Vision für die Vliesstoffindustrie des Jahres 2025

Pierre Wiertz, General Manager
EDANA

This present moment used to be the unimaginable future.

Stewart Brand. The Clock of the Long Now

Wie besser oder wie schlechter wird die Welt im Jahr 2025 sein?

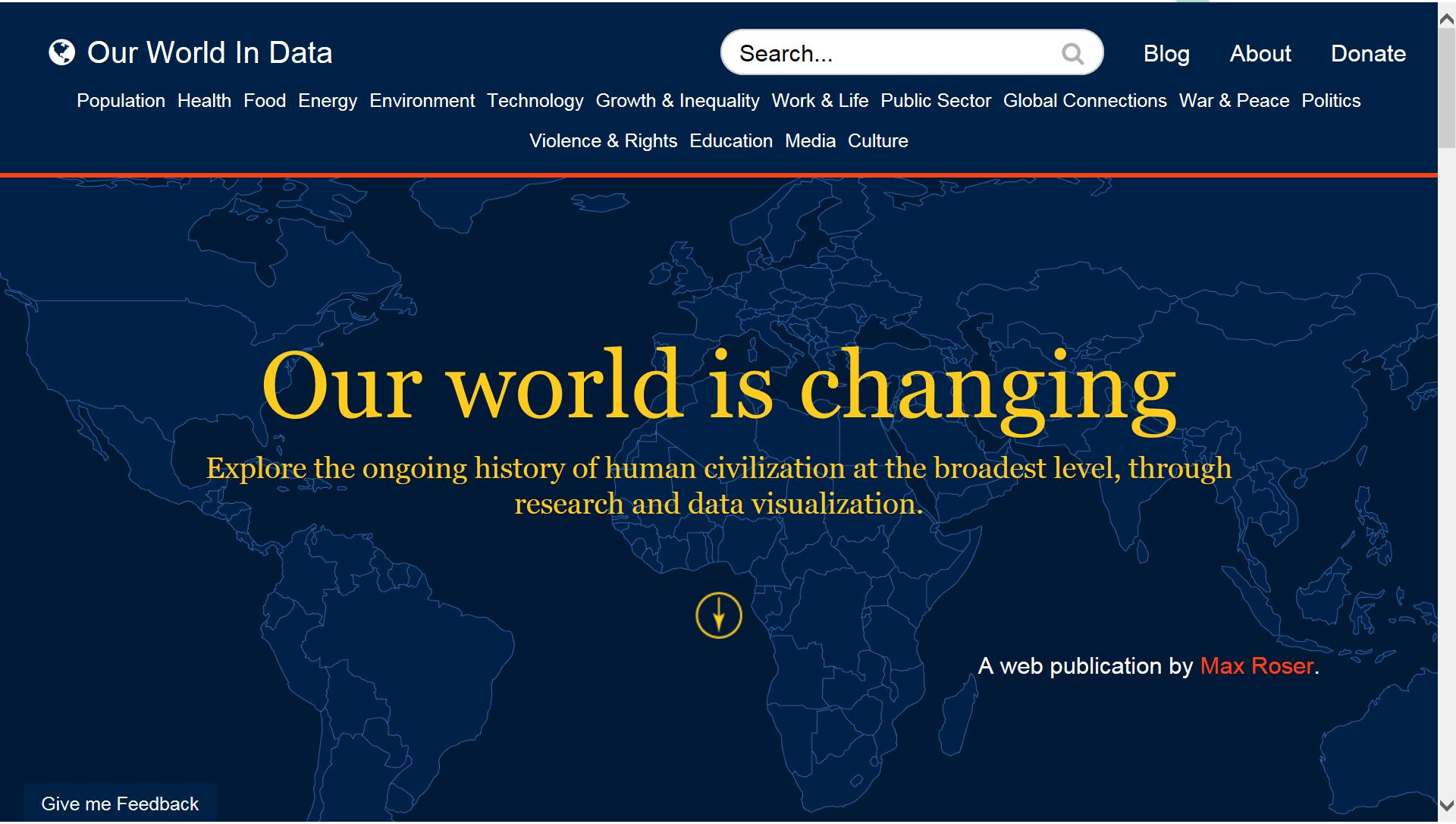
”Ich glaube, dass (…) (es) (ge)rechtfertigt (ist) , ein sehr optimistisches Bild von unserer Zeit zu entwerfen.

Aber ich wage es kaum, Ihnen meine optimistische These vorzulegen. Ich fürchte, Ihr Vertrauen völlig zu verscherzen.

Denn meine These ist die: Ich behaupte, dass unsere Zeit, trotz allem, die beste aller Zeiten ist, von denen wir historische Kenntnis haben”

Sir Karl F. Popper

WIE BESSER ODER WIE SCHLECHTER WIRD DIE WELT IM JAHR 2025 SEIN?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A web publication by Max Roser.
Give me Feedback

"Most of the long-run trends are positive and paint an optimistic view of our world that is unknown to many who only follow the daily news to inform themselves about the world.

The research presented on OWID backs up the statement by Karl Popper."

Dr Max Roser

"The empirical view of our world shows (…)

- (…) how human societies became less violent and increasingly more democratic
- (…) how new ideas continue to improve living standards

It is the story of declining poverty (…) in a world we care about…

We also need to show where people live in destitute conditions and present clearly what big challenges of today are…"

Dr Max Roser

Beitrag der Vliesstoff-Industrie zur Sicherung einer besseren Lebensqualität für einen wachsenden Teil der Weltbevölkerung

Personal Care Products

Medical & Healthcare

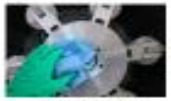
Civil Engineering & Geotextile

Absorbent Hygiene Products

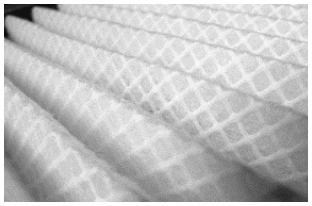
Building

Personal Care Wipes

Household



Industrial Wipes



Protective Clothing

Cable Wrapping

Inhalt

- ✓ Vorwort
- **Ziel dieses Vortrags**
- Arten von Zukunft
- Lehren aus der jüngsten Vergangenheit
- Wachstumsmotor für die Zukunft der Vliesstoffindustrie
- Bevorzugte Zukunft
- Vision für die Branche des Jahres 2025
- Schlussfolgerung

Ziel dieses Vortrags

- Qualitative Erwägungen…
- …wie die Branche im Jahr 2025 wahrscheinlich aussehen wird,

  aber auch…
- …wie die Industrie im Idealfall aussehen soll…

Vom EDANA Standpunkt aus:

« helping members design their future »

Types of Futures

- Possible - “might” happen (future knowledge)

- Plausible – “could” happen (current knowledge)

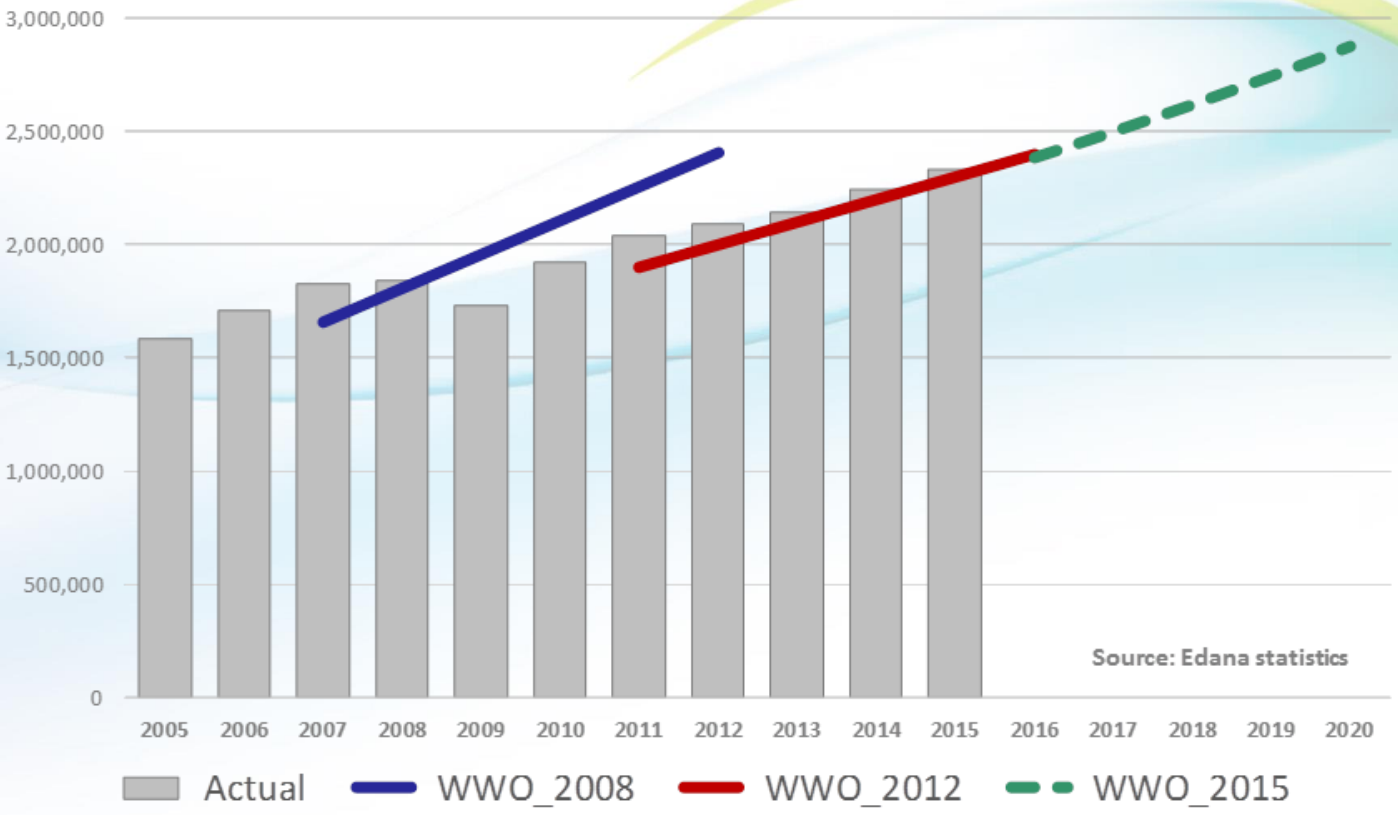
- Probable - “likely to” happen (current trends)

- Preferable - “want to” happen (value judgements)

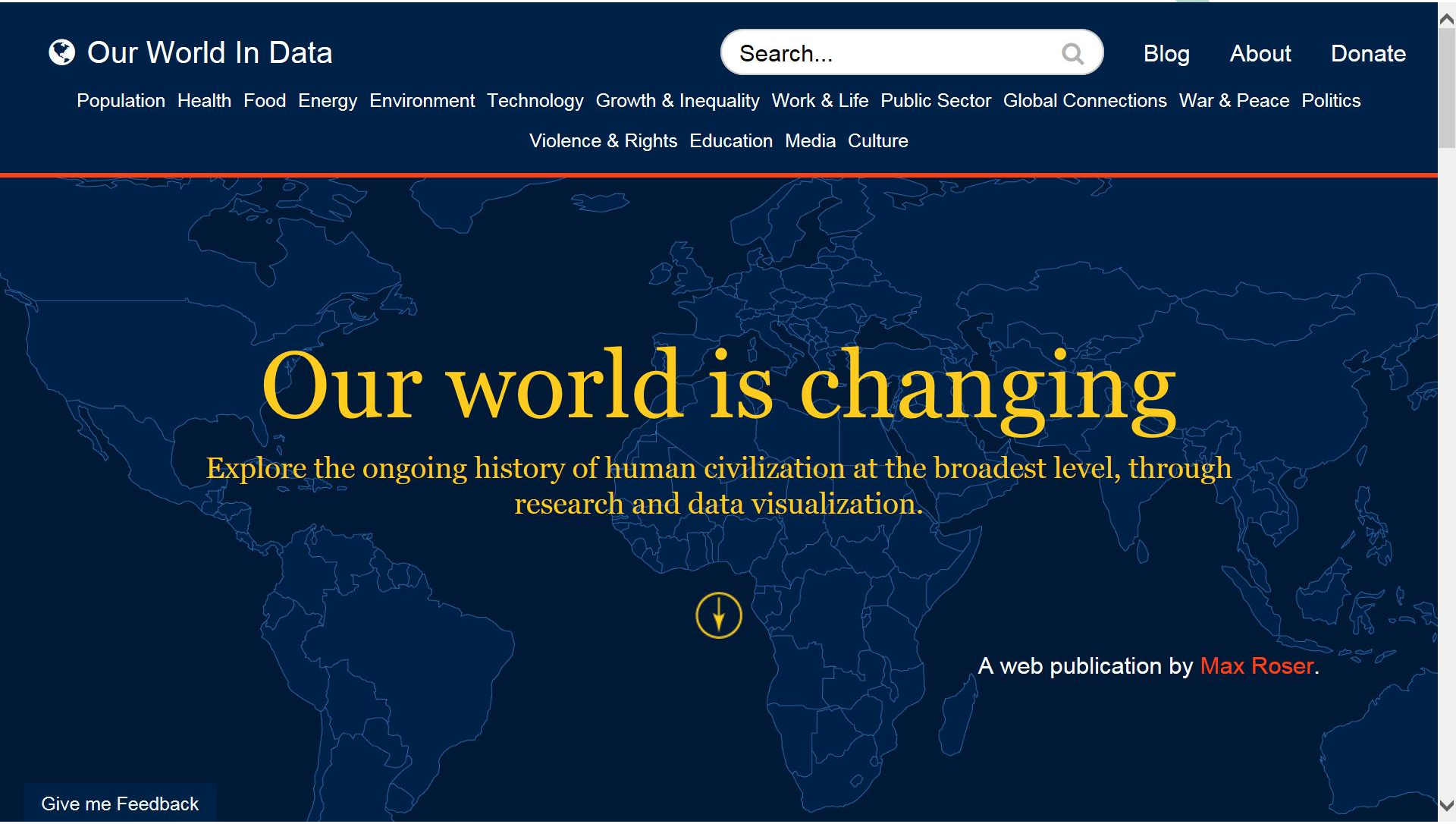
Thinking Futures

Lehren aus der jüngsten Vergangenheit

Vliesstoff-Produktion in Gross-Europa-Tatsächlich versus Prognose
3 letzte Ausgaben von EDANA-INDA Worldwide Outlook (WWO) für Vliesstoffe



- ✓ Vorwort
- ✓ Ziel dieses Vortrags
- ✓ Arten von Zukunft
- ✓ Lehren aus der jüngsten Vergangenheit
- **Wachstumsmotor für die Zukunft der Vliesstoffindustrie**
- Bevorzugte Zukunft
- Vision für die Branche des Jahres 2025
- Schlussfolgerung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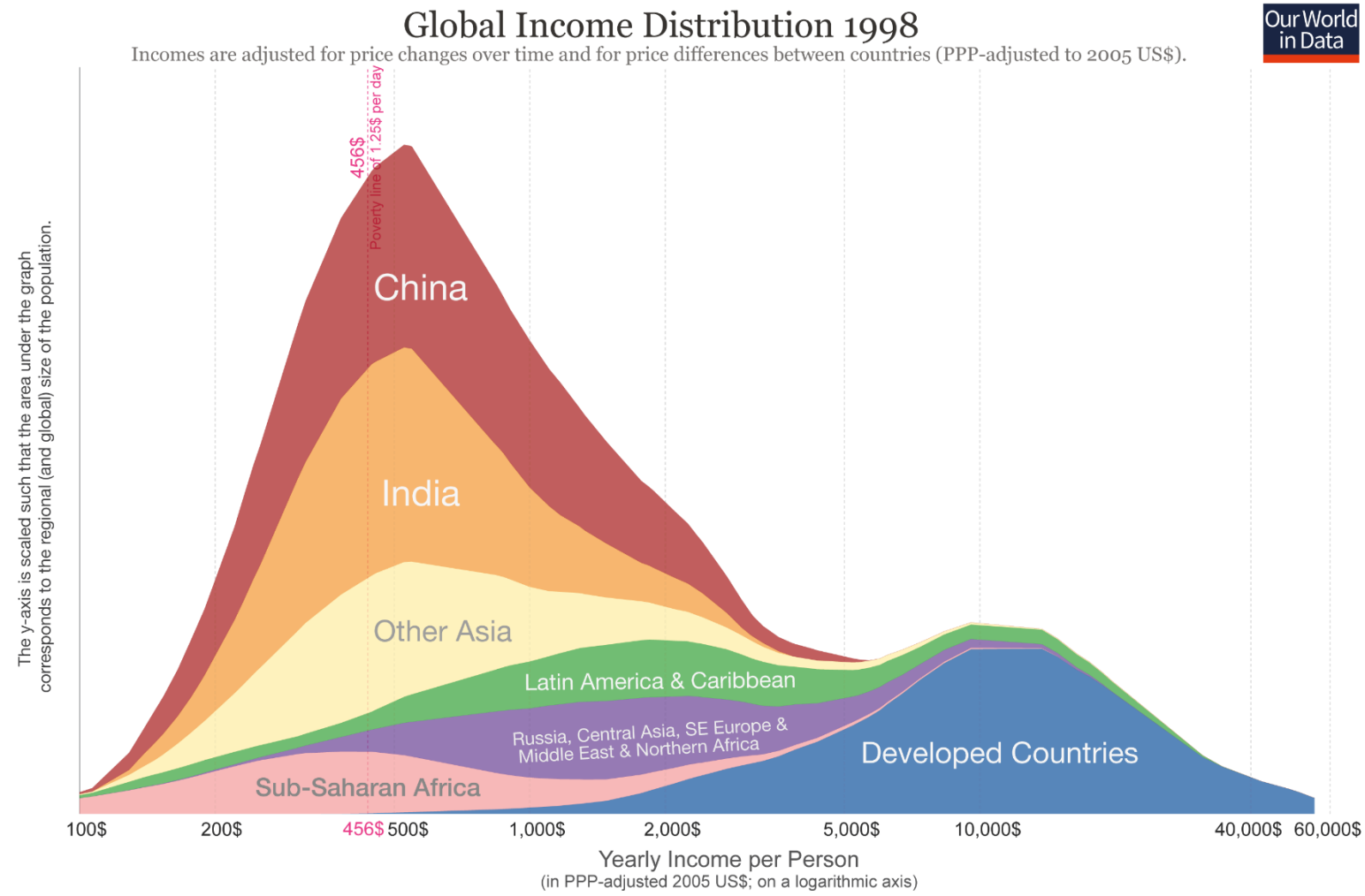

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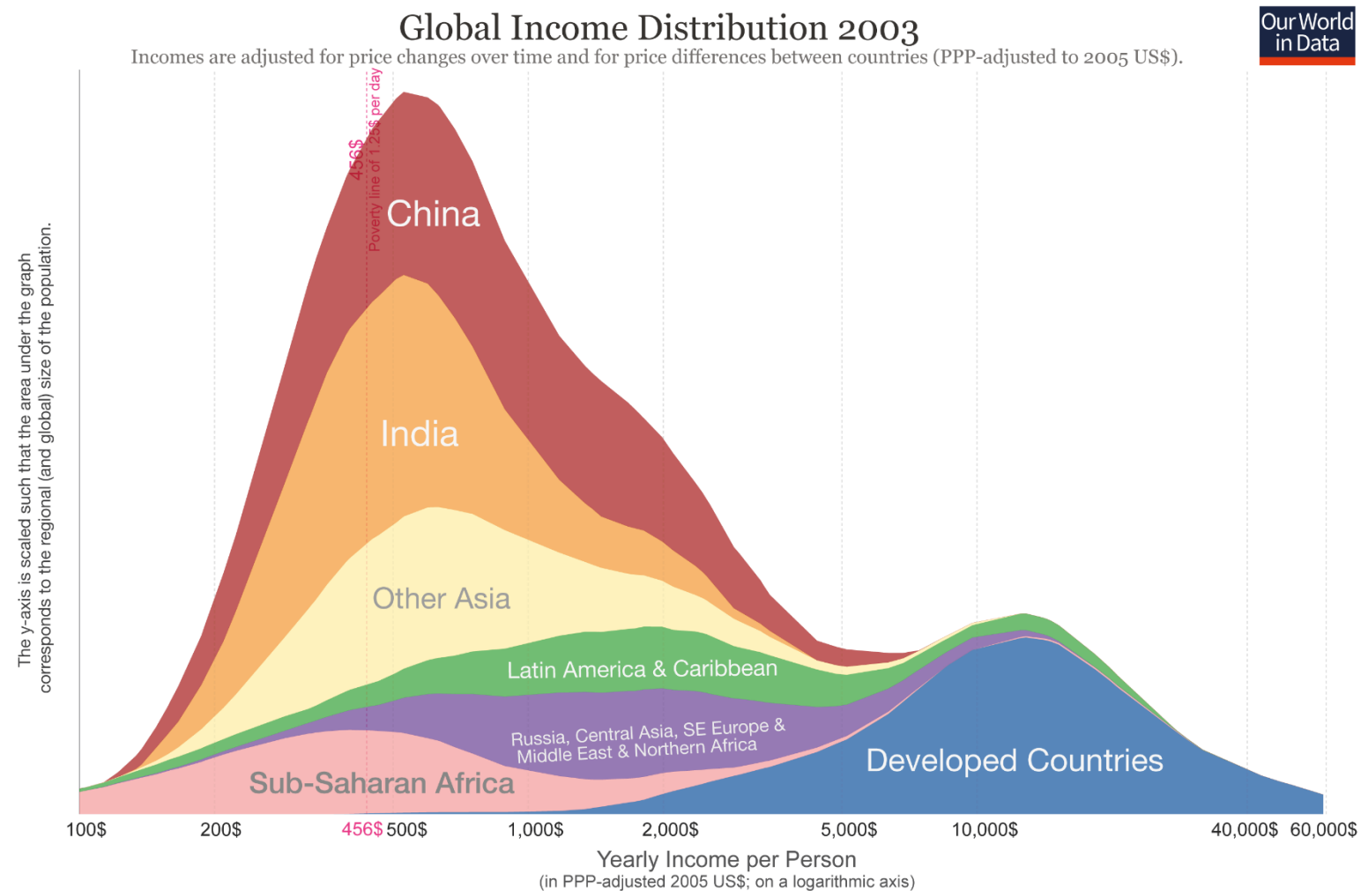

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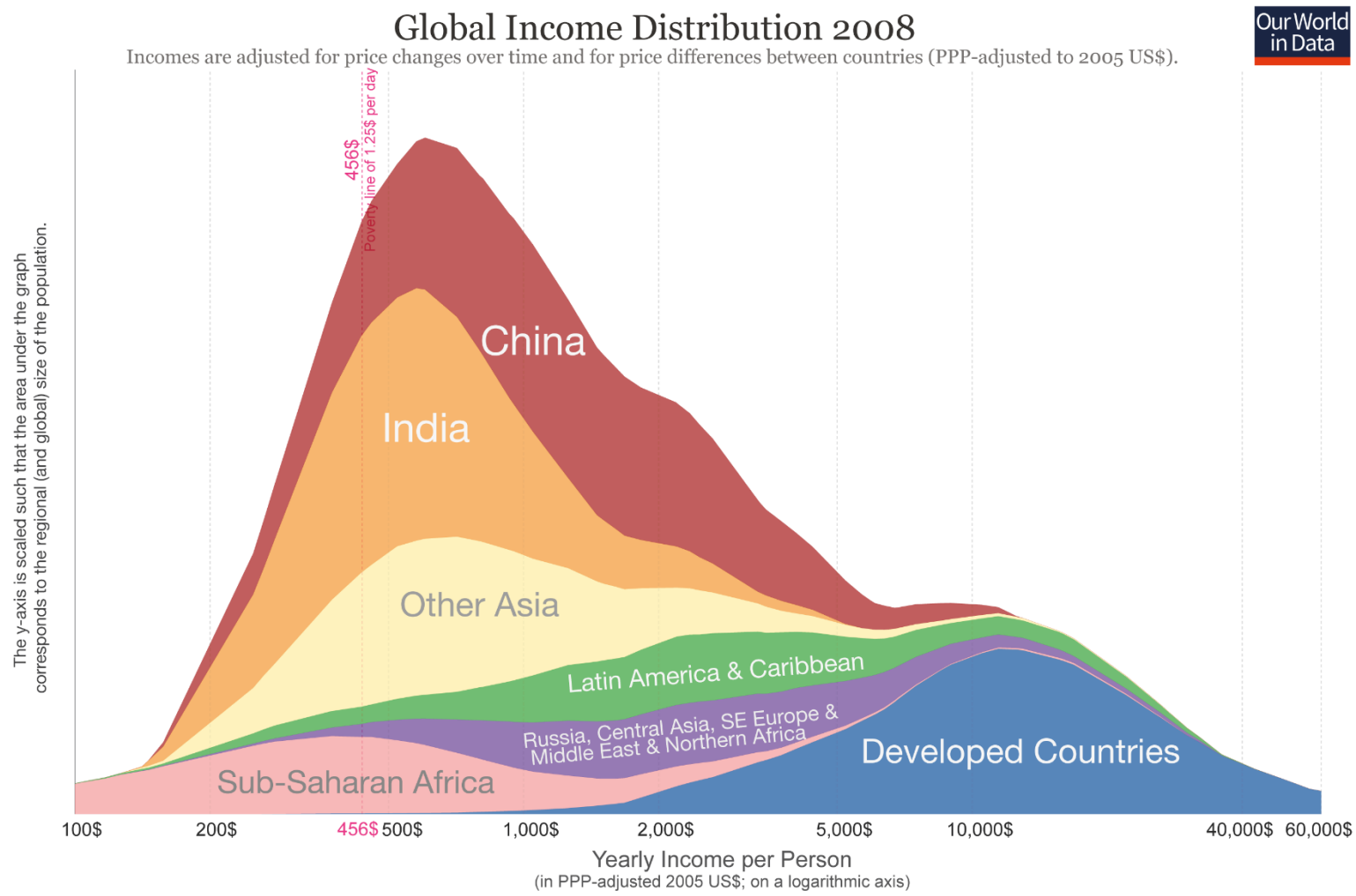

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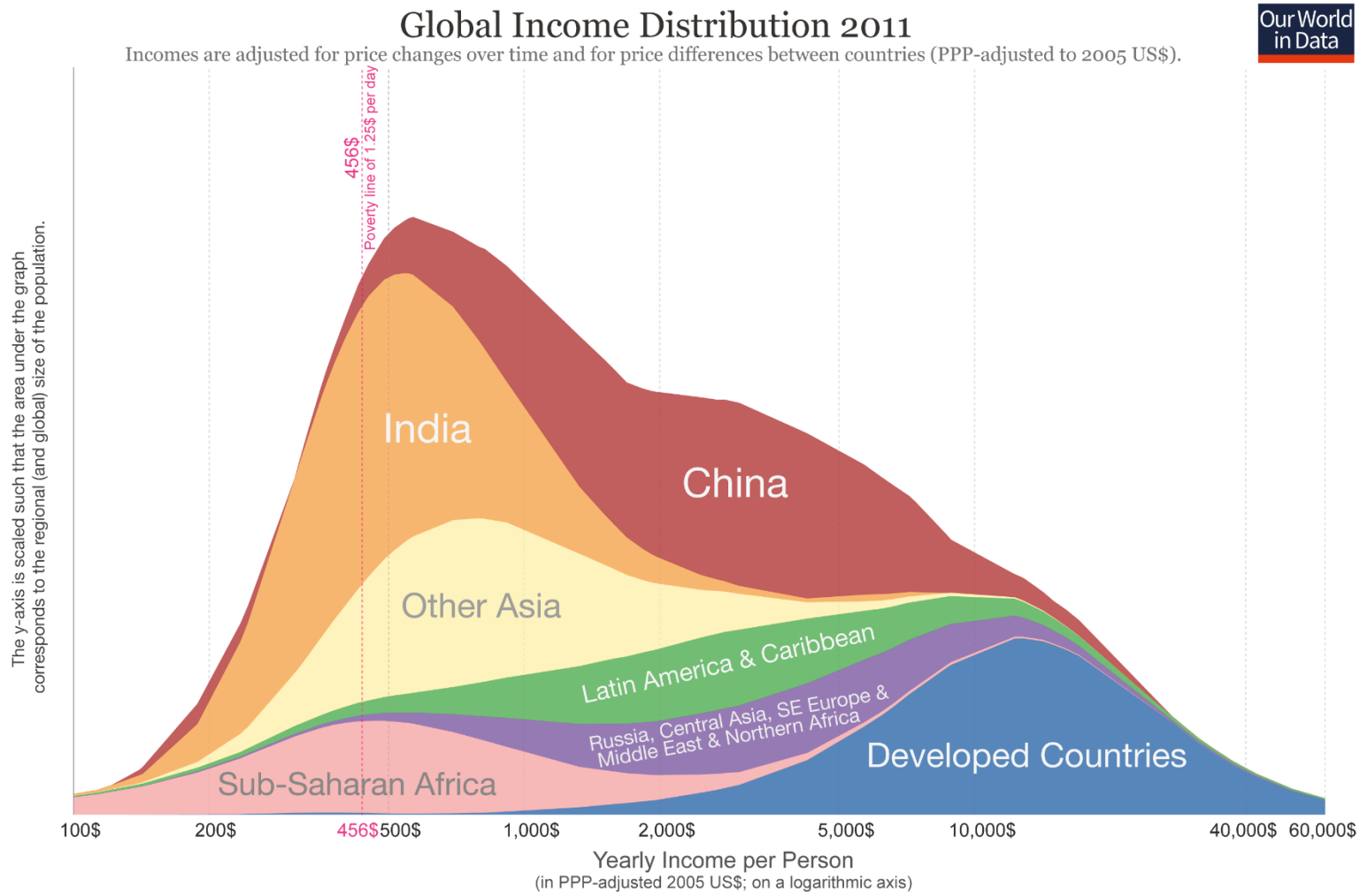

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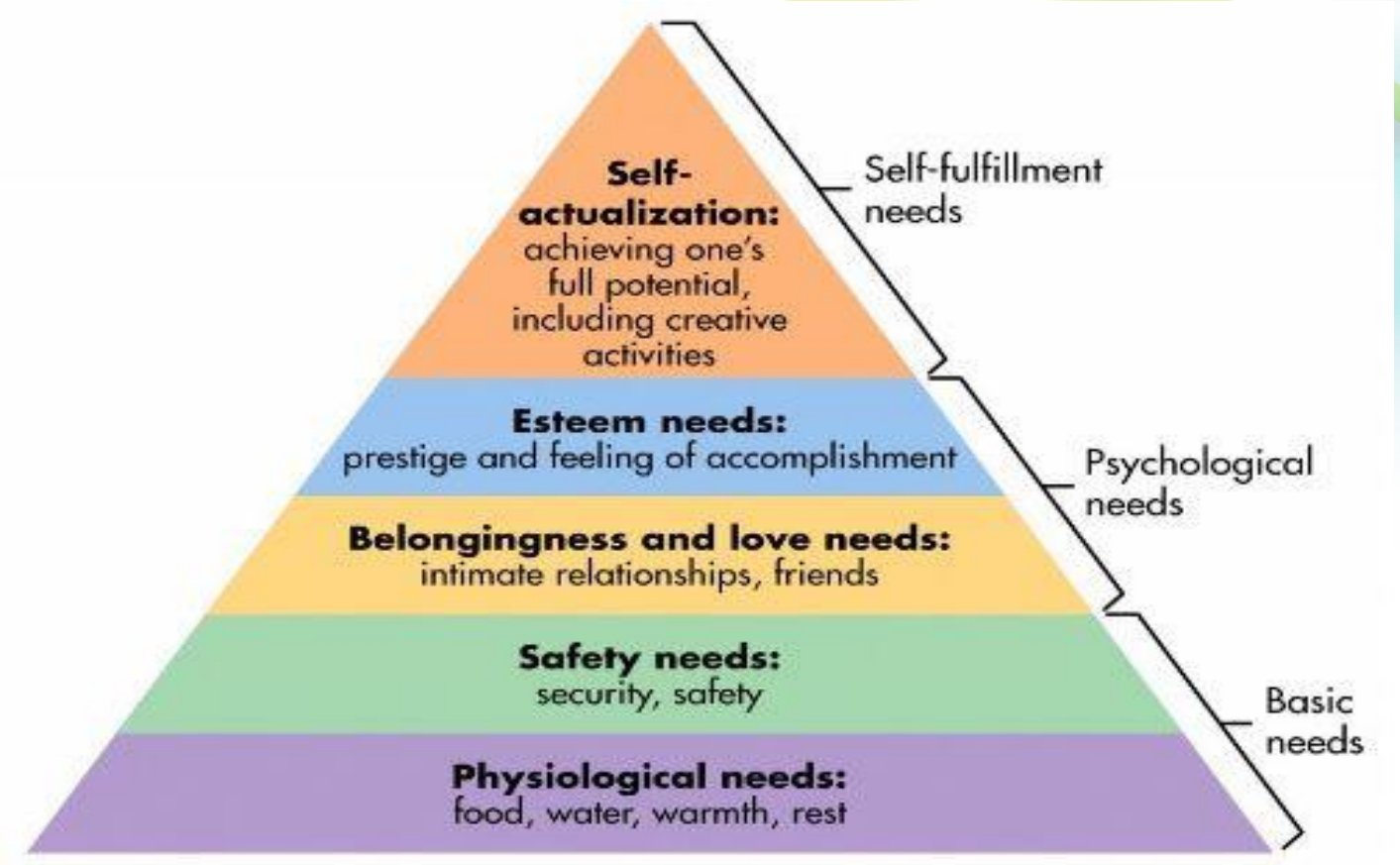
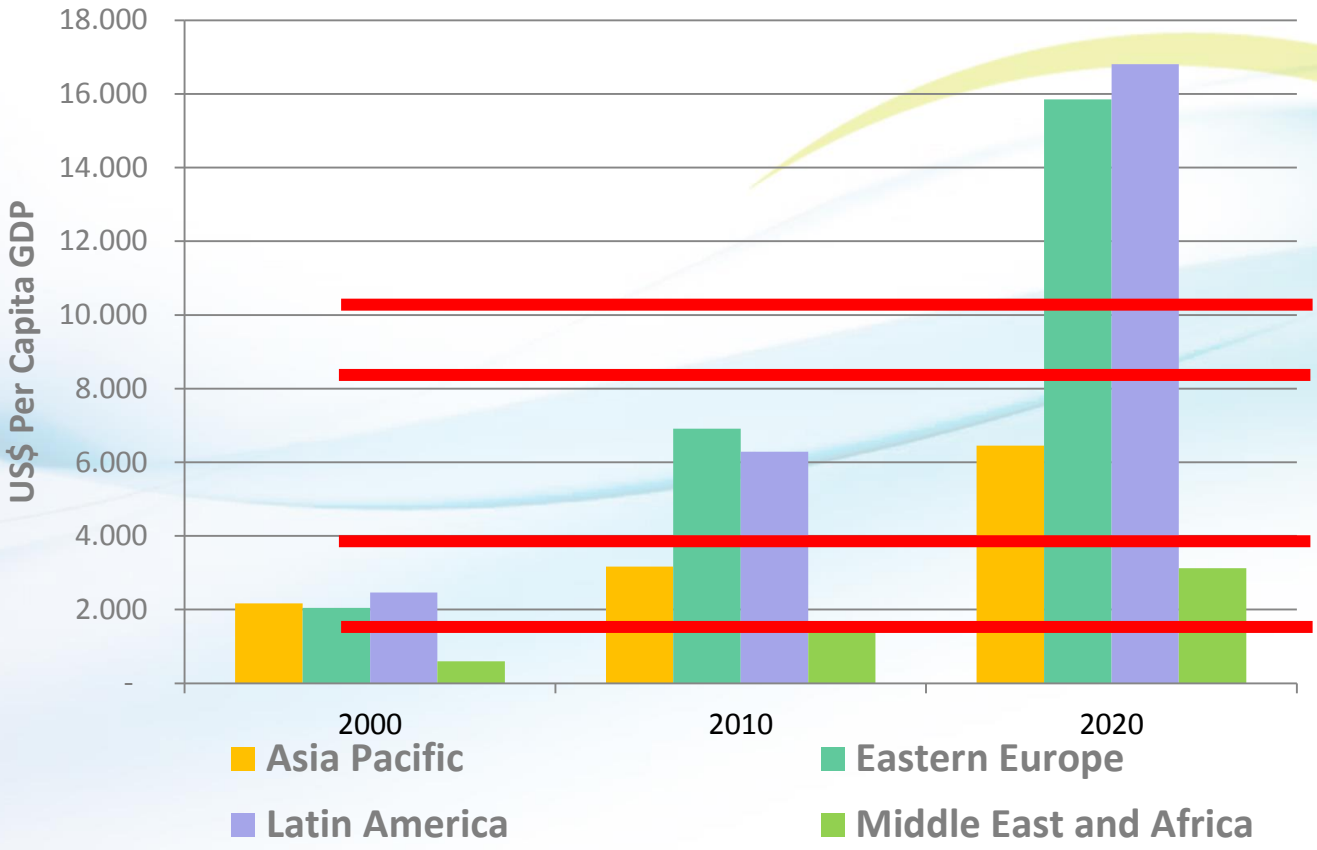
Maslowsche Hierarchie der Bedürfnisse



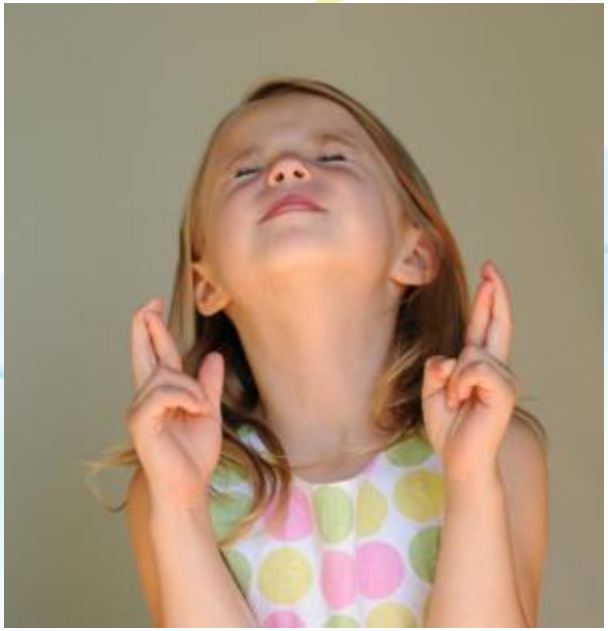
Beispiel des Zugangs zu Produkten auf Vliesstoff-Basis: Geschätztes Niveau des verfügbaren Einkommens für AHP's (Quelle: misc. Euromonitor reports)



Megatrends


Network society
Demographic development
Sustainability
Focus on health
Knowledge society
Polarization
Immaterialization
Globalization
Democratization
Commercialization
Acceleration and complexity
Individualization
Technologic development
Economic growth

Bevorzugte Zukunft



Bevorzugte Zukunft

- Unsicherheiten verringern
- Hindernisse vermeiden oder beseitigen
  - Beispiele: Handel & Steuern Lobbying (gegen Textilien Ursprungsregel)
  - Öffentliche Wahrnehmung beeinflussen (Ökobilanz –LCA-Sustainability- Abfallwitschaft)
  - Product Stewardship

Öffentliche Wahrnehmung beeinflussen: Beispiele EDANA Infographics

AUTOMOTIVE

LIGHTWEIGHT FABRICS FOR VEHICLES

NONWOVENS ARE **15% TO 30% LIGHTER** THAN THE TRADITIONAL MATERIALS THEY REPLACE, MAKING YOUR CAR MORE THAN **2KG LIGHTER.**

LESS POLLUTION = BETTER HEALTH : IF NONWOVENS WERE USED IN ALL NEW CARS IN THE EU, THIS WOULD RESULT IN **MORE THAN 2,000** DISABILITY ADJUSTED LIFE YEARS.

FOR AN AVERAGE PASSENGER CAR, USING NONWOVENS SAVES **55 KG CO_2 EQUIVALENTS** OVER ITS LIFETIME.

TWO THIRDS OF THIS **BENEFIT COMES FROM THE USE OF THE CAR.** THAT IS FROM THE DAY THAT YOU BEGIN DRIVING IT.

CARS USING NONWOVENS **IN ALL POSSIBLE** APPLICATIONS, FROM INSULATION, TO LININGS **HAVE A BENEFIT OF MORE THAN 30% LESS IMPACT** ON THE ENVIRONMENT.

EVERY YEAR ABOUT **13 MILLION NEW PASSENGER CARS** ARE REGISTERED IN THE EU. IF THESE CARS WERE ALL EQUIPPED WITH MODERN NONWOVEN MATERIALS,

800,000 TONNES OF CO_2 EQUIVALENTS PER YEAR COULD BE SAVED.

THIS EQUALS **3.7 BILLION KMS** IN A MEDIUM-SIZED PASSENGER CAR.

YOU COULD DRIVE TO THE MOON AND BACK **MORE THAN 4,800 TIMES!**

ALTERNATIVELY, THIS SAVING EQUALS THE REDUCTION OF **250,000** PASSENGER CARS ON THE ROAD.

OR ENOUGH CARS TO STRETCH THE LENGTH OF **ITALY** FROM NORTH TO SOUTH.

Nonwovens are used in many parts of a car, including temperature and sound insulation, seating, liners for the roof and wheel arches, and linings and carpets throughout the vehicle.

Nonwovens replace heavier materials, meaning lighter cars which use less fuel, generating less greenhouse gas emissions. This leads to improved air quality, saving resources and better health for people.

More efficient production is also achieved with the use of recycled polyester in seating, flooring, linings and insulation, meaning a further reduction of the environmental impact of nonwovens and the cars they are used in.

Source: Denkstatt case study on automotive nonwovens

GEOTEXTILES

ROAD CONSTRUCTION

AROUND 750KM² OF GEOTEXTILE NONWOVENS (THE EQUIVALENT OF MORE THAN 185,000 FOOTBALL FIELDS) ARE MANUFACTURED AND SOLD EVERY YEAR, 60% OF THIS IS USED IN THE CONSTRUCTION OF ROADS.

TODAY, WITH **70%** OF ROADS CONSTRUCTED USING NONWOVENS REPRESENTS

A SAVING OF 4.8 MILLION TONNES OF CO_2 EQUIVALENTS

THIS EQUALS AROUND **22 BILLION KMS** IN YOUR CAR.

YOU COULD DRIVE AROUND THE EARTH'S EQUATOR NEARLY 550,000 TIMES!

IF ALL NEW ROADS IN THE E.U. WERE BUILT WITH NONWOVENS, THIS WOULD INCREASE TO

A SAVING OF 6.8 MILLION TONNES OF CO_2 EQUIVALENTS

OR A SAVING OF **32 BILLION KMS** IN YOUR CAR.

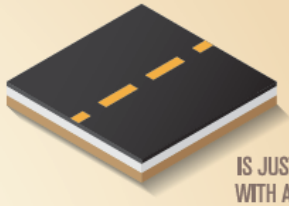
YOU COULD DRIVE AROUND THE EARTH'S EQUATOR NEARLY 800,000 TIMES!

THE BIGGEST IMPACT COMES FROM THE WEIGHT OF THESE MATERIALS.

GRAVEL 690KG/M²

GRAVEL WEIGHS 690KG PER M² VERSUS 175G PER M² FOR NONWOVENS, MAKING THEM ALMOST 4,000 TIMES LIGHTER!

NONWOVENS 175G/M²



FROM THEIR MANUFACTURE TO INSTALLATION, 1 M² OF GRAVEL TO COVER ROADS TO A STANDARD THICKNESS OF 30CM IS EQUIVALENT TO 11.2KG OF CO_2 WHILE EVERY M² OF GEOTEXTILE NONWOVEN IS EQUIVALENT TO 0.6KG OF CO_2.

NEARLY **20 TIMES** MORE EFFICIENT!

FOR COSTS, THIS IS JUST AS IMPRESSIVE. WITH A COST PER M² OF BETWEEN €15 TO €30 FOR GRAVEL AND BETWEEN €2 TO €3 FOR GEOTEXTILE NONWOVENS. THIS MEANS A COST SAVING USING NONWOVENS OF AN AVERAGE 8.5 BILLION EUROS PER YEAR. THAT'S NEARLY TWICE THE G.D.P. OF FIJI!

Nonwovens used in road construction mean a stronger road, which can be manufactured with fewer materials.

By letting water pass through the nonwoven layer, this keeps other materials from slipping away.

By being lighter, thinner and more resource-efficient than gravel, nonwoven geotextiles offer both an environmental benefit, and cost savings.

Source: Denkstatt case study on geotextiles for road construction

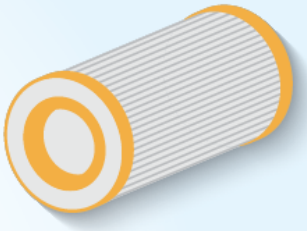
WATER FILTRATION

WATER-BORNE DISEASES SUCH AS DIARRHOEA CAUSE 2 MILLION DEATHS EVERY YEAR, AND THIS DISEASE ALONE AMOUNTS TO AN ESTIMATED 4.1% OF THE TOTAL GLOBAL BURDEN OF DISEASE.

88% OF THAT BURDEN IS DUE TO UNSAFE WATER SUPPLY, SANITATION AND HYGIENE, MOSTLY AFFECTING CHILDREN IN DEVELOPING COUNTRIES. MANY DISEASES COULD BE PREVENTED THROUGH BETTER ACCESS TO SAFE WATER SUPPLY.

THE GLOBAL MARKET FOR NONWOVEN FILTER MEDIA IS PROJECTED TO EXPERIENCE A 7% (CAGR) GROWTH OVER FIVE YEARS TO 2015, INCREASING FROM A VALUE OF $2.5 BILLION IN 2010 TO $3.5 BILLION IN 2015.

THE MOST RAPID GROWTH WILL BE IN THE ASIA-PACIFIC REGION, WITH APPROXIMATELY 9.5% GROWTH IN 2015.



FOR THE MORE MATURE MARKETS IN NORTH AMERICA AND THE EUROPEAN UNION, GROWTH RATE OF 5.4% AND 5.2% IS ESTIMATED OVER THIS SAME FIVE-YEAR PERIOD.

Water is essential to life. Microbial contamination of drinking water contributes to disease outbreaks and background rates of disease worldwide. To improve public health and quality of life, pollutants must be eliminated from drinking water.

Nonwovens enable the successful filtration of drinking water. Effective water filtration helps prevent disease, and removes undesirable chemicals, biological contaminants, suspended solids and gases from contaminated water.

Nonwovens are used in filtration because they can remove particulates from fluids. Nonwovens are not only used for water filtration, but also for other liquid filtration applications (e.g. beverage, hydraulic oils, fuels etc.). The product selected will vary depending on the liquid, the desired performance and the nature of the contaminants to be removed.

Source: Denkstatt case study on nonwovens

CROP COVERS

AROUND 1,840 MILLION M² OF NONWOVENS FOR CROP COVERS (THE EQUIVALENT OF 40,000 TONNES) ARE MANUFACTURED AND SOLD EVERY YEAR.

IN GROWING STRAWBERRIES, A FARMER ONLY HAS TO SAVE **2%** OF THE VALUE OF THEIR CROP TO MAKE USING NONWOVEN CROP COVERS WORTHWHILE. THIS TRANSLATES TO A **SAVING OF €25 MILLION** PER YEAR OF STRAWBERRIES THAT WOULDN'T HAVE MADE IT TO MARKET, OR TO THE FARMER GROWING THEM.

AROUND **2%** OF THE AMOUNT OF TOTAL NONWOVEN CROP COVERS ARE USED TO COVER SUGAR BEET PILES. THAT IS, THE VEGETABLE ONCE IT'S BEEN HARVESTED. THIS EQUALS MORE THAN **9,000 FOOTBALL FIELDS!**

BY COVERING THE SUGAR BEETS WHEN HARVESTED, FARMERS **EARN €54 MILLION** PER YEAR THAT WOULD OTHERWISE HAVE BEEN SPOILED!

WHEN **10%** OF THE HARVESTED SUGAR BEETS ARE PREVENTED FROM SPOILING, THIS **SAVES 65,000 TONNES OF CO_2** EQUIVALENT EMISSIONS. THIS EQUALS AROUND **300 MILLION KM** IN YOUR CAR. MEANING YOU COULD DRIVE AROUND THE EARTH'S EQUATOR ALMOST 7,500 TIMES, OR A ROUND TRIP TO THE MOON NEARLY **400 TIMES!**

FOR THE ENVIRONMENTAL IMPACT OF THE PRODUCT, **WITH AS FEW AS 2 USES, THE CO_2 EQUIVALENT IMPACT** OF THE CROP COVER FOR SUGAR BEETS **IS EQUAL TO 11%** OF THE CROP'S IMPACT.

HARVEST PROTECTION COVERS ARE EVEN MORE EFFICIENT AS THEY ARE USED ON AVERAGE **5X** WHICH BRINGS THEIR CO_2 EQUIVALENT **DOWN TO 0.5%** OF THE CO_2 EQUIVALENT **GENERATED WHEN GROWING THE CROP.**

Nonwovens protect crops, which means more efficient agricultural production.

By increasing the production and limiting damage to crops, nonwovens ensure that what is grown in the field counts.

Two types of crop covers are used, to either protect the fruit or vegetable while it's growing on the field, or to protect the produce once it's been harvested.

Nonwoven crop covers can also be used again and again, making their use even more valuable.

Limiting exposure to frost, wind, rain, hail, and animals (both big and small), nonwovens offer protection for the produce and farmer alike.

Source: Denkstatt case study on agricultural nonwovens for crop cover

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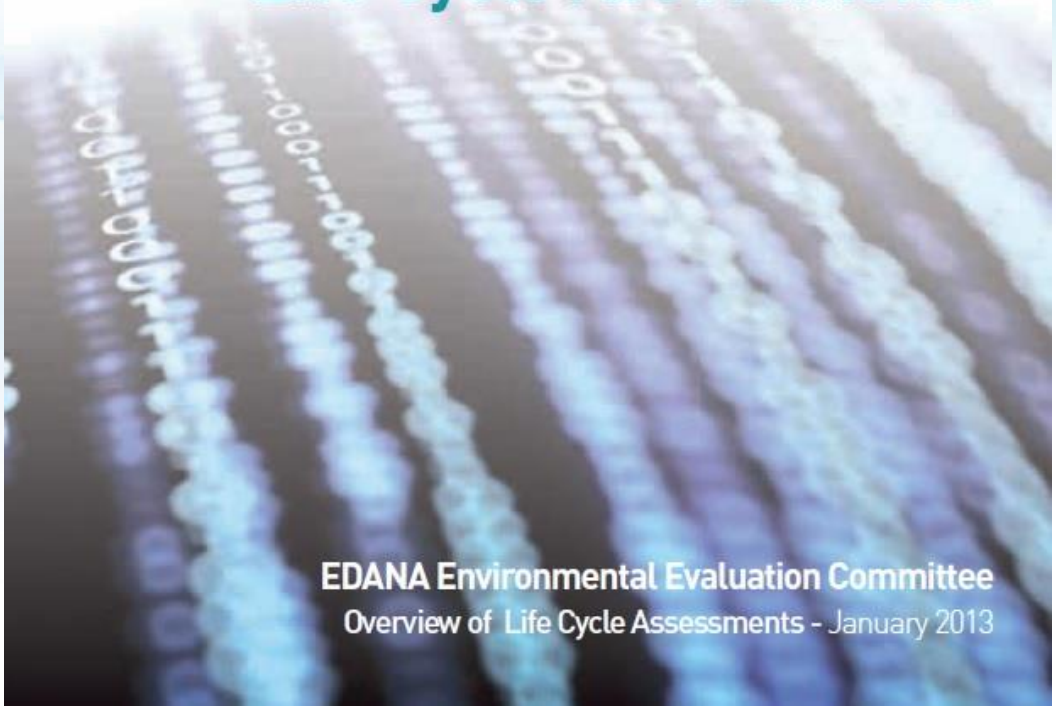
THE VOICE OF NONWOVENS

20 years of
Life Cycle Assessments



EDANA Environmental Evaluation Committee

Overview of Life Cycle Assessments - January 2013

Öffentliche Wahrnehmung beeinflussen: Beispiel Produktverantwortung

Modernes und positives Image der Branche

- ✓ Vorwort
- ✓ Ziel dieses Vortrags
- ✓ Arten von Zukunft
- ✓ Lehren aus der jüngsten Vergangenheit
- ✓ Wachstumsmotor für die Zukunft der Vliesstoffindustrie
- ✓ Bevorzugte Zukunft
- **Vision für die Branche des Jahres 2025**
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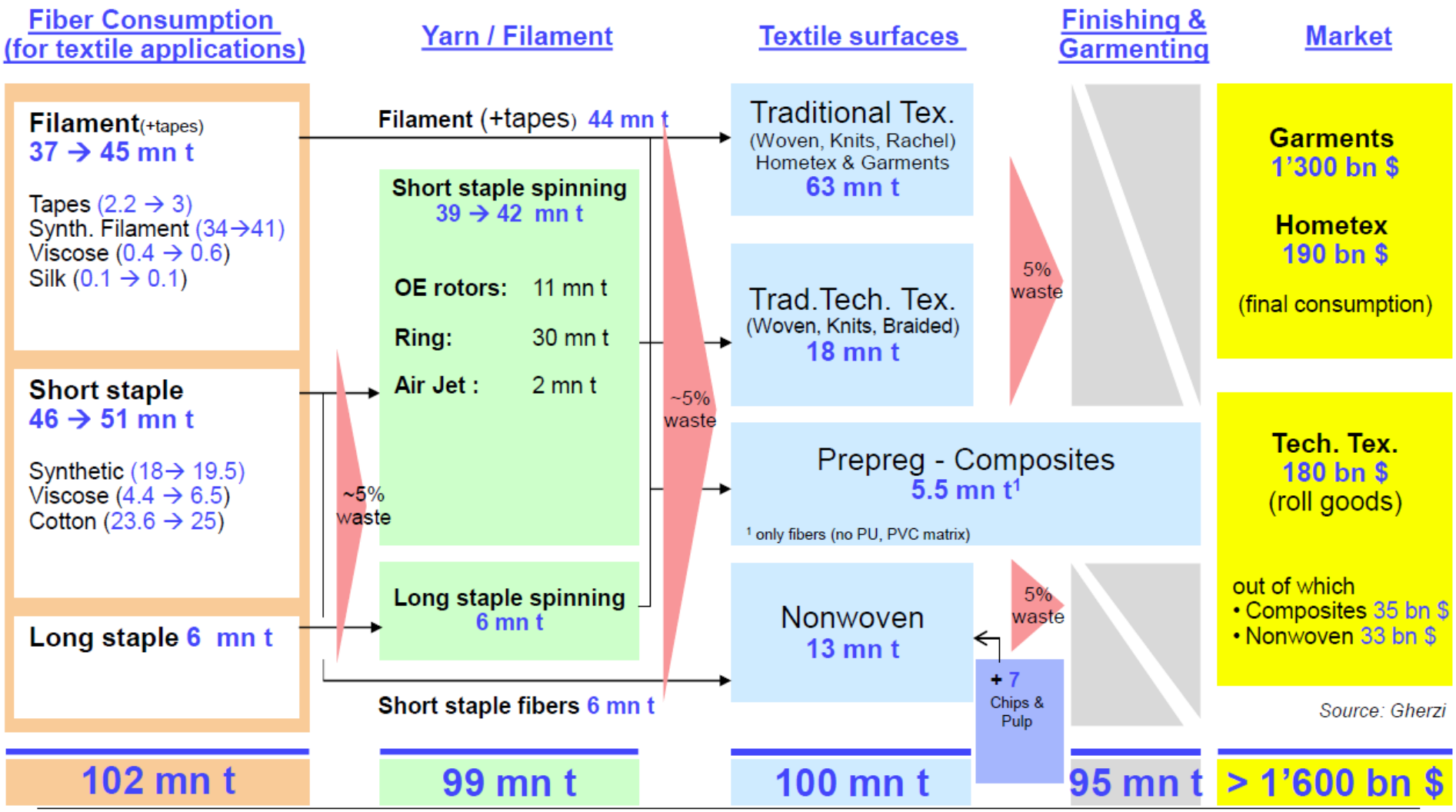
Vliesstoffindustrie bleibt am schnellsten wachsende Faserstoffbranche

Textile added value chain 2020



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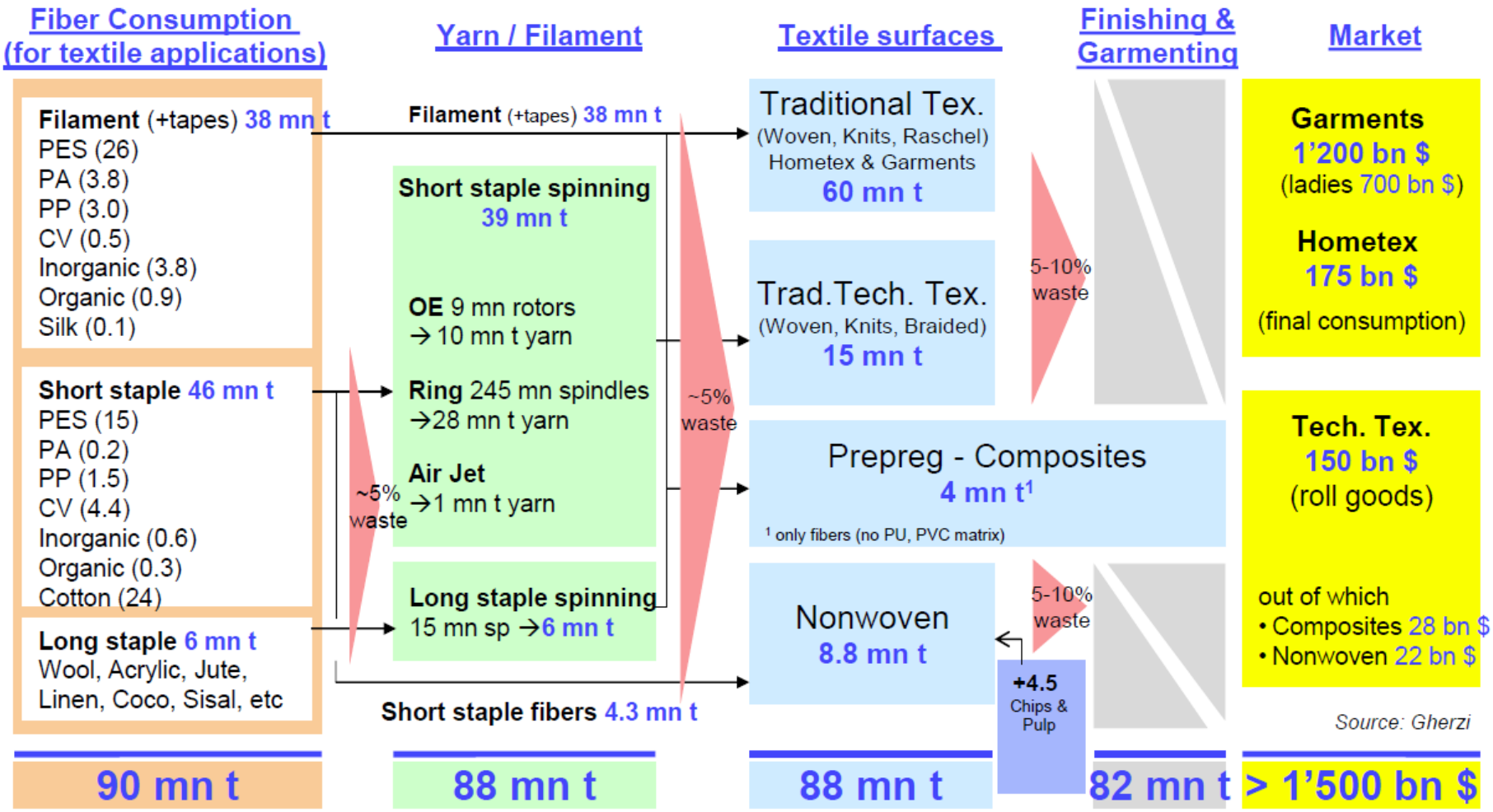
Textile added value chain 2014



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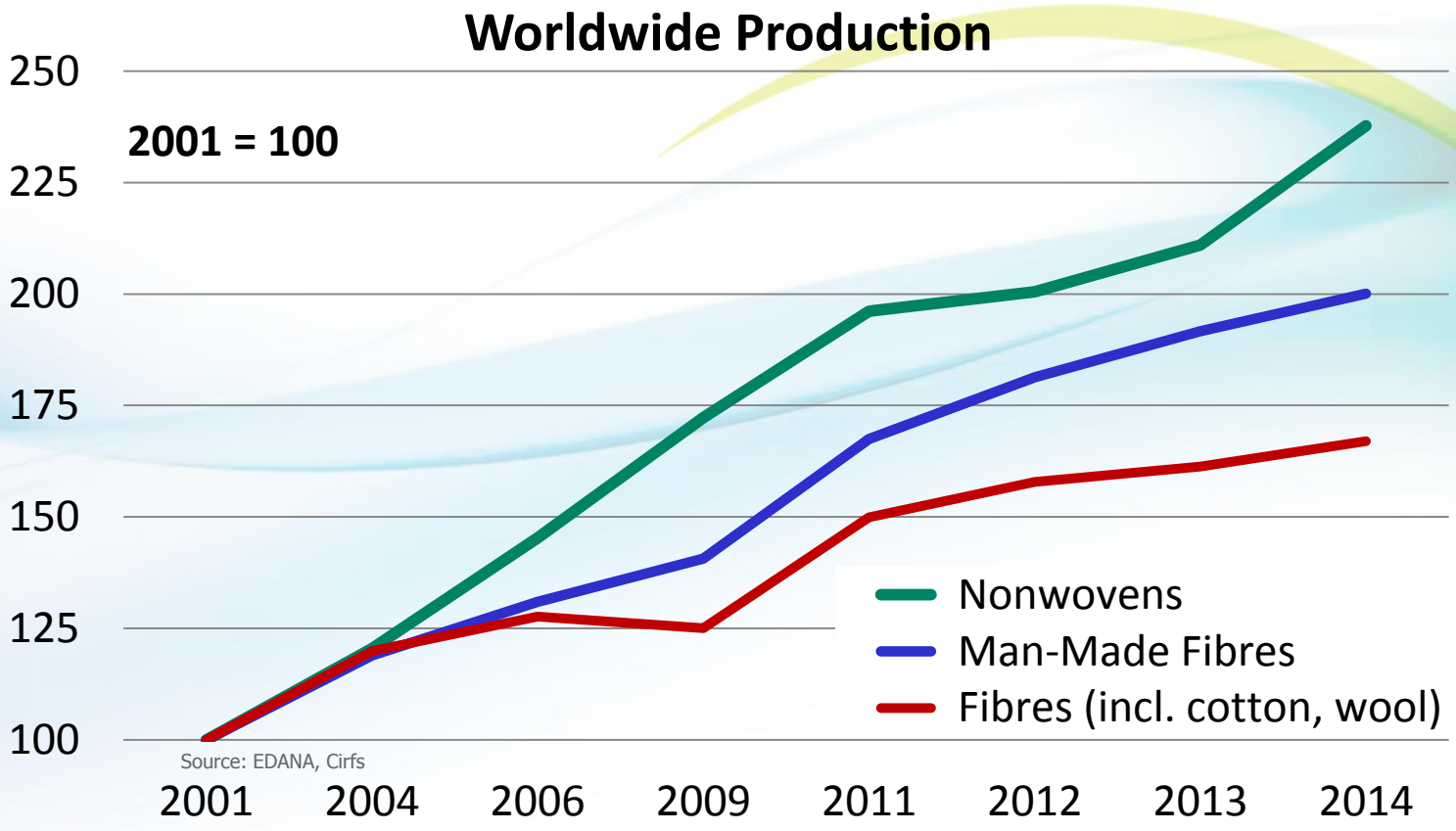
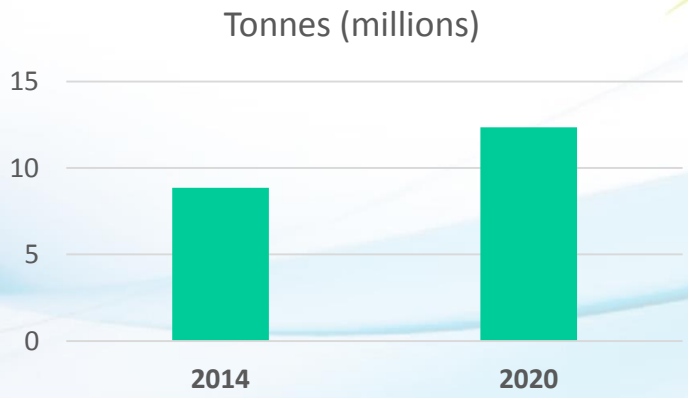
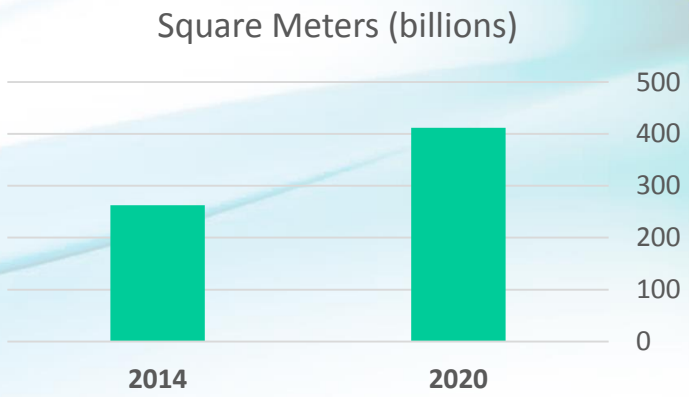
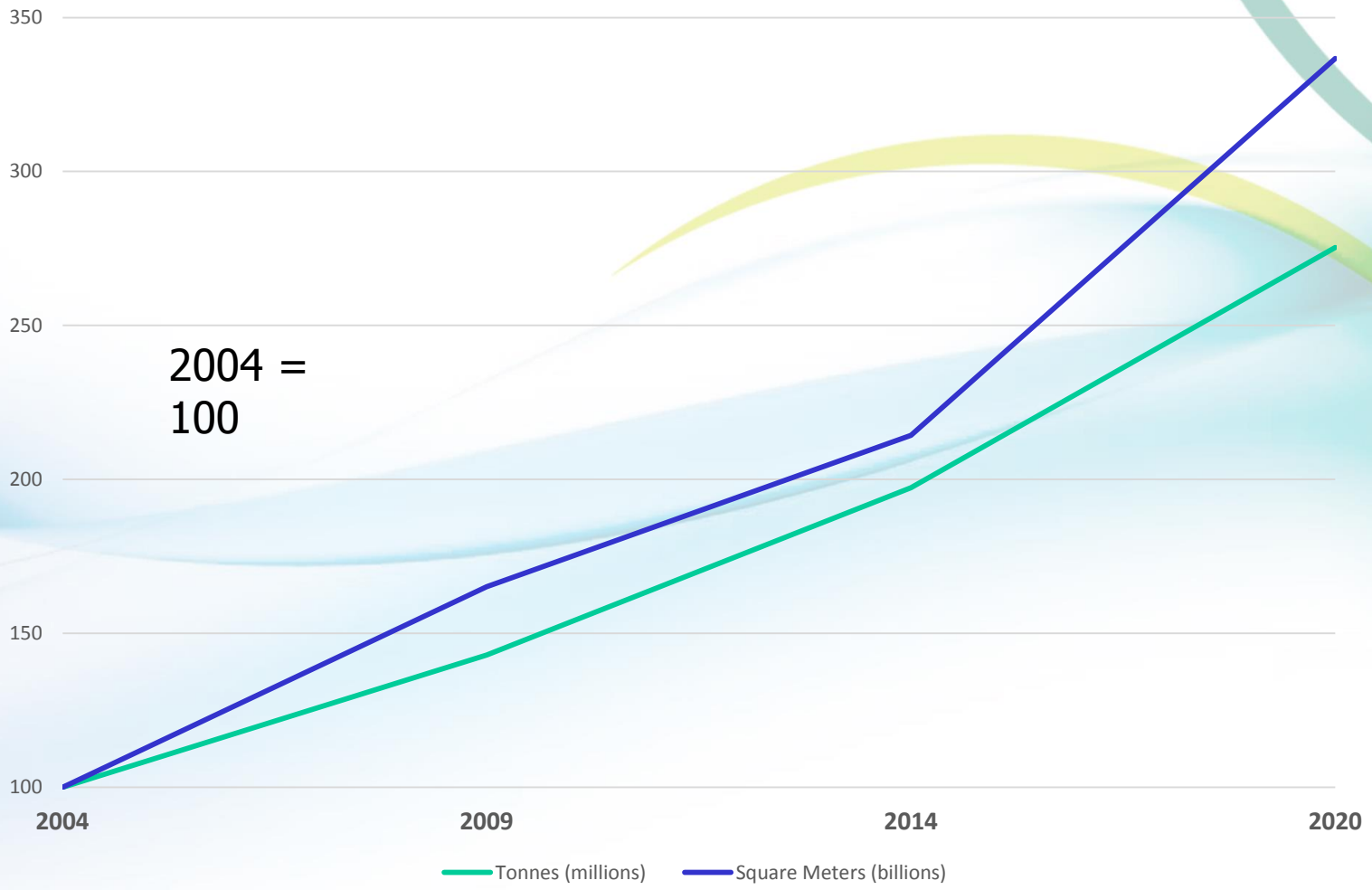
Nonwovens vs. Total Textile Fibres



Vliesstoffe: weniger ist mehr


Tonnes (millions)
15
10
5
0
2014
2020


Square Meters (billions)
500
400
300
200
100
0
2014
2020


350
300
250
200
150
100
2004 = 100
2004
2009
2014
2020
Tonnes (millions)
Square Meters (billions)

Outlook for Worldwide Nonwovens Production

	2004	2009	2014	2020	Annual Growth Rate 2004-2014	Annual Growth Rate 2014-2020
Tonnes (millions)	4,49	6,42	8,86	12,36	7,0%	5,7%
Square Meters (billions)	122,4	202,1	262,3	412,1	7,9%	7,8%
Dollars (billions)	19,9	27,3	35,6	48,2	6,0%	5,2%
Consumption per Person (kg per capita)	0,71	0,96	1,24	1,62	5,8%	4,5%

WORLDWIDE OUTLOOK FOR THE NONWOVENS INDUSTRY 2014-2020

Association of the Nonwoven Fabrics Industry
Advancing Nonwovens Worldwide

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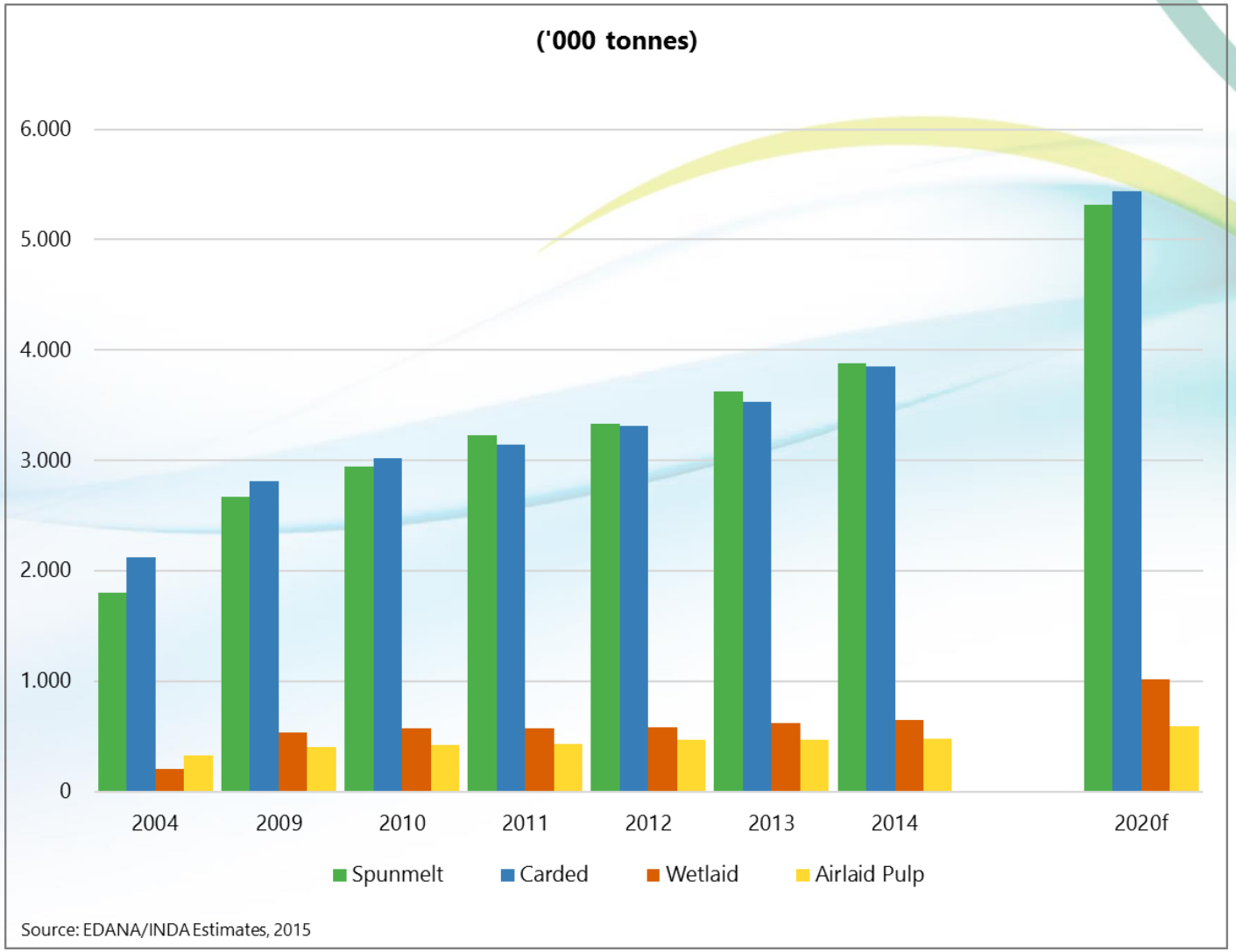
Worldwide Outlook for Nonwoven Production by Web Forming Process



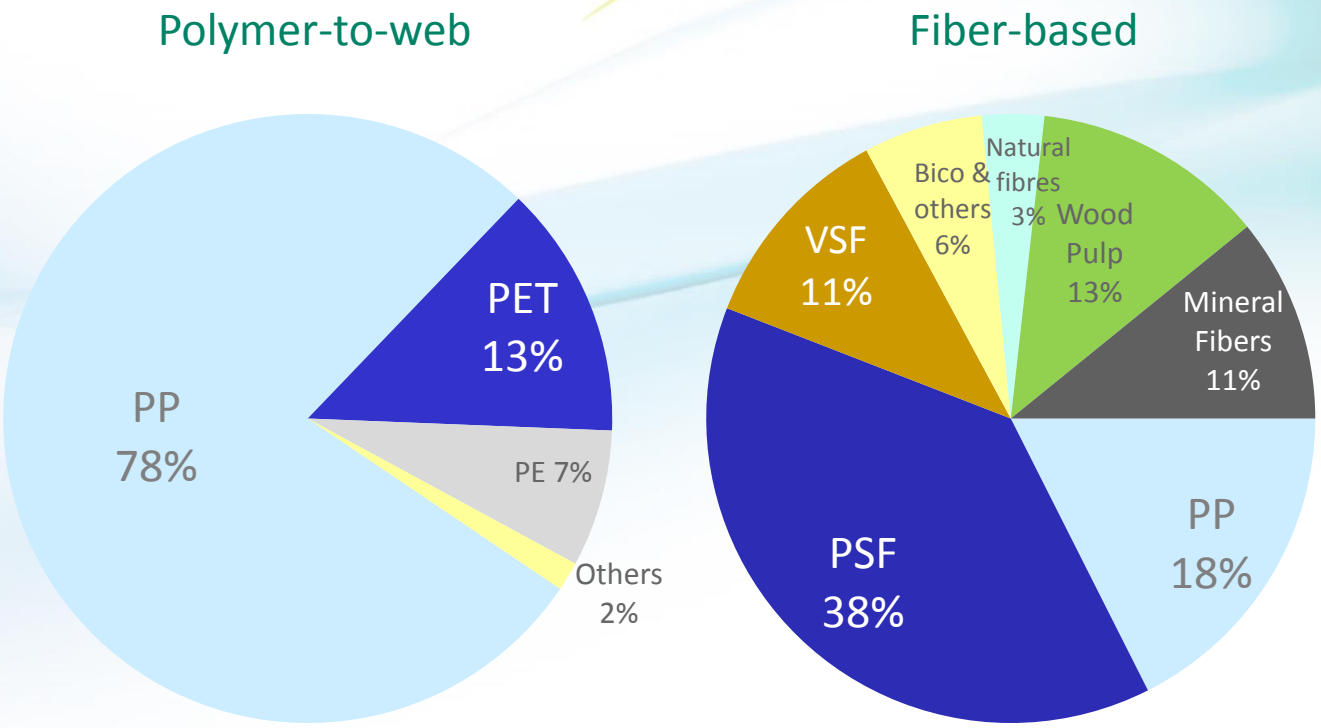
Vliesstoffe basieren weiterhin auf Petrochemie, doch zunehmend auch auf erneuerbaren Quellen

Rohmaterialien – einige Fakten

- Bereits 30 % der faserbasierten Vliesstoffe werden aus erneuerbaren Rohstoffen hergestellt bzw. basieren darauf.
- 2012 betrug der Einsatz von Materialien auf Öl-Basis bei Vliesstoffen weniger als 0,2% des Rohöls weltweit.
- Wachsender Trend Richtung Bio-Polymere wird durch verfügbare Kapazitäten, Kosten und Nutzung durch andere Sektoren begrenzt.

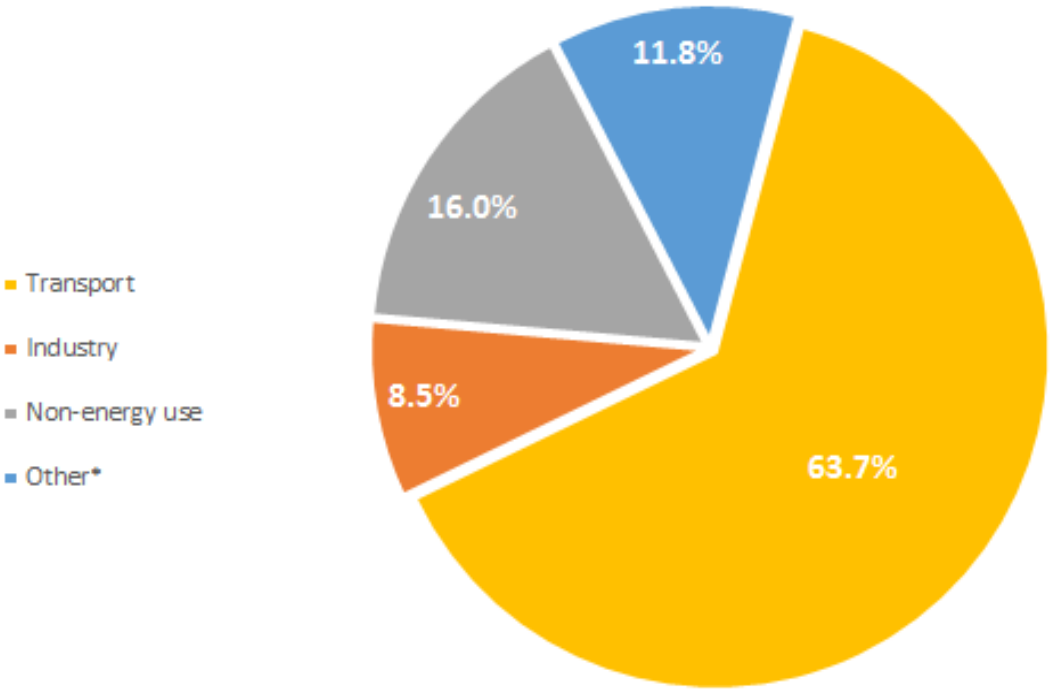
World Consumption of Raw Materials for Nonwovens

- 2014 consumption of polymers & fibres: 9,716 Tonnes



Source: ANFA, EDANA, INDA

Global crude oil consumption in 2012,
breakdown by sector

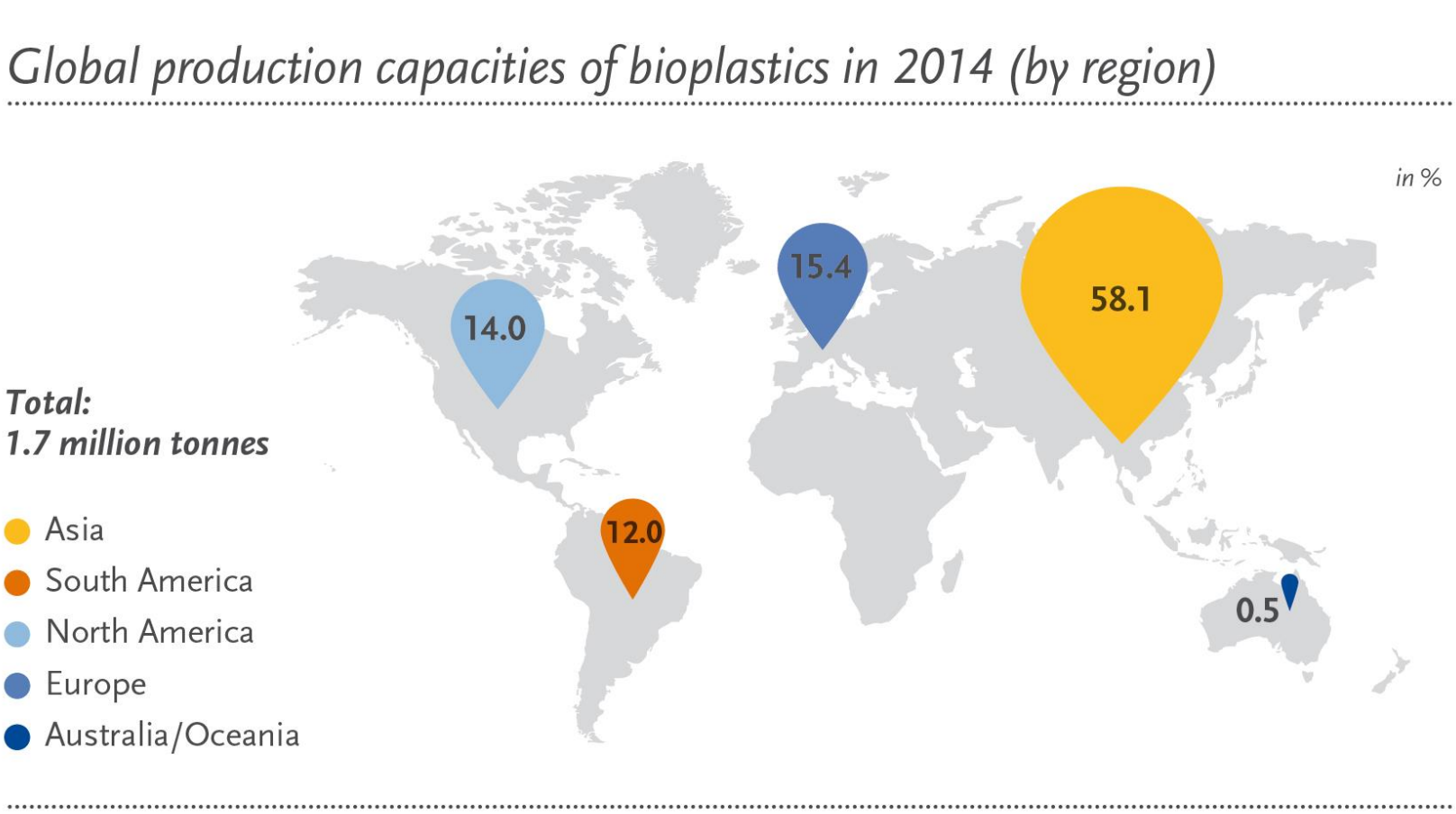


Total: 3652 mtoe

*Agriculture, buildings, commercial & public services, and others.

Source: IEA Key World Energy Statistics 2014

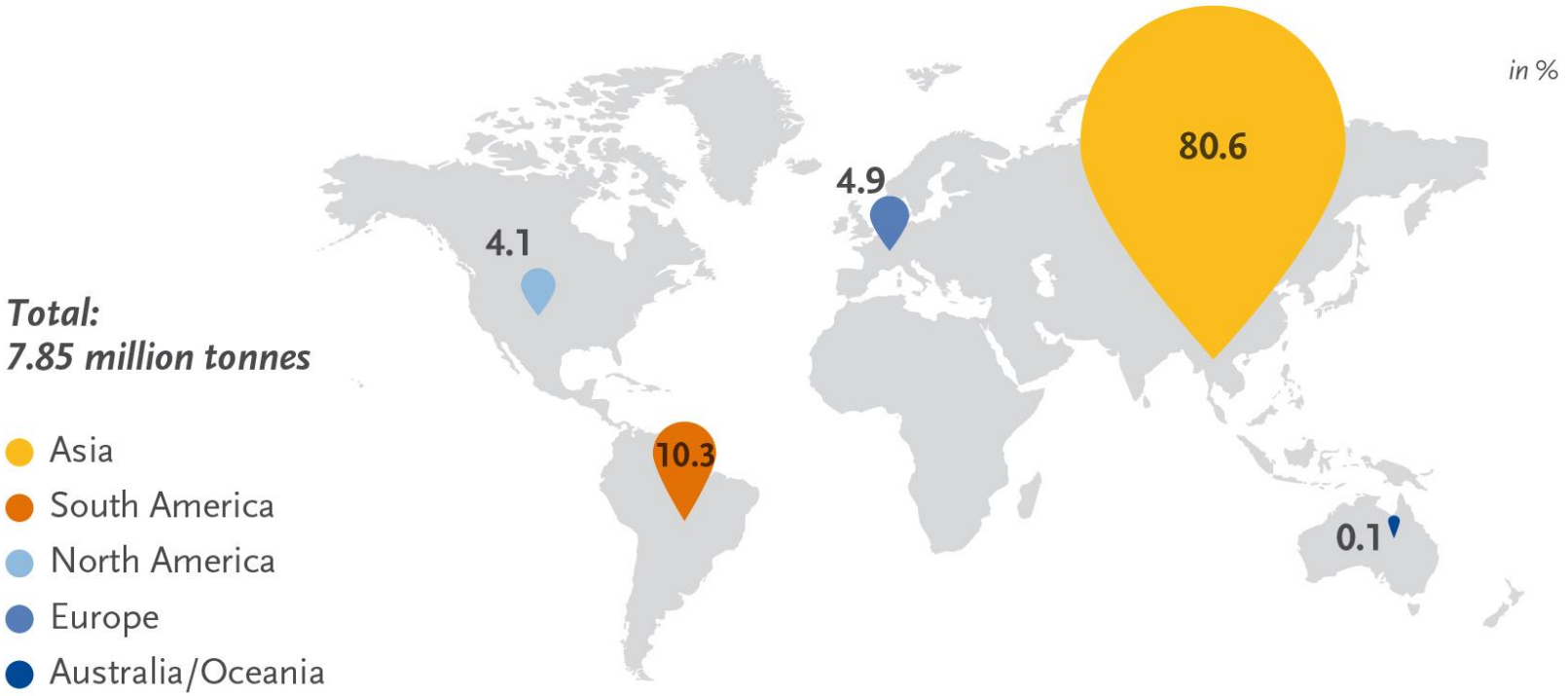
Regional development of bioplastics production capacities 2014



Source: European Bioplastics, Institute for Bioplastics and Biocomposites, nova-Institute (2015).
More information: ***www.bio-based.eu/markets*** *and* ***www.downloads.ifbb-hannover.de***

Regional development of production capacities 2019

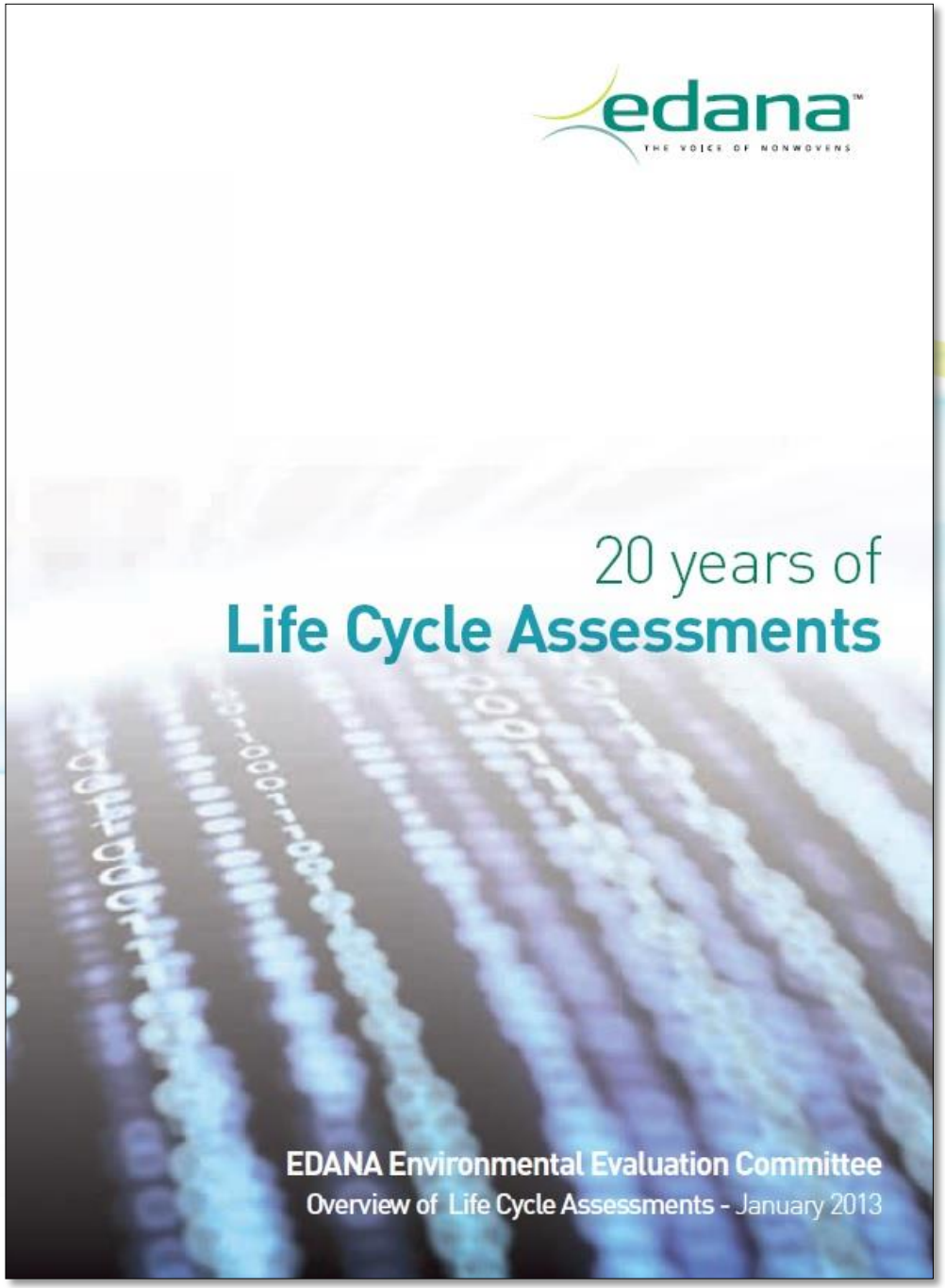
Global production capacities of bioplastics in 2019 (by region)



Source: European Bioplastics, Institute for Bioplastics and Biocomposites, nova-Institute (2015).
More information: ***www.bio-based.eu/markets*** *and* ***www.downloads.ifbb-hannover.de***

Evolutionen statt Revolutionen…

- Vliesstoffe weiterhin hybridisiert/kombiniert
- Branchenkonzentration-Interesse bei Private-Equity-Funds
- Kreislaufwirtschaft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EDANA Environmental Evaluation Committee
Overview of Life Cycle Assessments - January 2013

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- ✓ Ziel dieses Vortrags
- ✓ Arten von Zukunft
- ✓ Lehren aus der jüngsten Vergangenheit
- ✓ Wachstumsmotor für die Zukunft der Viesstoffindustrie
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Forestry
Agriculture
Viscose
Cellulose
Cotton
Oil
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Polypropylene
Polyethylene
Polyester
Superabsorbents
NONWOVENS PRODUCTION
Fibres
Filaments
Additives
FINISHED NONWOVEN
Consultants
Absorbent hygiene products
Cosmetics
Medical
Packaging
Personal care wipes
Research institutes and test labs
Agriculture
Automotive
Cable wrapping
Civil engineering
Construction
Fashion
Filtration
Industrial applications
CONVERTED GOODS
RETAILERS
END-USER

Table II-3

Outlook for Nonwoven Production by Region

('000 tonnes)

Region	2004	2009	2014	2020	Growth (AAGR) 2004-2014	Growth (AAGR) 2014-2020
North America	1.193	1.729	2.095	2.857	5,8%	5,3%
Greater Europe	1.336	1.673	2.167	2.876	5,0%	4,8%
Asia	1.415	2.428	3.707	5.300	10,1%	**6,1%**
China	*755*	*1.505*	*2.432*	*3.653*	*12,4%*	*7,0%*
Japan	*297*	*283*	*336*	*372*	*1,2%*	*1,7%*
Other Asian countries	*363*	*640*	*939*	*1.276*	*10,0%*	***5,2%***
South America	313	304	494	725	4,7%	**6,6%**
MENA	178	237	336	509	6,6%	**7,1%**
Rest of World	37	50	62	97	5,4%	**7,6%**
World Total	**4.472**	**6.420**	**8.862**	**12.364**	**7,1%**	**5,7%**

Source: EDANA/INDA/ANFA estimates, 2015

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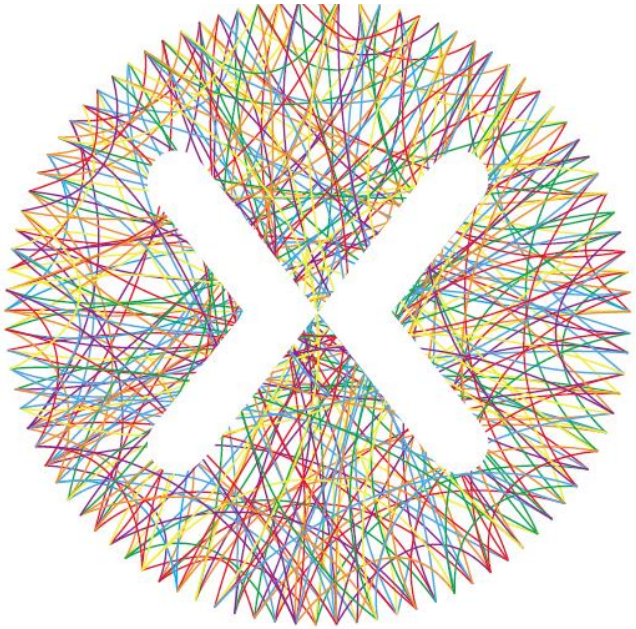
Nonwovens Innovation Academy
Nonwovens research & innovation conference
25–26 October, 2017 Chemnitz – Germany

Don’t miss INDEX™ 17



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