Where is the Growth in Composite Materials in Southeast Asia

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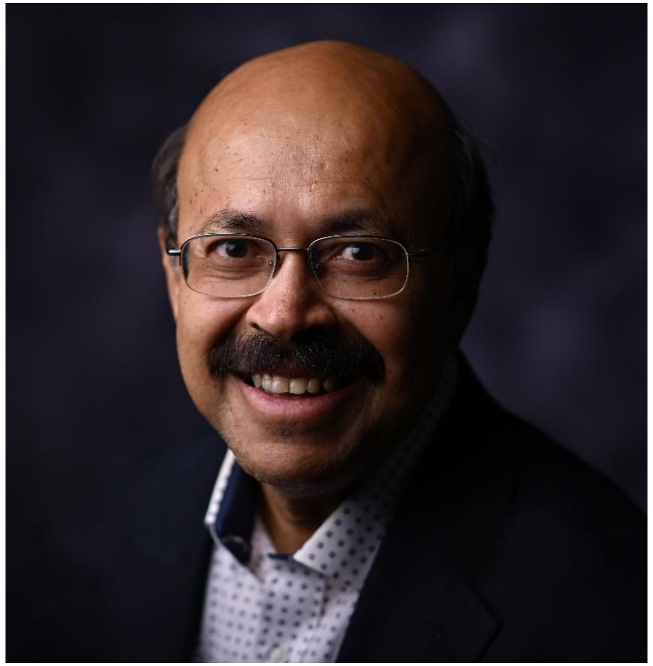
Insights that Matter

About Speaker Sanjay Mazumdar



Dr. Sanjay Mazumdar

CEO of Lucintel

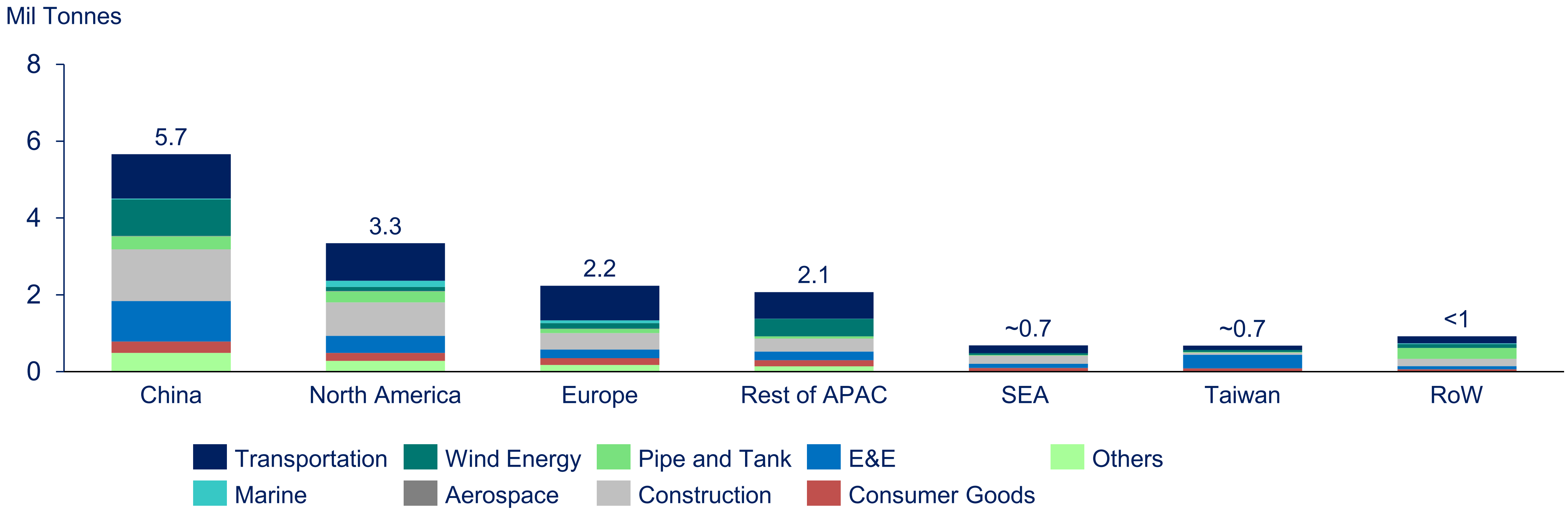
Thought Leader, Author and Strategist

Some Highlights:

- Offered advisory services (Market Entry, M & A) to hundreds of clients over 25 yrs
- Conducted hundreds of **strategic growth consulting projects**, due diligence, etc. in chemical, composites, automotive, aerospace, construction, and electronics industries for 3M, BASF, Carlyle, Dupont, GE, etc.
- **Author of two books** (The Innovation Engine for Growth and Composites Manufacturing) and Thought leader. Articles published in Wall Street Journal, Financial Times and in various magazines
- Worked for General Motors and received 2 Record of Inventions
- Sought-after speaker at conferences and annual board meetings, helping companies with their growth objectives. Panelist at conferences with industry leaders
- Ph.D. in Mechanical Engineering from Concordia University, Montreal and has additional training in Strategic Management from MIT, Boston.

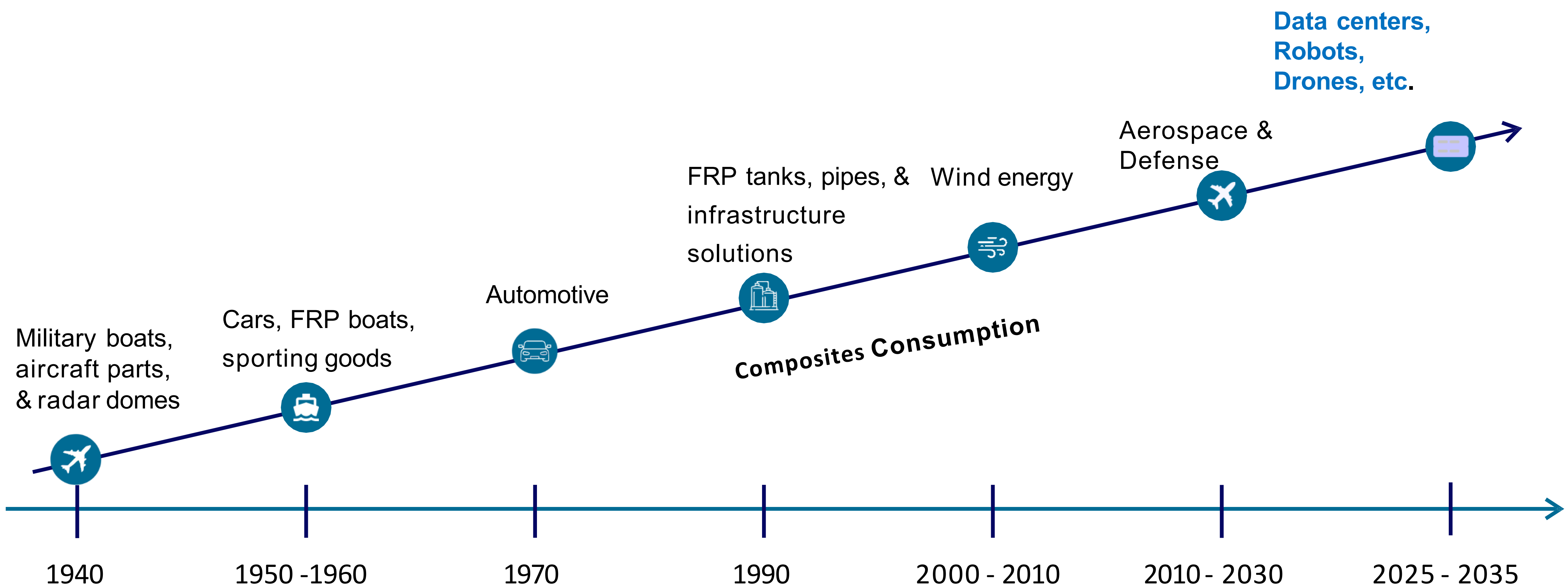
China led the last manufacturing shift. Today, many companies are asking 'How to diversify beyond China?' Southeast Asia is becoming that shift

Composites Demand (Million Tonnes) by Region in 2025



Source: Lucintel

In the past, composites growth came from aerospace, cars, wind, etc. In the next decade, the growth will come from data centers, robots, drones, etc.

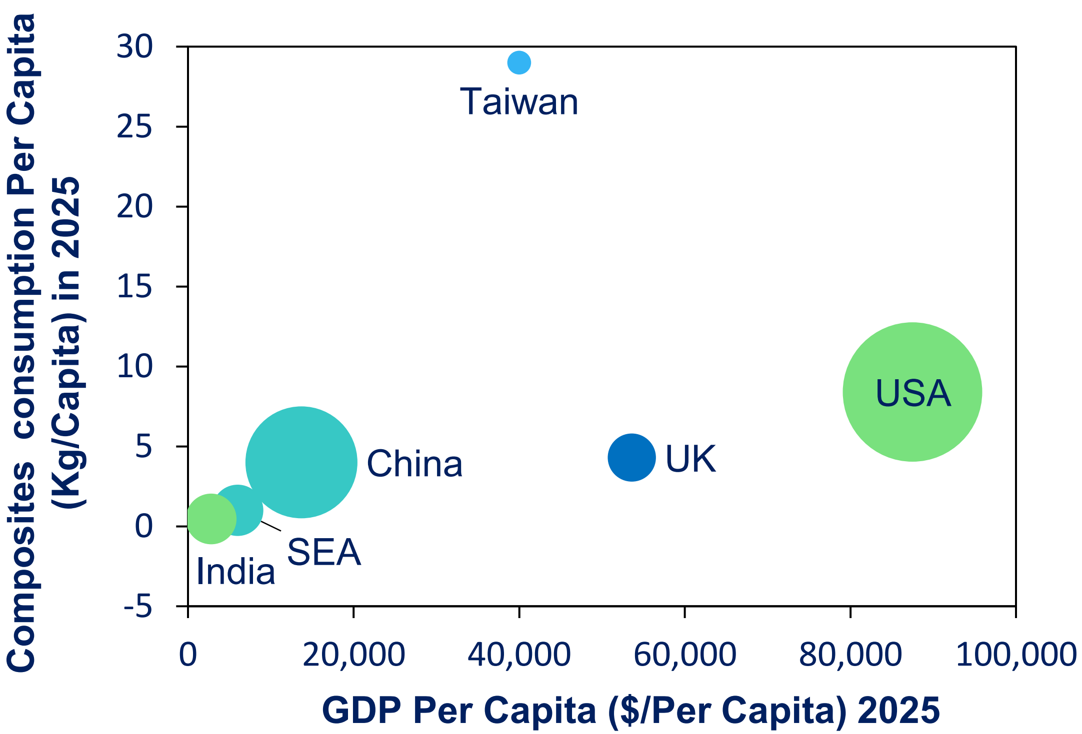


Next wave of megatrends such as data centers, robotics, EVs, hydrogen economy, sustainability, etc. will drive future opportunities for composites

Mega Trends	End Market Size	Growth	Adoption Potential of Composites	Composites Applications	Opportunity
Hydrogen	$1– $5B	Med-High	High	Tanks	High
EV	$400B+	High	Med-High	Battery enclosures	High
Data Centers	$600B+	Med-High	Low-Med	Cooling tower, enclosure, panel	Emerging
Robotics (Automation)	$40B+	High	Low-Med	Robotics parts	High
3D Printing	$15B+	Med-High	Low-Med	Tooling	Medium
Sustainability (Bio plastics)	$20B+	Medium	Medium	Bio-resin, bio-fiber	High

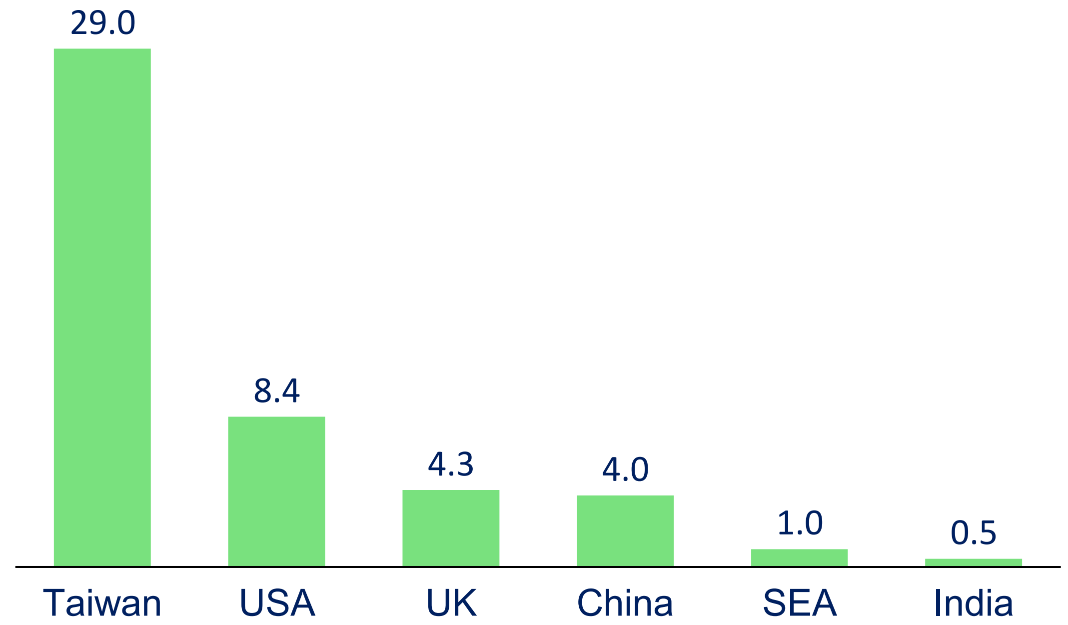
Taiwan's success in semiconductors in 1970s and 1980s demonstrates how a region can transform. Southeast Asia can create a similar growth story

Composites Consumption Per Capita (Kg/Capita): USA vs. UK vs. China vs. India vs. SEA vs. Taiwan



Note: Bubble size represents nominal GDP in 2025

Composites Consumption Per Capita (Kg/Capita) in Major Country in 2025



Source: Lucintel

Currently, composites consumption is low in SEA region. Invest early in emerging mega trends the way Taiwan invested in Semiconductors in 1980s

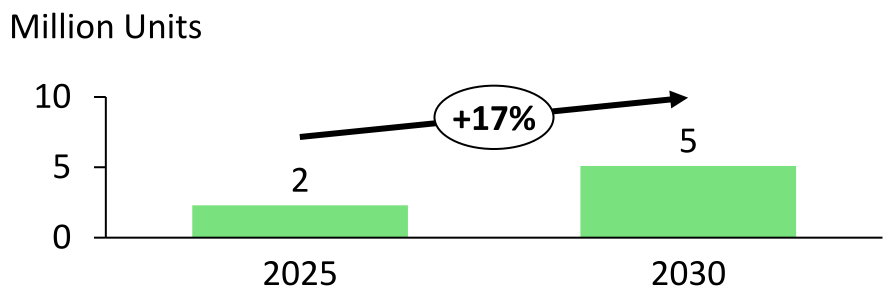
Country	Composites Demand (KT) in 2025	GDP ($B) in 2025	Population (Million) in 2025	Aerospace	Transportation	Construction	Wind Energy	E & E	Marine	Consumer Goods
Taiwan	600 to 700	920	23	Limited demand due to limited aircraft production	Some auto part manufacturing	Structural shape, etc.	Offshore wind energy. Domestics Nacelle, blade etc.	Semiconductor powerhouse. Raw materials to OEMs	Yacht building	Bicycle frame, tennis rackets, golf shaft, etc.
Singapore	Less than 100	604	6	Good capability in Aerospace MRO	Limited auto base	Limited FRP use	Limited activity	Limited PCB capability	Limited activity	Limited production
Malaysia	100 to 200	472	34	Presence of aerostructure and MRO companies	Annual automotive production of ~800,000 units	Structural shape, grating, etc.	Limited activity	Presence of major global PCB and CCL manufacturers	Patrol boat	Limited production
Thailand	100 to 200	577	72	Small aerospace base	Annual automotive production of ~1.5 million units	Growing Infrastructure demand	Onshore wind turbine	Presence of major global PCB and CCL manufacturers	Boat building	Surfboards, etc.
Vietnam	100 to 200	494	102	Limited demand due to limited aircraft production	Good EV manufacturing capability	Structural shape, etc	Good onshore and offshore activity	Presence of major global PCB manufacturers	Vessels	Low composites usage
Indonesia	100 to 200	1,446	284	Limited demand due to limited aircraft production	Spoiler, hood, bumper, decklid, etc.	Grating, cable tray, etc.	Limited activity	Limited manufacturing	Leisure boat, fishing boat, patrol boat, etc.	Limited production

Usage: Low | Medium | High

AI infrastructure, PCB, and wind energy are emerging as key composites growth drivers in Taiwan and SEA region

AI Server

Global AI Server Market (Million Units)

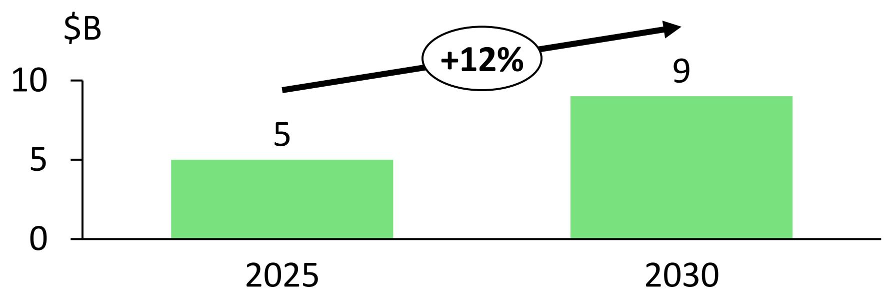


Key Takeaways

- AI server boom is being driven by expansion of data center and increasing GPU deployment . GPUs will remain the leading category of AI server. Nvidia is the leading AI server suppliers
- TSMC supplies GPUs and high-bandwidth memory (HBM) in Nvidia's advanced AI chips. China restrictions are boosting opportunities for Taiwanese glass fabric suppliers

PCB in SEA

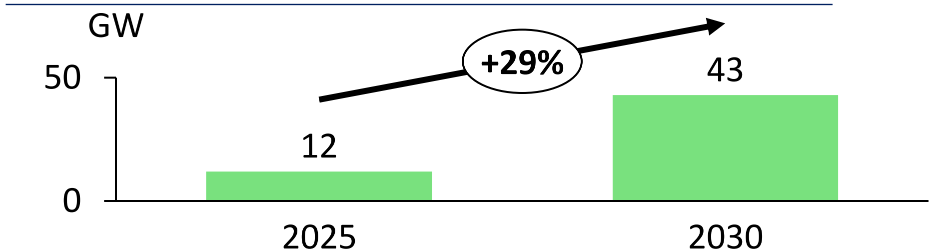
PCB Market in SEA ($B)



- Significant investments have been made by Taiwanese and Chinese PCB and CCL manufacturers in Southeast Asia over the past two years. The region is expected to focus on satellites, networking, servers, and automotive electronics as its primary end-use applications
- Opportunity for PCB industry (glass fabrics & epoxy resin) to support the expansion of downstream manufacturing

Wind Energy

Cumulative Wind Turbine Installation (GW) in SEA and Taiwan



- Significant opportunities in wind energy market in Vietnam, Thailand, Philippines and Taiwan.
- Vestas, Siemens Gamesa, and Envision are some of the OEMs. Tien Li is a domestic blade manufacturer.
- Wind turbines and blades are largely imported in SEA. Chinese and European players are planning local manufacturing facilities

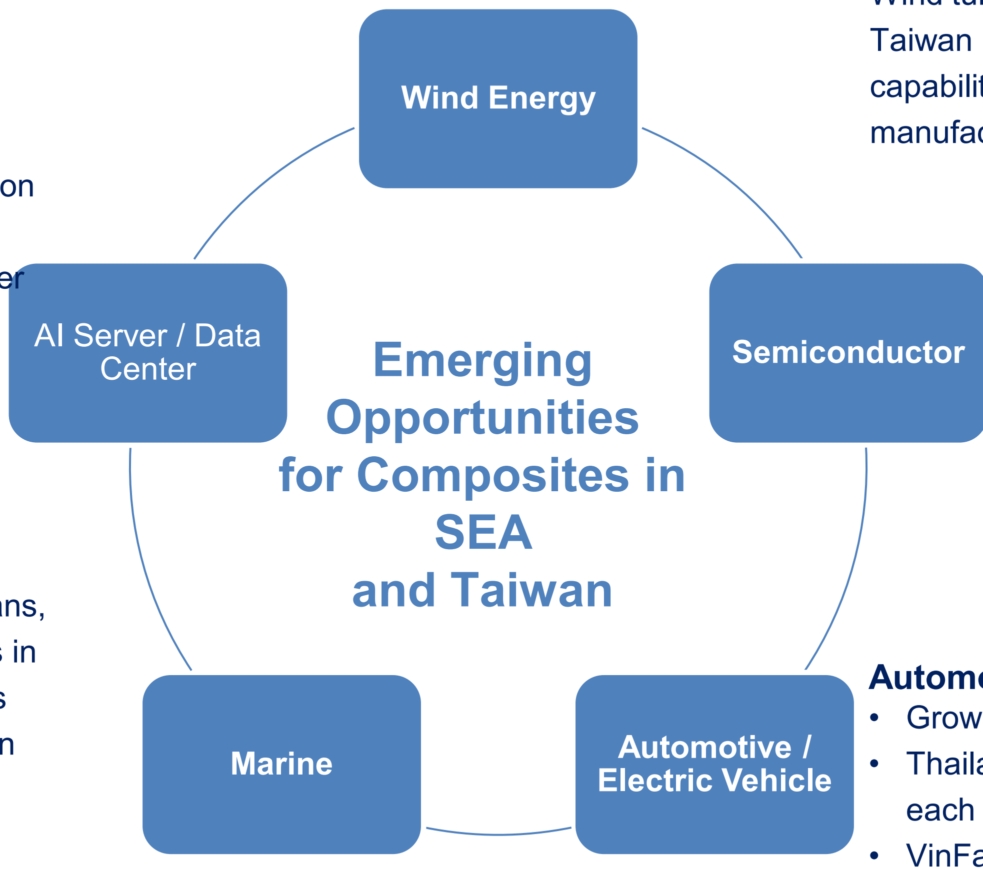
Supply chain diversification and emerging trends will be creating new composites demand in Southeast Asia for data center, EVs, wind, etc.

AI Server / Data Center

- Double digits growth forecast in AI server / data center in Taiwan, which are driving composites demand.
- TSMC which supports GPUs and high-bandwidth memory (HBM) in Nvidia's advanced AI chips, requires substrate materials made from low thermal expansion coefficient (Low CTE) fiberglass fabric
- Taiwan Glass could become a key supplier of Low CTE fiberglass fabric for Nvidia's GB200 AI servers

Marine

- Growing opportunities in yachts, catamarans, petrol boats, sports boats, and other types in Indonesia, Tawain, Philippines, and others
- North Sea Boats, Josefa Slipways, Horizon Yacht are some of the OEMs
- Opportunities for glass fiber reinforced polyester and vinyl ester composites



Wind Energy

- Double digits growth forecast in wind turbine in SEA region such as in Vietnam, Philippines, Thailand and Taiwan.
- Wind turbines and blades are largely imported in SEA region. Taiwan has domestic nacelle assembly and blade plant capability. Chinese and European players are planning local manufacturing facilities

Semiconductor

- Strong growth of PCB in Taiwan, Thailand, Vietnam, and Malaysia
- EMC, Zhen Ding, ITEQ, Tripod, Victory Giant, are some of the PCB and CCL players in South East Asia, mostly in Thailand, Vietnam, and Malaysia
- Opportunities for glass fabrics, epoxy resin, prepreg and end products

Automotive / Electric Vehicles

- Growing opportunities for EVs in SEA region.
- Thailand and Vietnam lead Southeast Asia's EV market, each producing more than 200,000 EVs annually
- VinFast, BYD, Great Wall Motor, MG, Changan, are major OEMs for EV in this region
- Various Tier 1 players, such as Denso, Bosch, Cobra International are present in this region

About Lucintel

Our proven growth strategies have empowered hundreds of companies unlock $100+ Mil opportunities

- To stay ahead of the competition and identify opportunities in new or existing markets, we offer services including market entry strategy, opportunity screening, market research, and M&A advisory. Founded in 1998.
- We have deep global insights into major industries. Team of over 120 analysts / consultants across globe
- Management comprised of PhDs, MBAs, and subject matter experts. Head quarter in Dallas, USA.

Lucintel conducted 1,000+ strategic consulting projects across industries for 3M, Audi, Dupont, Carlyle, GE, etc.

Our Proven Approach and Subject Matter Expertise Help Our Clients Achieve High Impact Results Through Actionable Insights

Subject Matter Expertise: Lucintel has extensive knowledge and subject matter expertise in composites, construction, chemical, aerospace, electronics, and other markets. Lucintel has completed over 500+ consulting projects and published over 800 market reports in various technologies and markets in last 20+ years.

Proven Approach: Lucintel has a proven approach in the market and competitive analysis, opportunity screening, partner targeting, customer mining, M&A, due diligence, and market entry strategy. Using our signature third-party validation process ensures accuracy in market intelligence.

Strong Team: Lucintel has a strong team of consultants including PhDs, MBAs, seasoned industry professionals and consultants from varied industry backgrounds who have multiple years of experience in conducting complex consulting projects with high client satisfaction. Our team also includes past employees from top-tier strategy consultancies (McKinsey, Bain).

Unparalleled Growth Ideas: Since Lucintel is a thought leader and has breadth and depth of expertise, we can accurately identify how major technology trends impact the growth strategy agenda for your company.

Discuss your growth objectives with us. We have a track record of success to accelerate your growth

- **Deep Technology and Market Expertise:** Lucintel has good knowledge across the value chain of composites industry
- **Track Record:** Lucintel has over 1,000 clients worldwide. Lucintel has provided market entry strategy, capability and gap assessment, opportunity screening, and M & A support to hundreds of clients worldwide in various industries. Examples of companies Lucintel has supported in making strategic decisions include: 3M, Audi, BASF, Carlyle, Credit Suisse, Evonik, GE, Hobas, Gordon Plastics, MIC, Solvay, and Sumitomo.
- **Networking and Actionable Results:** Lucintel has deep knowledge in accessing vital, hard to find insights due to its strong technical and market knowledge. We have 10,000+ contacts for conducting research.
- **Thought Leadership:** Lucintel has been widely cited in various magazines such as the Wall Street Journal, Financial Times, Bloomberg, CNBC, ZACKS, The Economist and more for its thought leadership.

THE WALL STREET JOURNAL. Bloomberg FINANCIAL TIMES

ZACKS Our Research. Your Success. The Economist CNBC

Contact Us to Discuss your Growth Objectives

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Thank You