

Electrical Steel (GO & NGO) Market

CWIEME
BERLIN

14-16 MAY 2024
MESSE BERLIN



Wolfgang Lipp
Vice President

SMR!

Steel & Metals Market Research



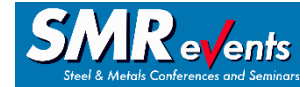
GROUP / TEAM / LOCATION



Enduse Focused
Single-Client
www.smr.at



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Stainless & Special Steel
Events
www.stainless-conference.com

Wolfgang Lipp	Patricia Moll	Ilona Spaltmann	Joy Tio

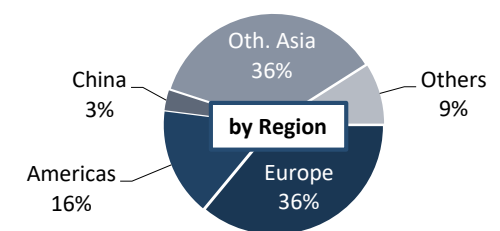
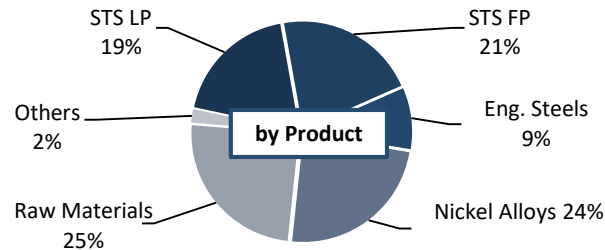
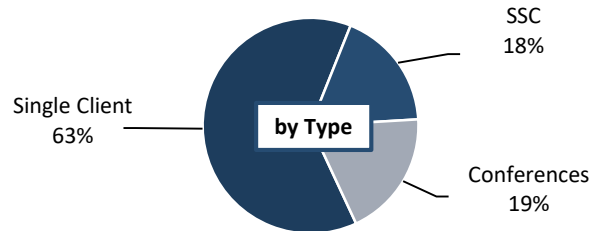



Market Intelligence for
High Value Materials
www.smr-premium.com

Benedikt Blitz	Corinna Blitz



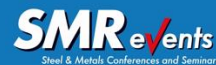
PROJECTS 2023



CONFERENCES

International Stainless & Special Steel Conference 2024

September 17 – 19, 2024 | Rome, Italy
A.Roma Lifestyle Hotel



North American Stainless & Special Alloys Conference 2024 Nashville November 6 - 8, 2024

in cooperation with:



Main Applications for Electrical Steel

Grain Oriented - GO:
Cores of Power and
Distribution Transformers



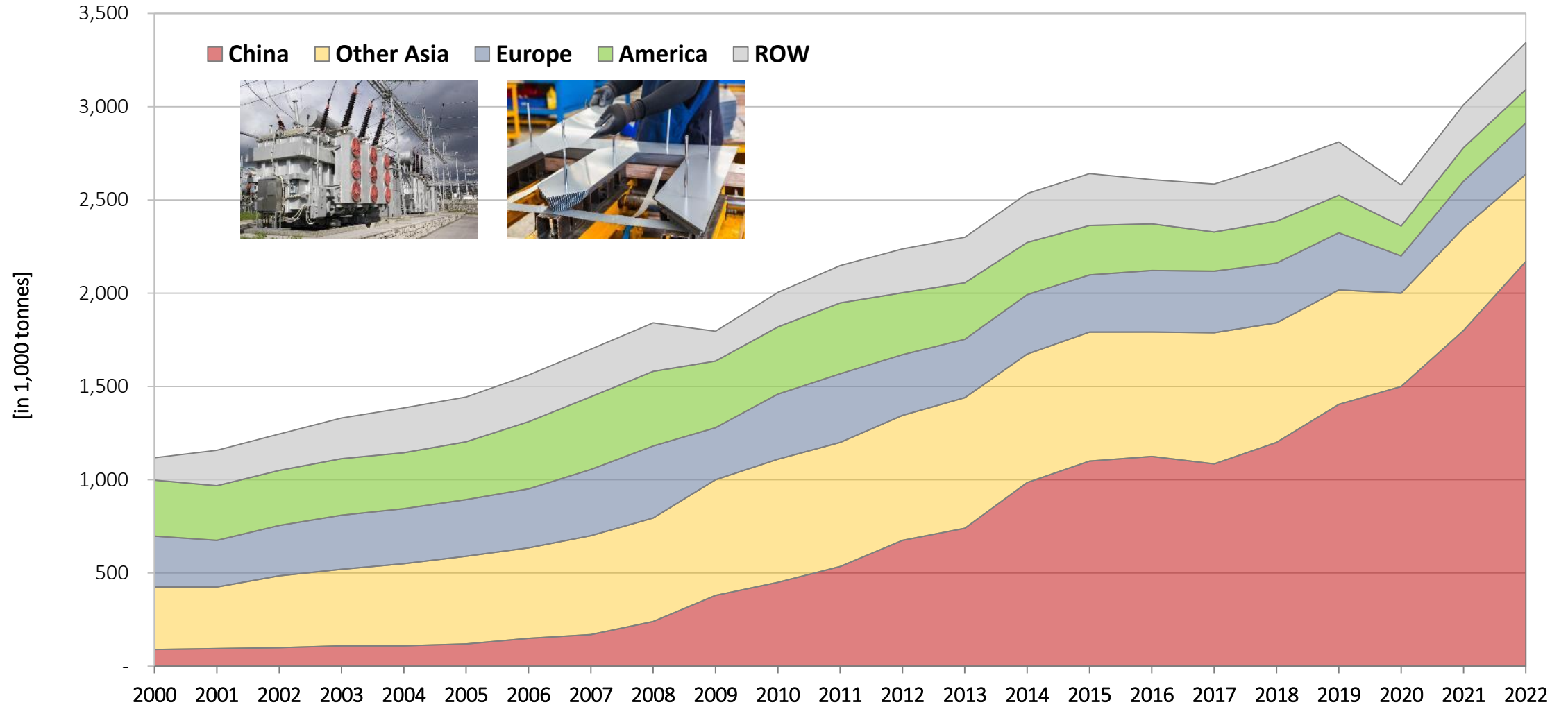
Non Grain Oriented - NGO:
Laminations (Stator and Rotor)
for Electric Motors



Grain Oriented - GO

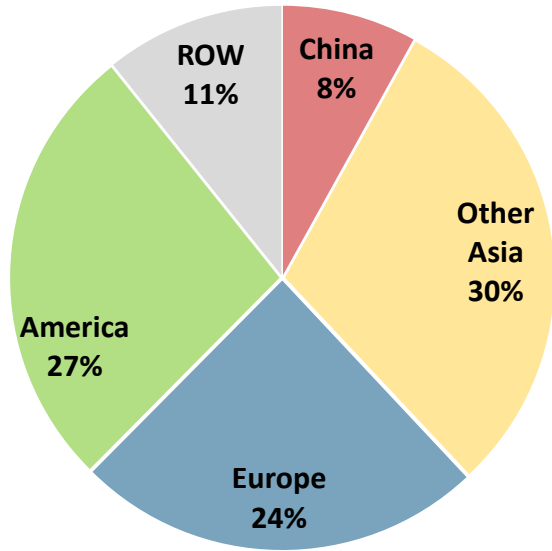


Long Term Production of GO Electrical Steel

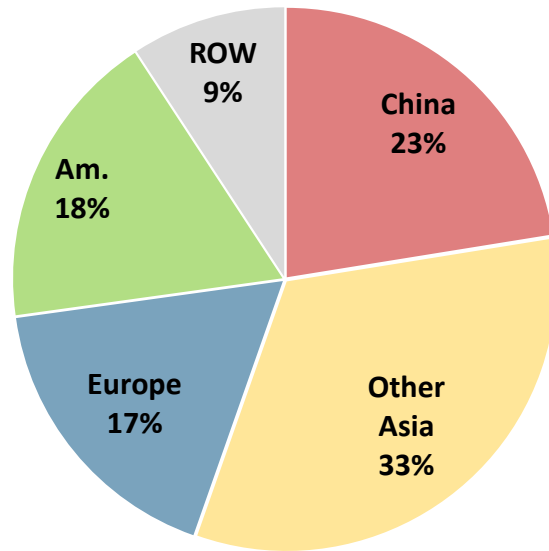


Production of GO Electrical Steel by Region

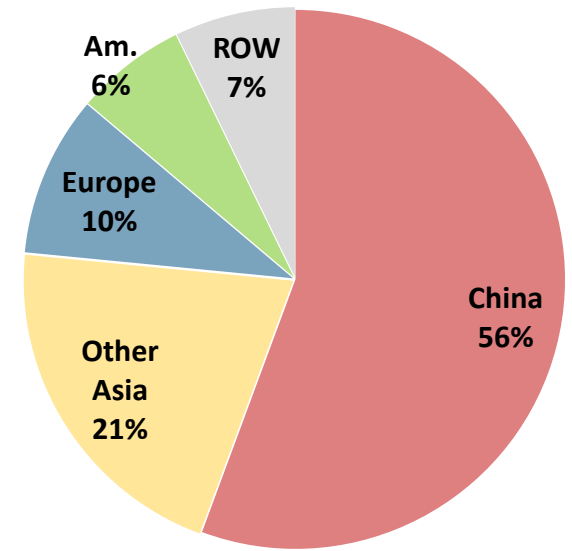
2000 (1.2 mt)



2010 (2.0 mt)

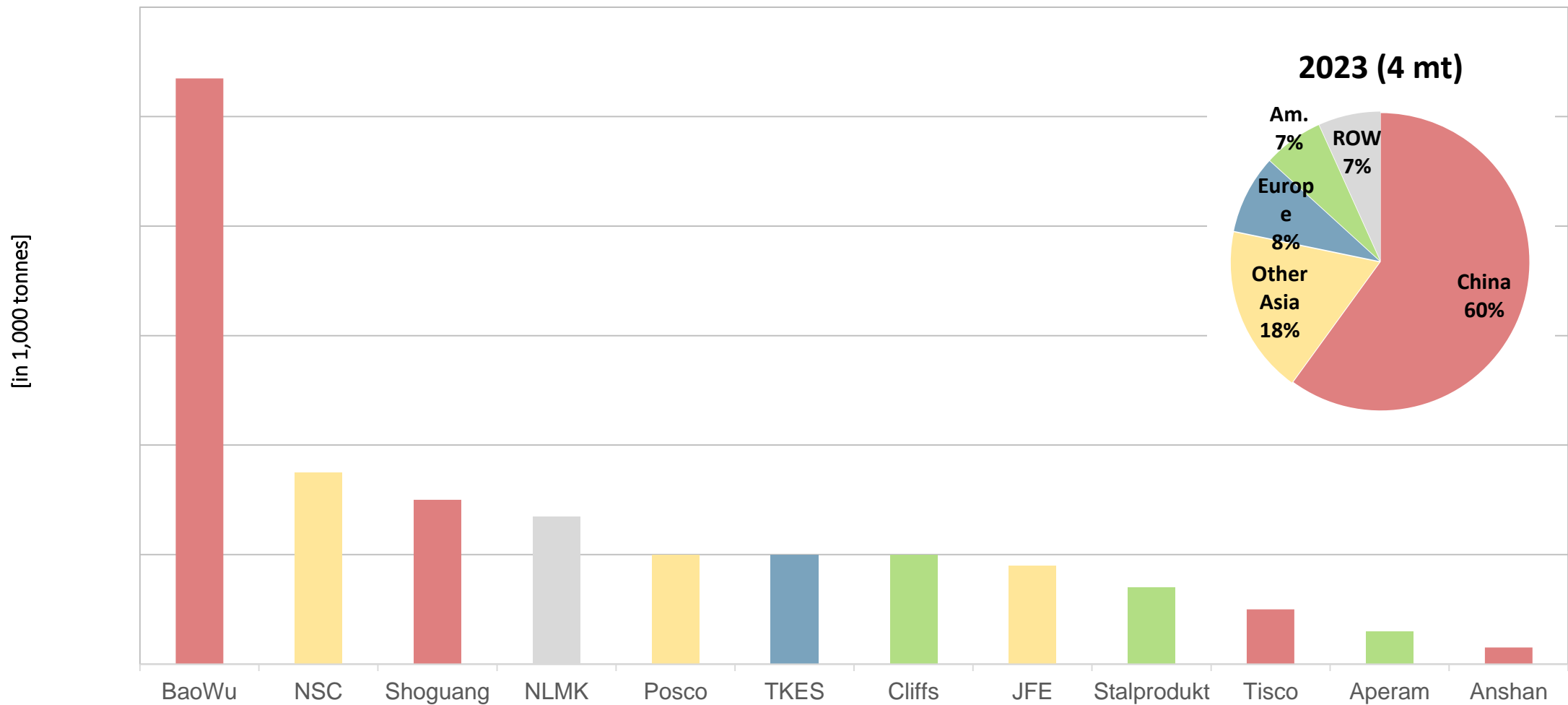


2023 (4.0 mt)



Producers of GO Electrical Steel 2023

Top 5 = 52 %, in addition to below there are several private Chinese mills with a combined production of ~1 mt.



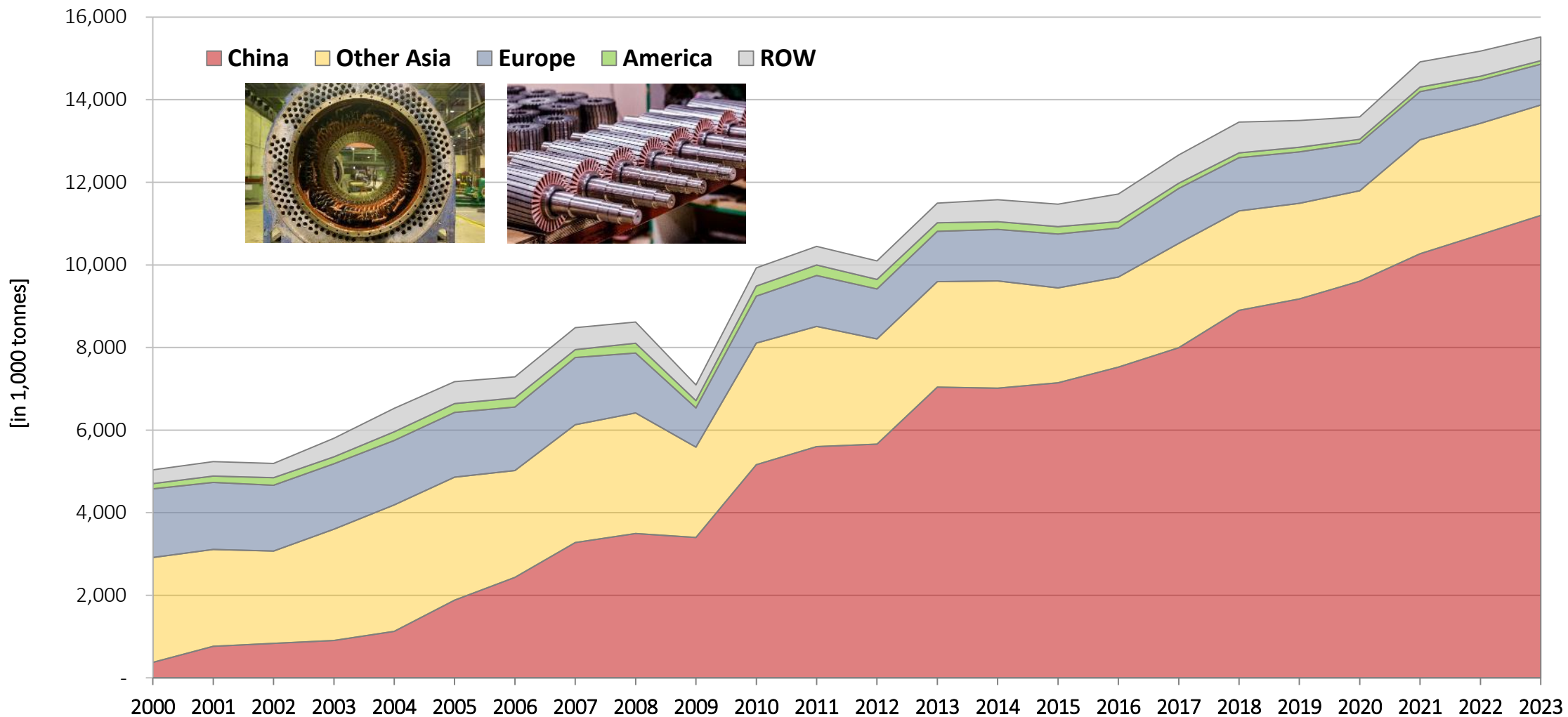
Source: SCM Consulting GmbH

Non Grain Oriented - NGO



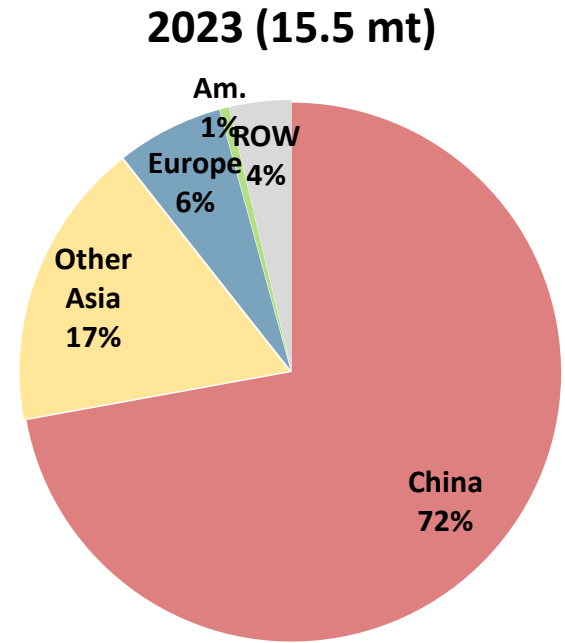
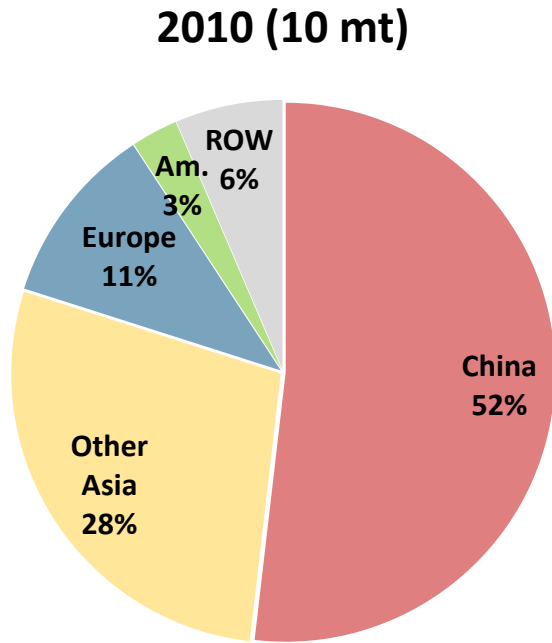
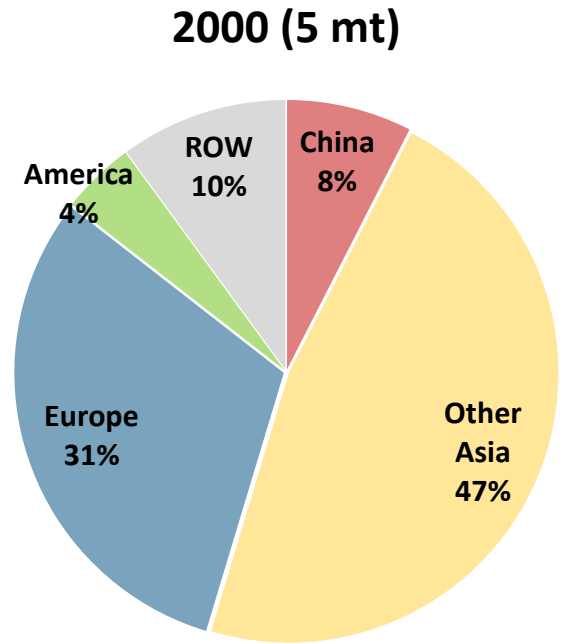
Long Term Production of NGO Electrical Steel

The market for NGO has reached 15.5 million t in 2023 – the dominance of China has been growing constantly.



Production of NGO Electrical Steel by Region (excl. CRML)

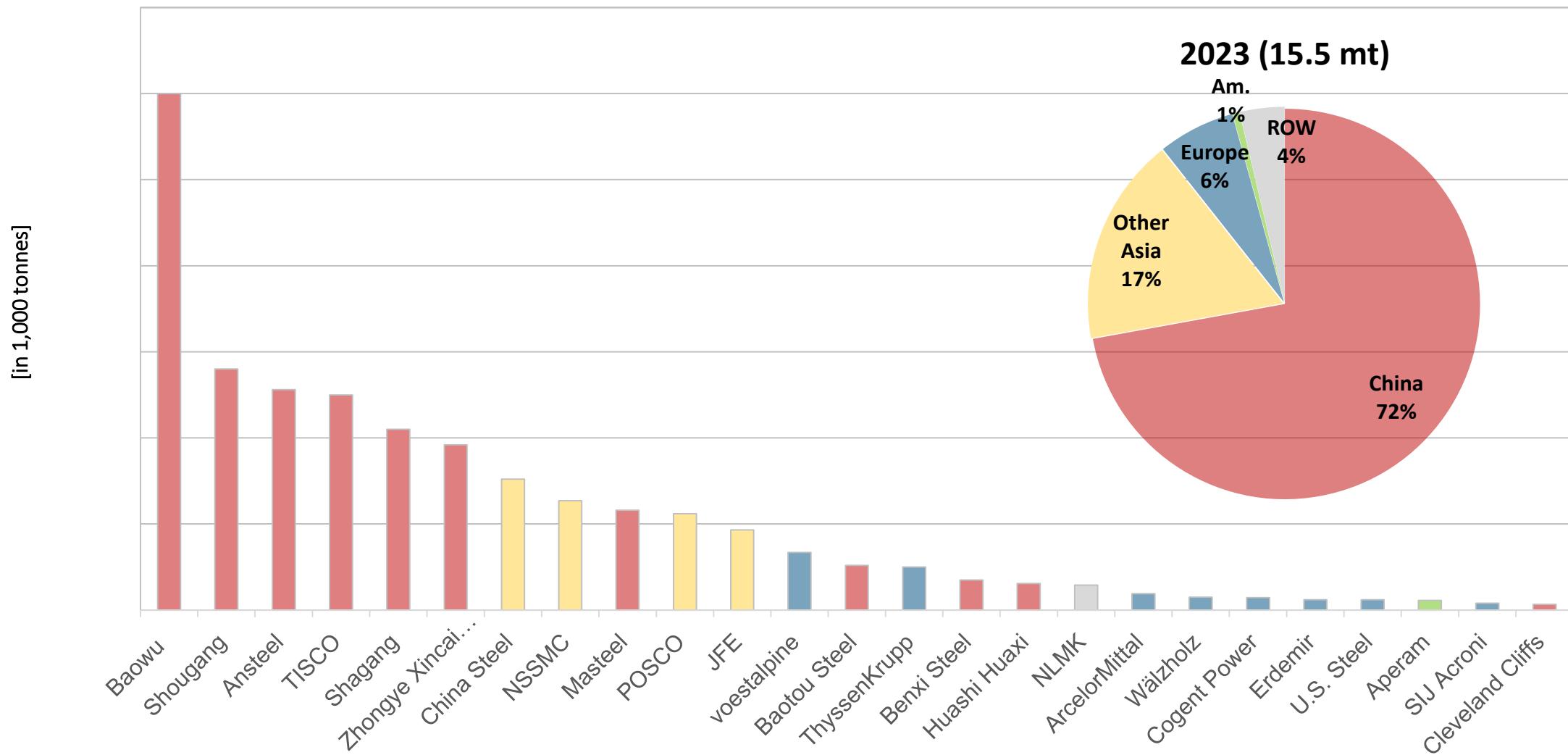
Chinese producers already accounted for 71 % in 2022. Production in America is low as CRML is not included.





Producers of NGO Electrical Steel 2023

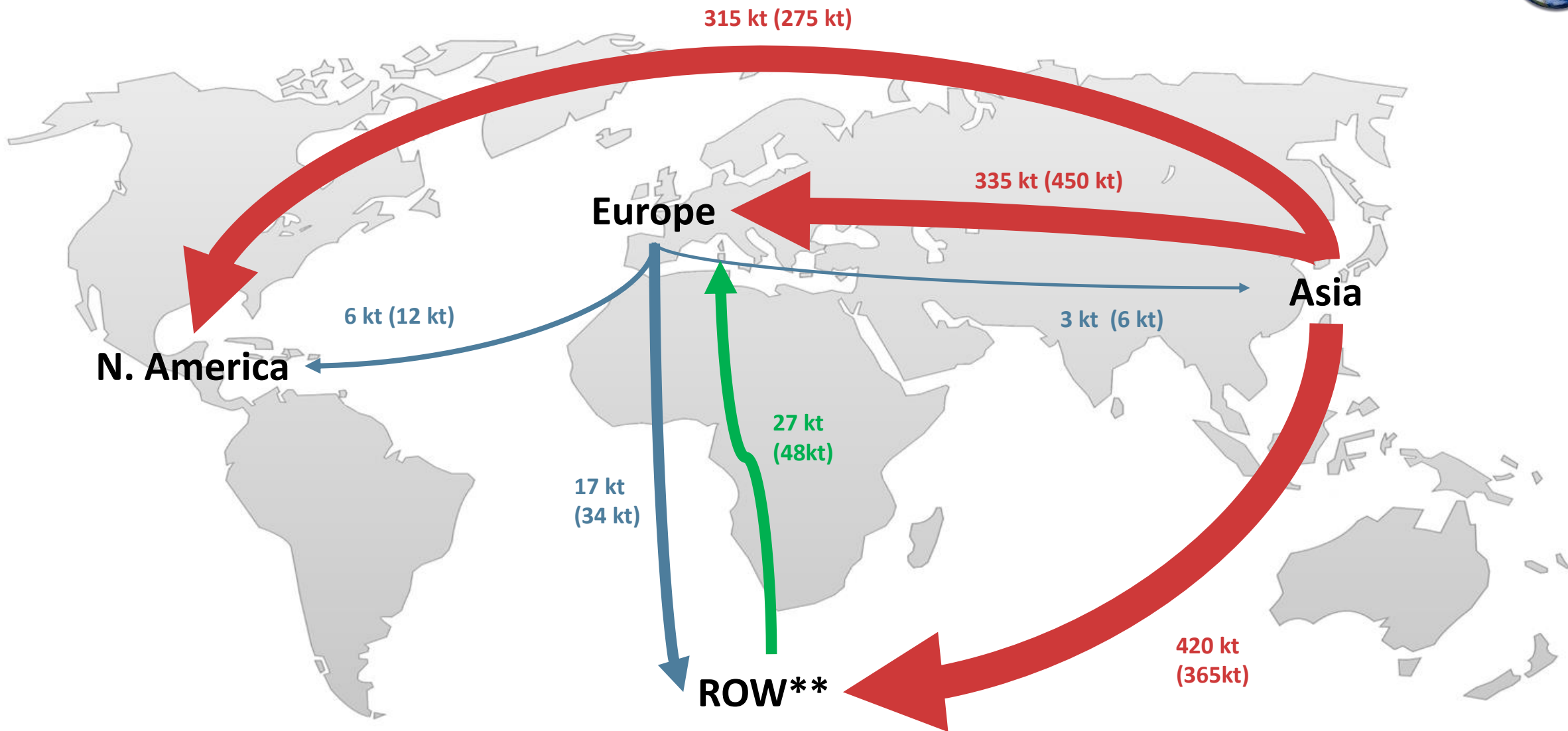
Top 10 = 73 %, top 15 = 83 % - Chinese producers dominate the market.





Trade flows for NGO Electrical Steel 2023 (2022)

Only around 11 % of NGO is traded between regions. Asia is the major supplier to the world.



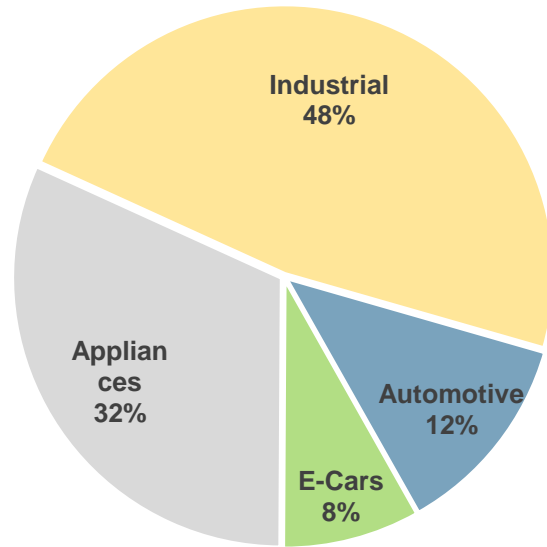
**incl. Turkey, India, Russia, S. America, etc.

NGO Electrical Steel by Application Globally

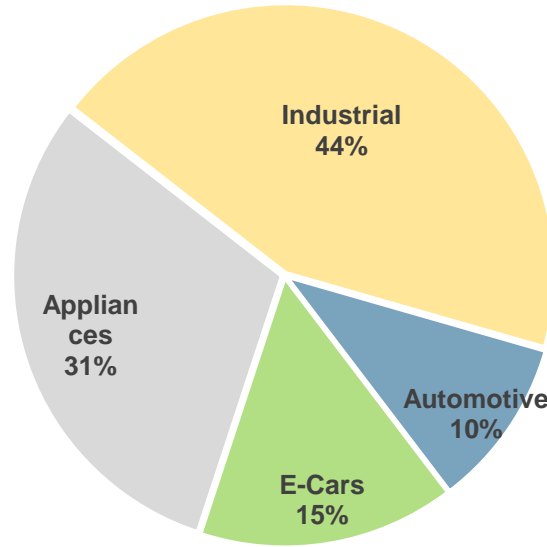
The share of E-Mobility will grow from 6 % in 2022 to 18 % in 2030.



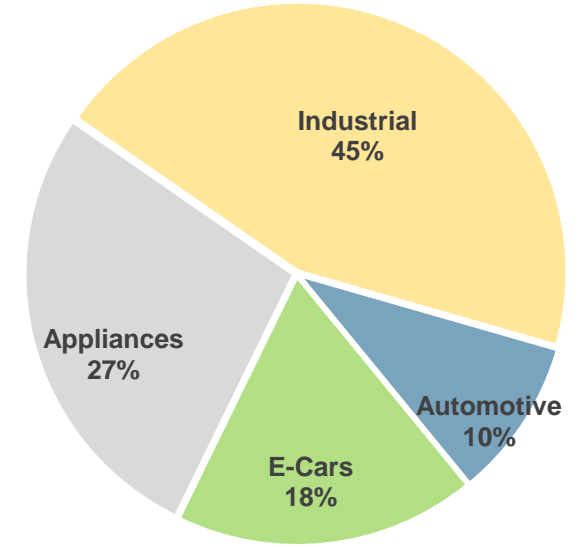
2023 (15.5 mt)



2027 (20 mt)

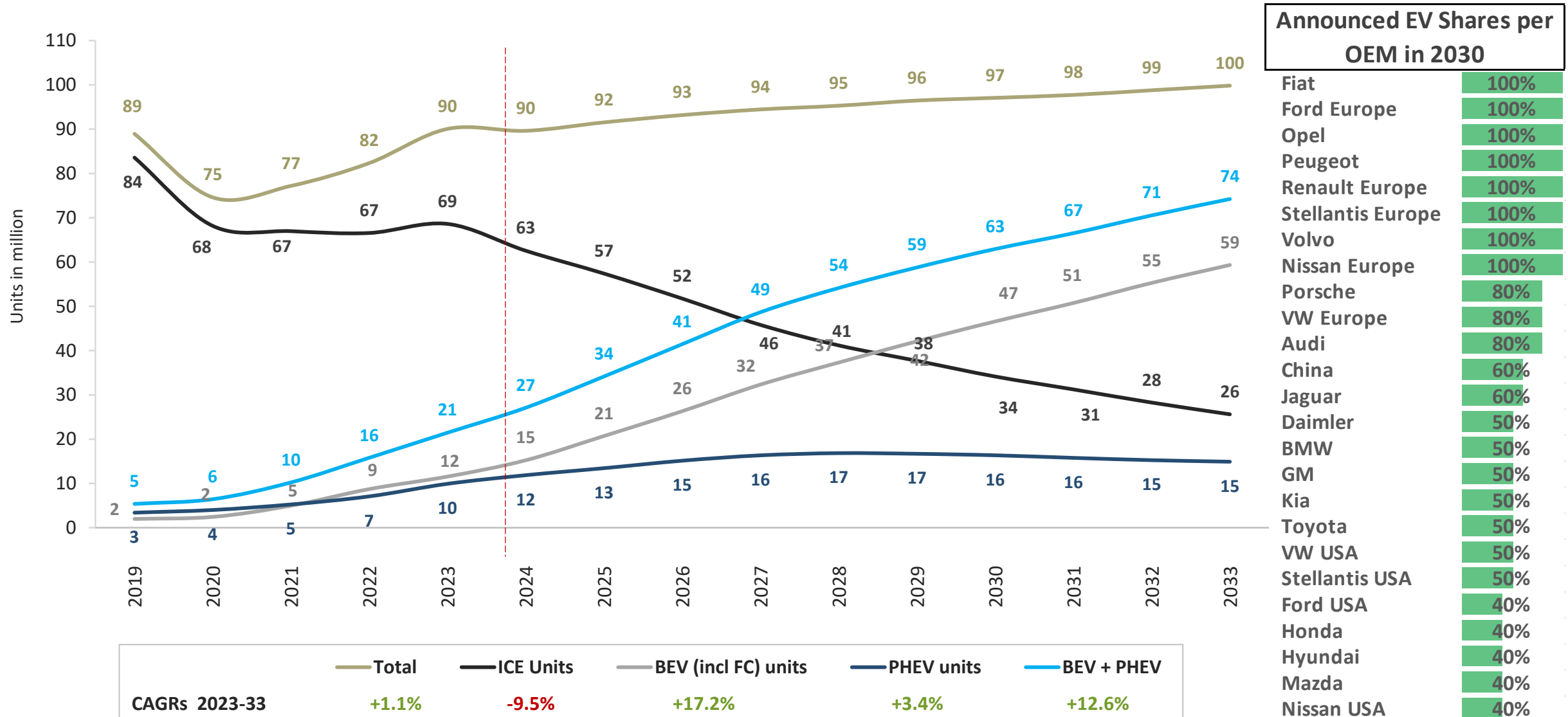


2030 (22 mt)



Automotive Outlook to 2033

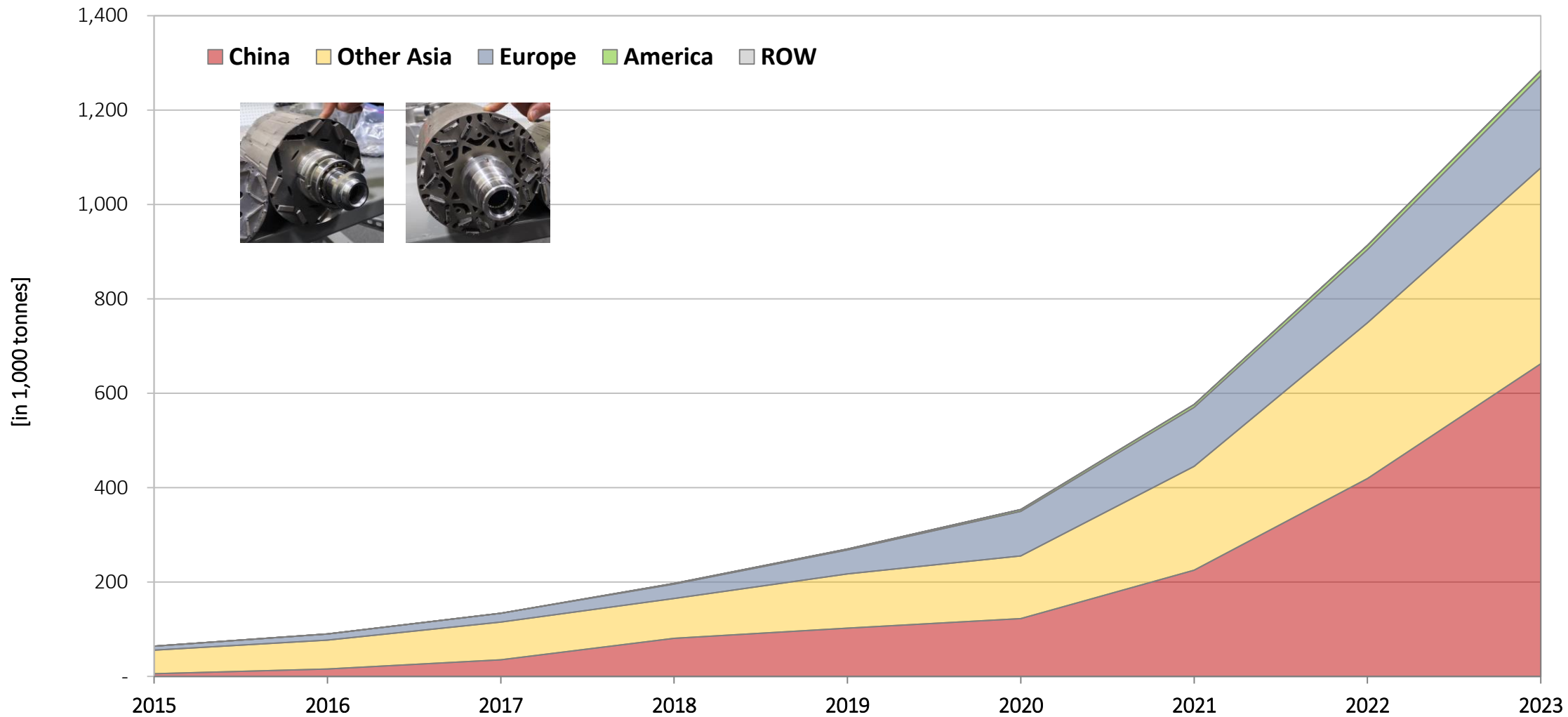
Total Production and ICE cars has improved in 2023 but is forecasted to decline faster from 2024 onwards



*Source: IHS-Markit, OEMs statements, SMR estimates

Production of EV Grade NGO Electrical Steel

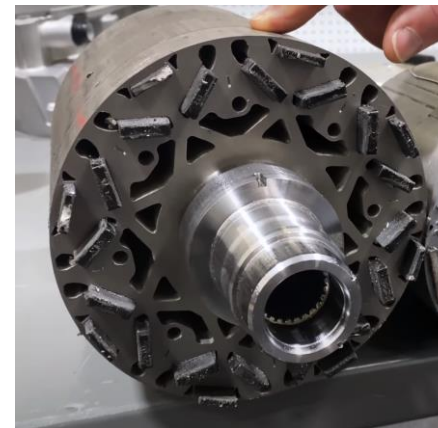
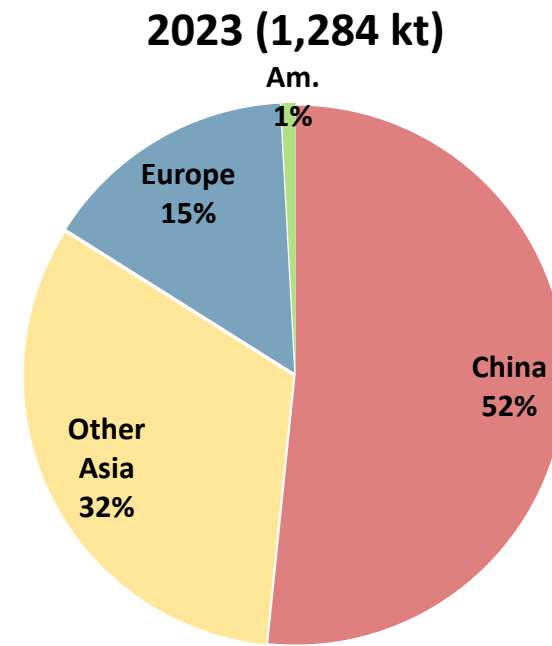
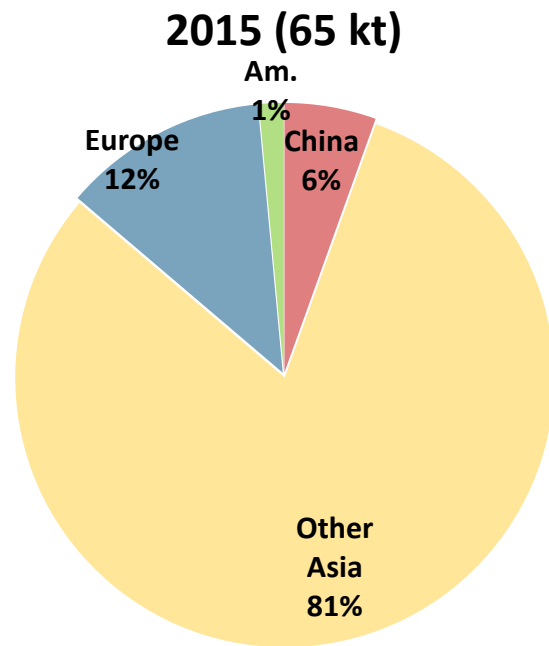
Demand for EV grade NGO has grown exponentially since 2015 and reached around 1.3 million t in 2023.





Production of EV Grade NGO Electrical Steel by Region

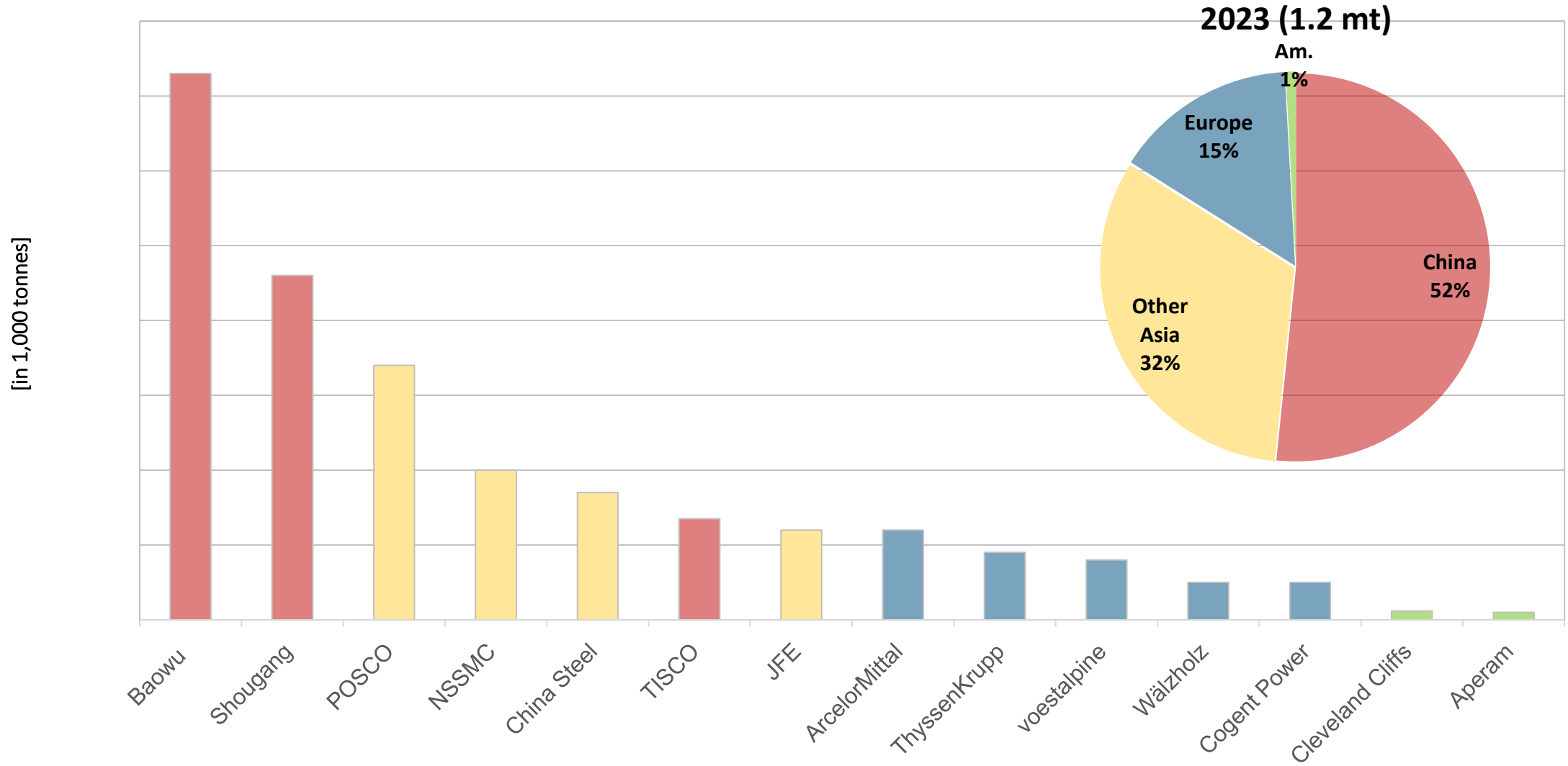
Production of EV grades has started in O. Asia (Japan, Korea, Taiwan) but China has quickly followed and took the lead. Production in America is lagging behind demand growth.





Producers of EV NGO Electrical Steel 2023

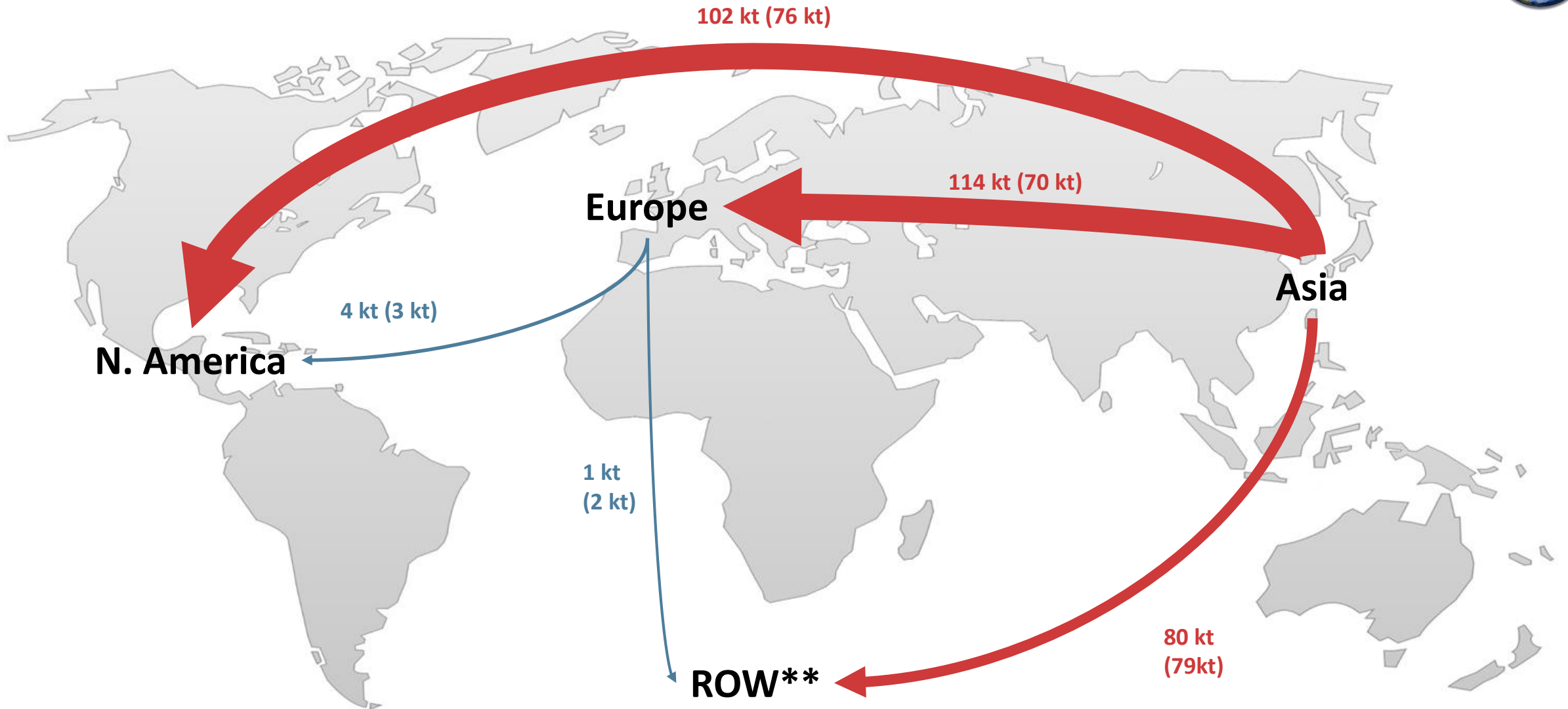
84 % produced in Asia (of which 52 % China) – Big River in the USA has not started production yet.



Trade flows for EV Grade NGO 2023 (2022)



Asia is the major supplier and Europe & North America are the main destination.
The trading share is higher then for standard NGO (~24 % compared to 11 %).

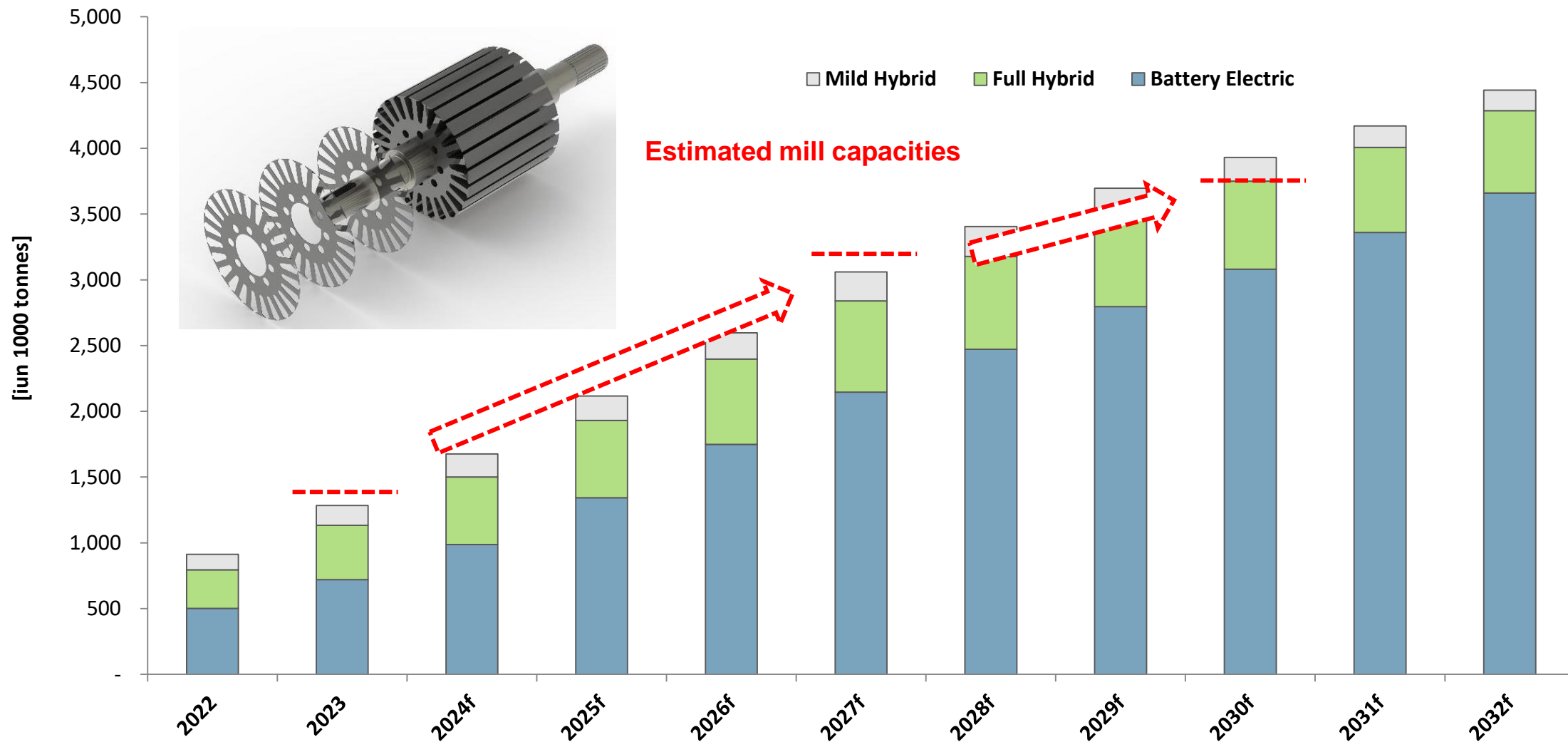


**incl. Turkey, India, Russia, S. America, etc.



Electrical Steel Demand for Traction Motors in EVs

65 kg BEV / 40 kg Full Hybrid / 20 kg Mild Hybrid; additional 1.8 mt until 2027 / 2.6 mt until 2030

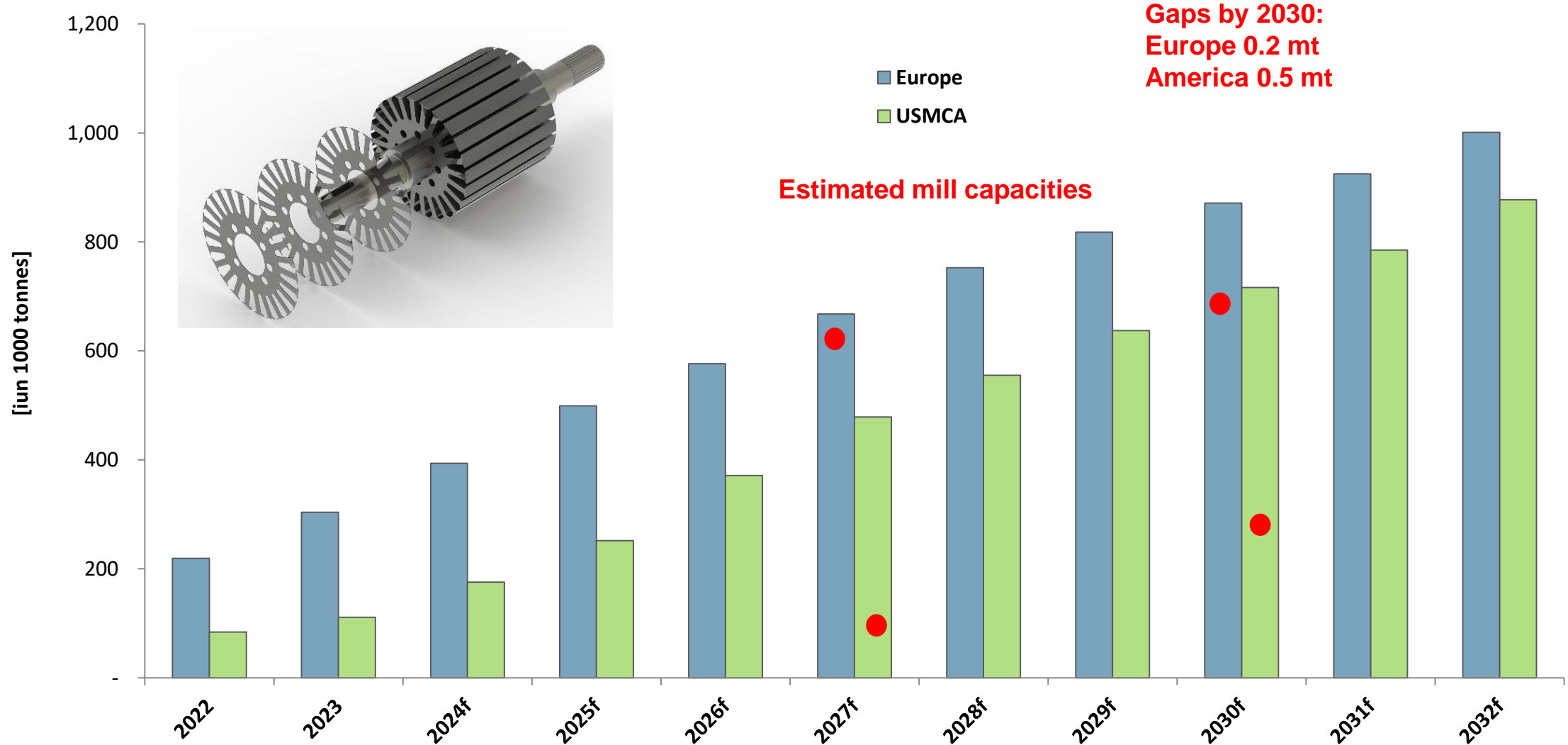


Estimated mill capacities

Electrical Steel Demand for Traction Motors in EVs

Europe: additional EV demand ~0.57 mt by 2030

America: additional EV demand ~0.60 mt by 2030



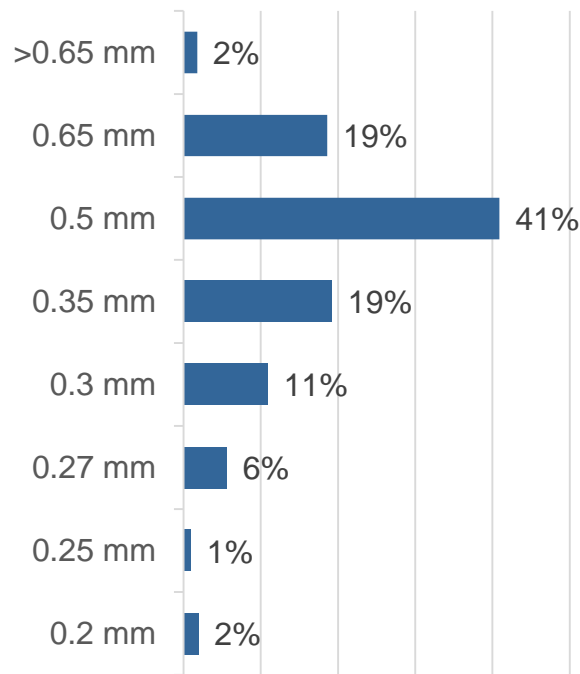


Thickness Structure NGO Europe

The EV sector will increase from 14 % of demand in 2023 to around 35 % causing shift to corresponding thin gauges;

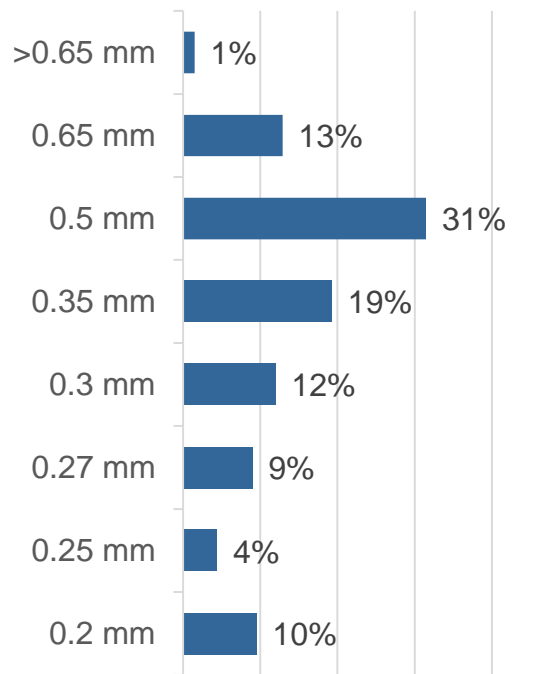
temporarily more 0.2 mm will be used but a switchback to 0.25 is expected due to limited availability.

2023 (1.6 mt)



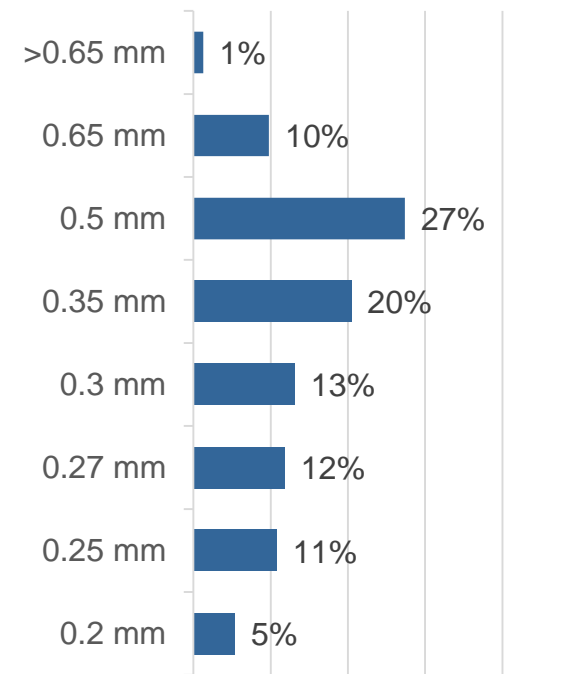
average ~0.46 mm

2027 (2.2 mt)



average ~0.41 mm

2030 (2.5 mt)



average ~0.39 mm

Issues Ahead

- Trend to thinner steel (=production capacities in tonnage are shrinking)
- Limited capacity for EV grade NGO – vast majority of production capacity in Asia (creating dependency on China, single sourcing)
- Increase of EV grade NGO by 2.6 mt until 2030 is a challenge
- Big gap supply/demand gaps in North America and Europe
- If producers are shifting to higher value EV grades, capacity for conventional NGO will also be tight

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Questions?

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marketresearch@smr.at

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