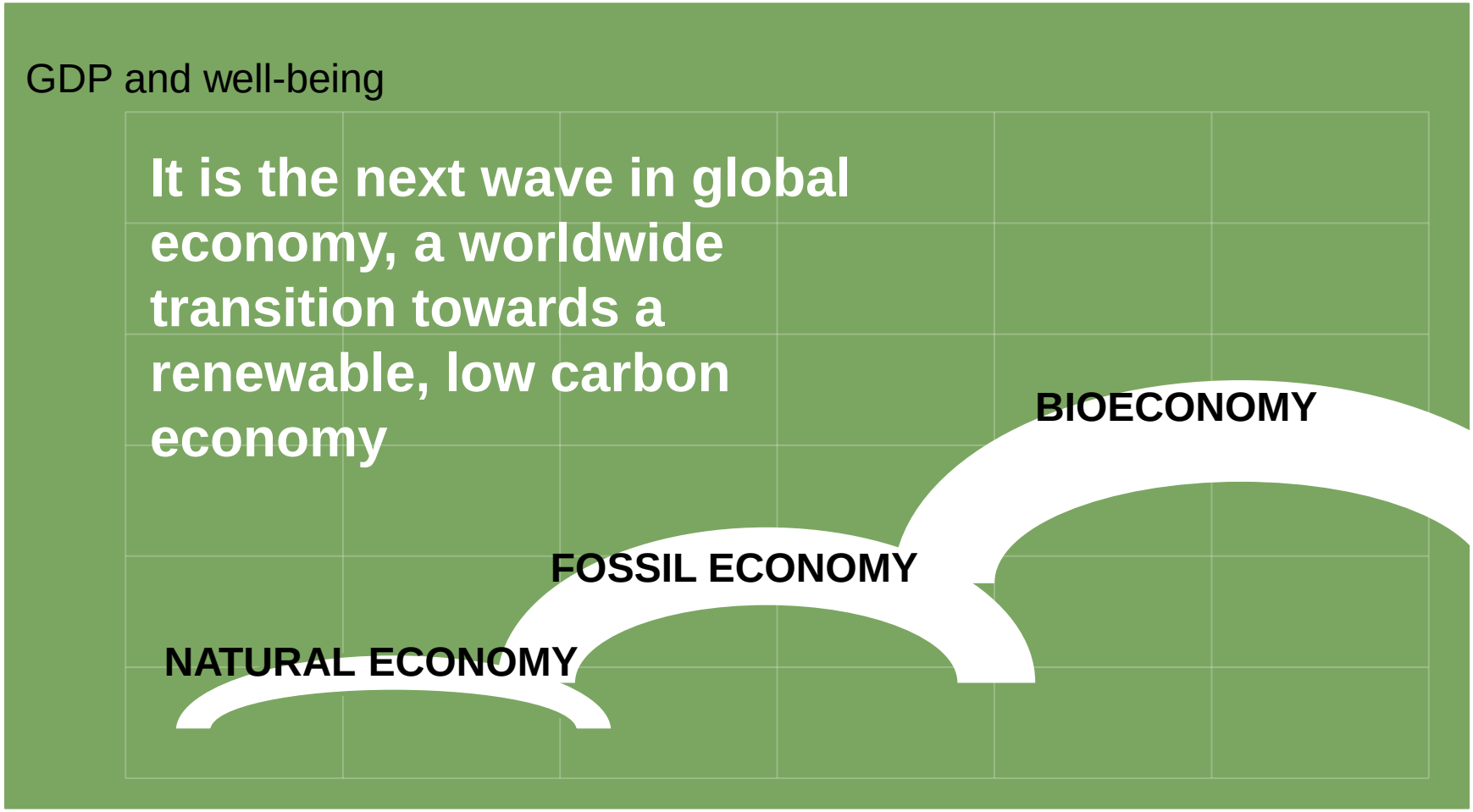
European Pulp Industry Sector Association AISBL
- KEY FIGURES

- Officially founded in 2005
- A Belgian association registered in Brussels, 250 Avenue Louise – works closely with CEPI
  - c/o Sustinendo Oy, Helsinki, FINLAND
- Combined turnover of member companies equaled 63 billion EURO in 2015
- Representing 82% of the European market pulp volume, global coverage 26 million tons of the ca. 60 million ton capacity (43%)

European Pulp Industry Sector Association AISBL

- **Promotes** a better understanding of the **progress** made by the industry and of the **benefits** arising from the use of its renewable products;
- **Collects statistics** for the supply and demand of market pulp, **reports** to its members
- **Represents the industry collectively** towards authorities and other organizations
- Collaborates on **sustainability** topics

WHAT IS BIOECONOMY?



Source: Finland's bio-economy strategy

BIOECONOMY REFERS TO AN ECONOMY, WHICH DOES THE FOLLOWING:

1. Relies on renewable natural resources
2. Reduces our dependence on fossil resources
3. Prevents biodiversity loss
4. Creates new economic growth and jobs
5. **All based on the principles of sustainable development**

THE PULP INDUSTRY IN THE CORE OF BIOECONOMY

RAW MATERIAL FROM RENEWABLE RESOURCES

- All members are Chain-of-Custody certified with FSC® and/or PEFC™
  - Legality is the first criteria
  - No wood is used from biodiversity hotspots
  - 100% traceability
- The amount of certified wood varies between 66-100%, while only 10% of the world's forests are certified
- Recyclable and biodegradable raw material
  - **CIRCULAR ECONOMY**

PROTECTING BIODIVERSITY IN PRODUCTION FORESTS

- The **legal framework** as well as the **forest certification criteria** take into account habitats important for biodiversity and add to their features
  - Biodiversity is always considered in forest management and harvesting plans
- Majority of endangered species are characteristic for natural habitats, not in production forests

EPIS
European Pulp Industry Sector

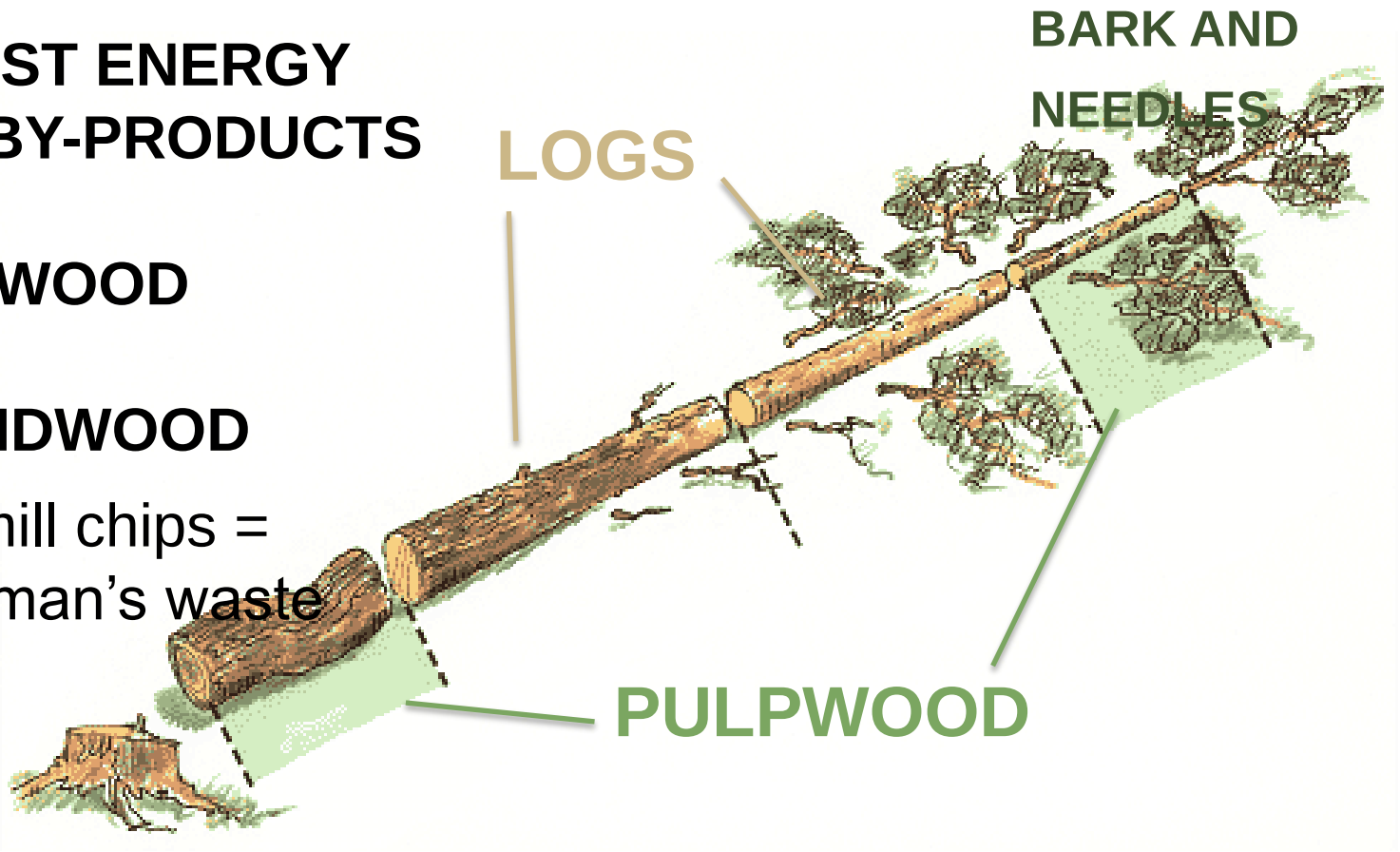
WOOD IS USED IN AN EFFICIENT AND VERSATILE WAY

FOREST ENERGY AND BY-PRODUCTS

PULPWOOD

ROUNDWOOD

Saw mill chips = other man's waste



EPIS
European Pulp Industry Sector

PULP FOR A LOW CARBON WORLD

1. GROWTH
- Trees bind carbon as they grow
- Young trees bind more carbon, wherein **forest regrowth is beneficial**

2. STORAGE
- Carbon stays in the product

3. SUBSTITUTION
- Carbon dioxide emissions are saved when fiber-based materials replace fossil based materials

CASE EXAMPLE: ECOSYSTEM RESTORATION PROJECT IN GHANA

- Forest cover is rapidly disappearing – for reasons other than industrial wood use.
- **In countries, where forest industry is well established, forests grow more than they are used.**
- Africa, with the government in Ghana as an example, is slowly realizing that **sustainable forest industry is the only way to save the forests and start reforestation.**

EPIS
European Pulp Industry Sector

THE ECOLOGICAL FOOTPRINT COMPONENTS

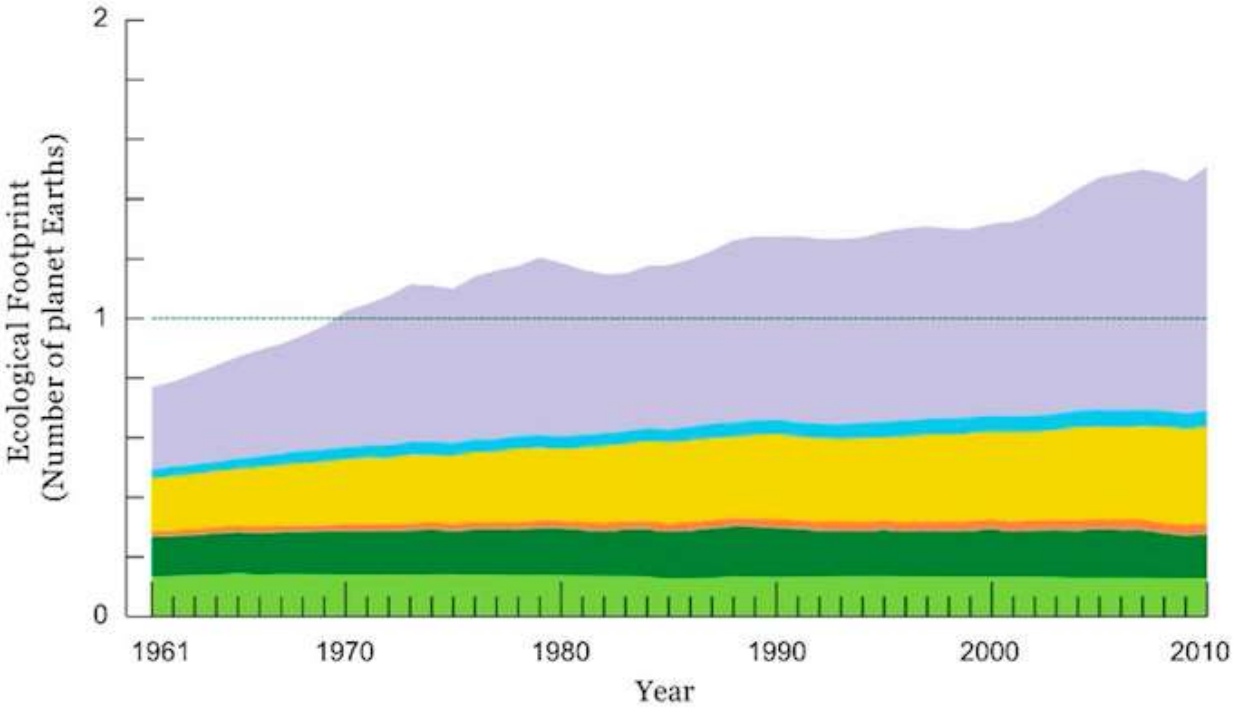


Figure 3: The Ecological Footprint components: *the carbon component makes up more than half of the total global Ecological Footprint. (Global Footprint Network, 2014).*

WWF Living Planet Report 2014 Summary page 10

PULP MILLS PRODUCE A SIGNIFICANT AMOUNT OF BIOENERGY

- A modern pulp mill is a net producer of energy

  + 240% electricity self-sufficiency in a modern bio-product mill
- **Renewable energy** generated by burning the black liquor
- As a by-product, the surplus bioenergy contributes to the business case of a pulp mill, with good efficiency

CASE EXAMPLE:
PULP INDUSTRY IN SWEDEN

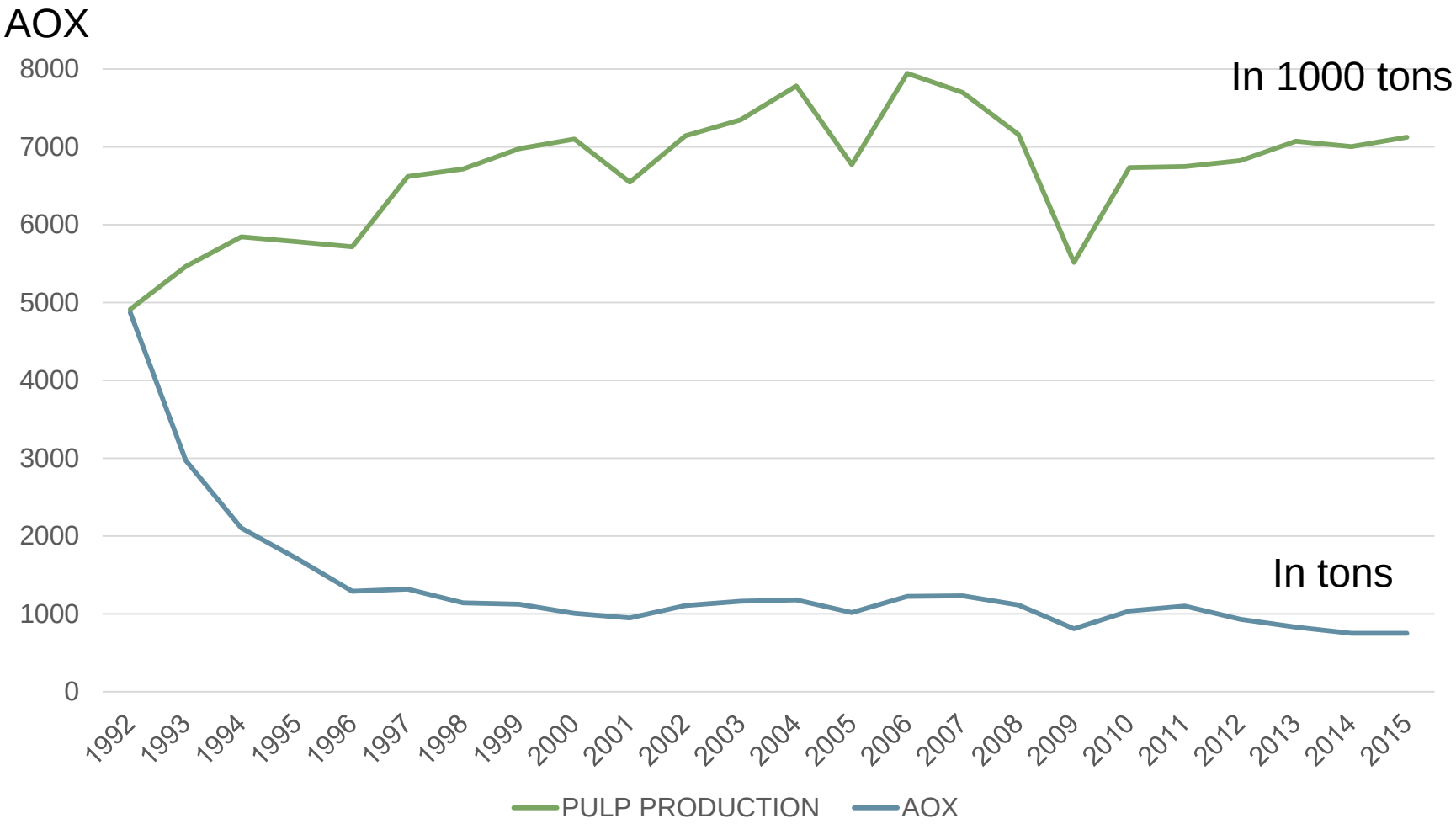
- 96% of the heat energy used by the industry is bioenergy
- 95% of the electricity is from nuclear, hydro, bio or wind origin
- They are therefore nearly **free of CO_2 emissions**

Source: http://www.skogsindustrierna.org/branschen_1/fakta/energi

MODERN AND EFFICIENT TECHNOLOGY HELPS TO REDUCE ENVIRONMENTAL IMPACTS

- The pulp industry has proved it is possible to decouple growth from adverse environmental impacts
- Efficient use of raw materials, water and energy
  - Resource efficiency
  - More with less

CASE EXAMPLE: EMISSIONS DECREASE IN FINLAND



Source: Finnish Forest Industries

EPIS
European Pulp Industry Sector

WHY IS PULP PRODUCED?

WHAT IF THERE WAS NO PULP AVAILABLE AS A RAW MATERIAL ?

“If there were no paper, humanity would be in difficulty.”

PRODUCTS FOR A LARGE VARIETY OF END USES

Main end uses for market pulp

- Tissue
- Graphic papers
- Specialty products
- Packaging
- Fluff pulp
- Viscose
- CMC etc.

EXAMPLES OF NEW BIO-PRODUCTS FROM PULP MILLS – from pulp, lignin, bark and wood residues

- Biofuels
- Biochemicals
- Biocomposites
- Bioplastics
- Biofibrils
- Biomedical products

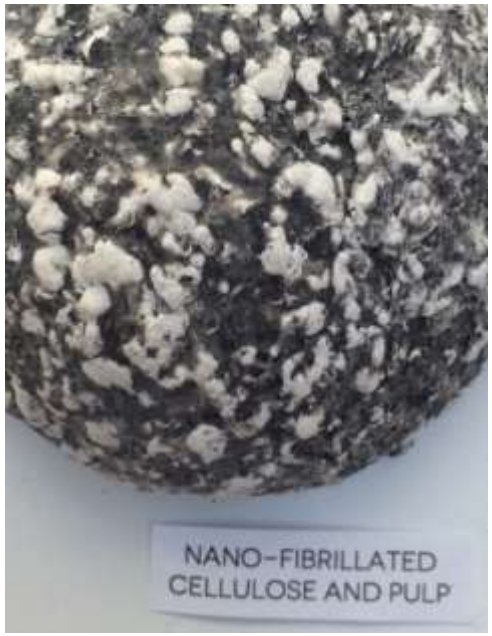
PRODUCTS GENERATED IN THE PULPING PROCESS

- Crude tall oil
- Turpentine
- Biogas from sludge
- Electricity
- Heat
- Etc.

EPIS
European Pulp Industry Sector

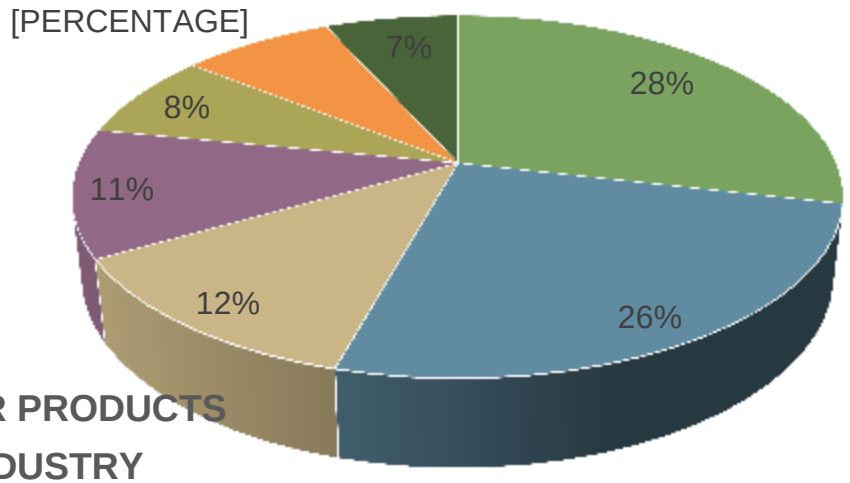
EXAMPLES OF NEW APPLICATIONS FOR CELLULOSE

EXAMPLES OF NEW APPLICATIONS FOR CELLULOSE



THE PULP INDUSTRY CONTRIBUTES GREATLY TO EU BIOECONOMY* (EU-28, 2013)

TOTAL 600 BILLION EUROS



Excluding agriculture, forestry, fishery, food, beverages and tobacco products

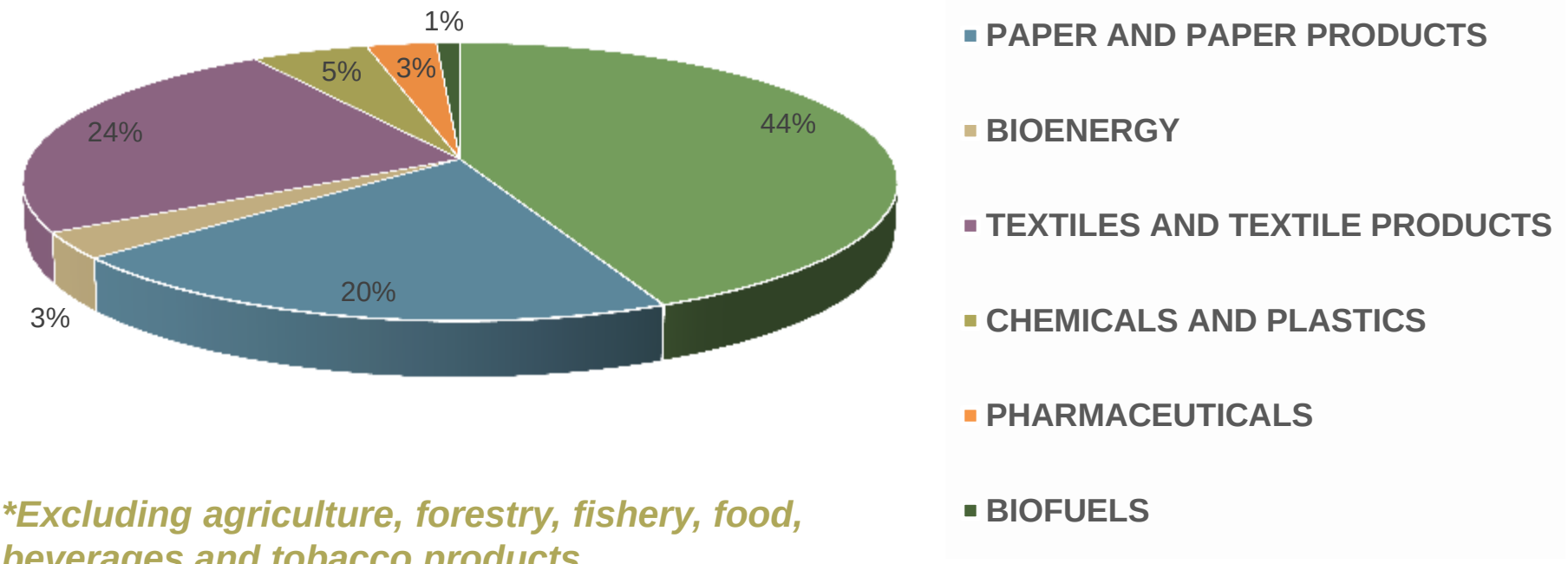
- ***With them the total would be €2,1 trillion***

EPIS
European Pulp Industry Sector

Source: European Bio-economy in figures, March 2016
Nova Institute for Ecology and Innovation

THE PULP INDUSTRY CONTRIBUTES GREATLY TO EU BIOECONOMY* (EU-28, 2013)

TOTAL 3.2 MILLION JOBS



**Excluding agriculture, forestry, fishery, food, beverages and tobacco products*

EPIS
European Pulp Industry Sector

Source: European Bio-economy in figures, March 2016
Nova Institute for Ecology and Innovation

POSITIVE SUSTAINABLE BENEFITS ARE DERIVED FROM THE PULP INDUSTRY

“The pulp industry manages a product that optimally satisfies the goals of global sustainable development”

EPIS
European Pulp Industry Sector

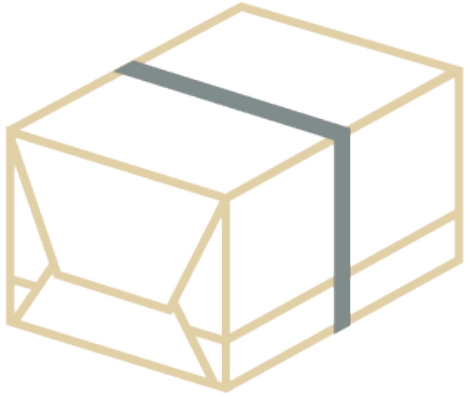
In summary:

The pulp industry is a key player in modern bioeconomy.

PULP INDUSTRY VS. BIOECONOMY IN SUMMARY

- ✓ Renewable, natural resources
- ✓ Carbon benefits
- ✓ Fiber from sustainably managed forests
- ✓ Decoupling growth from adverse environmental impacts
- ✓ Growth and jobs
- ✓ Contribution to all UN Sustainable Development goals

THANK YOU



Anna Maija Wessman
Secretary General
European Pulp Industry Sector Association AISBL
e-mail: annu.wessman@sustinendo.fi

EPIS
European Pulp Industry Sector