Long-Life and Durable Nonwovens Market Overview



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INDA – Association of the Nonwoven Fabrics Industry

Director of Technical Affairs and Education

Advanced Textiles EXPO®

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Presentation Overview

- Who is INDA & what are nonwovens?
- INDA's market data methodology
- Credit where it's due (the people that do the heavy lifting)
- Global and North American nonwoven capacity
- Changes in trade mix (current as of the last USA tariff news)
- Trends in long-life nonwoven categories
- North American supply to nonwoven market

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Who is INDA?

INDA helps members and the nonwovens industry develop their businesses through these five strategic pillars:



Convene and connect the industry



Achieve industry relevance among policymakers, end-users & other key stakeholders



Advocate for the nonwovens industry in public policy forums



Deliver market insights for better decision-making



Provide workforce development to sustain the industry's innovative edge

Learn more at https://www.inda.org/indamembers/

> An engineered fibrous assembly, primarily planar, which has been given a designed level of structural integrity by physical and/or chemical means, excluding weaving, knitting or papermaking.
>
> ISO 9092:2019

ISO Technical Committee 38: Textiles also governs nonwovens

Nonwovens in Everyday Life

















Product Categories Using Nonwovens

















INDA Market Data Methodology

- Provided by INDA members and select non-members
  - Annual survey
  - Interviews
- Anonymous and Confidential
  - Data is consolidated and rolled-up
  - Company references are removed
  - Only INDA market intelligence team is privy to source data
- Contributors/Participants are provided a copy of report
- Data generally presented in terms of tonnes and revenue
- Where appropriate square meters (sqm) are provided

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Who deserves the real credit today!



Cindy Garcia
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INDA Senior Analyst for Market & Industry

Market Data and Figures extracted from:

"North American Nonwovens Industry Outlook 2022-2027"

"North American Nonwovens Industry Demand and Forecast 2024-2029"

"North American Nonwoven Materials Annual Study 2022-2027"

"North American Supply Report 2025"

"INDA/EDANA Global Nonwoven Markets Report: A Comprehensive Survey and Outlook 2023-2028"



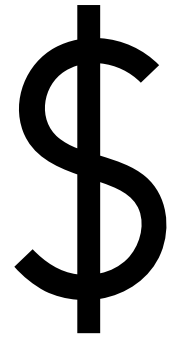
Jacques Prigneaux
EDANA Market Analysis and Economic Affairs Director

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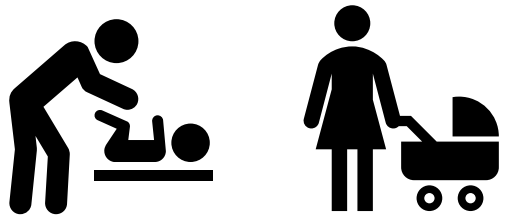
How to Assess Health of Industry?

- Many possible metrics but we'll use two for a high level view

- Does a segment growth rate exceed GDP?
  - **USA GDP CAGR for 2019 to 2024 = 2.4%**
  - **USA GDP CAGR for 2025-2029 = 2.0%**



- Does a segment growth rate exceed population demographics?
  - **USA Population CAGR for 2019 to 2024 = 0.49%**



- Also of interest: Housing Starts, New Auto Sales,…

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Trends in Nonwoven Regional Production

Table II-3

Outlook for Nonwoven Production by Region

('000 tonnes)

Region	2013	2018	2023	2028	Growth (AAGR) 2013-2023	Growth (AAGR) 2023-2028
North America	3,274	4,163	4,684	5,570	3.6%	3.5%
Greater Europe	2,358	2,907	2,865	3,020	2.0%	1.1%
Asia	4,321	6,596	9,614	10,565	8.3%	1.9%
China	3,156	4,975	7,717	8,316	9.4%	1.5%
Japan	331	343	269	287	-2.1%	1.3%
Other Asian Countries	834	1,278	1,629	1,962	6.9%	3.8%
South America	523	602	752	843	3.7%	2.3%
MENA	351	447	469	742	3.0%	9.6%
Rest of World	55	70	108	145	7.0%	6.1%
World Total	**10,882**	**14,785**	**18,492**	**20,885**	**5.4%**	**2.5%**

Source: EDANA/INDA/ANFA estimates, 2024

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Nonwoven Imports To North America

Table 12

Top 10 Countries Importing to North America Yearly Comparison

2014, 2023, and 2024: Country with Percentage Share of North American Imports

2014		2023		2024	
China	37.3	China	35.5	China	36.7
Germany	9.7	India	13.5	India	14.4
Israel	9.1	Germany	6.6	Turkey	6.7
India	6.1	Turkey	6.2	Germany	6.0
Taiwan	4.5	Israel	3.8	Taiwan	3.2
France	4.1	Saudi Arabia	3.5	Israel	3.2
Japan	3.8	Japan	3.5	Korea	2.8
Turkey	3.2	Taiwan	3.1	Saudia Arabia	2.7
Italy	3.1	Italy	3.0	Japan	2.6
Luxembourg	2.3	Korea	2.8	Thailand	2.5
Top 10	**83.2**	**Top 10**	**81.6**	**Top 10**	**80.8**

Source: U.S. International Trade Commission and IHS Maritime & Trade-PIERS, 2025

Increased Tariffs Constrain Imports from China

Nonwoven imports transition to other nations

"North American Nonwovens Industry Outlook 2022-2027"
"North American Supply Report 2024"
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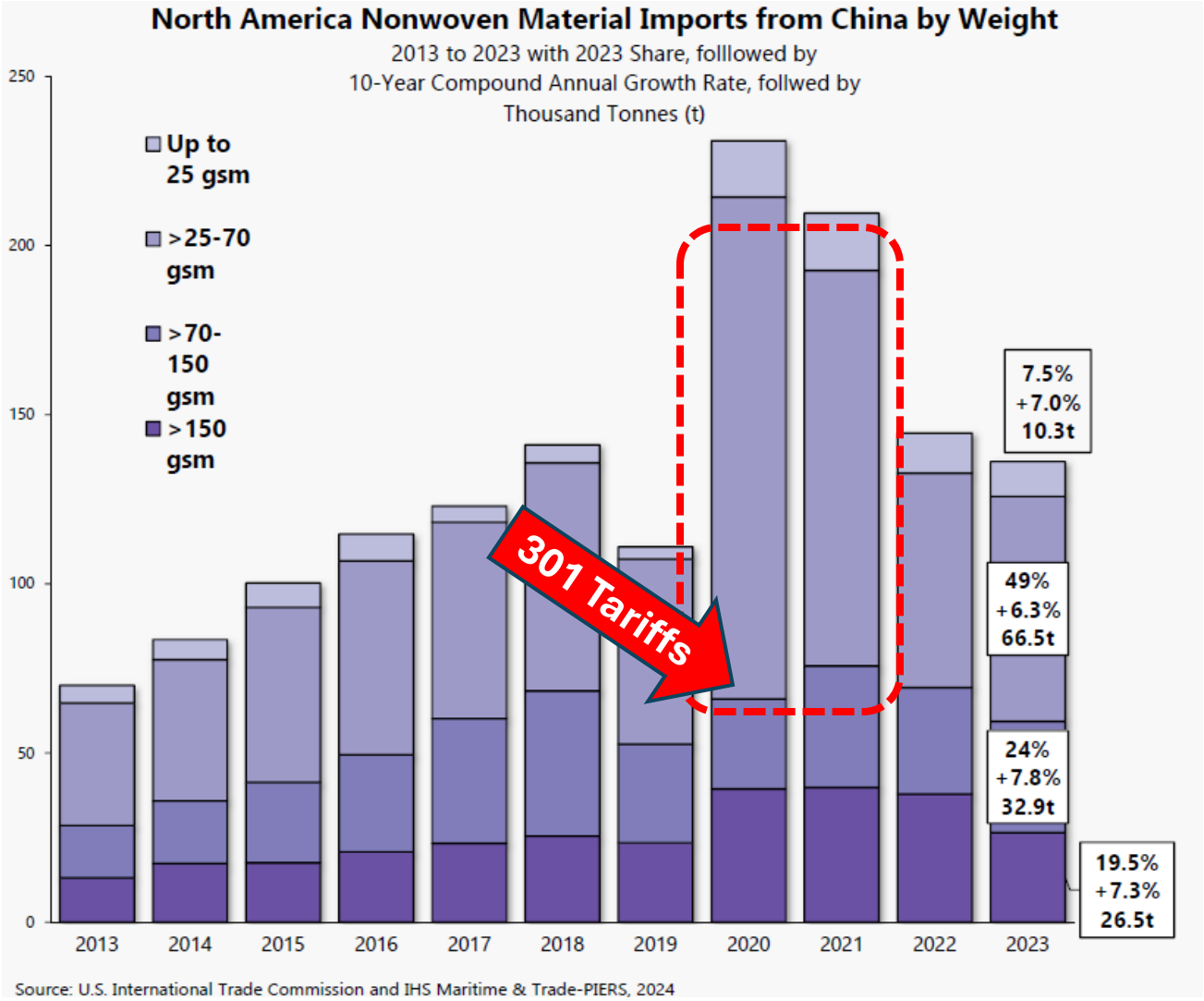
What's being imported?

Primarily medium weight nonwoven for wipes and medical applications

Significant increase in volume of 30-45 gsm nonwoven during COVID

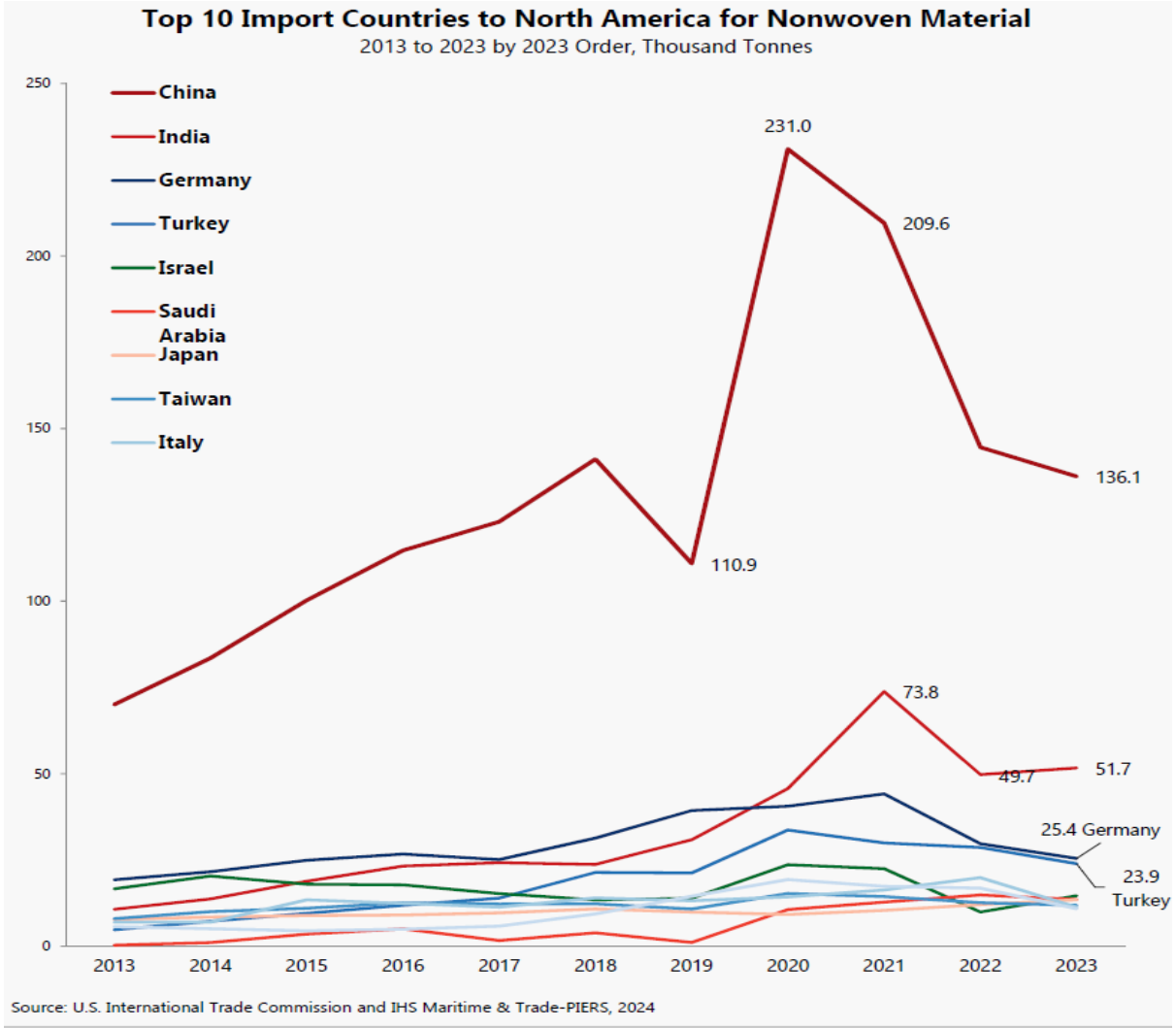
Largely returned to pre-COVID levels

Growth rates inflated due to COVID



"North American Nonwovens Industry Outlook 2022-2027"
"Trade America Supply Report 2024"
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India Maintains “COVID” Gains



Tariffs on Chinese goods drove import reduction 2017-2019.

Tariff exemptions during COVID restored Chinese imports

Multiple countries saw uptick of import to N.AM during COVID

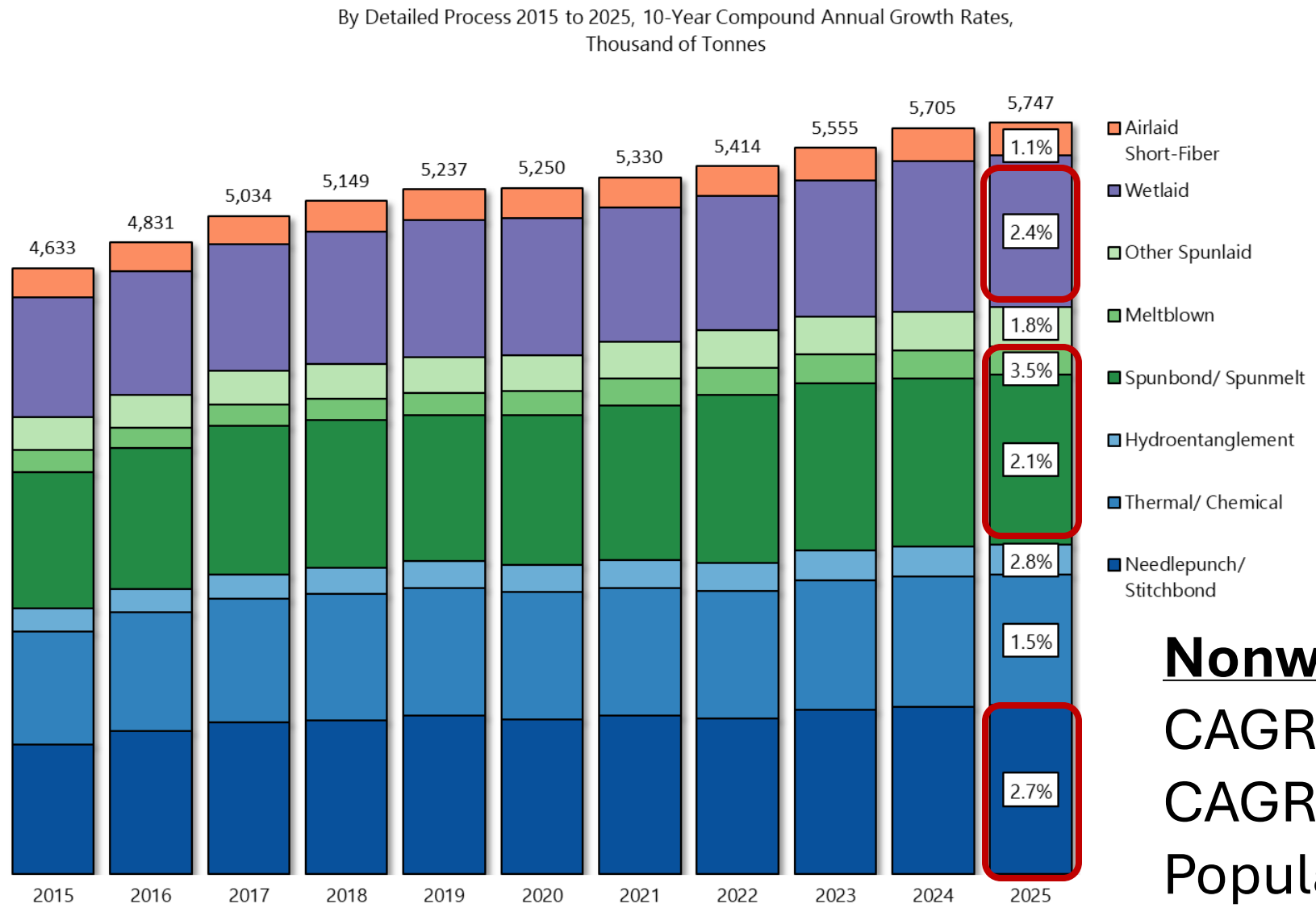
India maintains those gains

“North American Nonwovens Industry Outlook 2022-2027”
“North American Supply Report 2024”

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North American Nonwoven Capacity



Souce: INDA, 2026

Nonwoven Growth

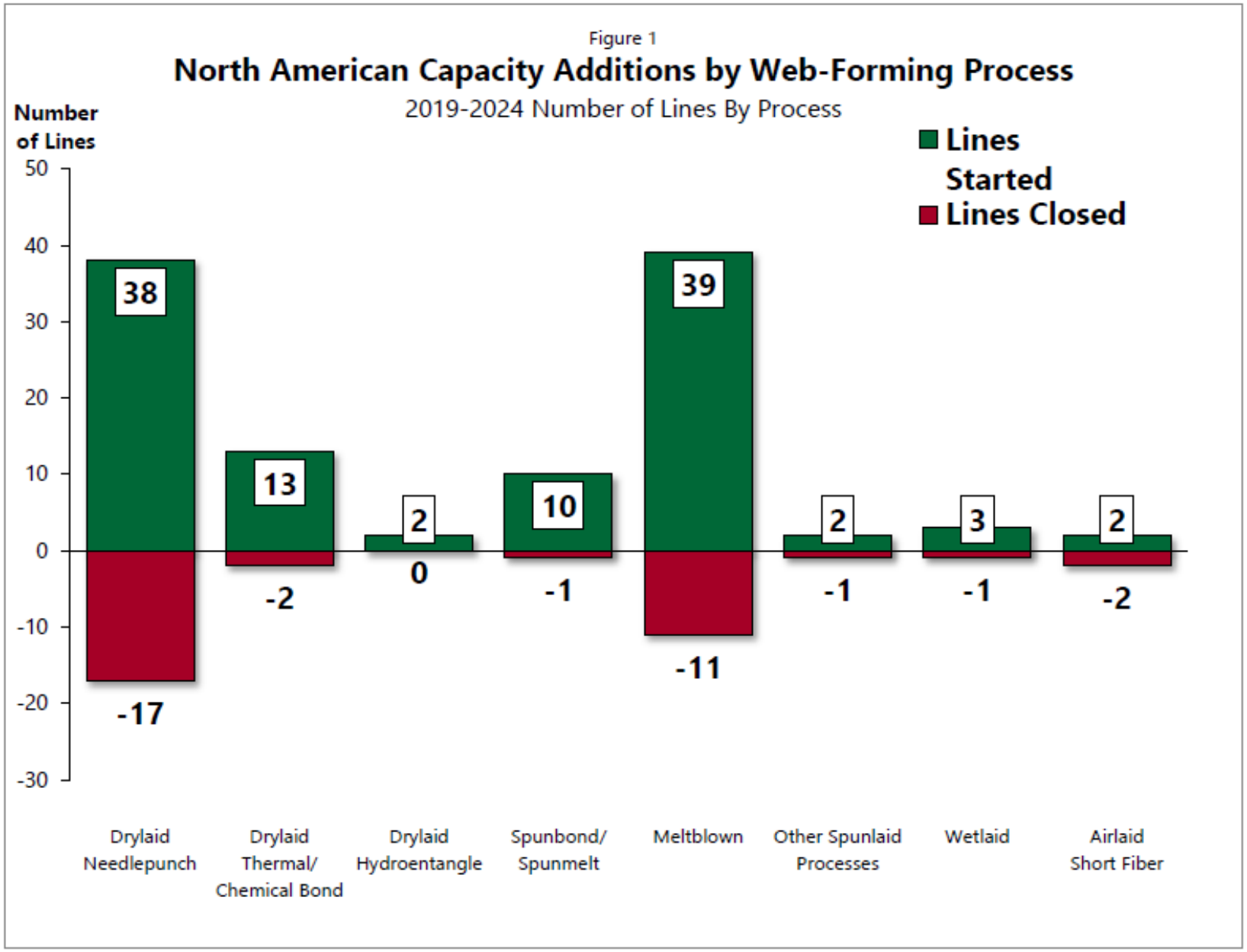
CAGR >> GDP

CAGR >> Population

Market Data and Figures extracted from INDA reports:

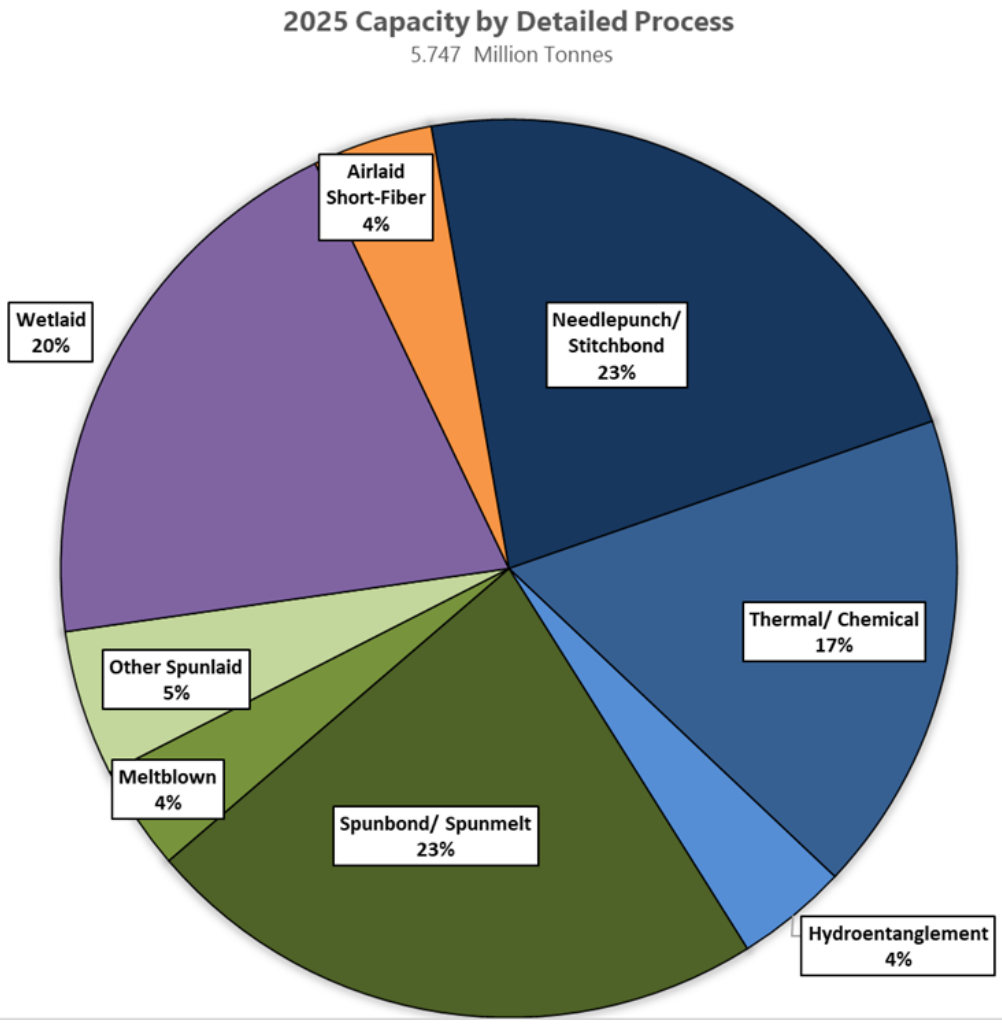
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North American Capacity Evolution



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North American Nonwoven Capacity by Process



Overall the Nonwoven Pie is growing

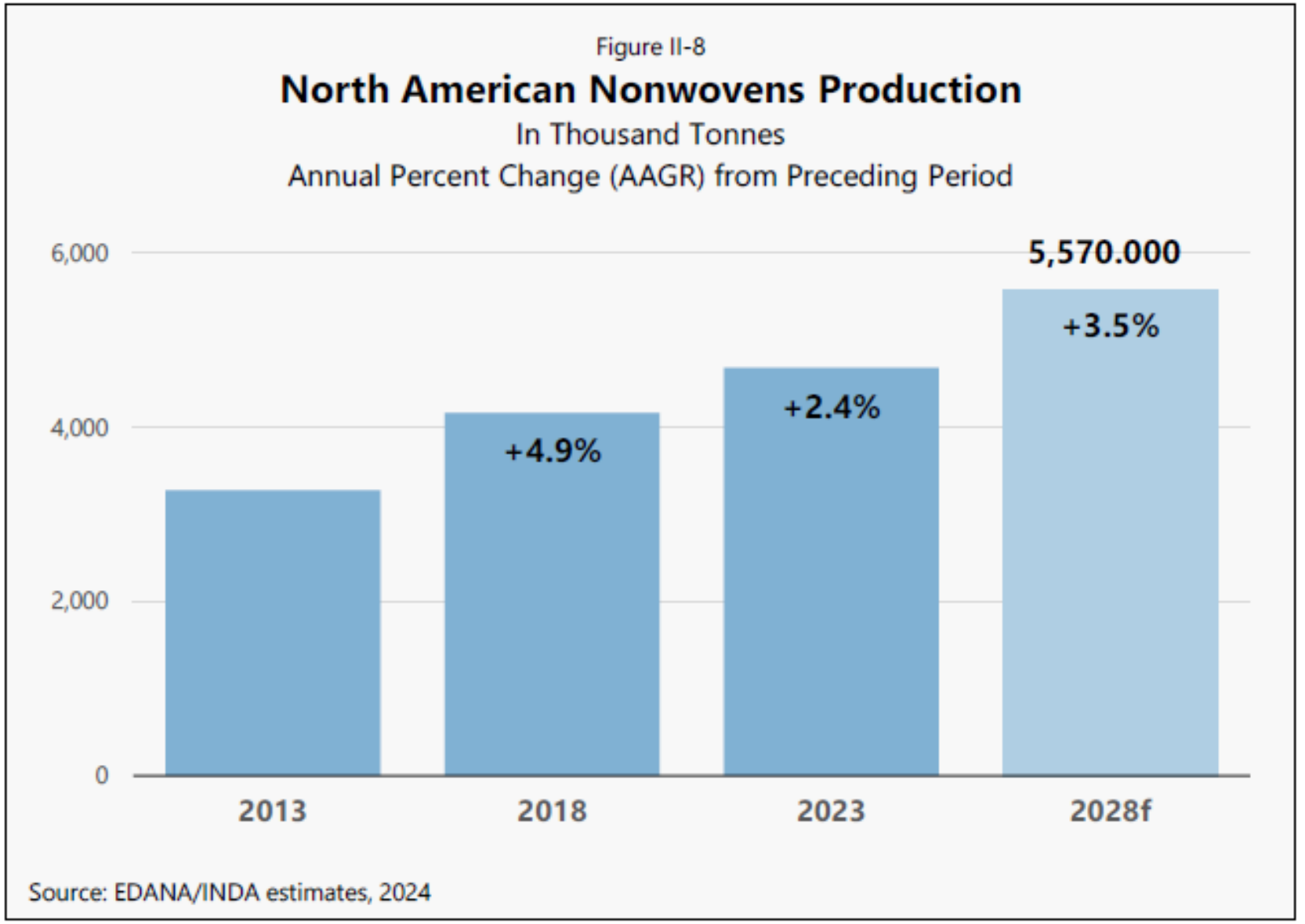


Market Data and Figures extracted from INDA reports:

"North American Nonwovens Supply Report 2026"

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North American Nonwoven Capacity

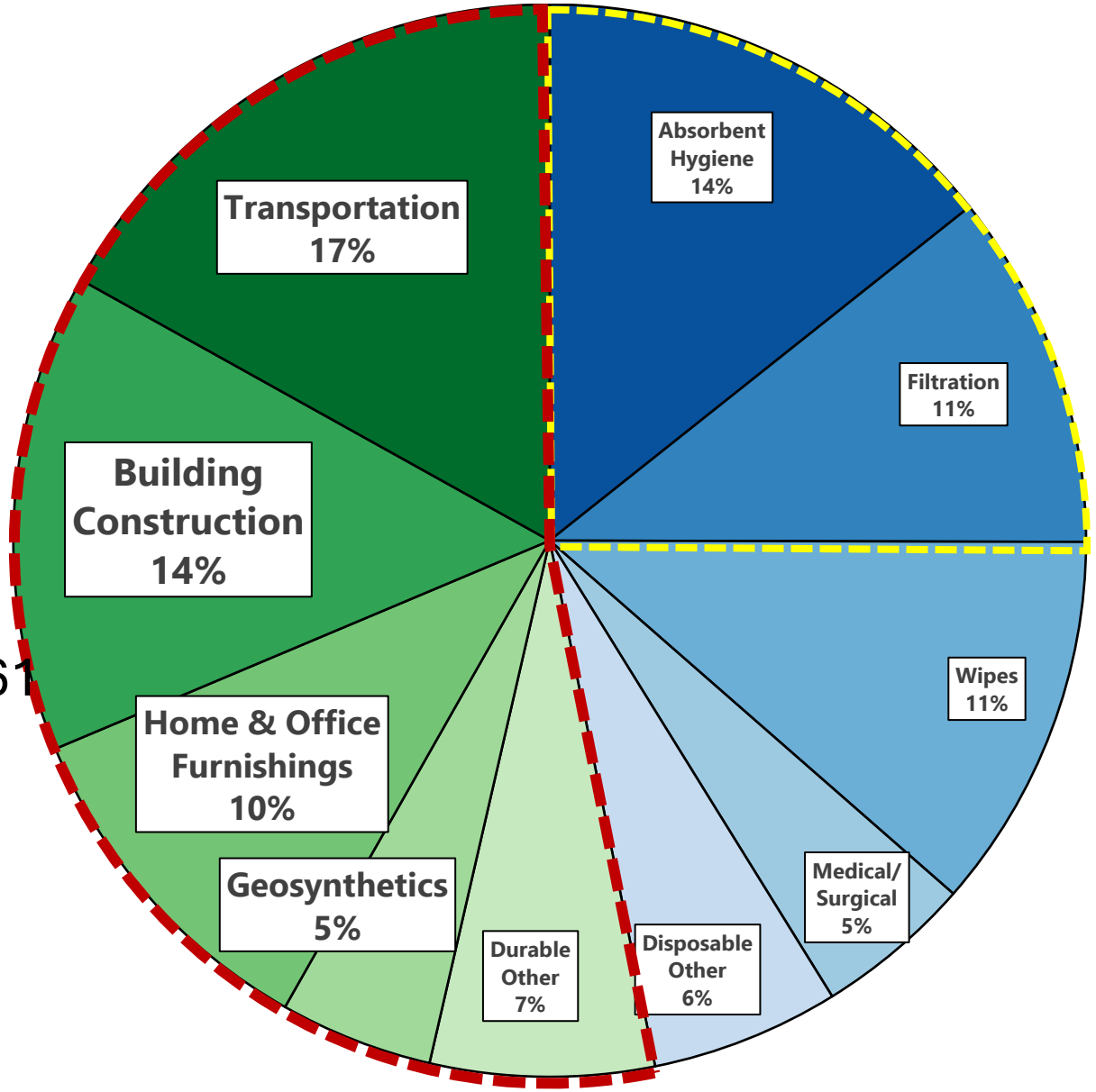


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North American Nonwovens by End-Use

Green shades represent Long-Life Durable Markets 53%

Blue shades represent Disposable End-Use Markets 47%



The durable end-use markets accounted 2.61 million tons of the nonwoven roll good material in 2025

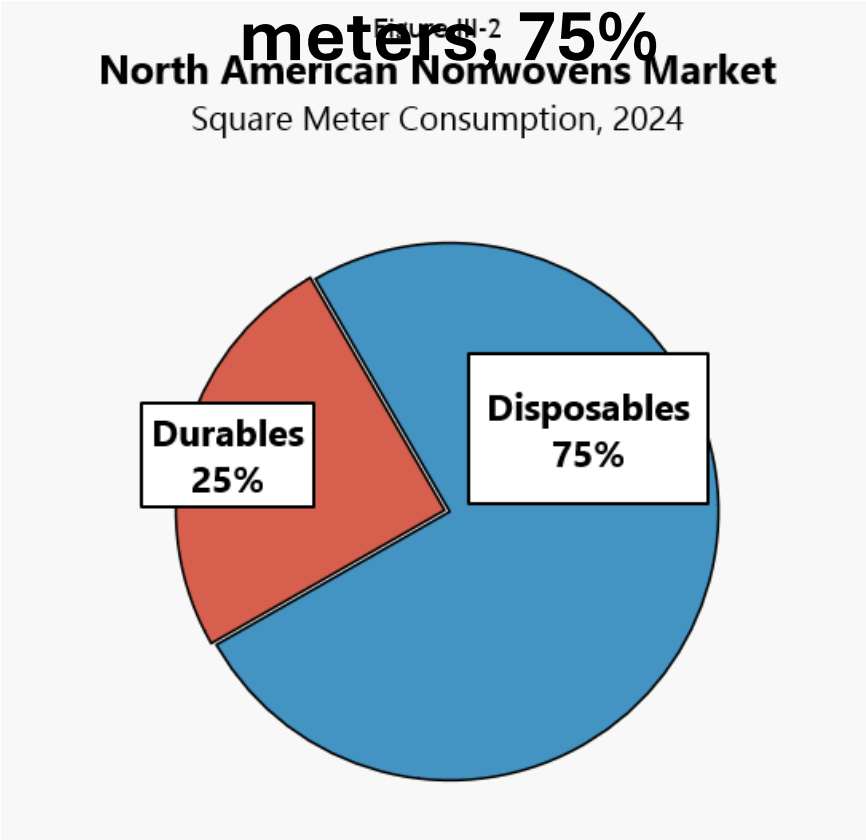
Transportation, Building Construction, and Hygiene accounted for 45% of the nonwoven production

Market Data and Figures extracted from INDA reports:
"North American Nonwovens Supply Report 2026"

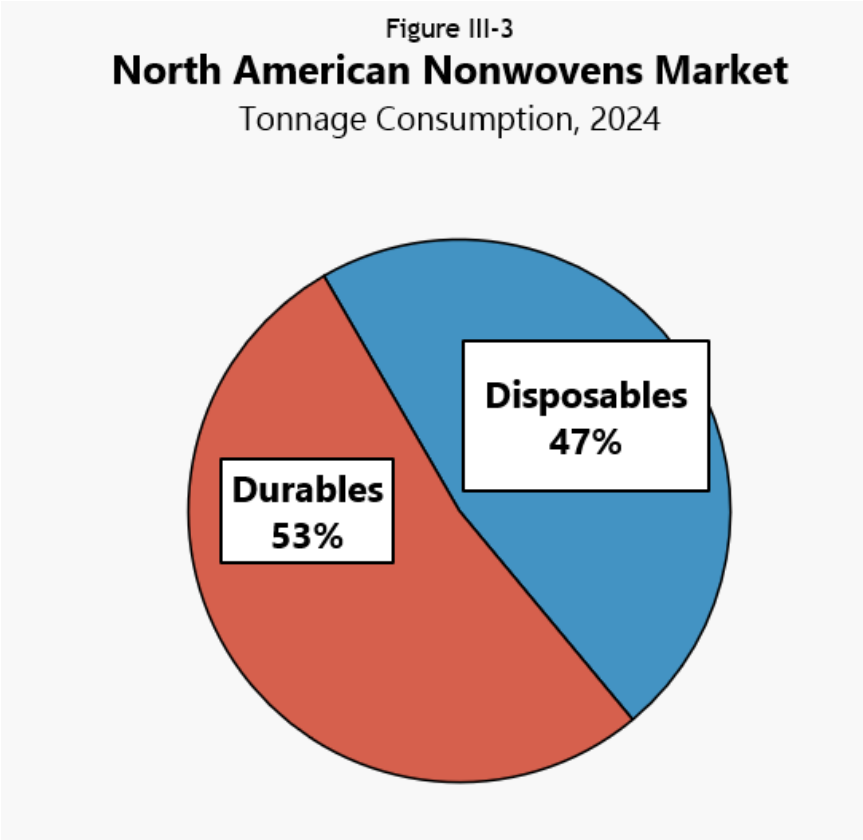
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Square Meter Vs Tonnage

Disposable, when measured in square meters, 75%



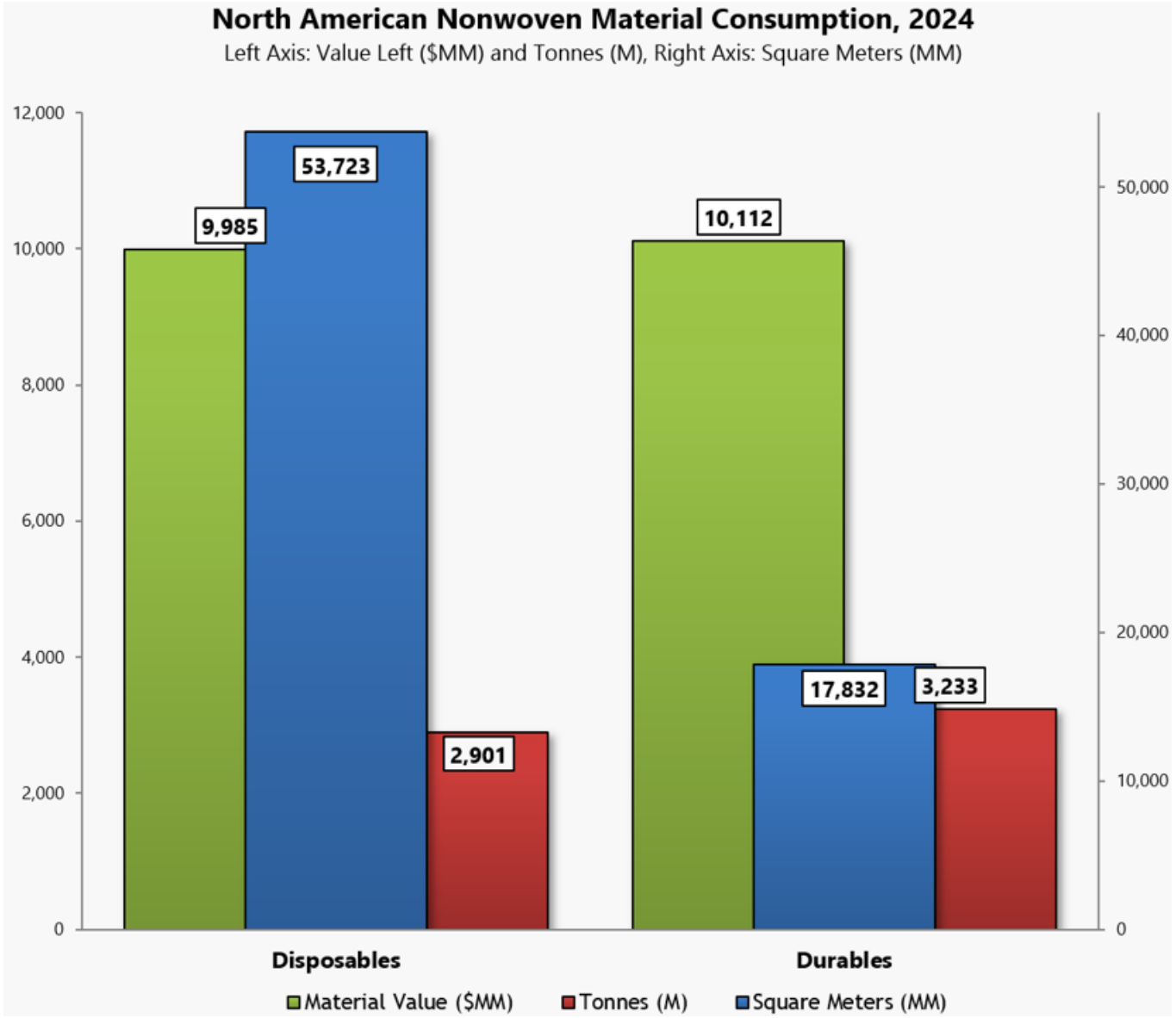
In terms of tonnage, Durables lead with 53%



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Disposable vs Durable Nonwovens

- Overall, INDA estimates 74.5 billion square meters of nonwoven material was utilized in 2024 which equated to over 6.1 million tonnes.
- INDA estimates that the value of roll good at the producer level at $20B



"North American Nonwovens Industry Demand and Forecast 2024-2029"

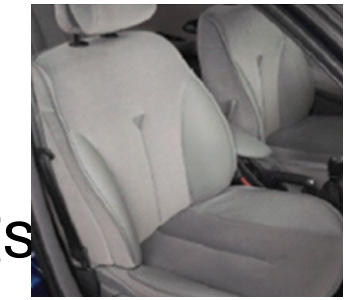
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North America Durable Categories

- INDA classification of Durables includes:
  - Transportation
  - Building Construction
  - Home & Office Furnishings
  - Geosynthetics/Agro
  - Apparel, and Other Durables

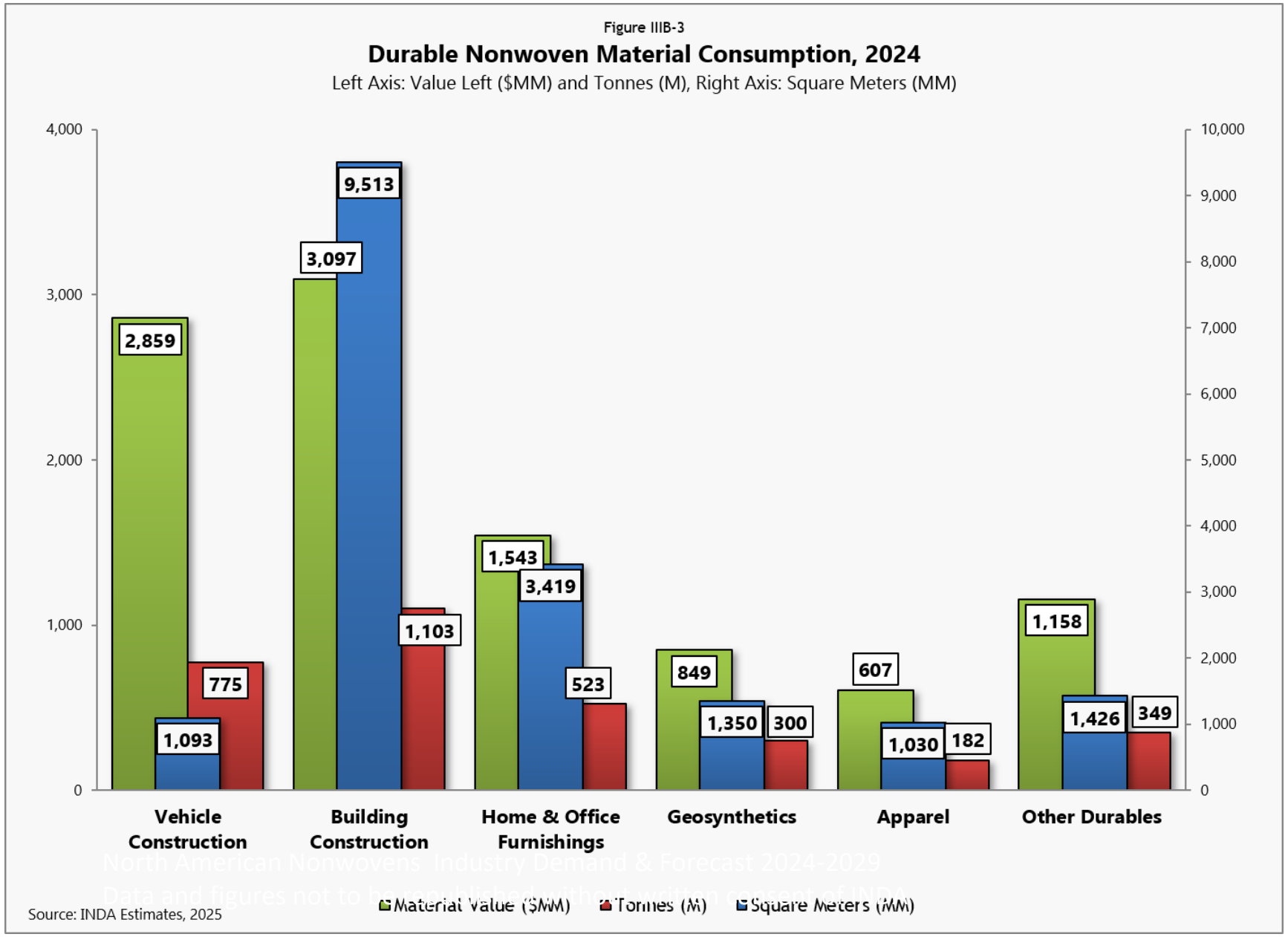





- In 2024 approximately 17.8 billion square meters of material was utilized in products that weighed approximately 3.2 million tonnes.
- Building Construction leads in both tonnage and square meters.

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North America Nonwoven Demand



North American Nonwovens Industry Demand & Forecast 2024-2029
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Historical and Forecast

Table IIIB-1

North American Durable Nonwoven Markets

Nonwoven Material Consumption by End Use

	2019		2024		2029f		2019-2024		2025-2029f	
	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM% (CAGR)	t% (CAGR)	SQM% (CAGR)	t% (CAGR)
Vehicle Construction	998	651	1,093	775	1,129	801	2.0	3.6	0.6	0.7
Building Construction	5,505	638	9,513	1,103	12,613	1,474	11.6	11.6	5.8	6.0
Home & Office Furnishings	3,175	477	3,419	523	3,825	595	1.5	1.9	2.3	2.6
Geosynthetics	1015	217	1,350	300	1,778	405	5.9	6.7	5.7	6.2
Apparel	939	165	1,030	182	1,170	208	1.9	2.0	2.6	2.6
Other Durables	1,268	304	1,426	349	1,754	419	2.4	2.8	4.2	3.7
Total	**12,889**	**2,452**	**17,832**	**3,233**	**22,270**	**3,902**	**6.7**	**5.7**	**4.5**	**3.8**

Source: INDA Estimates, 2025

"North American Nonwovens Industry Demand and Forecast 2024-2029"
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What's Happened in last 2 years?

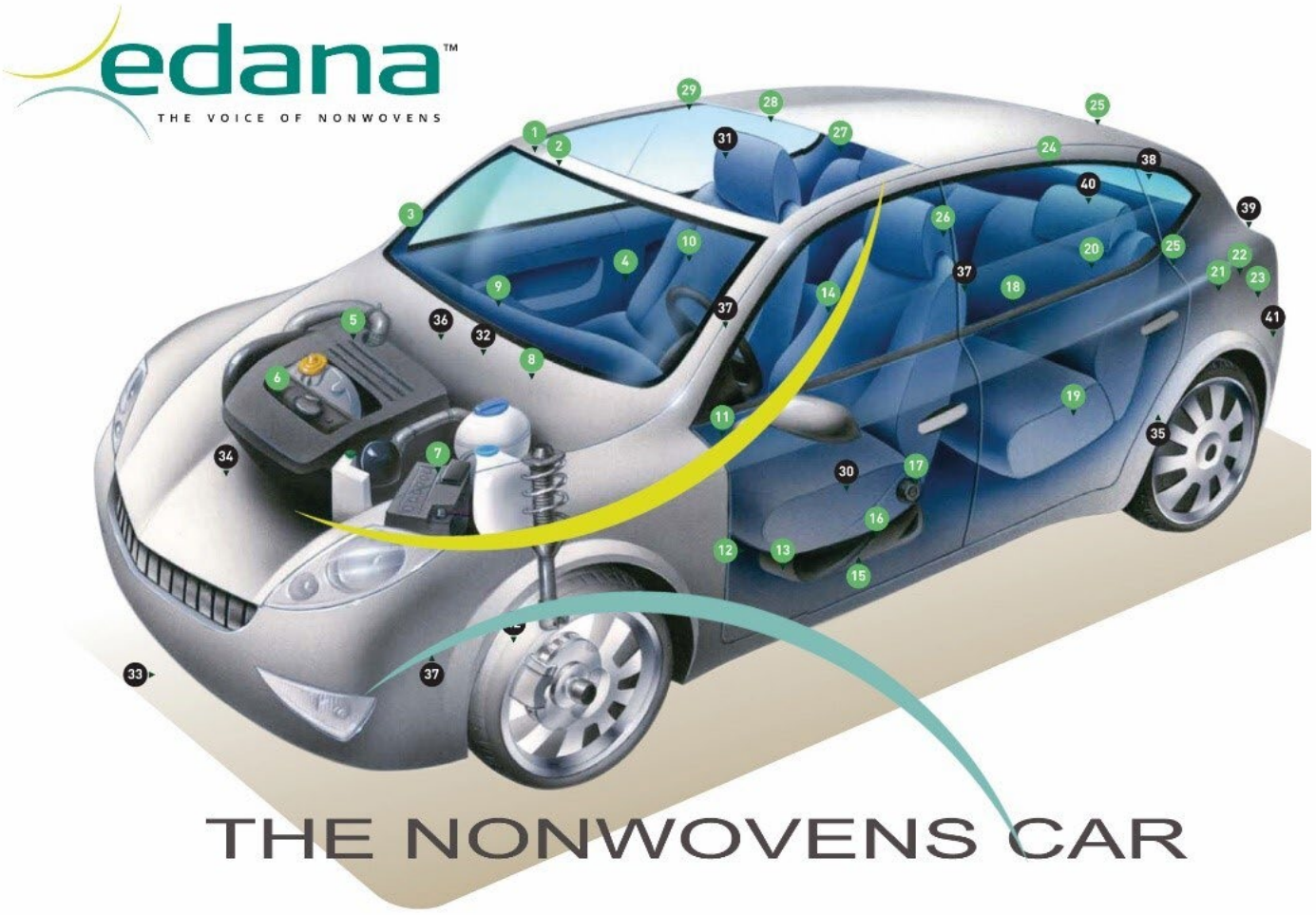
- Geotextiles have done well due to Federal Infrastructure funding and are on track with forecast

- Building Construction: Although residential building has stalled under weight of interest rates, Institutional and tech/industrial manufacturing have helped the sector, but it has fallen behind forecast

- Home Furnishings, Transportation, and Apparel are keeping pace with forecasts

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Nonwovens in Transportation



1 Covering material for sun-visors
2 Padding for sun-visors
3 A, B, C, column padding
4 Door trim pads
5 Fuel filters
6 Oil filters
7 Battery separators
8 Cabin air filters
9 Loudspeaker cover
10 Covering for moulded seats
11 Transmission tunnel
12 Carpet & carpet reinforcement
13 Car mats
14 Vinyl backing for seat covers
15 Backing for tufted carpeting
16 Covering for seat belt anchorage
17 Covering for seat belt
18 Decorative fabric
19 Polyurethane coated backing
20 Seat slip agents
21 Boot (trunk) liners
22 Moulded fuel tanks
23 Bodywork parts
24 Window frames
25 Headliner facings
26 Upholstery backing
27 Loudspeaker housing
28 Sunroof
29 Saloon roof

Acoustic absorber applications

30 Doors
31 Headliner
32 Inner & outer dashboard insulation
33 Under engine shield
34 Moulded bonnet liner
35 Rear wheel arch liner
36 Cowl
37 Pillar trim panels
38 Parcel shelf
39 Trunk trims
40 Rear seat strainer
41 Air extractor
42 Wheel arch liners

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Trends in Transportation Nonwovens

Table III-6

Transportation Nonwovens Production by Region

('000 tonnes)

Region	2013	2023	2028f	Growth (AAGR) 2013-2023	Growth (AAGR) 2024-2028
North America	213	787	1,060	14.0%	6.1%
Greater Europe	147	151	167	0.3%	2.0%
Asia	311	543	659	5.7%	4.0%
South America	52	86	96	5.2%	2.2%
MENA	3	5	12	5.4%	21.9%
Rest of World	4	8	18	7.2%	17.6%
Total	**730**	**1,579**	**2,012**	**8.0%**	**5.0%**

Source: INDA/EDANA/ANFA, 2024

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Trends in Transportation Nonwovens

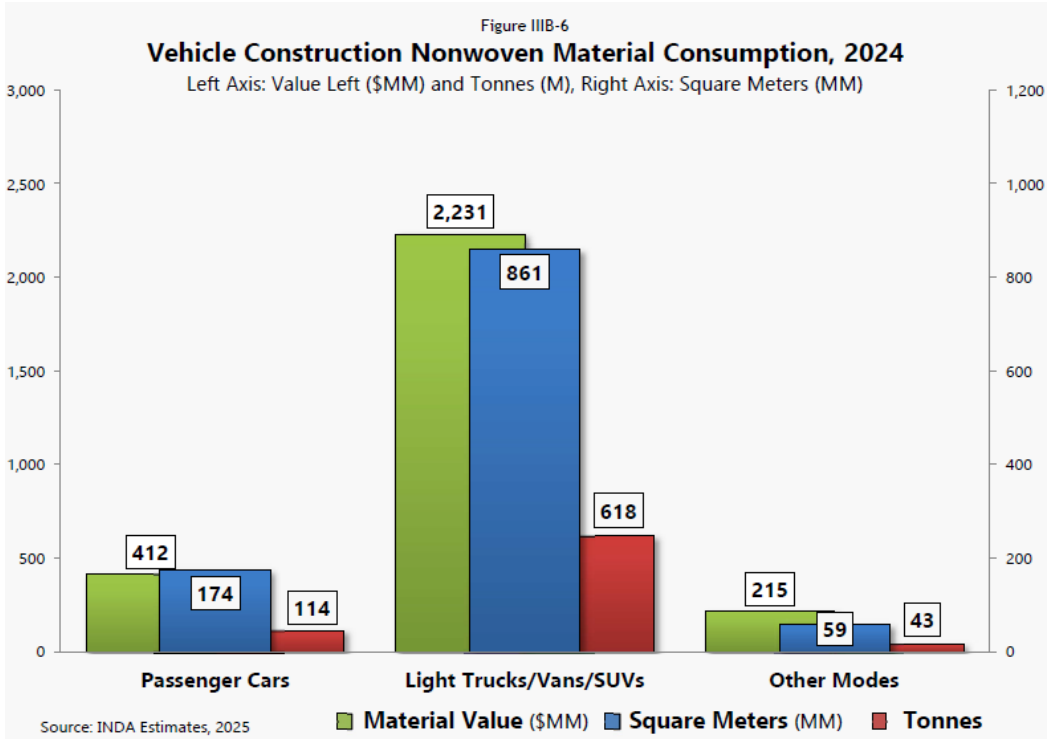


Table IIIB-3

North American Light Vehicle Market

Nonwoven Material Consumption in Square Meters (SQM) and Tonnes (t)

	2019		2024		2029f		2019-2024		2025-2029f	
	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM% (CAGR)	t% (CAGR)	SQM% (CAGR)	t% (CAGR)
Automobiles	245	151	174	114	176	115	-6.7	-5.5	0.2	0.2
Light Trucks	686	457	861	618	886	636	4.7	6.2	0.6	0.6
Total	**931**	**609**	**1,035**	**732**	**1,062**	**751**	**2.1**	**3.8**	**0.5**	**0.5**

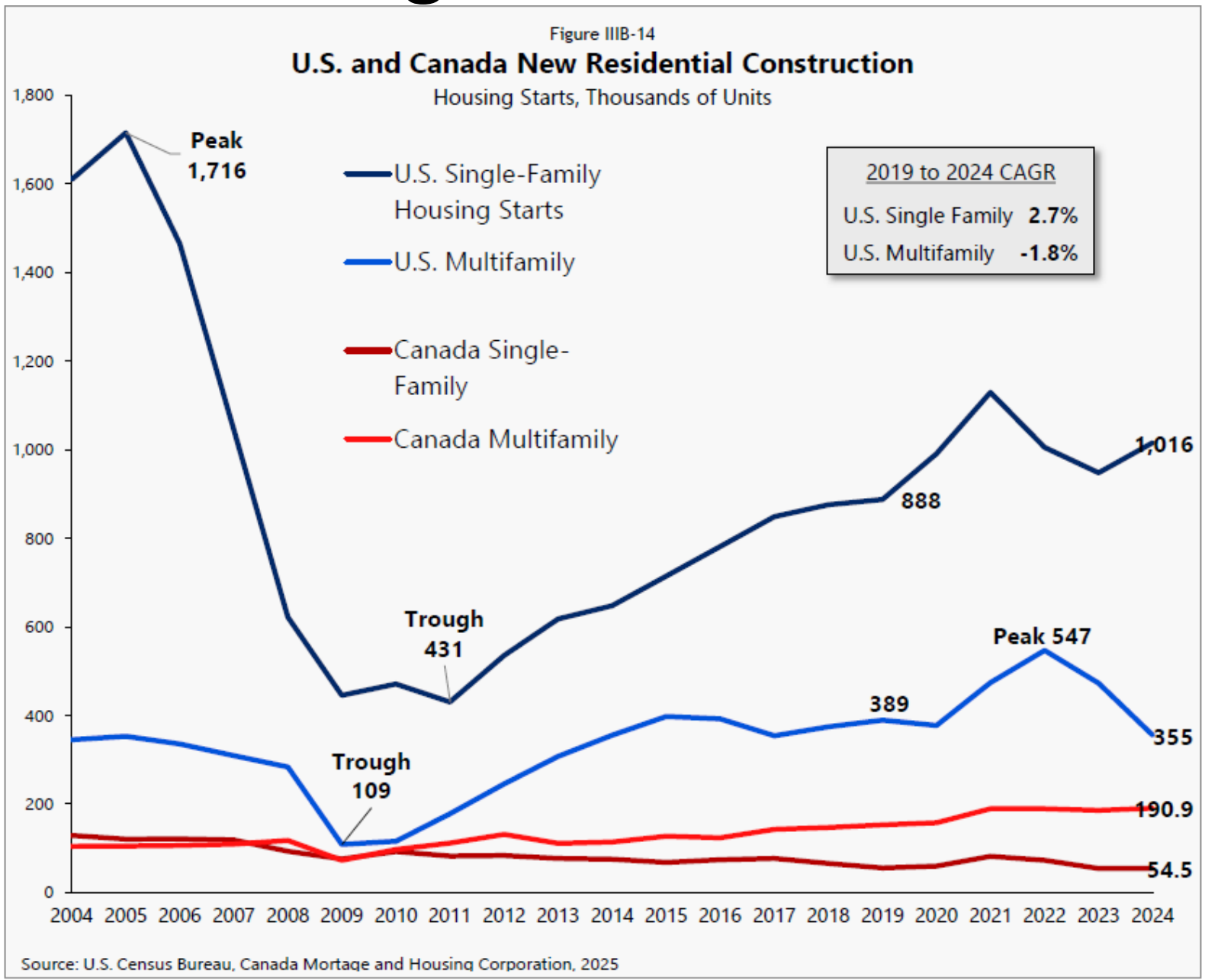
US Government recently rolled back the 2031 fuel efficiency target from 50.4 mpg to 34.9 mpg

Fuel economy has increased 41% since 2004, driven by vehicle light-weighting, hybrids, and EVs

Intent to purchase hybrid/EV continues to rise amongst Gen X (35%), Millenials & Gen Y (60%)

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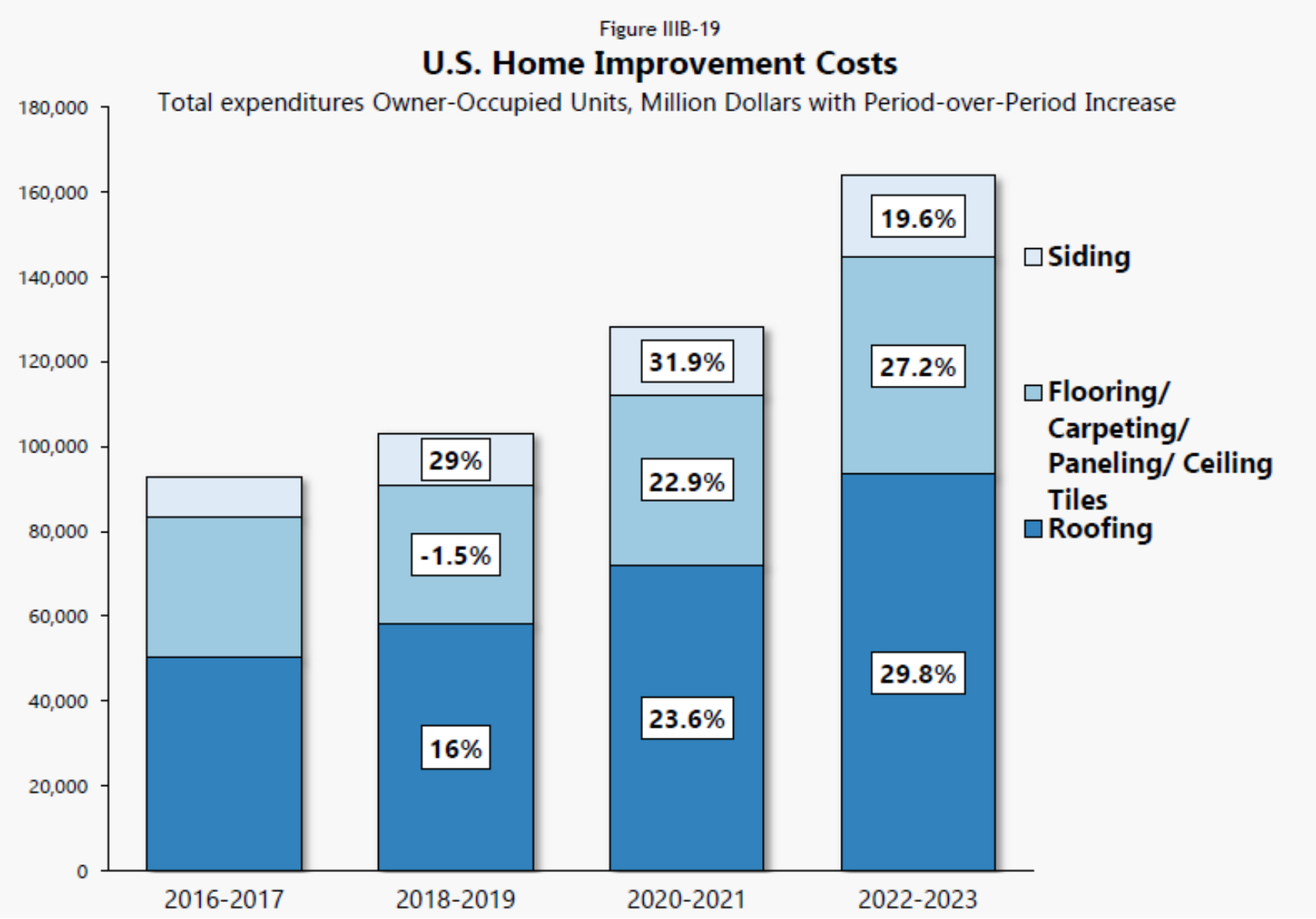
Trends in Building Construction



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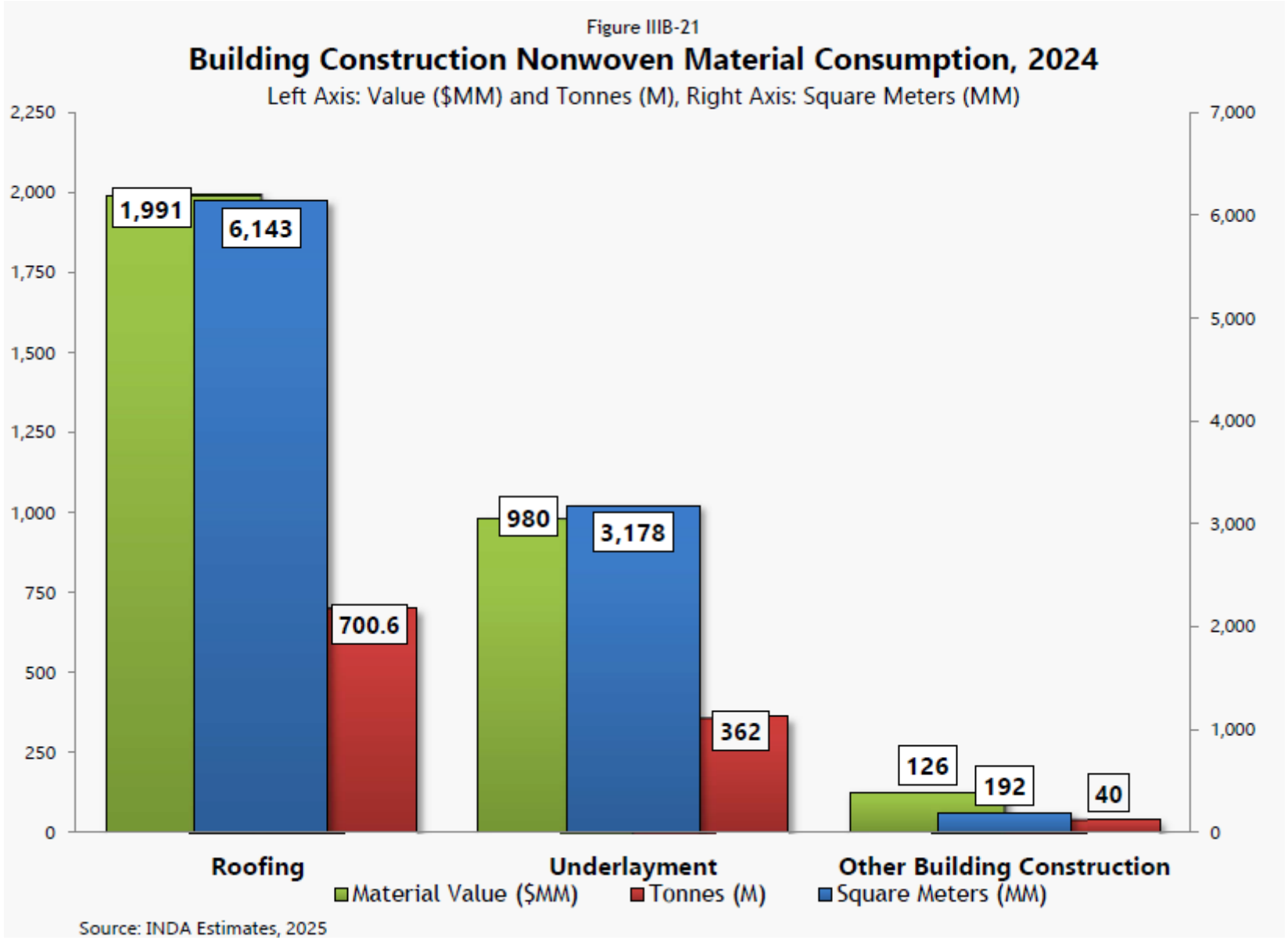
Trends in Building Construction



Source: U.S. Census Bureau

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Trends in Building Construction



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Trends in Building Construction

Table IIIB-5
North American Building Construction Market
Nonwoven Material Consumption in Square Meters (SQM) and Tonnes (t)

	2019		2024		2029f		2019-2024		2025-2029f	
	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM% (CAGR)	t% (CAGR)	SQM% (CAGR)	t% (CAGR)
Roofing	3,273	361	6,143	701	8,469	985	13.4	14.2	6.6	7.1
Underlayment	2,104	251	3,178	362	3,918	441	8.6	7.6	4.3	4.1
Other Materials	127	27	192	40	226	47	8.6	8.5	3.3	3.2
Total	**5,505**	**638**	**9,513**	**1,103**	**12,613**	**1,474**	**11.6**	**11.6**	**5.8**	**6.0**

Table IIIB-6
North American Building Construction – Roofing Market
Nonwoven Material Consumption in Square Meters (SQM) and Tonnes (t)

	2019		2024		2029f		2019-2024		2025-2029f	
	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM% (CAGR)	t% (CAGR)	SQM% (CAGR)	t% (CAGR)
Residential	1,676	157	2,326	216	2,643	245	6.8	6.6	2.6	2.6
Nonresidential	1,597	204	3,817	485	5,826	740	19.0	18.9	8.8	8.8
Total	**3,273**	**361**	**6,143**	**701**	**8,469**	**985**	**13.4**	**14.2**	**6.6**	**7.1**

Source: INDA Estimates, 2025

- Rising mortgage and borrowing rates dampening new home starts and remodels
- Alternative roofing (metal, solar “shingles”) may be slow growth

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Trends in Geosynthetics

Table III-9

Geosynthetics Nonwovens Production by Region

('000 tonnes)

Region	2013	2023	2028f	Growth (AAGR) 2013-2023	Growth (AAGR) 2024-2028
North America	196	234	265	1.8%	2.5%
Greater Europe	156	140	157	-1.1%	2.3%
Asia	300	647	751	8.0%	3.0%
South America	42	67	76	4.8%	2.6%
MENA	44	47	85	0.6%	12.9%
Rest of World	19	28	31	4.0%	2.1%
Total	**757**	**1,163**	**1,365**	**4.4%**	**3.3%**

Source: INDA/EDANA/ANFA, 2024

Asia and now MENA follow regional construction booms

US forecasted increase in growth driven by infrastructure bill

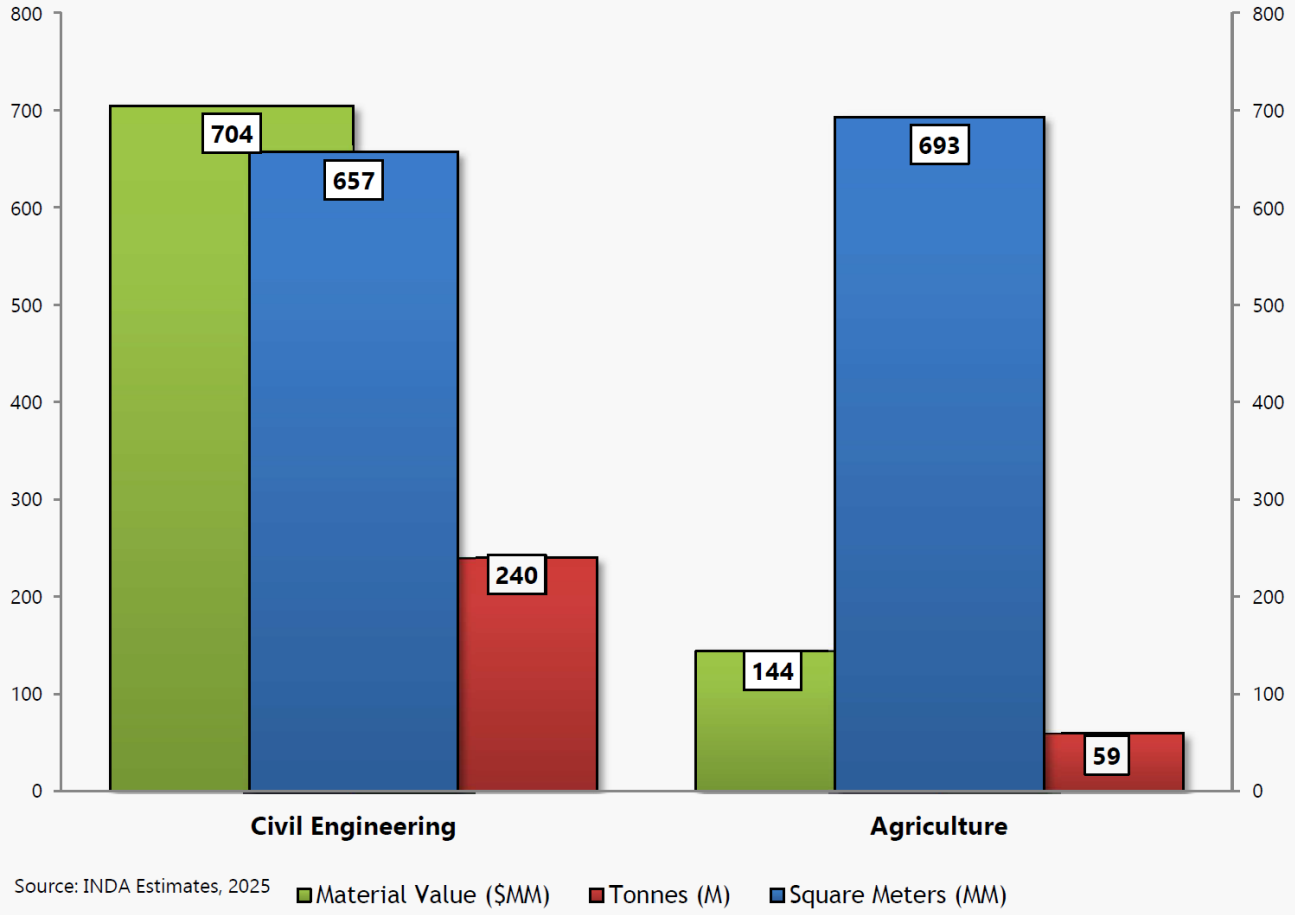
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Trends in Geosynthetics

Figure IIIB-36

Geosynthetics Nonwoven Material Consumption, 2024

Left Axis: Value Left ($MM) and Tonnes (M), Right Axis: Square Meters (MM)



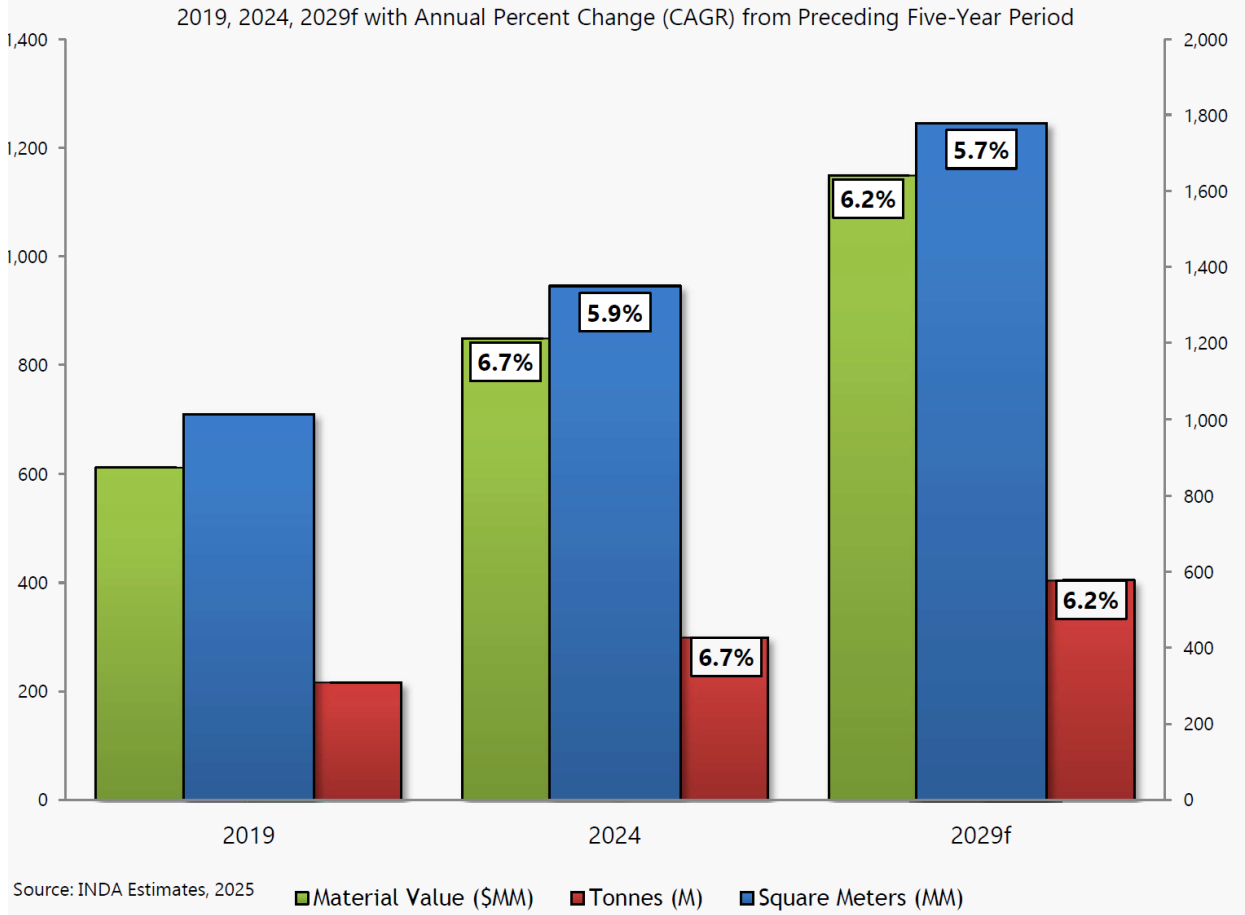
Source: INDA Estimates, 2025

Figure IIIB-37

Geosynthetics Nonwoven Material Consumption

Left Axis: Value Left ($MM) and Tonnes (M), Right Axis: Square Meters (MM)

2019, 2024, 2029f with Annual Percent Change (CAGR) from Preceding Five-Year Period



Source: INDA Estimates, 2025

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Trends in Geosynthetics

Table IIIB-14
North American Geosynthetic Market
Nonwoven Material Consumption in Square Meters (SQM) and Tonnes (t)

	2019		2024		2029f		2019-2024		2025-2029f	
	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM (MM)	Tonnes (M)	SQM% (CAGR)	t% (CAGR)	SQM% (CAGR)	t% (CAGR)
Civil Engineering	464	170	657	240	911	330	7.2	7.2	6.8	6.5
Agriculture	551	47	693	60	867	75	4.7	4.7	4.6	4.7
Total	**1,015**	**217**	**1,350**	**300**	**1,778**	**405**	**5.9**	**6.7**	**5.7**	**6.2**

Source: INDA Estimates, 2025

- Government programs for infrastructure are major Civil Engineering driver
- Trade/tariff and bio-fuel can have impacts on Agricultural Geosynthetics
- Eco-regulations may have influence on the materials used

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Take-aways

- Growth in long-life nonwovens utilization generally exceeding key economic and demographic drivers in USA and globally
- Growth in production & consumption of durable / long-life nonwovens is outpacing most short-life nonwoven applications
- Needlepunch and hydroentangled provide excellent strength to weight properties expanding applications for long-life nonwovens
- Governmental policy has significant role in driving durable growth (e.g. trade policy, fuel economy mandates, interest rates, infrastructure, etc)

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INDA ready to help!



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