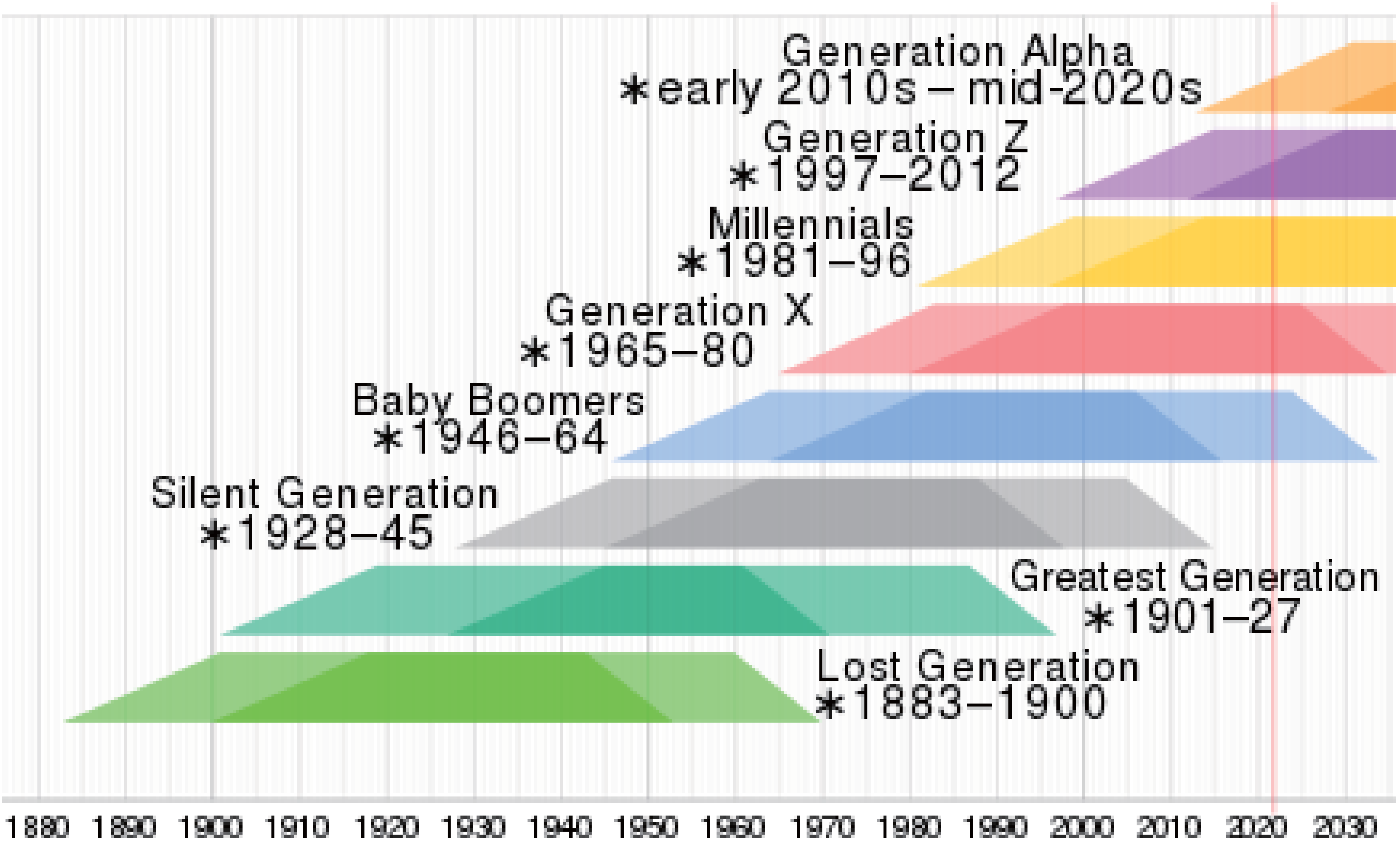

Generation Alpha
∗early 2010s – mid-2020s
Generation Z
∗1997–2012
Millennials
∗1981–96
Generation X
∗1965–80
Baby Boomers
∗1946–64
Silent Generation
∗1928–45
Greatest Generation
∗1901–27
Lost Generation
∗1883–1900
1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030

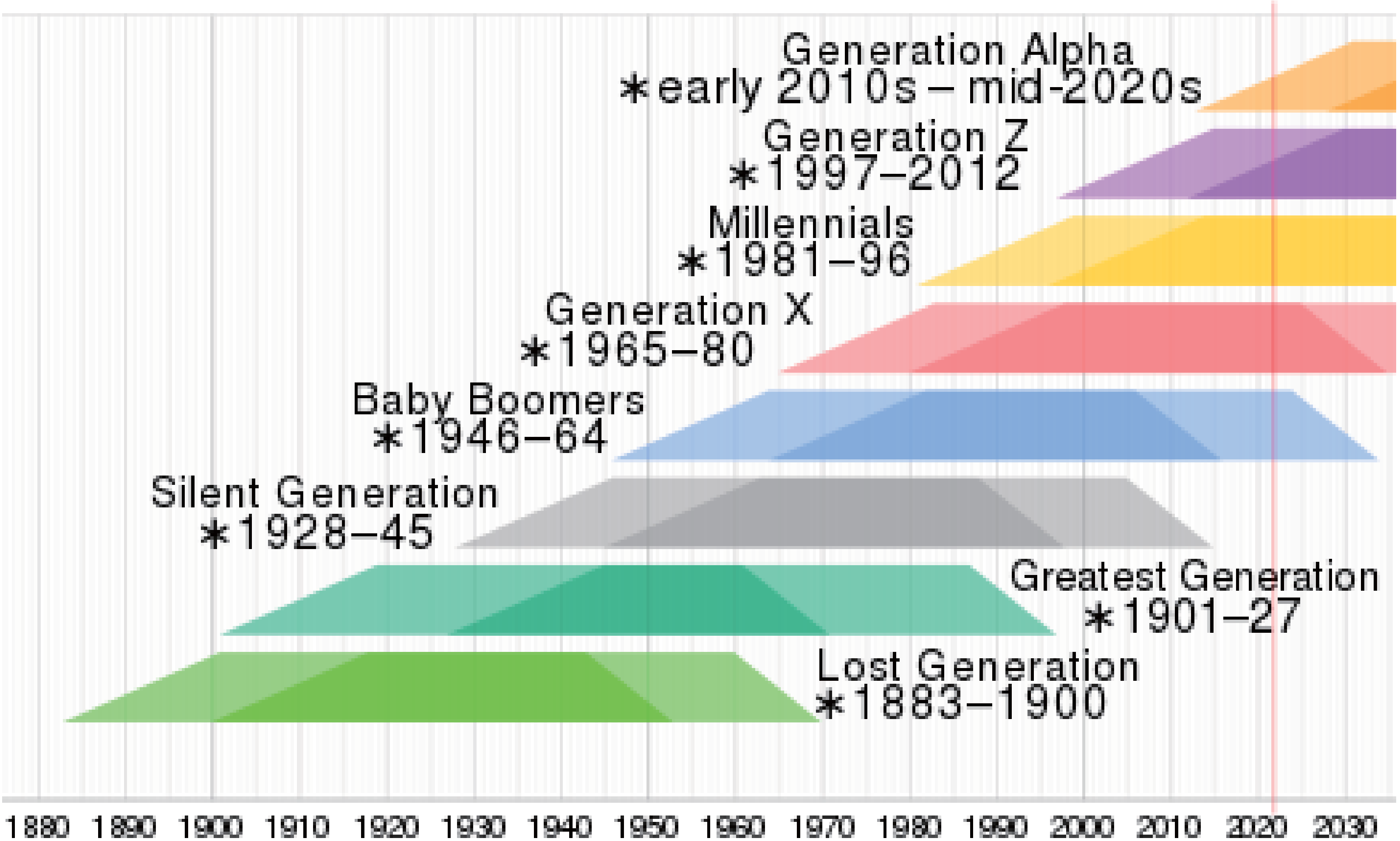
An overview of key issues facing nonwovens on top of European market trends.

Pierre Wiertz

IDEA 22 CONFERENCE MARCH 31, 2021

To make it simple

- Looking backwards – 4 generations of nonwoven users
- What can we learn from 50 years of market data?
- New Generations- New Missions - New Challenges
- A sneak preview: European Nonwovens market after the 2020 record?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Greatest Generation
∗1901–27
Lost Generation
∗1883–1900
1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020 2030

Born between 1946 and 1964, the boomers reaped all the benefits of the postwar period's extraordinary economic growth

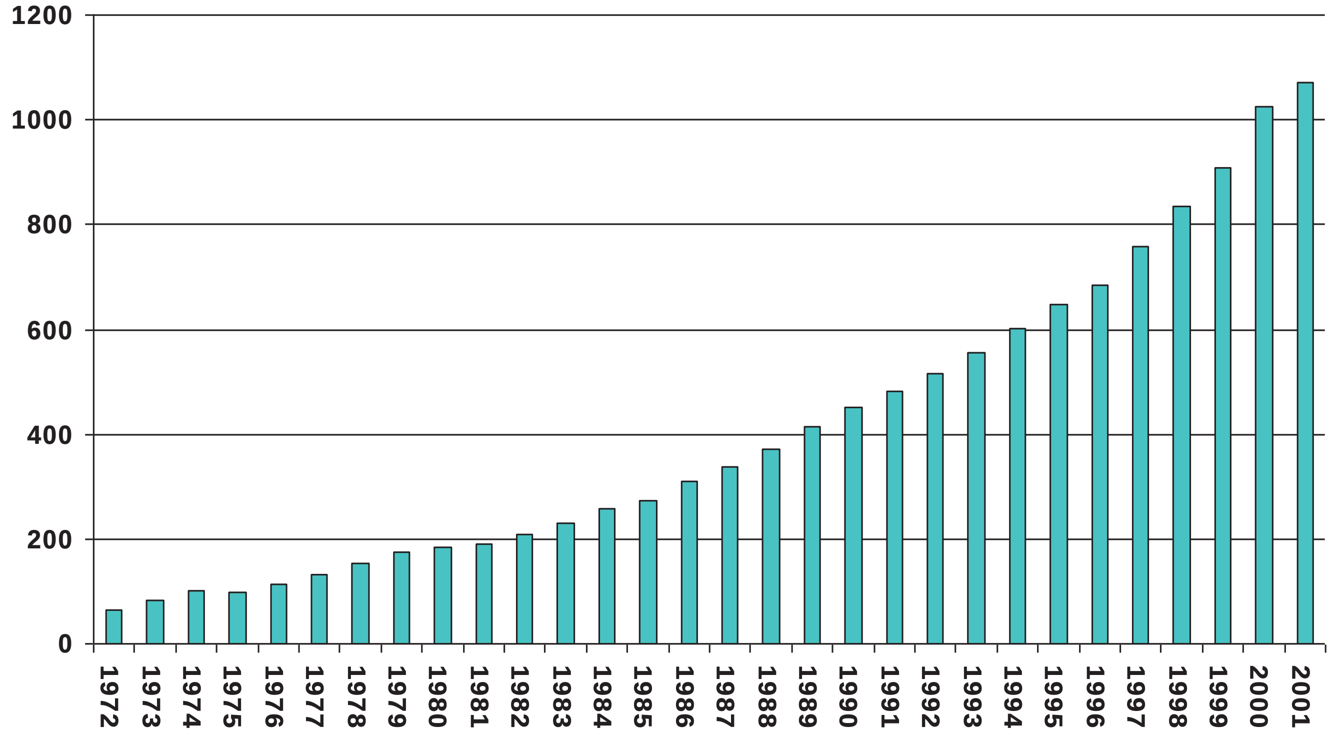
How the Boomers Saved Everything, P.J. O'Rourke

First real beneficiaries of modern nonwovens were baby-boomers and Gen X
Inventors of modern nonwovens were their predecessors

- “The seeds of the nonwovens industry may (…)have been sown in the 1870s. The germination, however, only began in earnest in the United States and in Europe during the 1920s, 1930s, and 1940s.
- The industry finally became commercially viable in the United States and in Europe during the 1970s, and a bit later in Japan and elsewhere.
- Since then the growth of the industry and the versatility of its products has been revolutionary, even chaotic – albeit a healthy one,manifest in the problem of defining the nature of the products”

(S. K. Batra, B. Pourdeyhimi, Introduction to Nonwovens Technology)

Production of Nonwovens in Western Europe (1972 – 2001) in 1000 Tonnes



Celebrating 50 years
...and 5 decades of on-going market data collection

A Tribute to EDANA Stalmarts and Pioneers

Guy Massenaux

Philip Preest

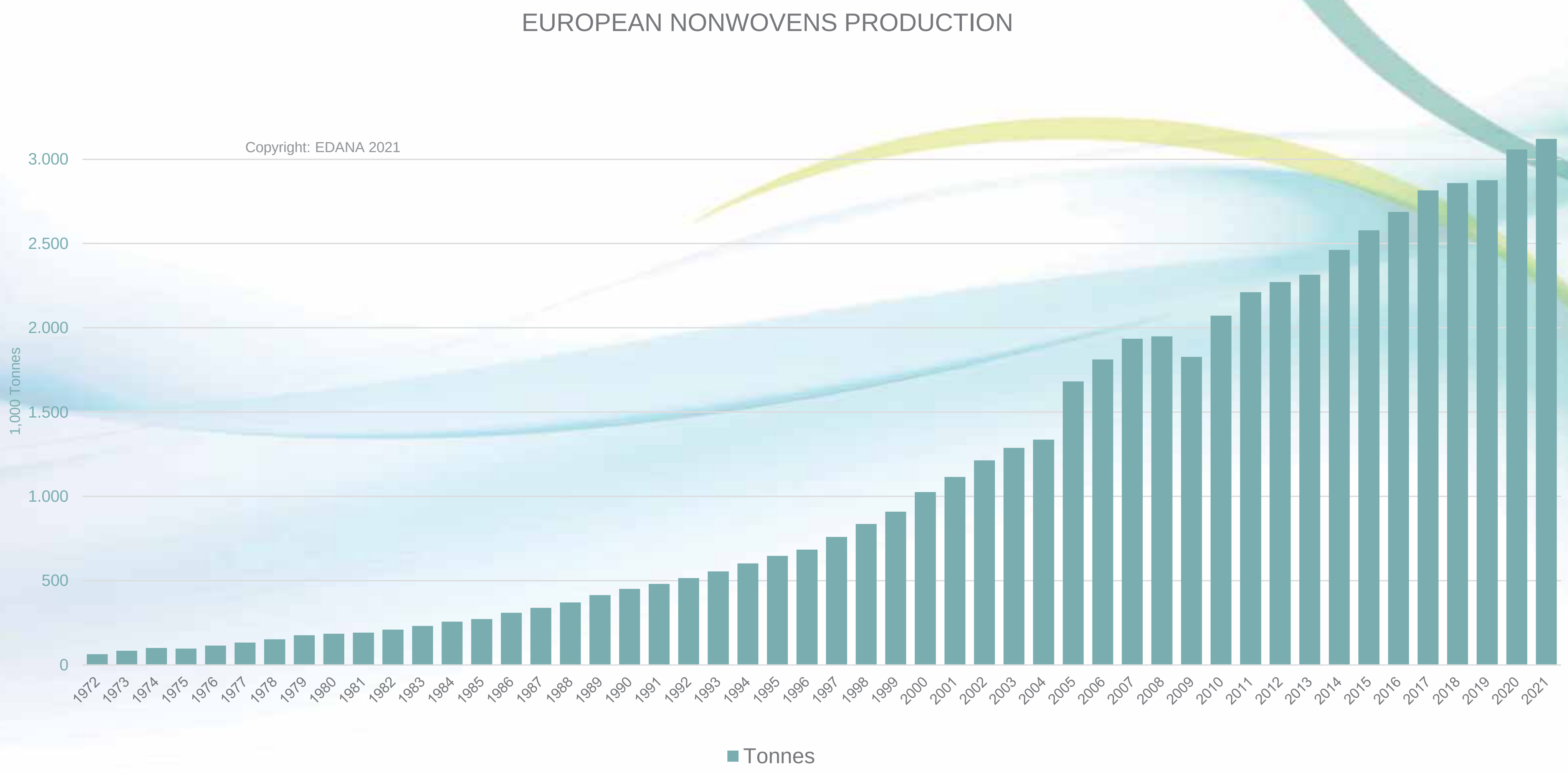
EDANA European Nonwoven Statistics

Standardized questionnaire of more than 10,000 possible cells		
Greater Europe	Production and raw material consumption by process Sales by process and by market segment	In tonnage and square meters

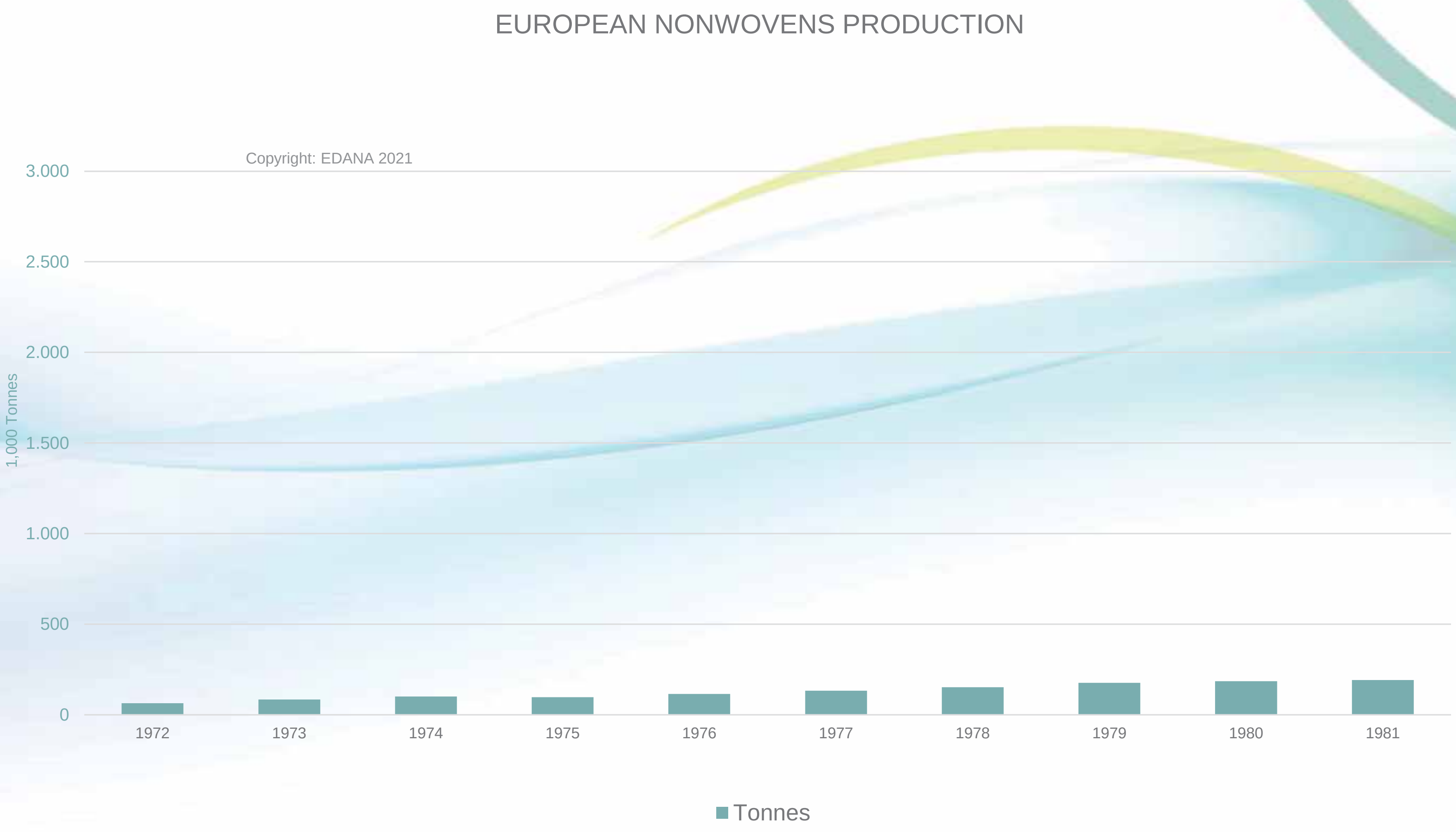
Compilation of actual data directly received from EDANA member companies.

In 2021, 118 companies provided their 2020 returns.

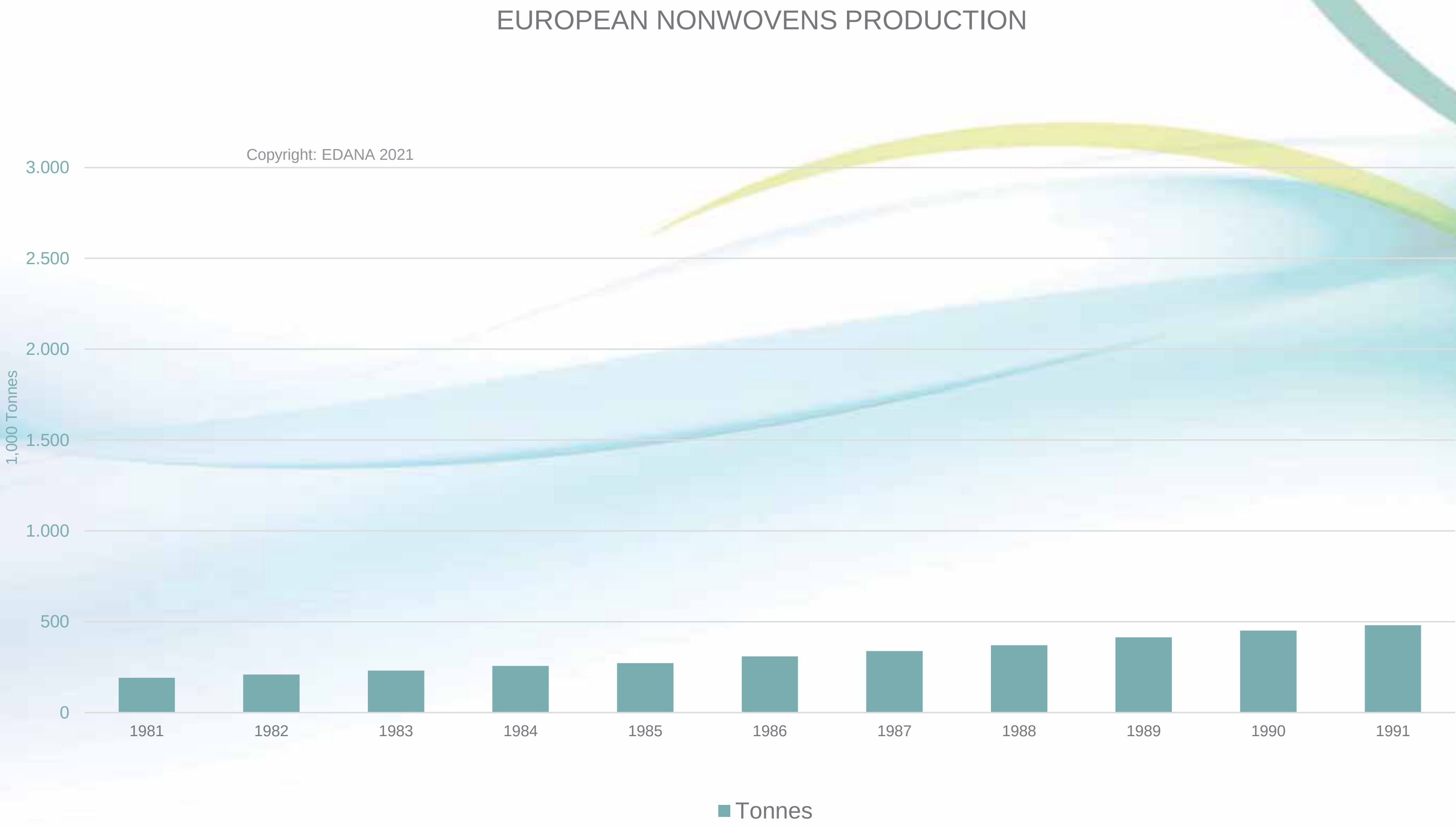
Monitoring of non-members.


EUROPEAN NONWOVENS PRODUCTION
Copyright: EDANA 2021
1,000 Tonnes
3.000
2.500
2.000
1.500
1.000
500
0
1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021
Tonnes

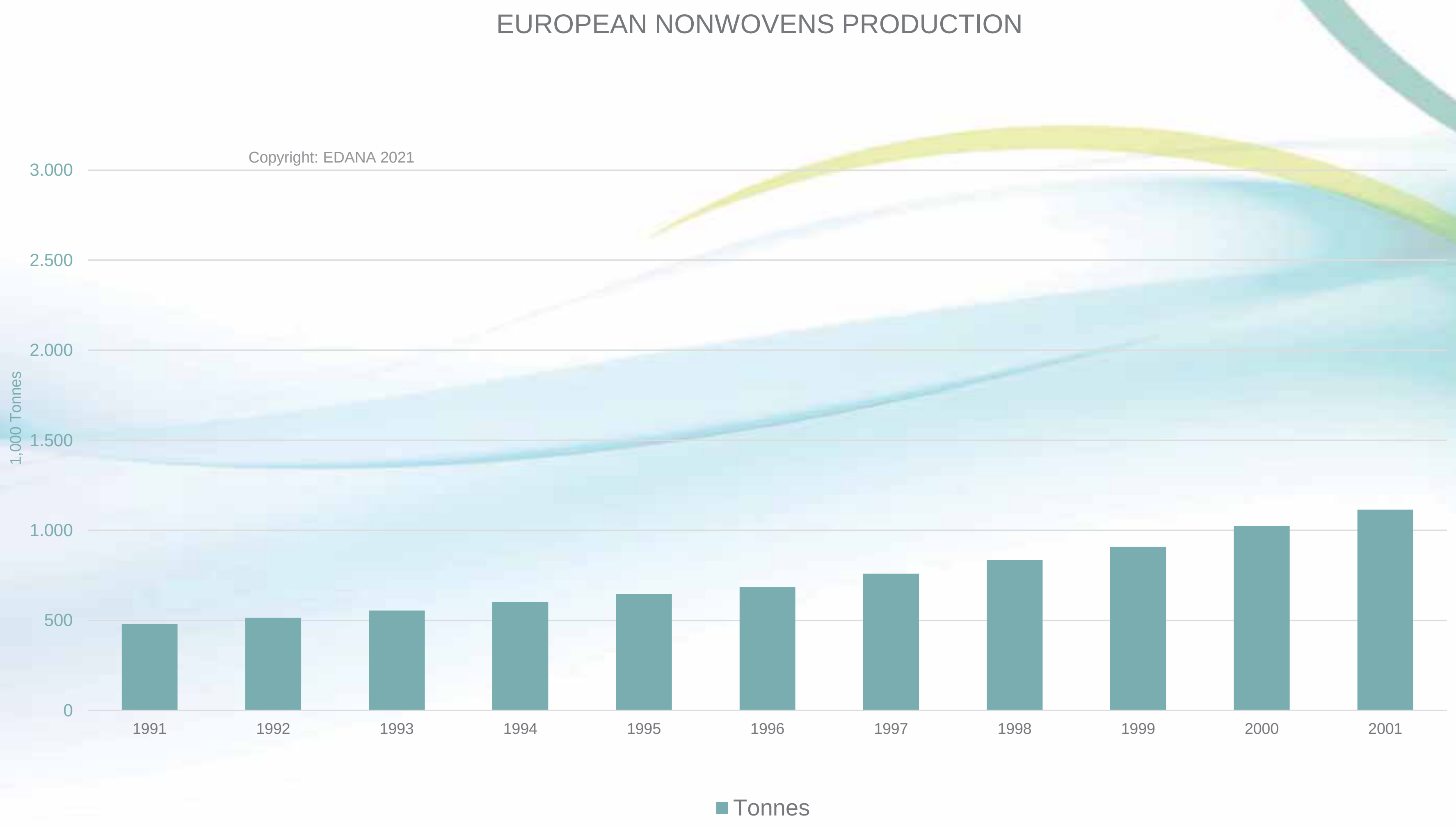
Annual Average Growth Rate 1972-1981: +13.1%



Annual Average Growth Rate 1981-1991: +9.7%



Annual Average Growth Rate 1991-2001: +8.8%



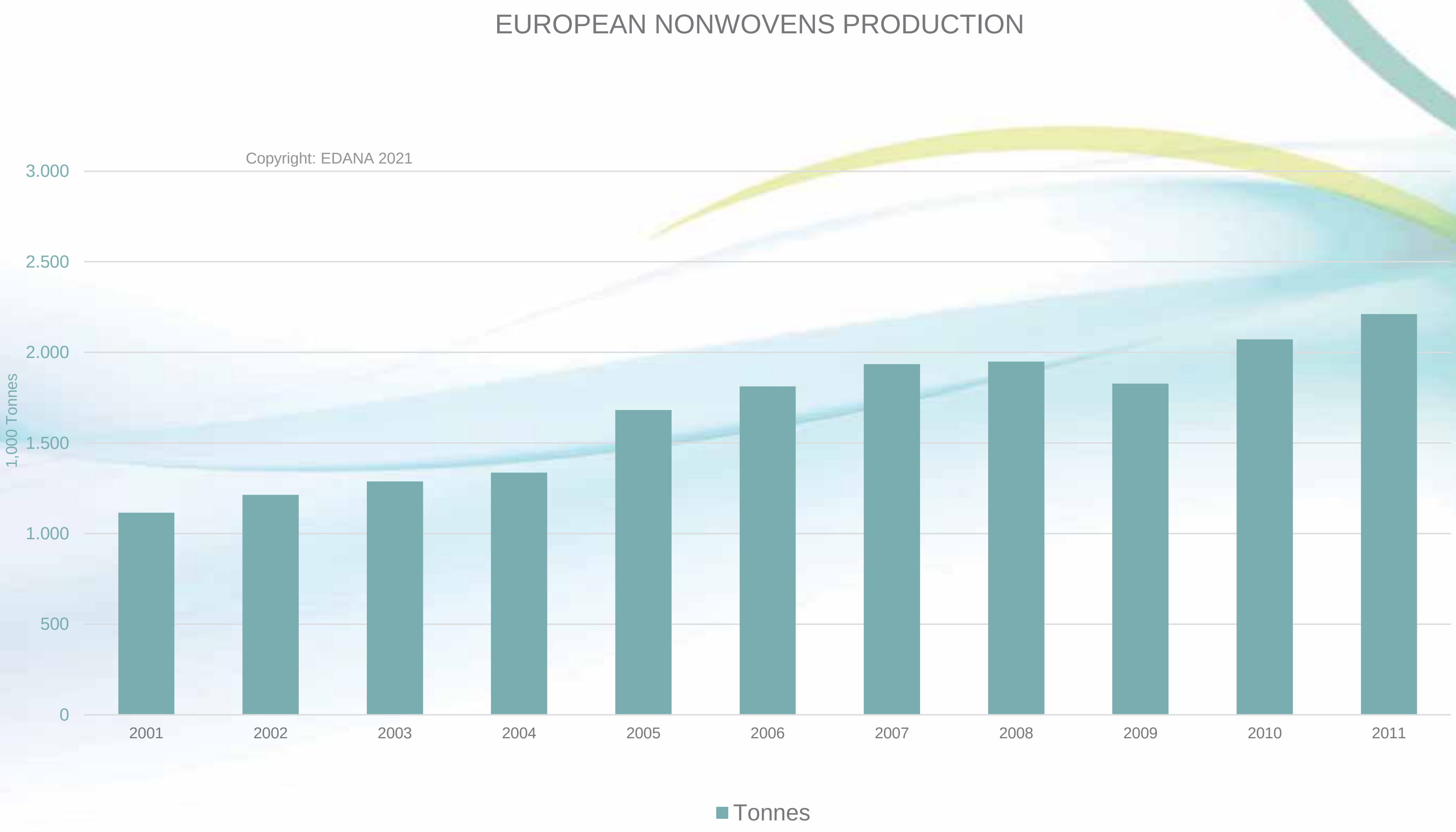
Learnings from first 30 years of large scale nonwovens production and market growth

- An apparently recession-proof industry
- Diversification in technologies and end-uses; hygiene takes lead since mid-70ies, wipes become second end-use in weight terms only from early 2000's; medical % consistently low
- "Disposable" and "single-use" not initially "dirty" words become increasingly challenged

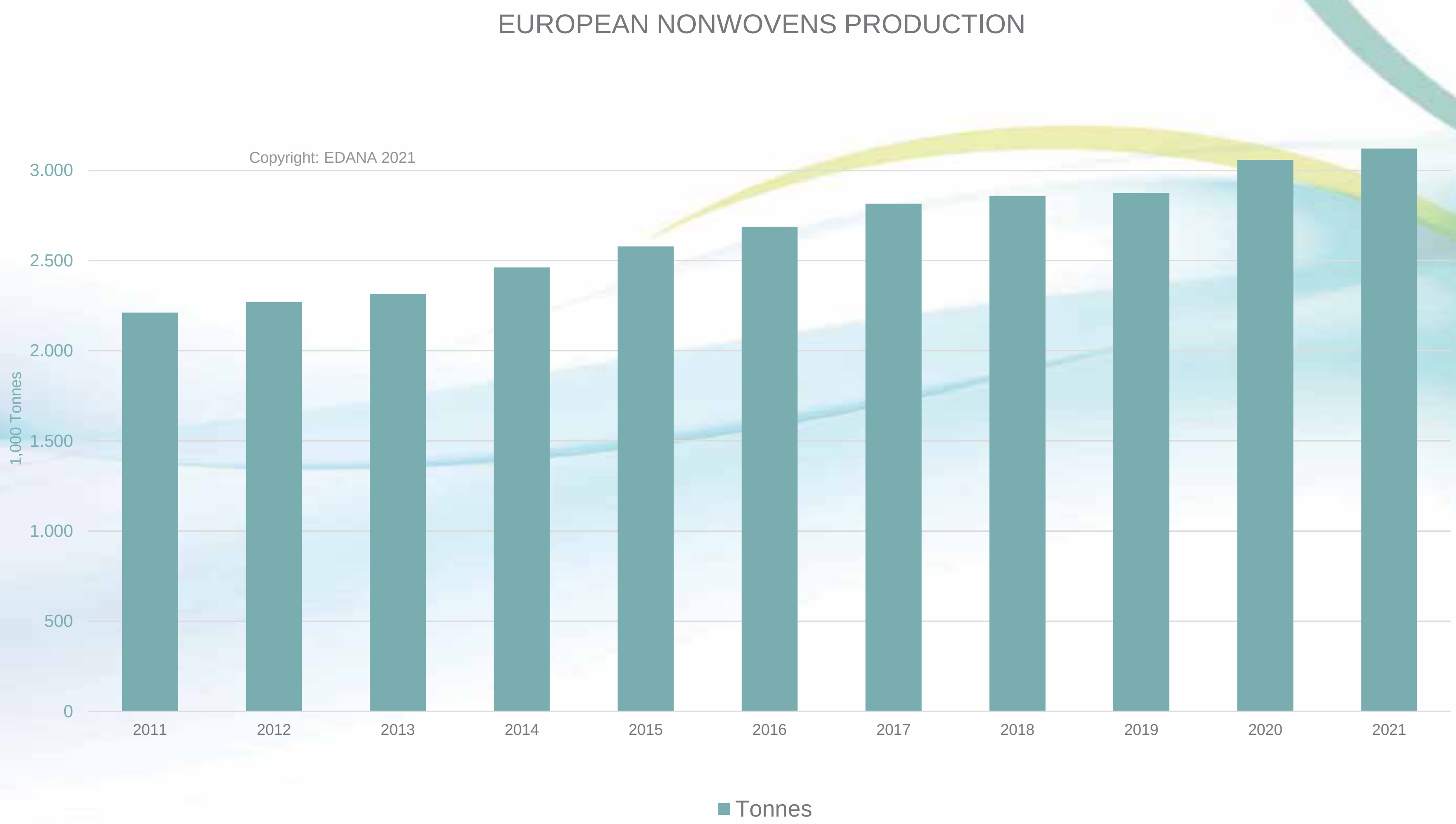
Learnings from first 30 years of large scale nonwovens production and market growth (Ctd)

- Building and Civil Engineering for long number 2&3 before wipes
- Despite M&As, concentration of sector still relatively low
- “Light” Regulatory framework, “only” medical devices somewhat directly regulated.
- In the absence of constraints, nonwovens industry takes initiatives in environmental impact assessments (LCA)

Annual Average Growth Rate 2001-2011: +7.1%

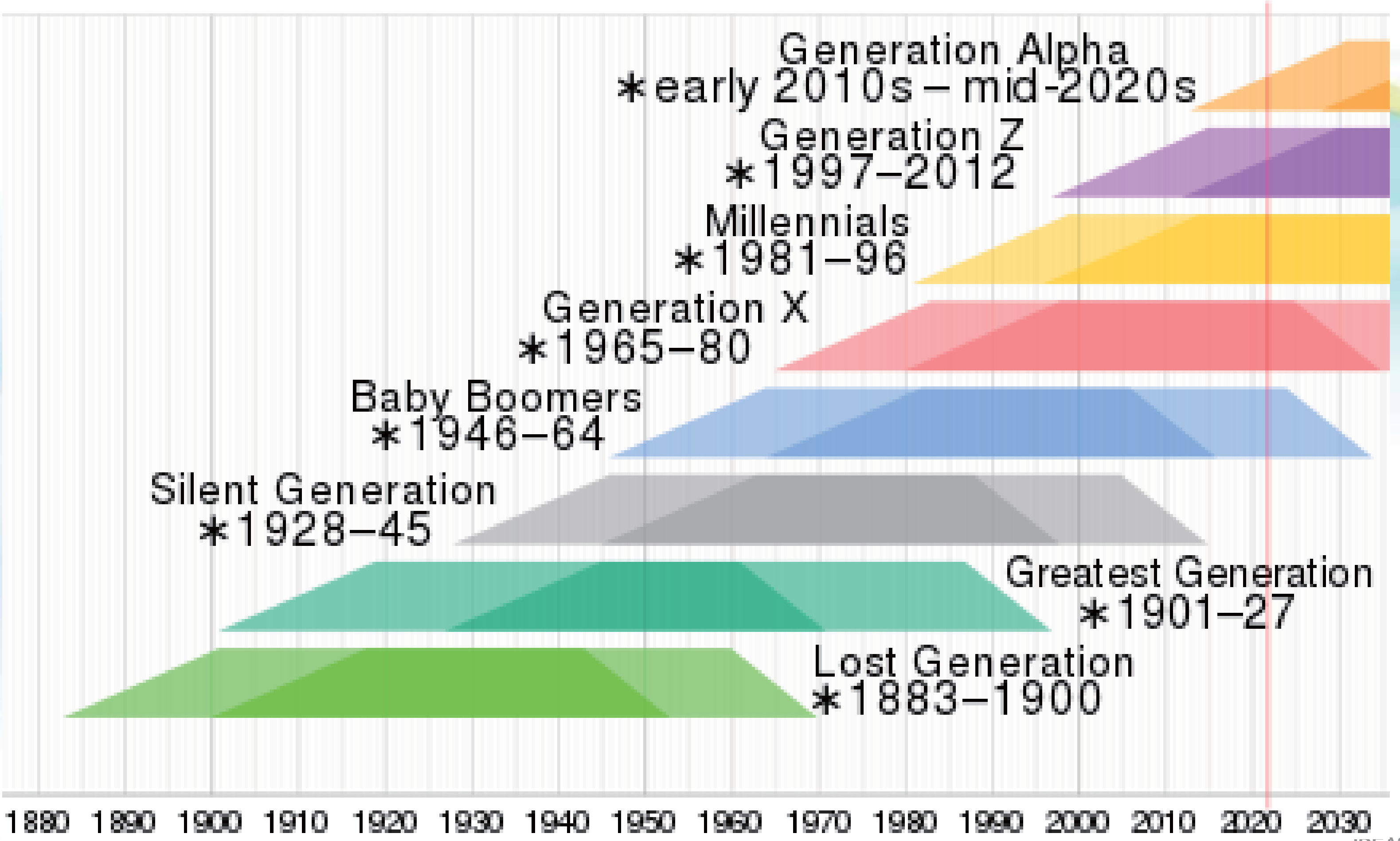


Annual Average Growth Rate 2011-2021: +3.5%



Recent Economic, Public Policy and Regulatory Background: Challenges (and opportunities?) for the European nonwovens industry

Each generation must, out of relative obscurity, discover its mission, fulfil it or betray it — *Frantz Fanon*



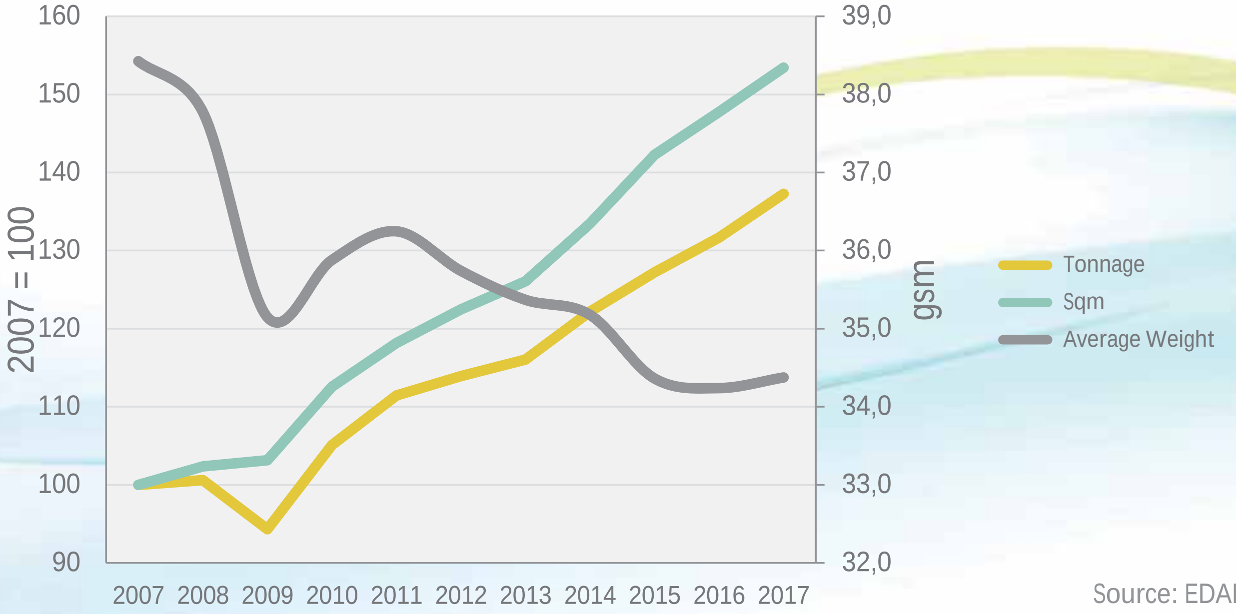
"I want you to panic" *(Climate activist Greta Thunberg)* *and the EU response to* **Glasgow COP 26 commitments**

European Green Deal

EDANA Sustainability Vision

Materials Development

Weight and Surface Area Evolution



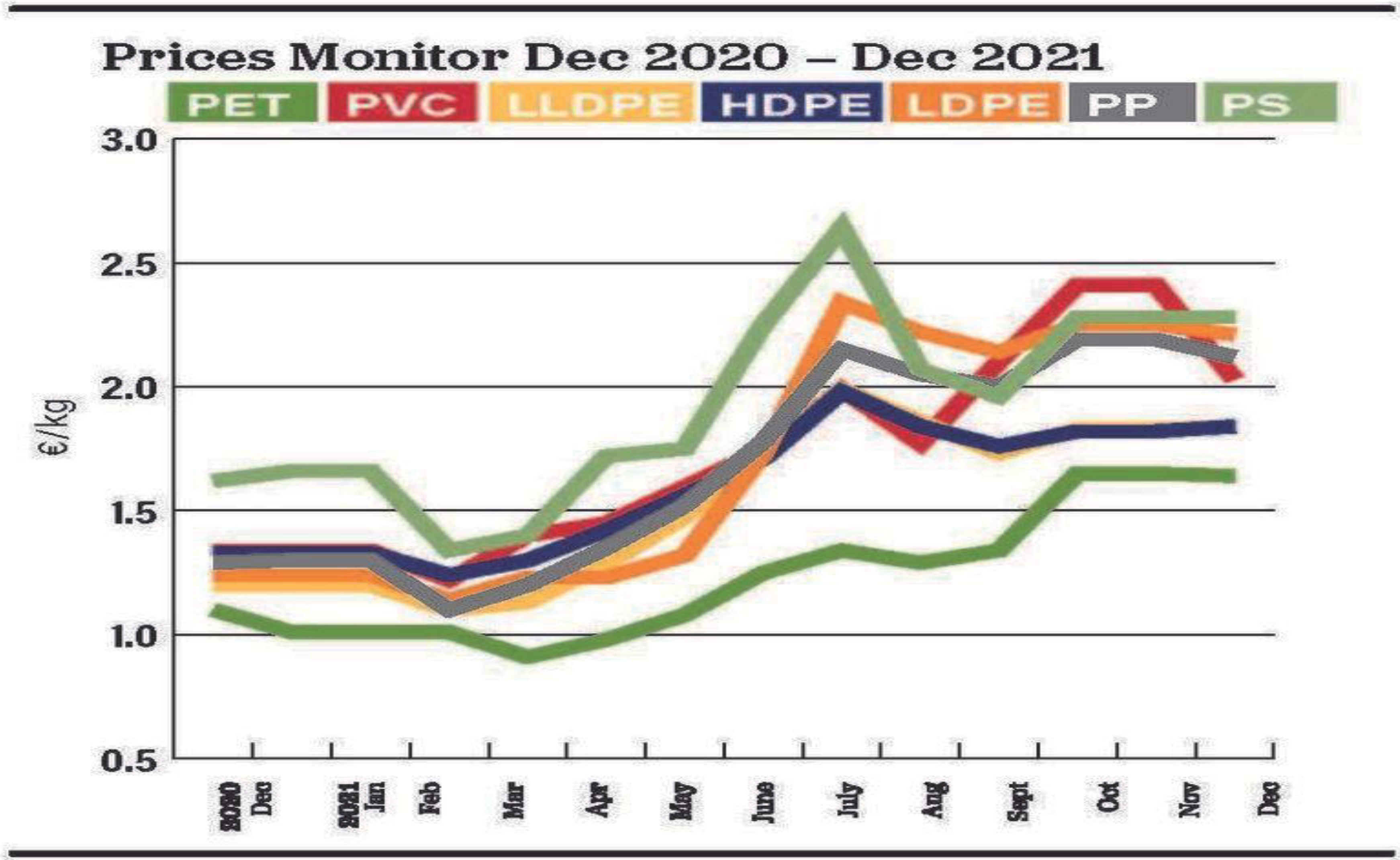
Source: EDANA Statistics

Cuts in weight and thickness reduced the environmental impact of some finished products: lower energy consumption in transport and smaller volumes to be handled in end-of-life.

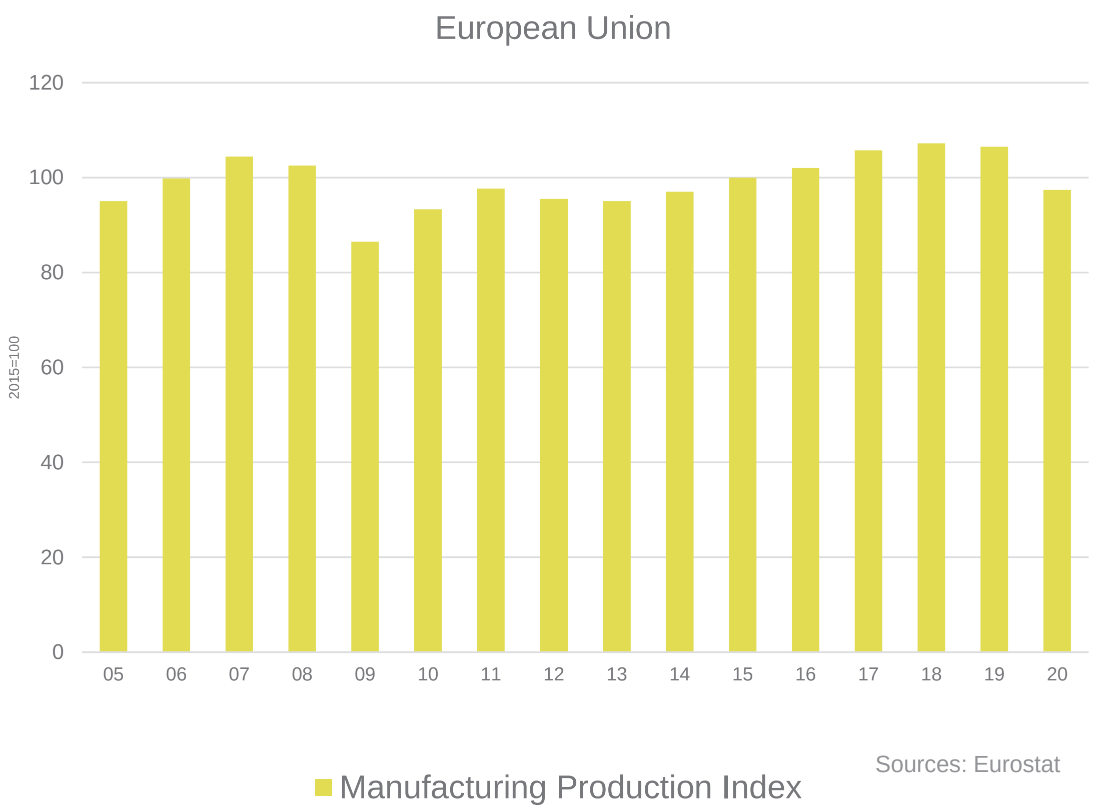
A series of adverse events have been driving European raw materials (and lately energy) prices to historical peaks

- 2020: a combination of unplanned (force majeure) and planned petrochemical plant shutdowns
- 2020-21: surge in container freight rates (impact of global sanitary crisis+ economic recovery + Suez Canal blockage)
- 2022: Ukraine crisis impact on oil, gas, and consequently petrochemicals

Source: Sustainable Plastics

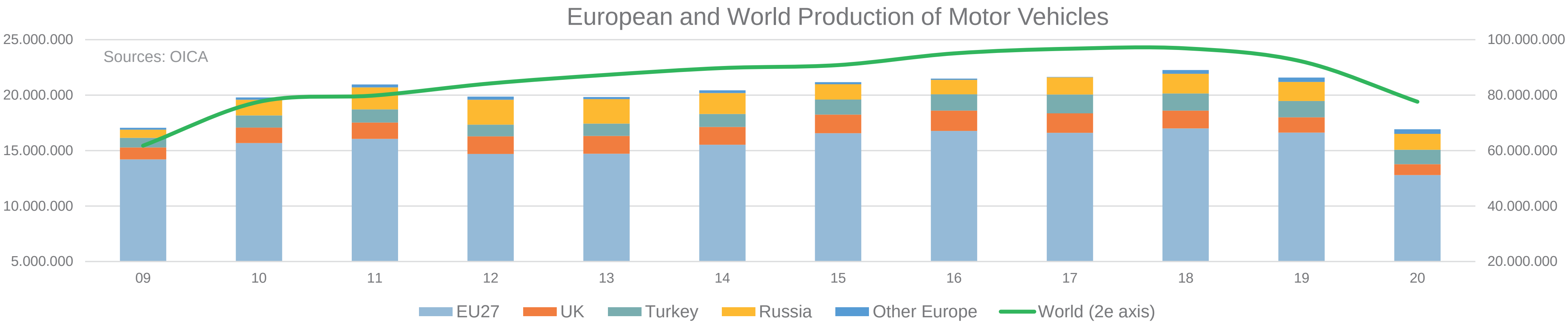


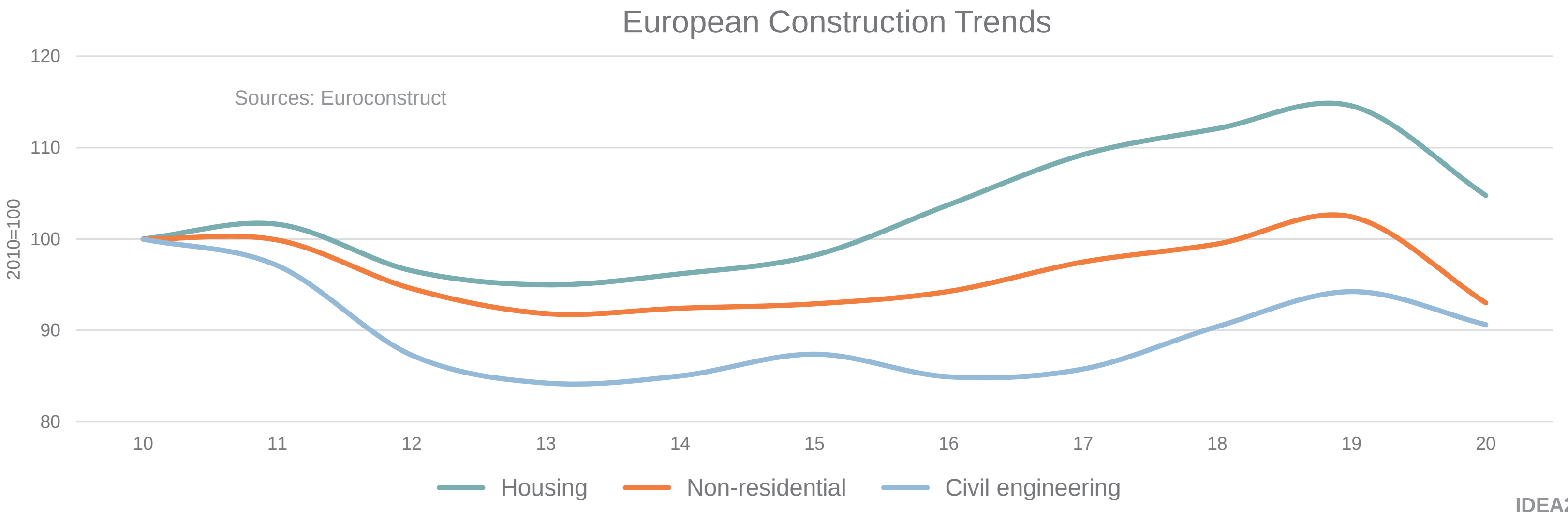
2020: from a Sanitary to an Economic crisis



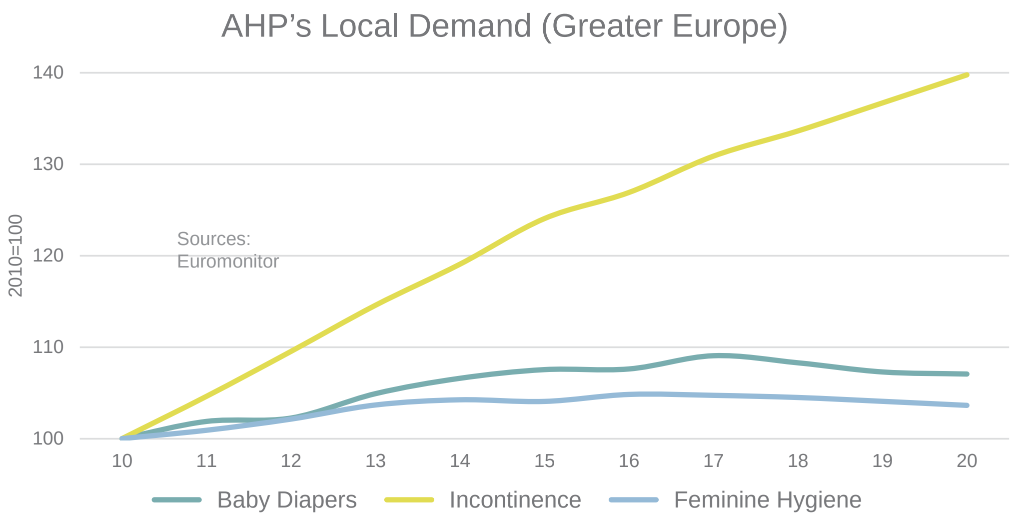
Sources: Eurostat

2020: from a Sanitary to an Economic crisis





2020: Differentiated AHPs and Wipes growths



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Latest Nonwovens End-use trends

Market Segments Definition

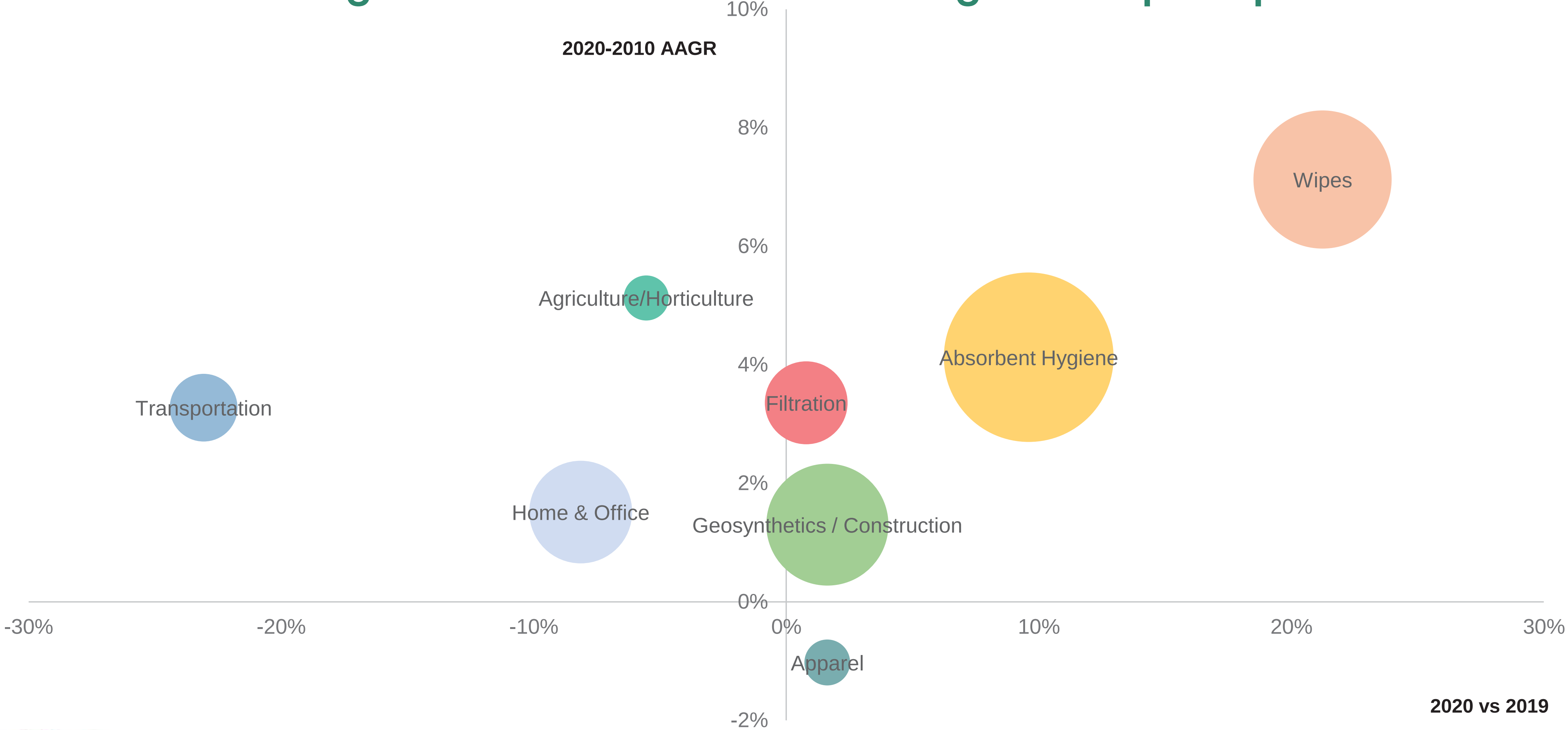
83 categories (EDANA Stat)

Baby
(Coverstock, Acquisition / Distribution Layer, Leg Cuffs, Textile Backsheet TBS, Core Wrap, …)
Adult incontinence (Coverstock, Acquisition / Distribution Layer, …)
Feminine Hygiene (…)
Surgical gowns & drapes
Face masks
Wound care, Bandages, Dressings, Swabs
Shoecovers, Head Covers
Other Medical/surgical
Cotton pads
Wipes for personal care
Wipes for industrial use wet, Wipes for industrial use dry
Wipes for other applications wet, Wipes for other applications dry
Protective garments, Other garments
Interlinings, Shoe/leathergoods
Coating substrates
Floor covering
Upholstery
Wall covering
Table linen
Air filtration
Drinkable liquid filtration
Other liquid filtration
Flat polyester for roofing
Other Building/Roofing
(Pitched Roof, Other Flat Roof Materials, Housewrap …)
Underground/civil engineering
Automotive interior, Air, rail & water transportation, Carpet and carpet backing in transportation
Agriculture, Electronic Materials, Food & Beverage, Packaging, ….

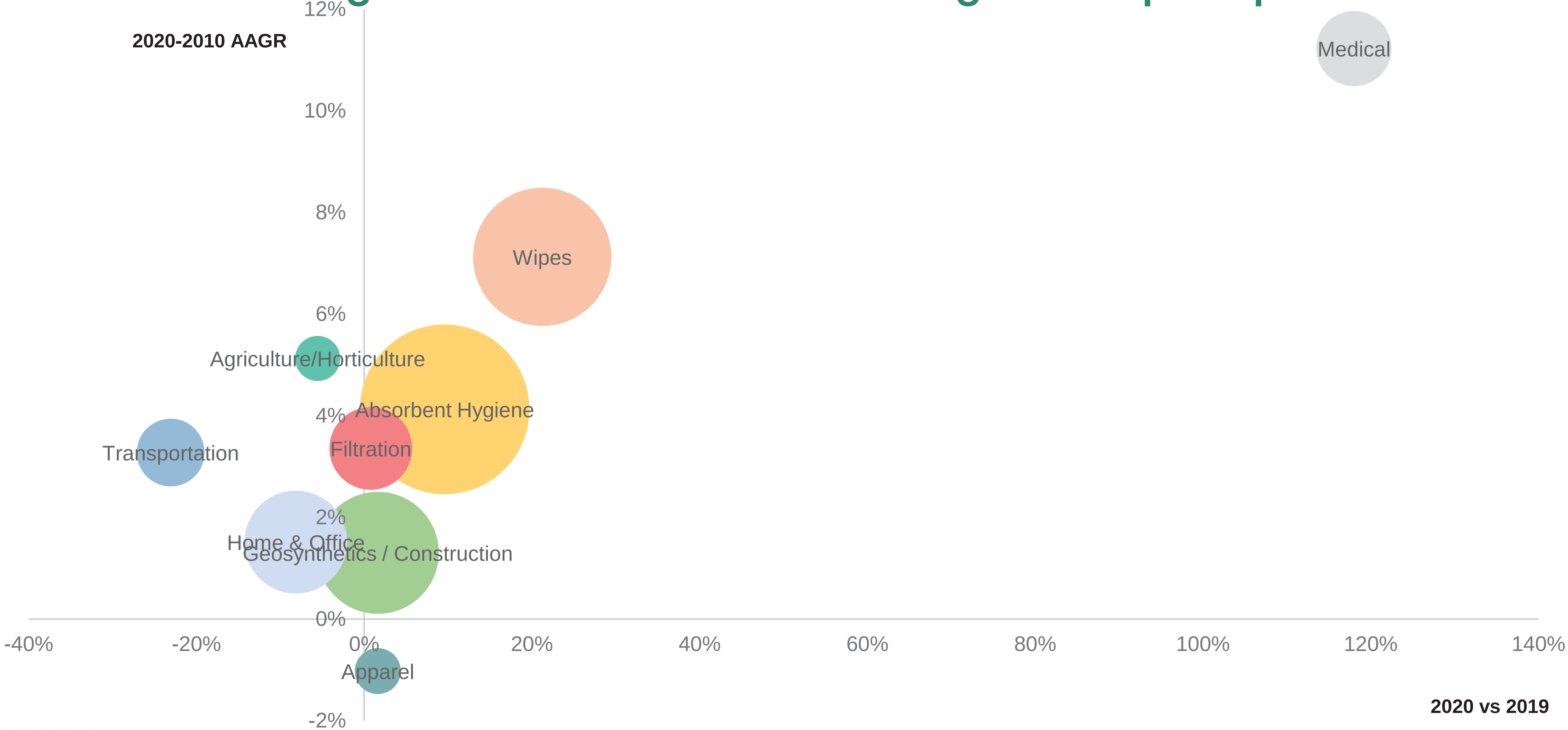
EDANA-led global consensus classification between nonwovens associations on a global basis

Absorbent Hygiene
Filtration
Medical
Apparel
Construction / Geosynthetics
Home & Office
Wipes
Agriculture/Horticulture
Transportation
Other

Market Segments: a short and long-term perspective



Market Segments: a short and long-term perspective



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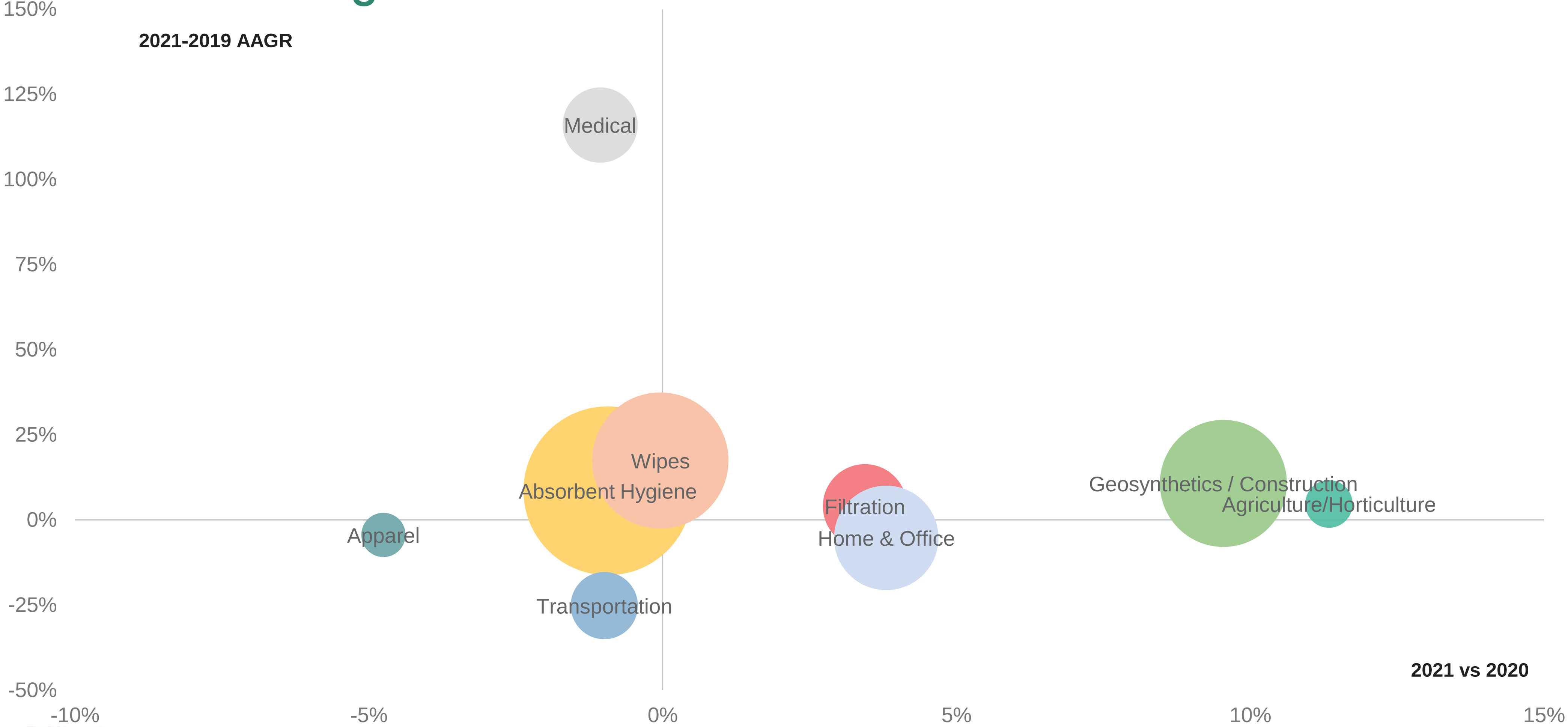
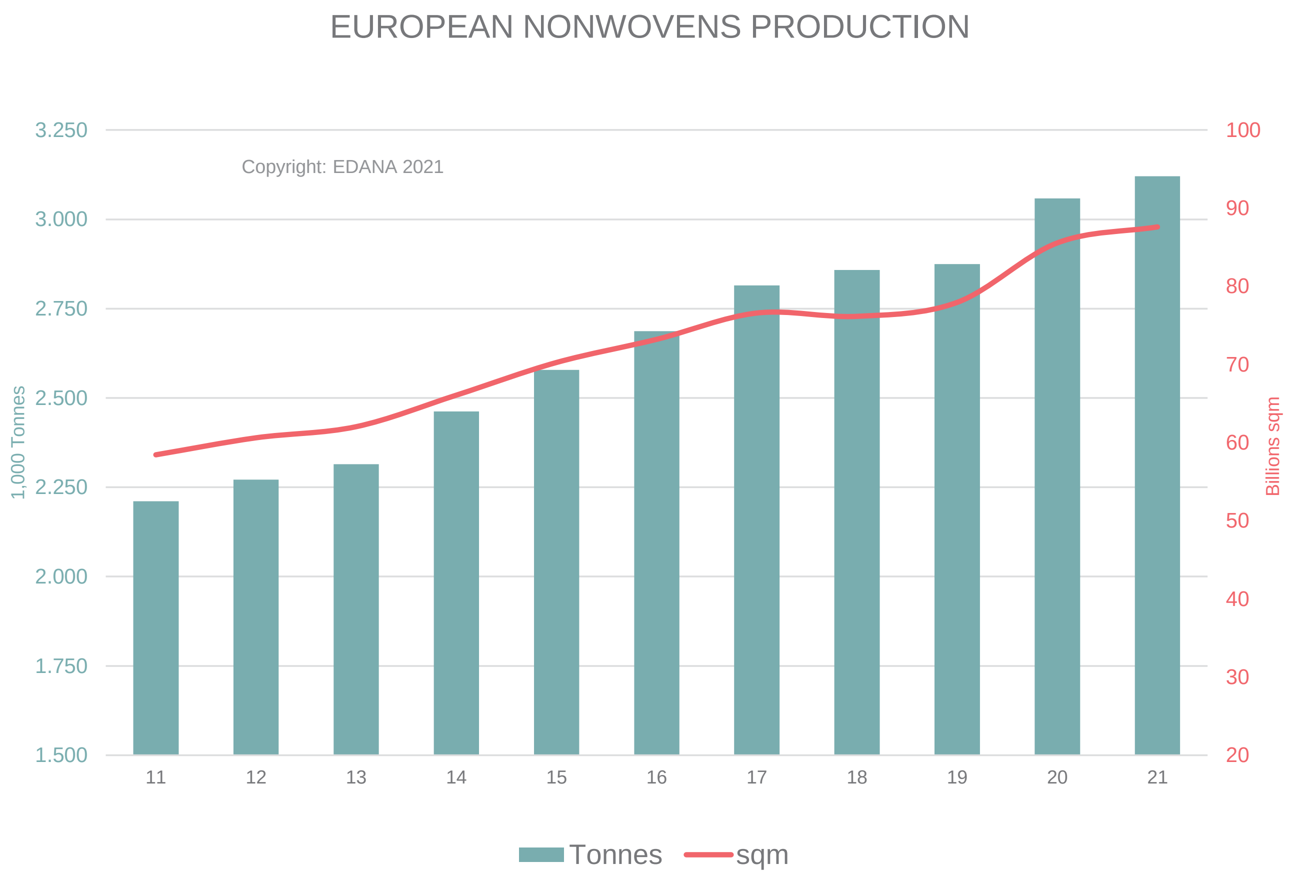
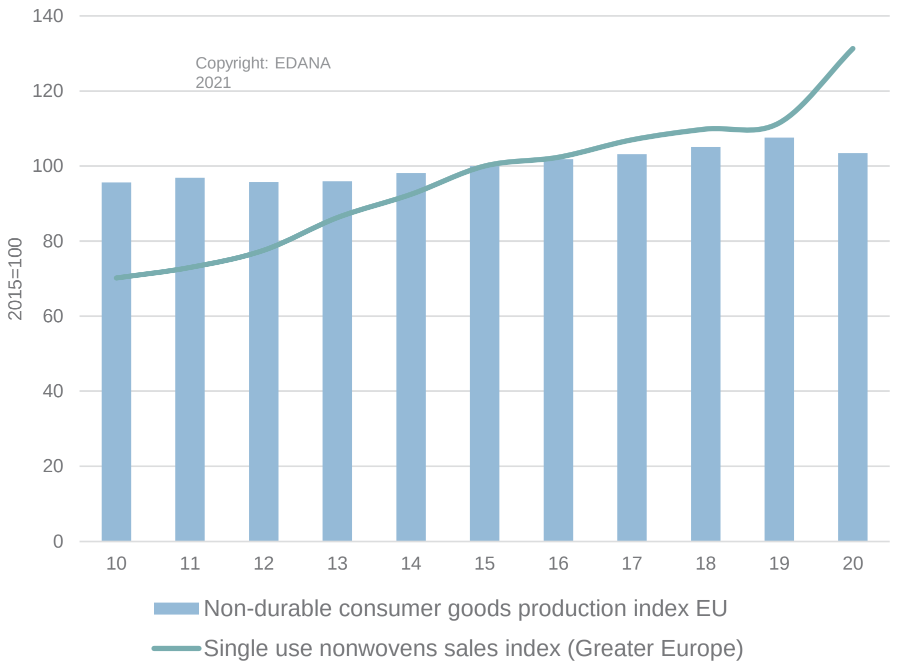
Market Segments: 2021 trends

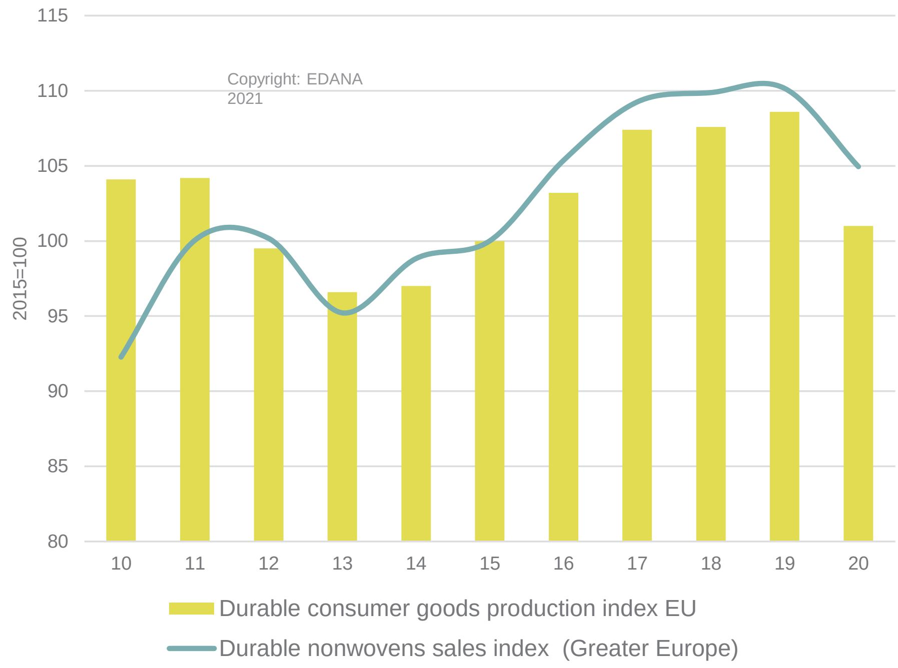



EUROPEAN NONWOVENS PRODUCTION
Copyright: EDANA 2021
3.250
3.000
2.750
2.500
2.250
2.000
1.750
1.500
1,000 Tonnes
100
90
80
70
60
50
40
30
20
Billions sqm
11
12
13
14
15
16
17
18
19
20
21
Tonnes
sqm

Nonwovens remain at higher-than-average EU growth rates

But not for all applications





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Summing-up: Challenges facing European Nonwovens Industry/**Opportunities**

- Production costs and profitability**/????**
- Increasingly demanding regulatory framework (e.g. chemicals restrictions)/**voluntary guidelines /stewardship programme**
- EPR on consumer goods
- Environmental legislation (e.g. Single Use Plastics Directive), Green deal/ **Material substitutions/circularity (chem. recycling), mass balance renewables**

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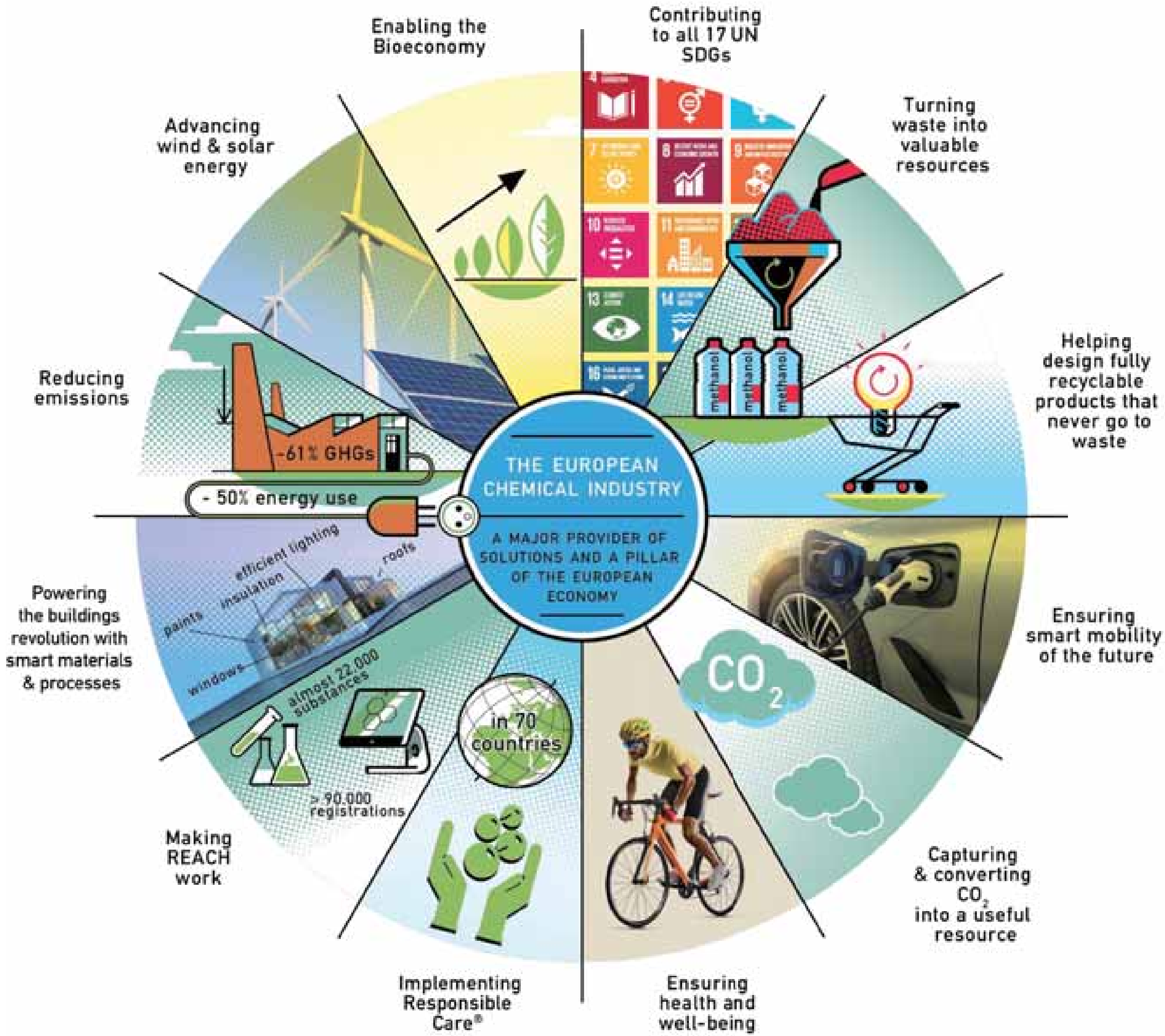

Enabling the Bioeconomy
Contributing to all 17 UN SDGs
Turning waste into valuable resources
Helping design fully recyclable products that never go to waste
Ensuring smart mobility of the future
Capturing & converting CO_2 into a useful resource
Ensuring health and well-being
Implementing Responsible Care®
Making REACH work
Powering the buildings revolution with smart materials & processes
Reducing emissions
Advancing wind & solar energy
THE EUROPEAN CHEMICAL INDUSTRY
A MAJOR PROVIDER OF SOLUTIONS AND A PILLAR OF THE EUROPEAN ECONOMY
-61% GHGs
- 50% energy use
efficient lighting
roofs
insulation
paints
windows
almost 22.000 substances
> 90.000 registrations
in 70 countries
CO_2
methanol

Handing-over to the next generation: Introducing Murat Dogru, EDANA General Manager from 1st July 2022


index™
23 THE WORLD'S LEADING NONWOVENS EXHIBITION
xplore new horizons with nonwovens
18-21 APRIL 2023
PALEXPO, GENEVA

Thanks to Jacques :

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