



Le nuove rotte per la filiera Fincantieri

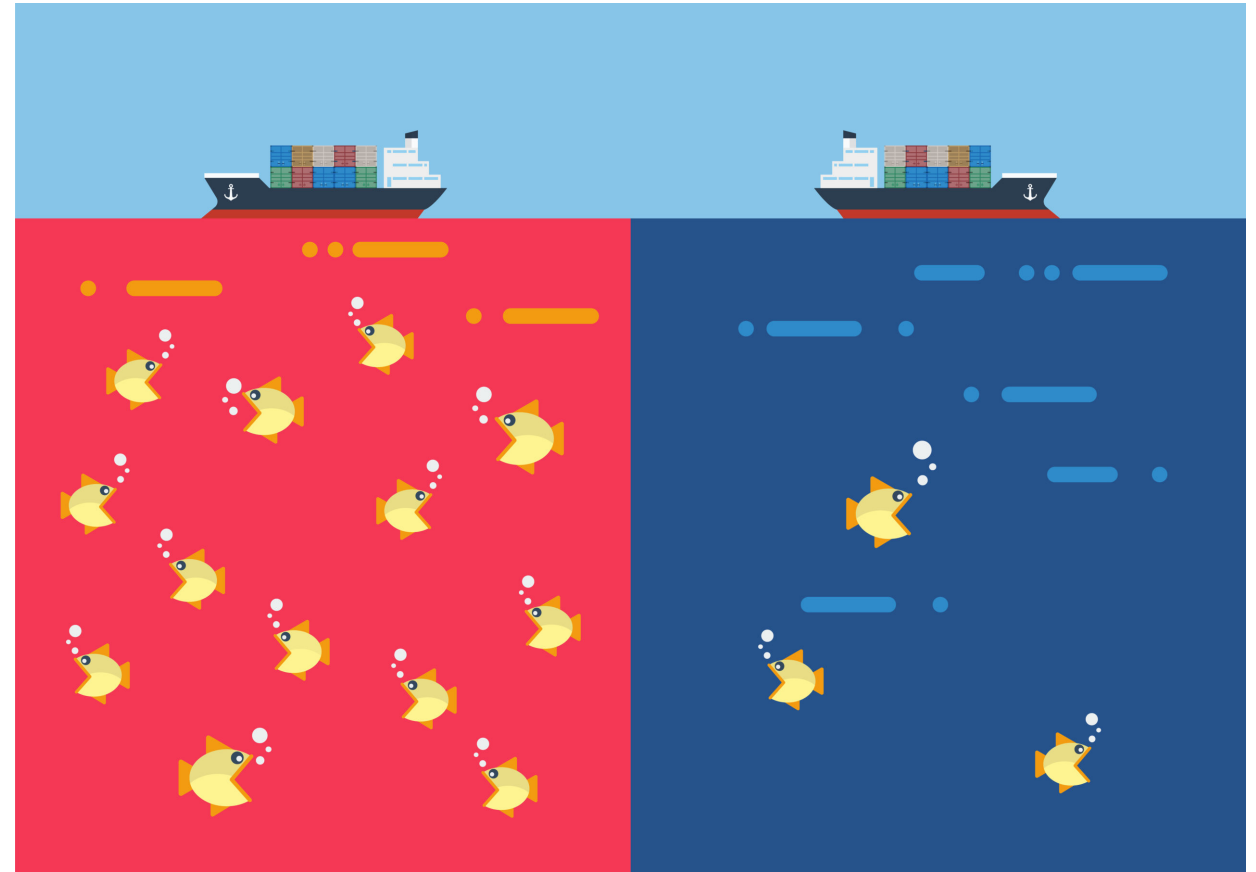
Meeting Fincantieri Supply Chain – Genova, 17 ottobre 2023

Prof. Carlo Alberto Carnevale-Maffè
SDA Bocconi School of Management – Milan, Italy

Red sea, blue ocean, green waters

Tre nuove rotte per gli attori della supply chain Fincantieri

1. (Ri)salire sulle navi, e restarci. Sopra e sotto la linea di galleggiamento.
2. Installare un cantiere di servizi in ogni porto, e metterlo in rete.
3. Ripensare il mare come spazio economico e geopolitico e non solo come superficie logistica





MOBY-DICK

OR, THE WHALE
HERMAN MELVILLE

**Il mare è una
magnifica
ossessione**

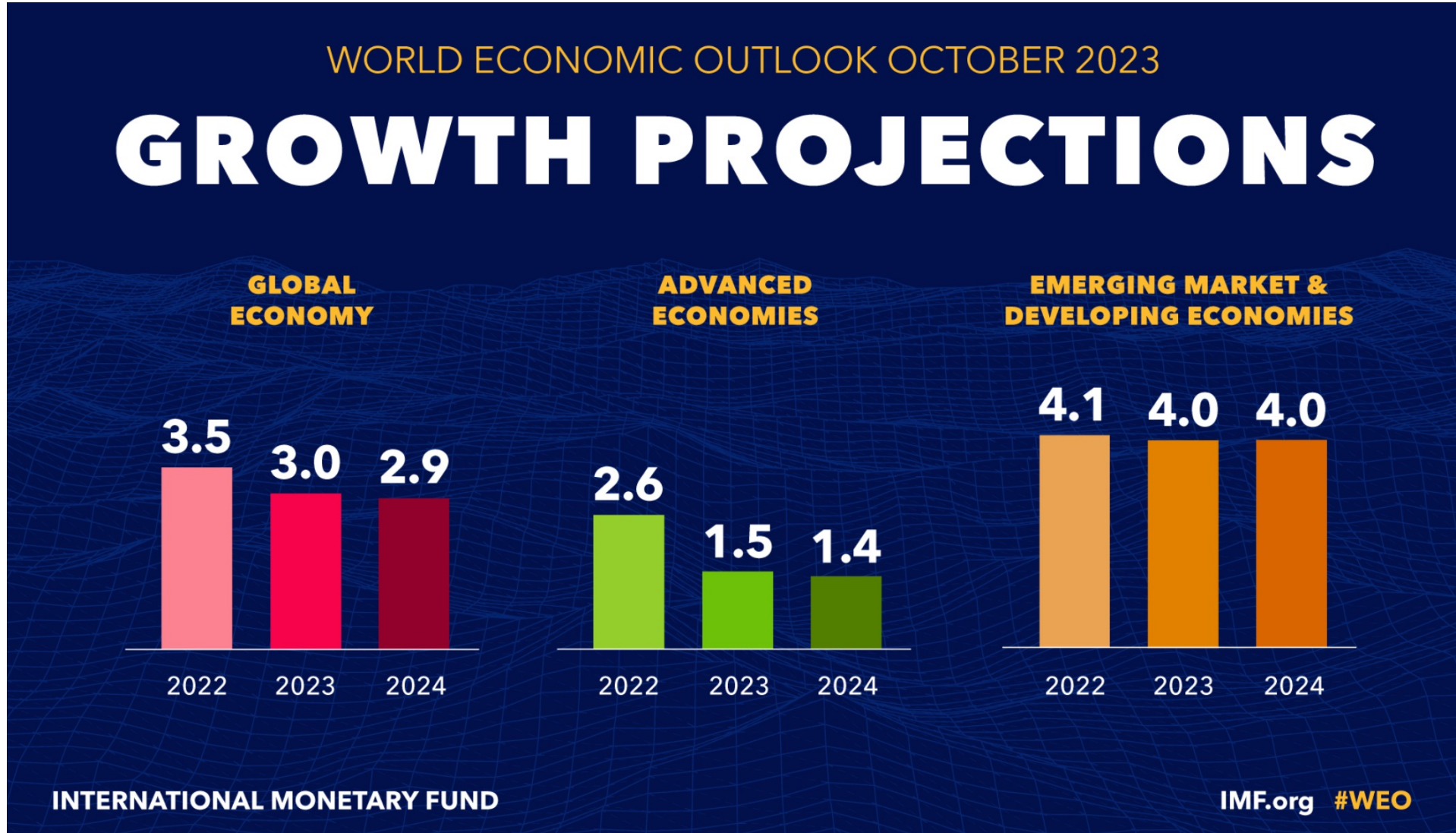
*Costruire insieme a
Fincantieri la nuova
«Pequod»: per quale
sfida?*

Che tipo di fornitori serviranno alla cantieristica civile, industriale e militare di domani?

1. ESG-bound
2. Data-driven
3. Service-oriented



Ma dov'è tutta questa crisi?



(Fonte: IMF, Ottobre 2023)

World Economic Outlook Projections

(Real GDP growth, annual percent change)

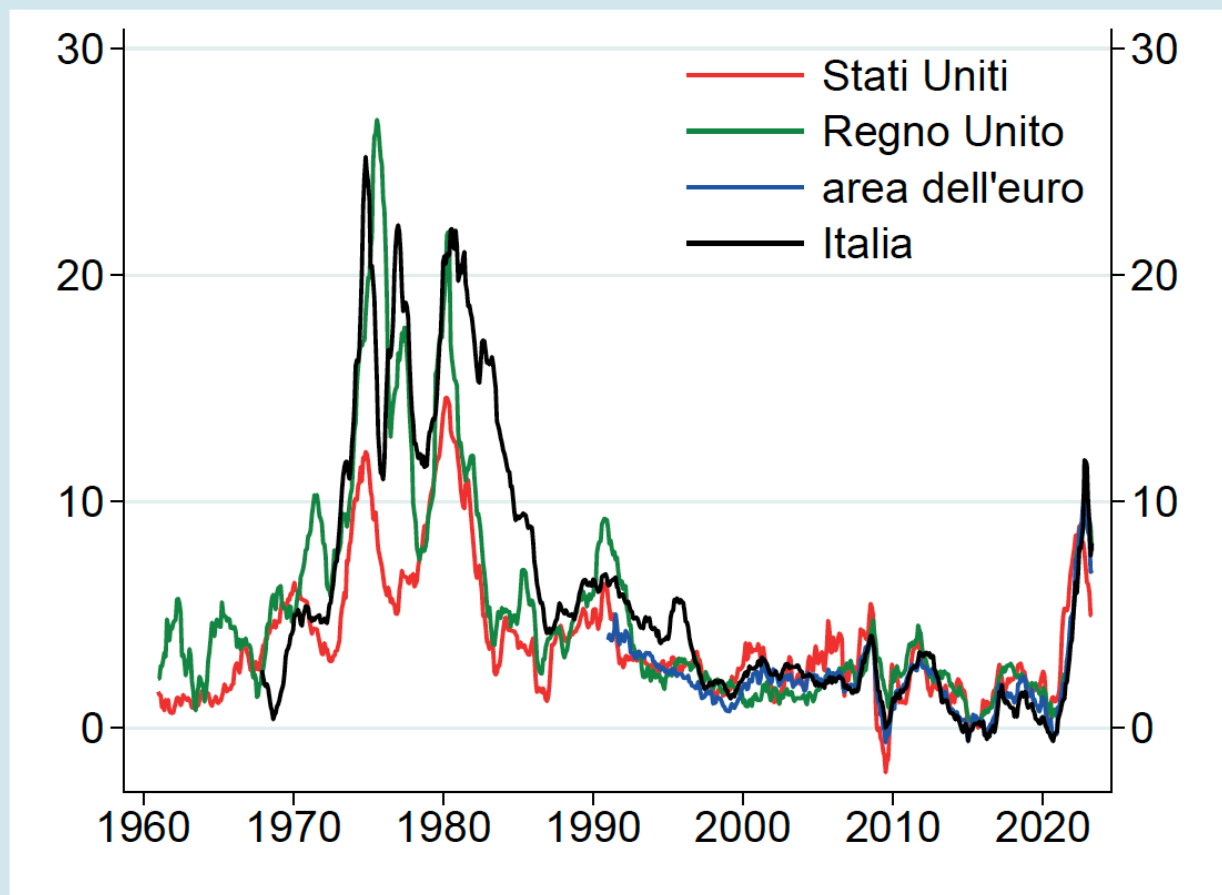
	2022	2023	2024
World Output	3.5	3.0	2.9
Advanced Economies	2.6	1.5	1.4
United States	2.1	2.1	1.5
Euro Area	3.3	0.7	1.2
Germany	1.8	-0.5	0.9
France	2.5	1.0	1.3
Italy	3.7	0.7	0.7
Spain	5.8	2.5	1.7
Japan	1.0	2.0	1.0
United Kingdom	4.1	0.5	0.6
Canada	3.4	1.3	1.6
Other Advanced Economies	2.6	1.8	2.2
Emerging Market and Developing Economies	4.1	4.0	4.0
Emerging and Developing Asia	4.5	5.2	4.8
China	3.0	5.0	4.2
India	7.2	6.3	6.3
Emerging and Developing Europe	0.8	2.4	2.2

Ma dov'è tutta questa crisi?

Per il 2023, l'unico segno negativo di tutte le economie avanzate è per la Germania. Nel 2024, tutti principali paesi del mondo sono previsti in crescita.

(Fonte: IMF, Ottobre 2023)

Il ritorno dell'inflazione (variazioni percentuali)



**L'inflazione
colpisce
ancora**

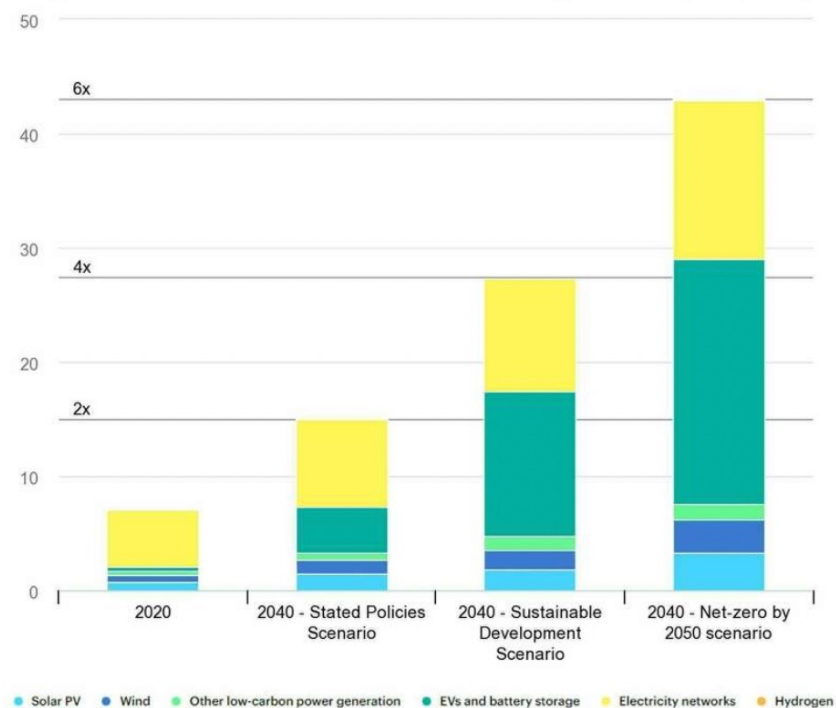
Fonte: Eurostat, Istat, UK Office for National Statistics e US Bureau of Labor Statistics.

Nota: variazioni percentuali sui dodici mesi; area dell'euro: composizione variabile dopo il 1999 e media pesata degli undici paesi partecipanti all'avvio della terza fase dell'Unione economica e monetaria prima di quella data.

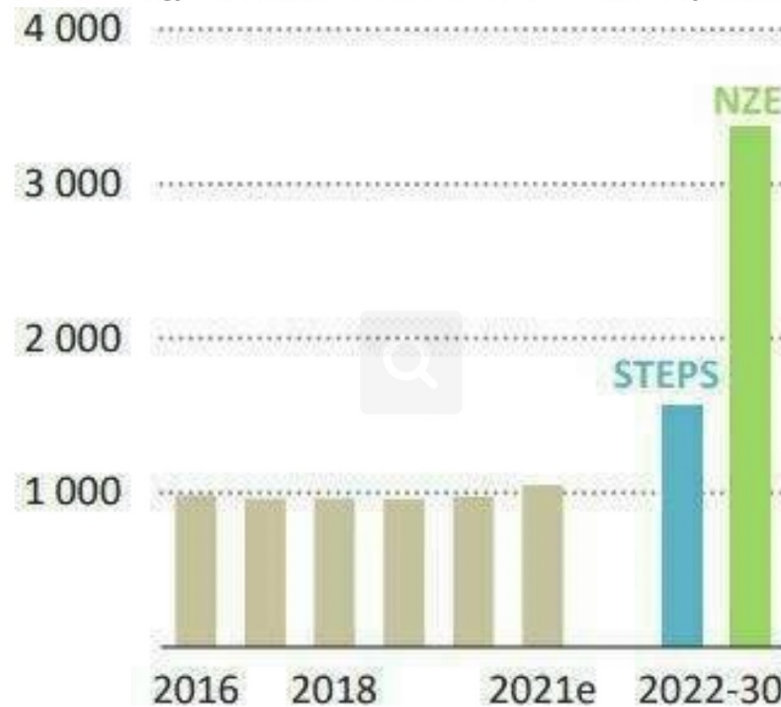
La «Greenflation» costituirà un fattore permanente dello scenario di medio-termine



Figure 5: Total mineral demand for clean energy technologies (in Mt)



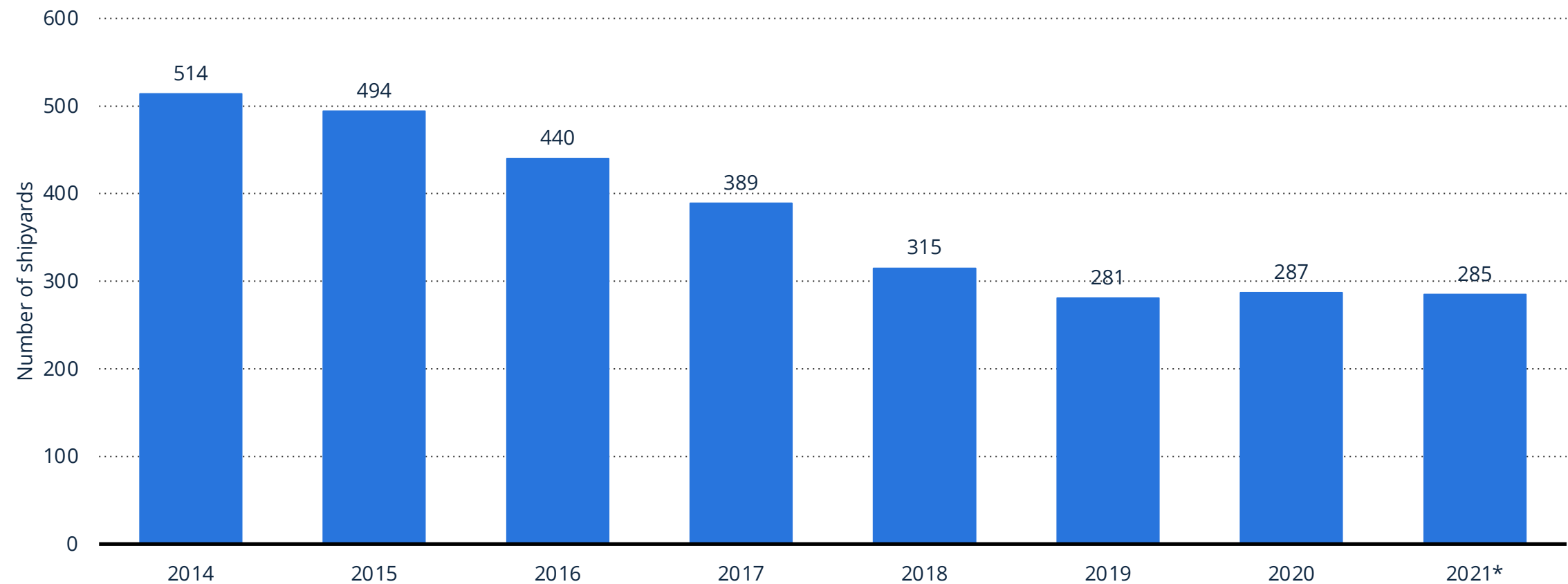
Investment clean energy in the Stated Policies and Net Zero Emissions by 2050 scenarios (Bn USD)



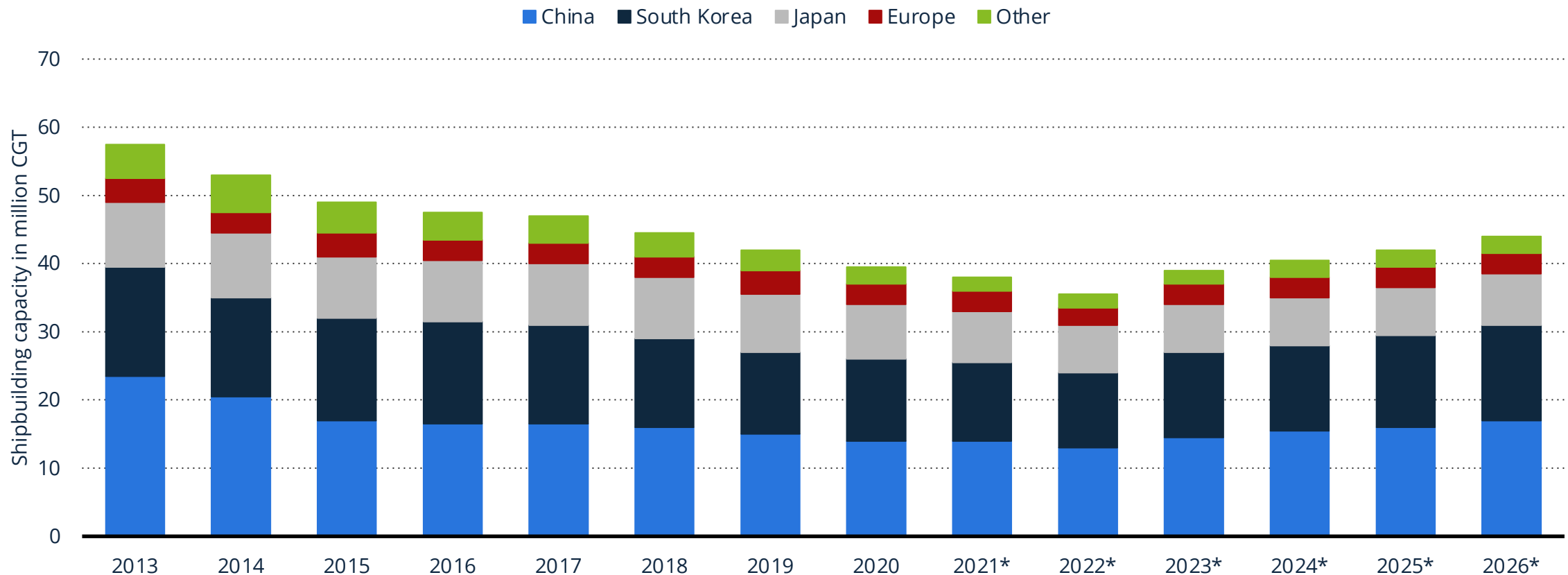
Source: World Energy Outlook 2021, (Oct. 2021) [IEA](#)

Source: IEA, *The role of critical materials in clean energy transitions*, March 2022

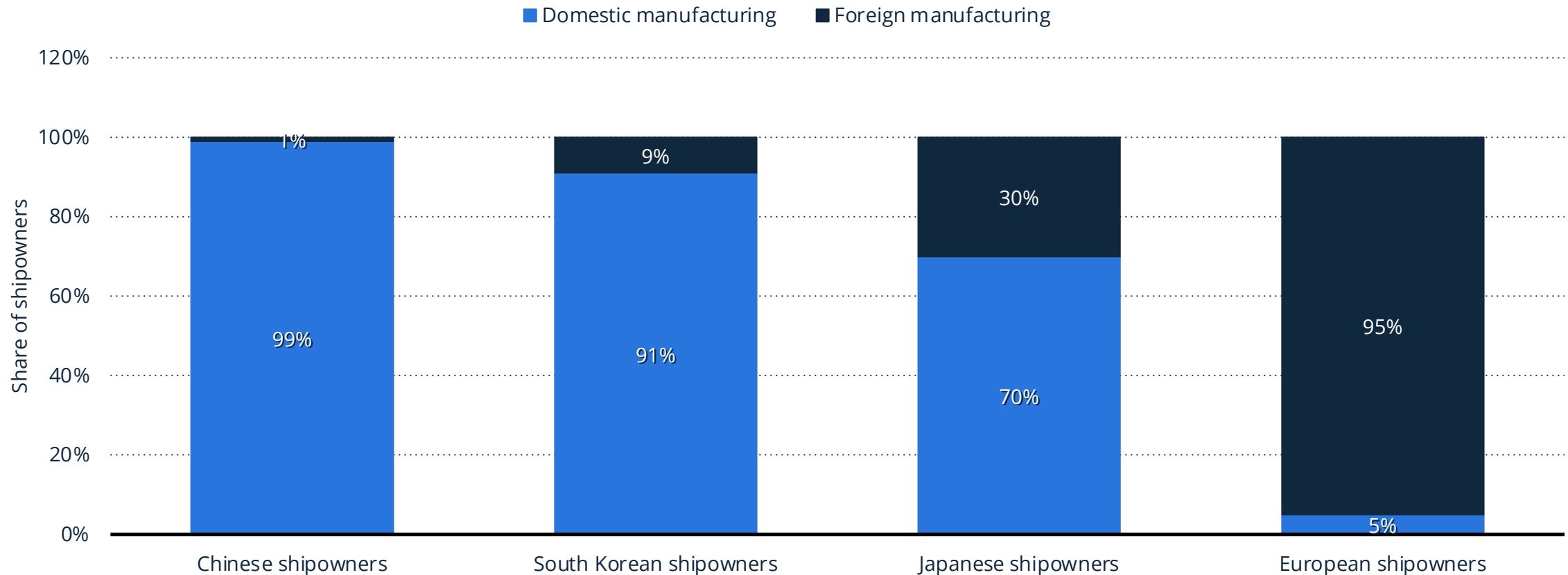
Number of active shipyards worldwide from 2014 to 2021



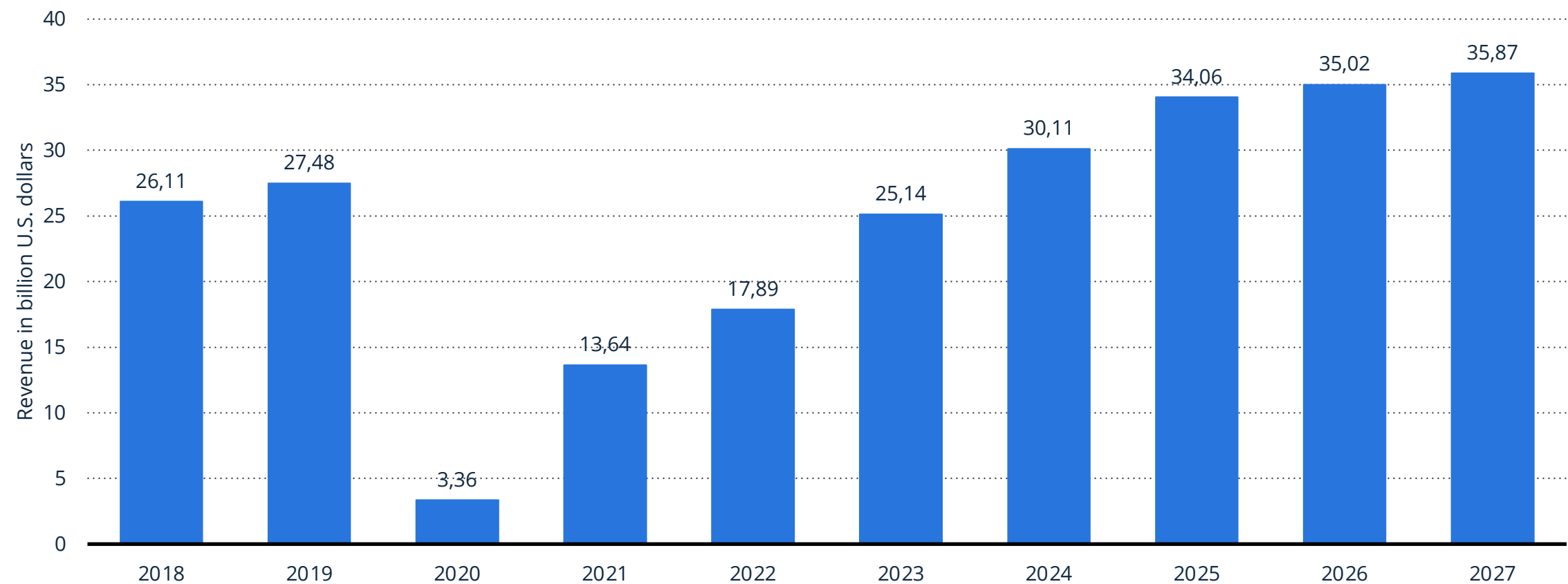
Shipbuilding capacity worldwide 2013-2026, by country



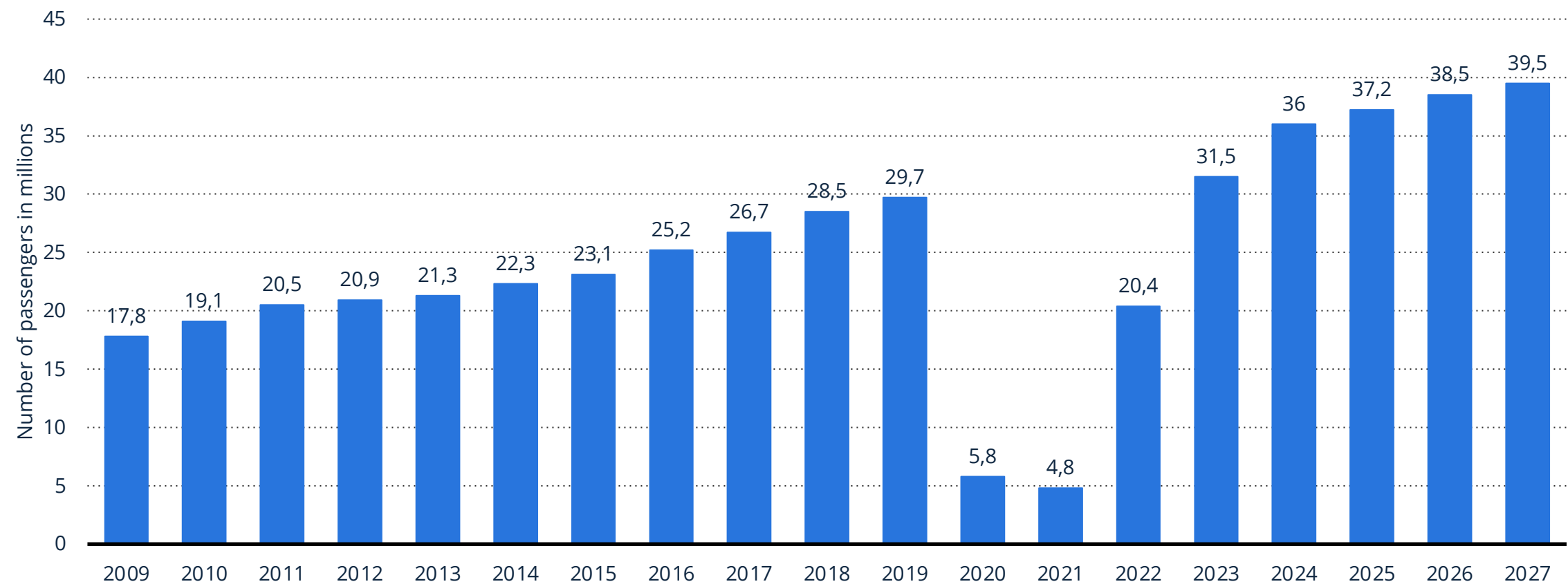
Share of shipowners ordering ships from domestic or foreign ship manufacturers, by country of shipowner



Revenue of the cruises industry worldwide 2018-2027



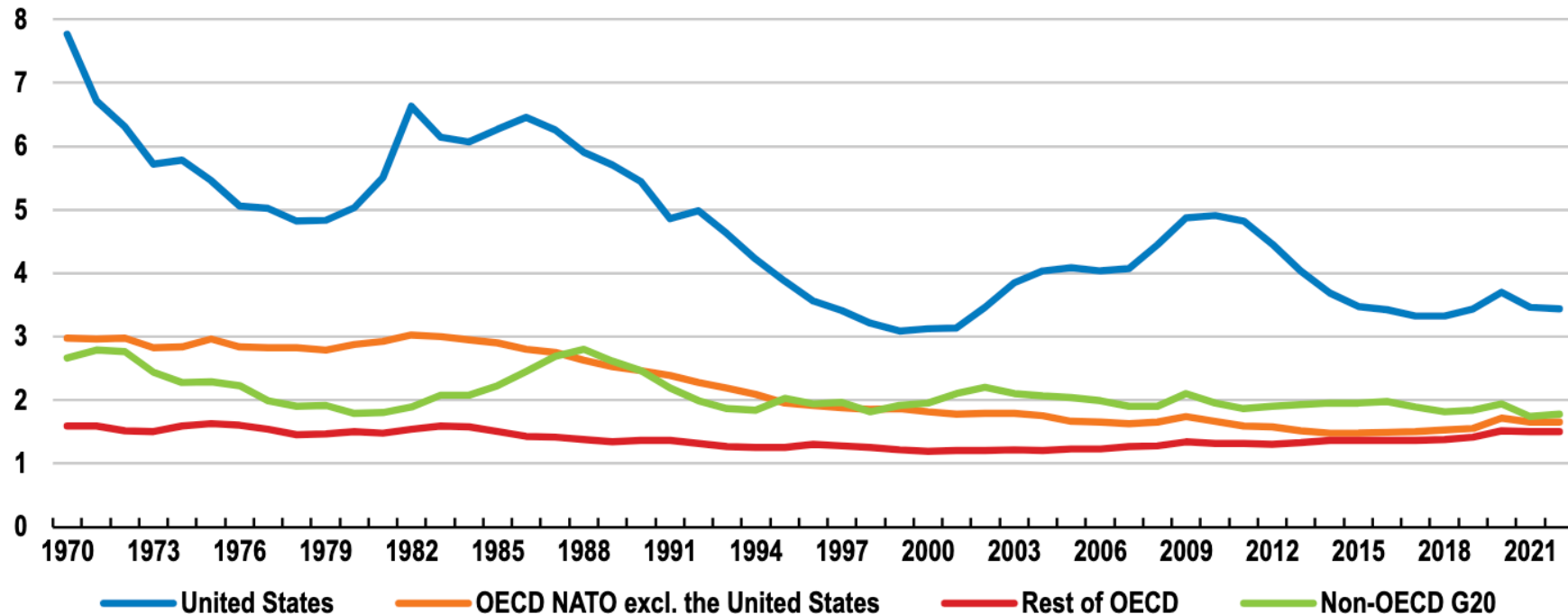
Number of global ocean cruise passengers 2009-2027



Le spese per la difesa sono state in forte riduzione dagli anni '70 a oggi: gli USA molto sopra la media OECD

Figure 13. Global defence spending has declined since the 1970s

Defence spending, per cent of GDP, current prices



Note: OECD and NATO based on current membership. Aggregates show averages weighted by GDP at market prices in USD. Their composition changes over time due to data availability. Saudi Arabia is excluded from the non-OECD G20 aggregate due to the very high volatility of its defence spending.

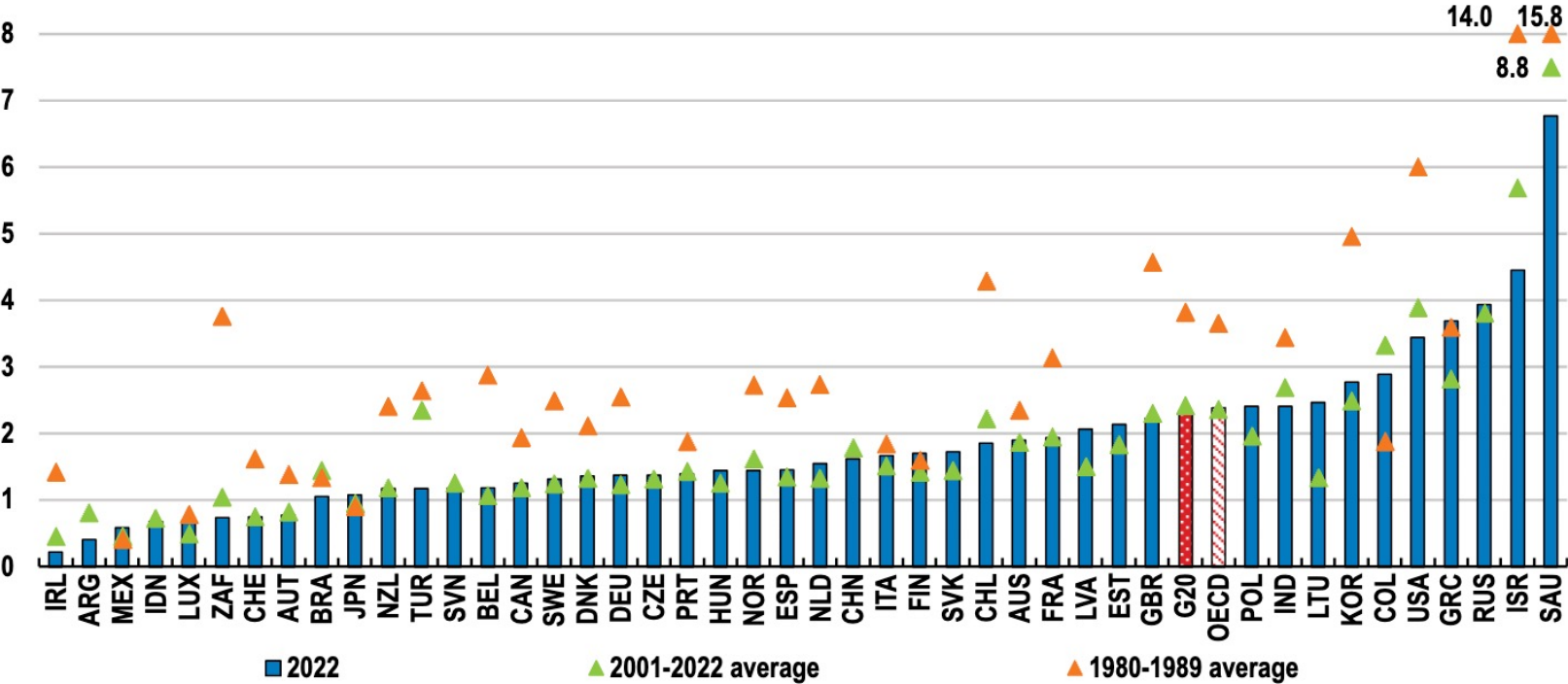
Source: Stockholm International Peace Research Institute; and OECD calculations.

(Fonte: OECD, Settembre 2023)

Le spese militari sono scese in quasi tutti i Paesi dell'OCSE, ma nei prossimi anni sono previsti forti aumenti in diverse regioni

Figure 14. Defence spending has fallen in most countries in recent decades

Defence spending, per cent of GDP, current prices



Note: OECD aggregate based on current membership. OECD and G20 aggregates weighted by GDP at market prices in USD. For Chile and South Africa, the first available year is 1986. For several countries, including China and Russia, the first available year is 1989 or afterwards, and hence an average for the 1980s is not reported. Costa Rica and Iceland are not shown because they do not have a permanent standing military force.

Source: Stockholm International Peace Research Institute; and OECD calculations.

Nei prossimi anni sono probabili ulteriori aumenti della spesa, talvolta considerevoli. Francia, Germania e Giappone hanno iniziato ad attuare piani dettagliati a medio termine a tale scopo, puntando ad aumenti compresi tra lo 0,4% del PIL (Francia) e quasi l'1% (Giappone).

In altri paesi esiste un obiettivo a lungo termine che implica una maggiore spesa per la difesa (ad esempio, il 2% del PIL in Canada e in Italia, come da impegni NATO, e il 2,5% del PIL nel Regno Unito), ma piani a medio termine per raggiungere questi livelli non sono ancora stati rilasciati.

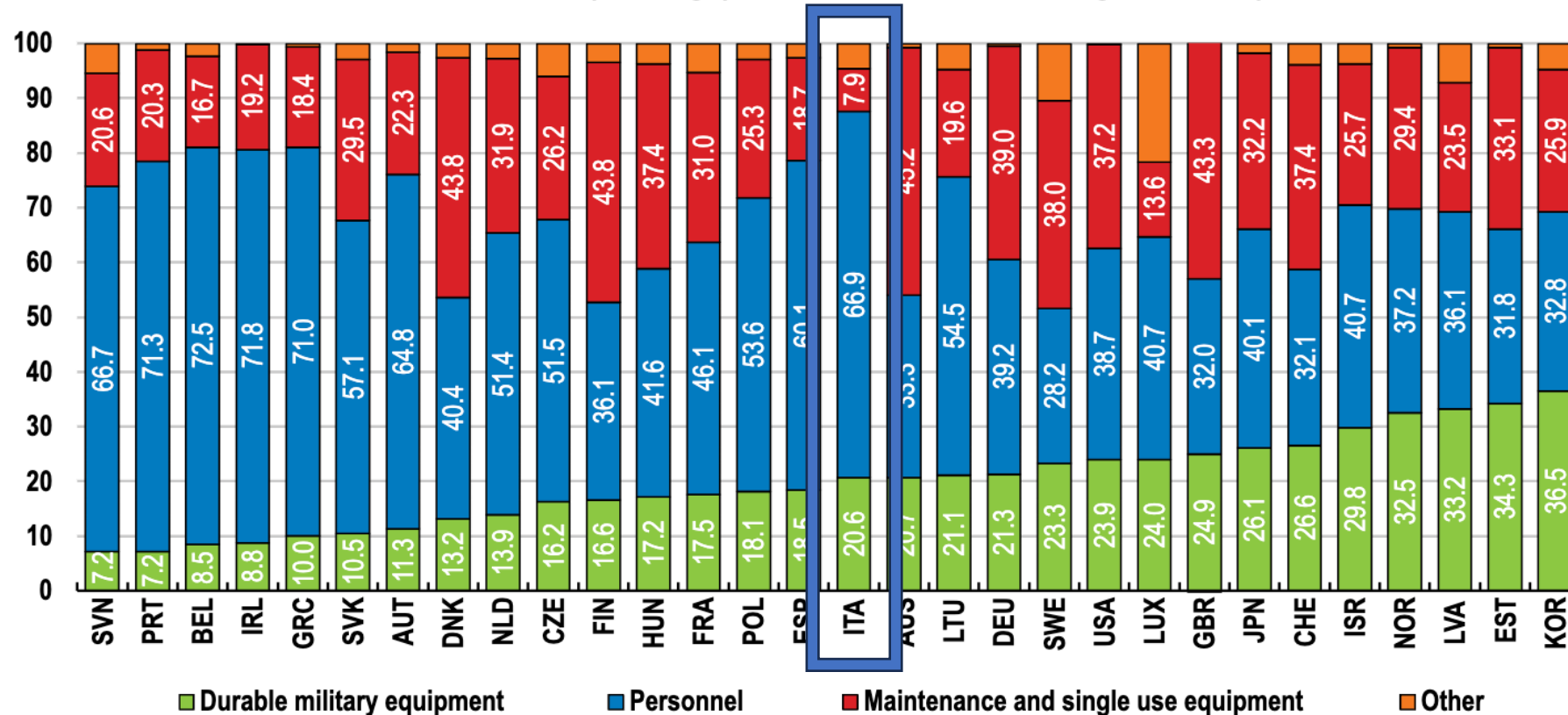
Al contrario, i due paesi OCSE del G20 in cui le spese militari in percentuale del PIL sono le più elevate, gli Stati Uniti e la Corea, attualmente non prevedono di aumentare ulteriormente tale quota. I paesi del G20 non appartenenti all'OCSE in generale non hanno aumentato la spesa per la difesa in percentuale del PIL nel recente passato (la Russia è un'eccezione), né hanno annunciato piani in tal senso nel medio termine.

(Fonte: OECD, Settembre 2023)

L'Italia ha la più bassa quota di spesa dei paesi OCSE da destinare all'equipaggiamento militare (7,9%)

Figure 15. The composition of defence spending differs substantially across countries

Shares in total defence spending, per cent, 2012-2021 average, current prices

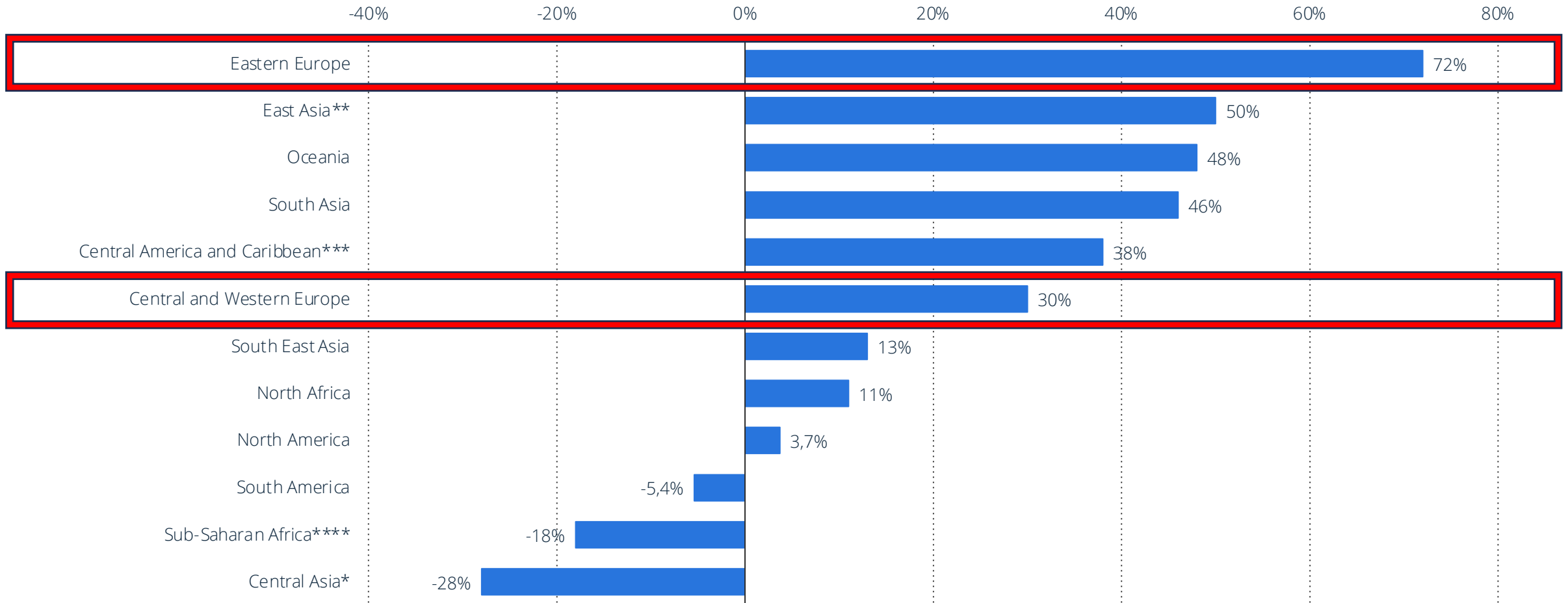


Note: Durable military equipment corresponds to gross fixed capital formation (GFCF), personnel to compensation of employees and maintenance and single-use equipment (such as ammunition) to intermediate consumption. Since GFCF is often volatile, a 10-year average is considered. Values for KOR correspond to the 2012-2020 average.

Source: OECD Classification of the Functions of Government (COFOG) database; and OECD calculations.

(Fonte: OECD, Settembre 2023)

Change in military expenditure 2013-2022, by region

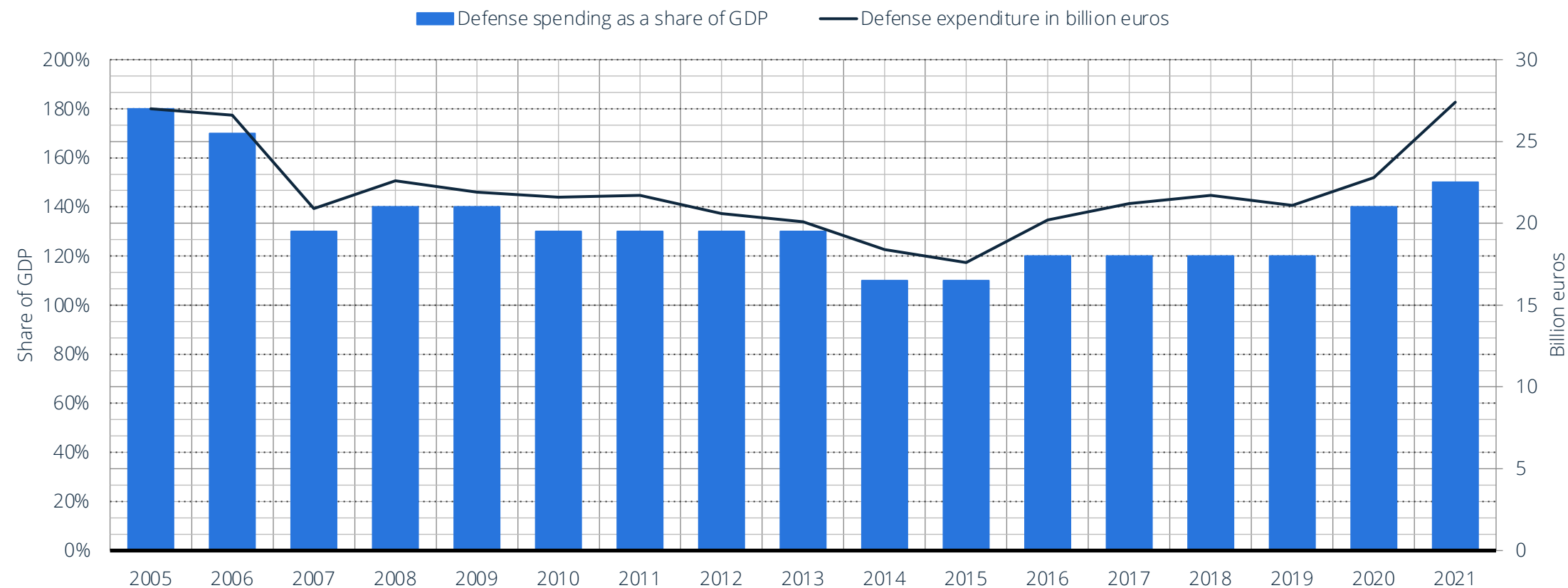


Note(s): Worldwide; 2013 to 2022

Further information regarding this statistic can be found on [page 8](#).

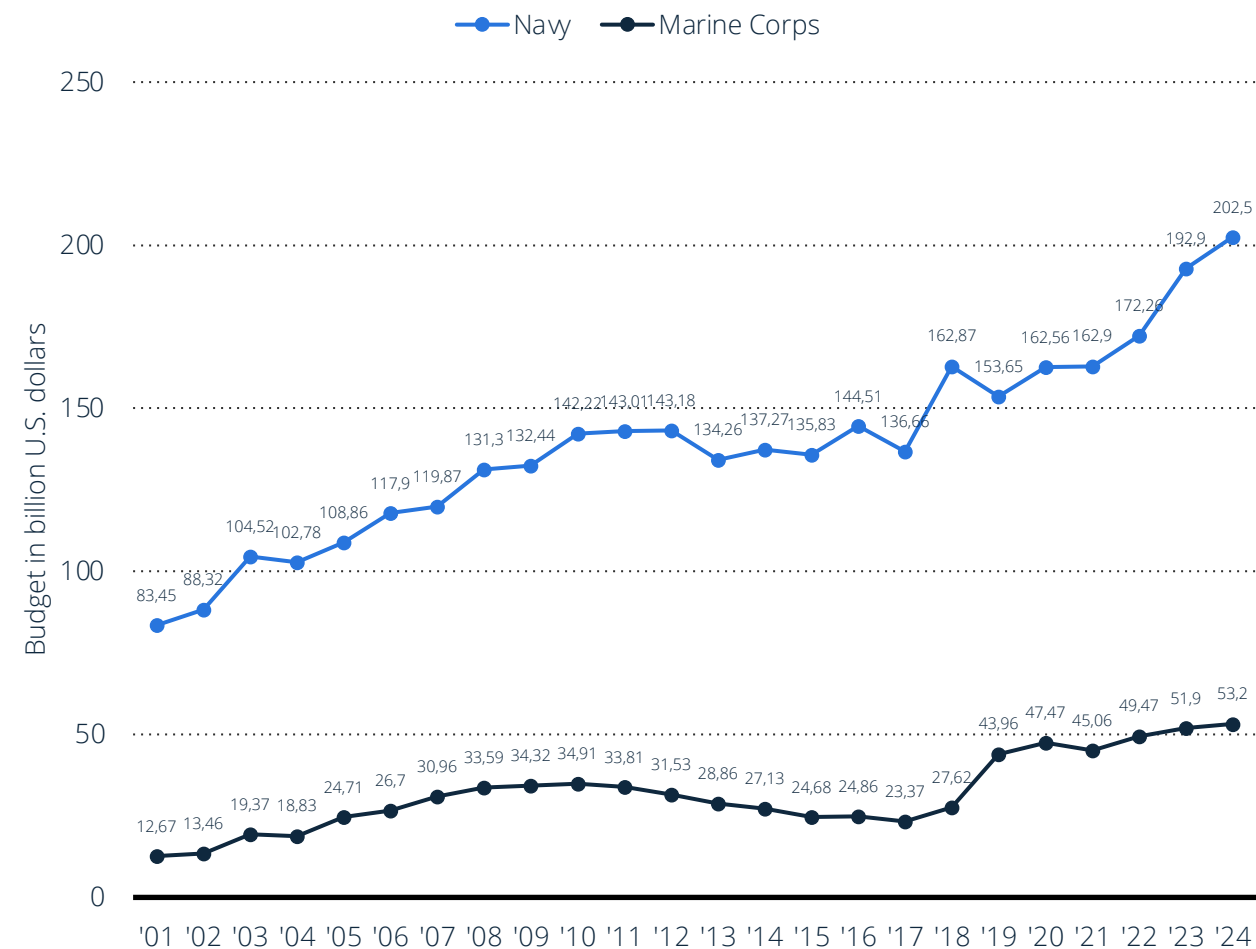
Source(s): SIPRI; [ID 272488](#)

Italian defense spending in absolute terms and share of GDP 2005-2021



Note(s): Italy; 2005 to 2021
Further information regarding this statistic can be found on [Page 4](#).
Source(s): European Defence Agency; [ID 1394459](#)

Budget of the U.S. Navy and the U.S. Marine Corps 2001-2024



Note(s): United States; fiscal years 2001 to 2024
Further information regarding this statistic can be found on [page 8](#).
Source(s): Department of the Navy; [ID 239290](#)

Che tipo di fornitori serviranno alla cantieristica civile, industriale e militare di domani?

1. ESG-bound

2. Data-driven

3. Service-oriented



**Nella nuova formula dell'innovazione nella cantieristica,
quattro più tre fa cinque...**

*Industria 5.0 =
4.0 + 3 (ESG)*



Rischio reputazionale e due diligence sulla supply chain: i nuovi passi della normativa in Europa e in Italia

di Nicoletta Grilli

3 aprile 2023

Servizio | **Manifatturiero**

Imprese, indotto della Germania in allarme sulle forniture green

Obblighi per la supply chain più stringenti su ambiente e condizioni di lavoro. Timori in Emilia-Romagna dove la Germania è il primo partner estero delle imprese

di Ilaria Vesentini

29 giugno 2023

Approvata dal Parlamento UE la direttiva Supply Chain Due Diligence: quali obblighi e impatti per le imprese industriali

The CSDDD will apply to:

- EU companies with more than 500 employees and a global turnover of €150 million+
- Non-EU companies that generated turnover of €150 million+ in the EU market
- EU companies with more than 250 employees and a global turnover of €40 million+, with 50% generated in a high risk sector
- Non-EU companies that generated turnover greater than €40 million in the EU market, with 50% generated in a high risk sector



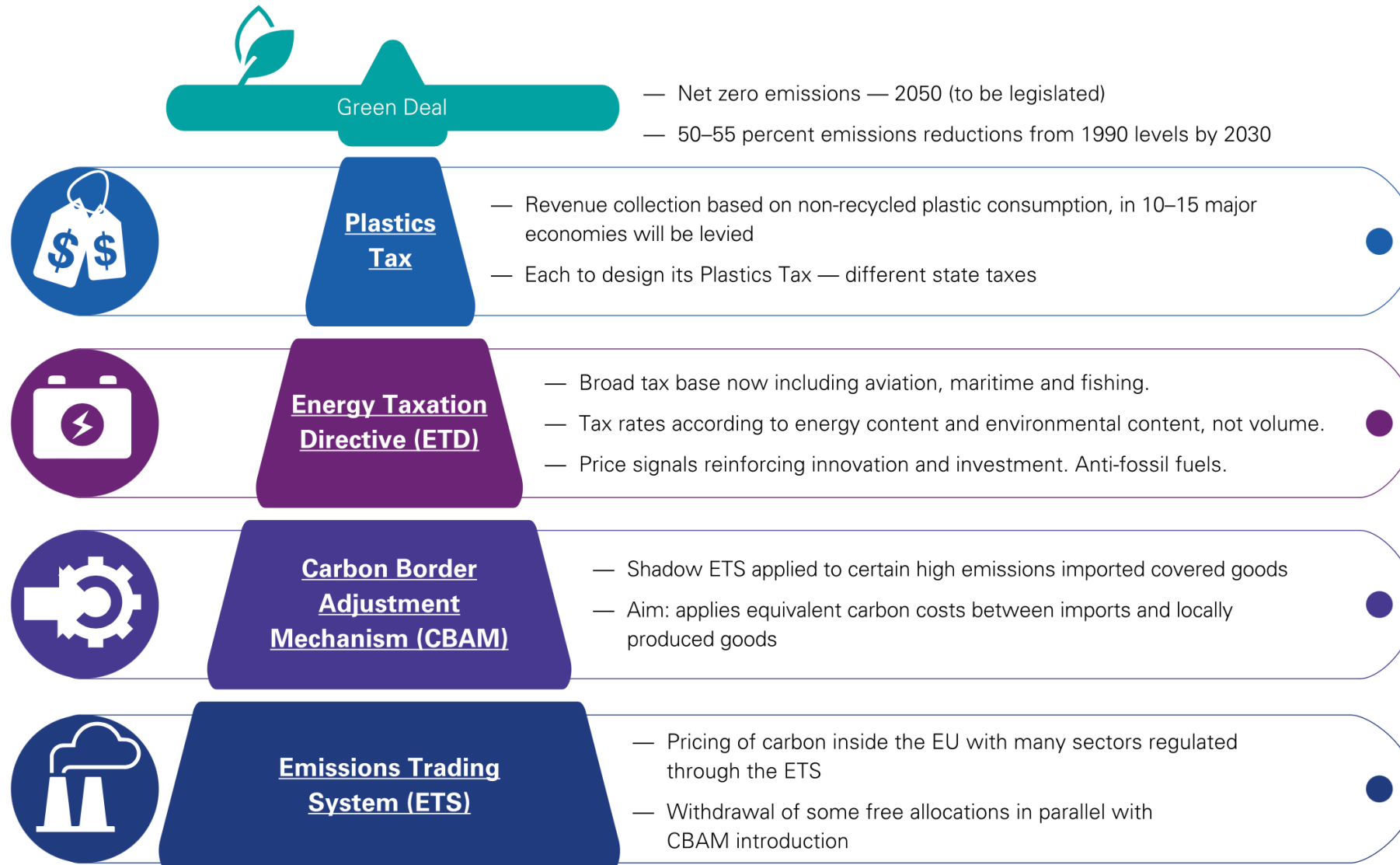
Chandler Thornton
Product Insights Lead, ELEVATE

Published: 2 June 2023

EU Parliament approves supply chain due diligence directive, kicking off a wake-up call for companies

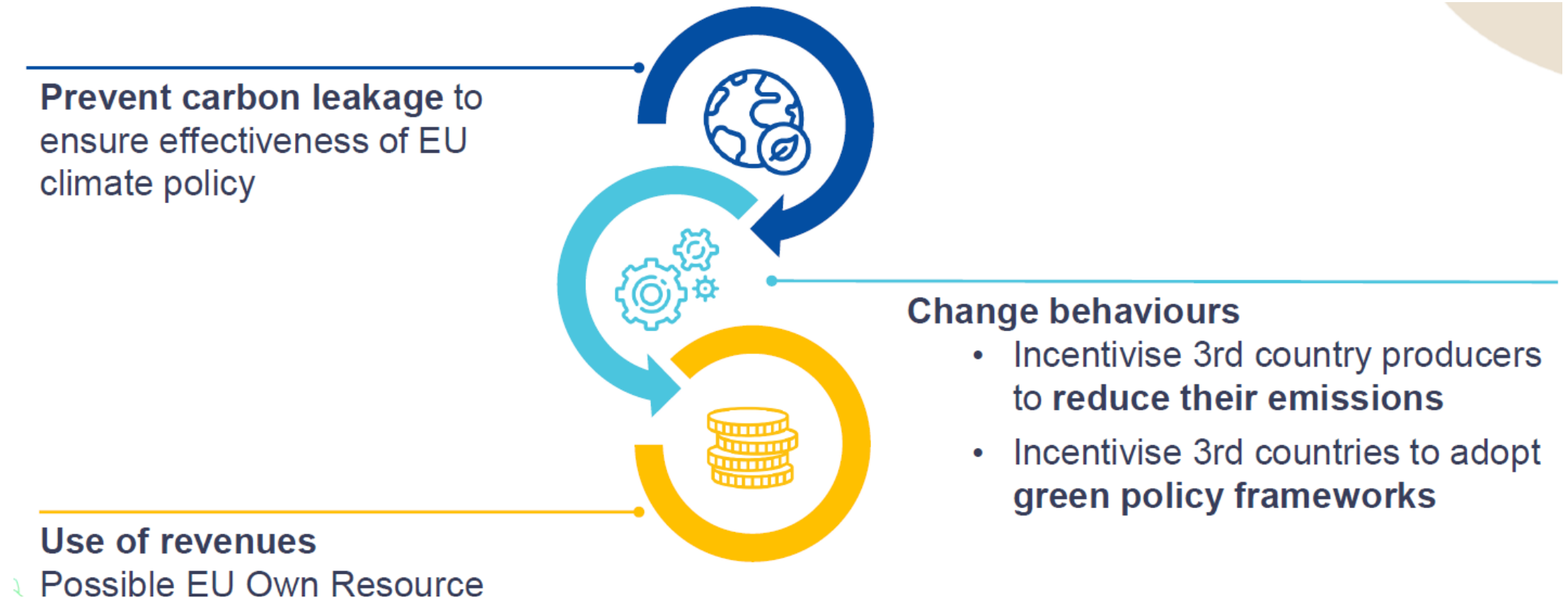
In a much-anticipated move since its draft proposal last year, the European Union Parliament approved the Corporate Sustainability Due Diligence Directive (CSDDD) on Thursday, which will require EU companies and those operating in the EU to implement more stringent due diligence. CSDDD is part of a string of recent EU legislation aimed at supply chains applying further due diligence, such as the deforestation regulation, conflict mineral regulation and the draft regulation prohibiting products made with forced labour.

Due cose sono certe nella vita: le tasse e le direttive europee su altre tasse. «Green», però.



Non chiamatelo “dazio”: si dice “adjustment”

Che cos'è il Carbon Border Adjustment Mechanism (CBAM)



**1 ottobre 2023: entra in vigore il CBAM,
ritorna un blando protezionismo, vestito di verde**

CARBON BORDER ADJUSTMENT MECHANISM



As the EU raises its own climate ambition, but less stringent environmental and climate policies prevail in non-EU countries, there is a strong risk of so-called 'carbon leakage', which can shift emissions outside of Europe and seriously undermine EU and global climate efforts.



Mettere il CO2 sotto il tappeto dei fornitori extra-UE? Non si potrà più, per molti settori

Carbon leakage occurs when industries transfer polluting production to other countries with less stringent climate policies, or when EU products are replaced by more carbon-intensive imports.

In its first phase, the CBAM will focus on goods most at risk of carbon leakage:



CEMENT



IRON & STEEL



ALUMINIUM



FERTILISER



HYDROGEN

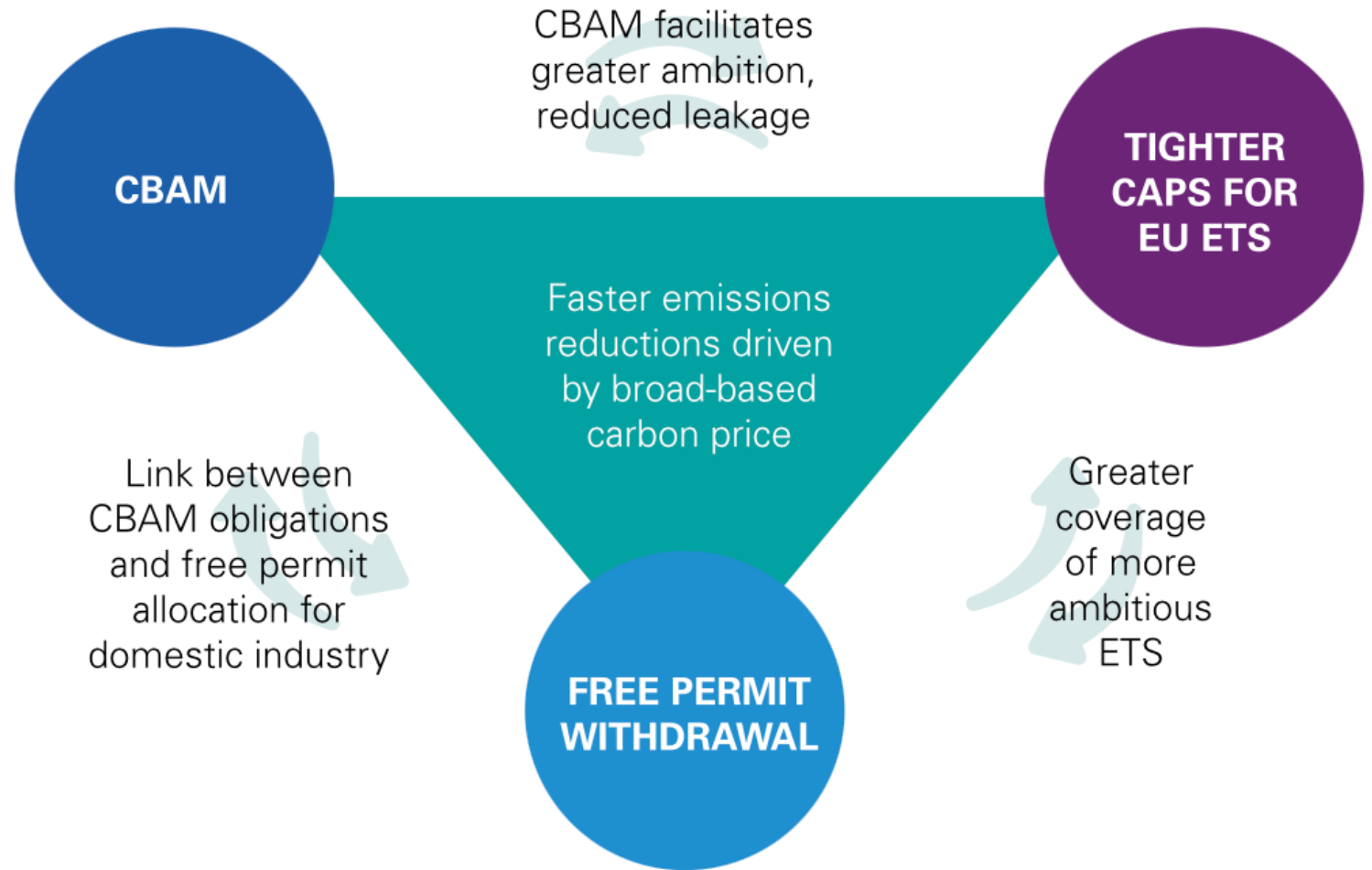


ELECTRICITY

I meccanismi di «carbon pricing» impatteranno pesantemente sui processi di molte filiere industriali

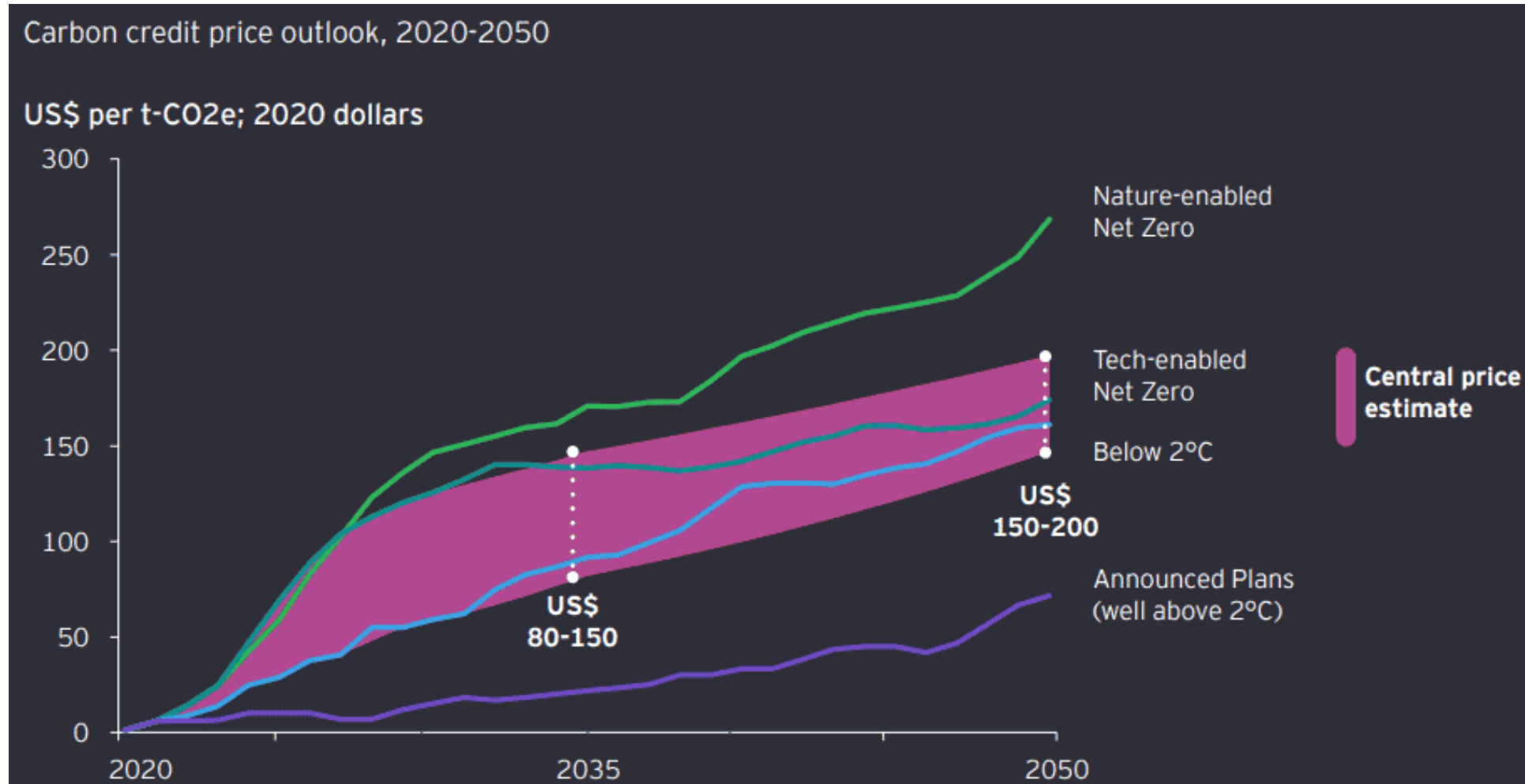
There are four key pillars to the reforms that represent a game changer for carbon pricing:

- A step change tightening of emissions cap under the EU ETS to align the ETS ambitions with the EU's carbon reduction targets.
- Expanding the sector coverage of the existing ETS to cover maritime transport, and introducing a separate but adjacent ETS covering buildings and road transport.
- The progressive withdrawal of free permits for emission-intensive trade-exposed (EITE) sectors under the EU ETS.
- The introduction of a CBAM, which establishes a 'shadow ETS' for certain goods being imported into the EU to avoid further carbon leakage from these more ambitious reforms.



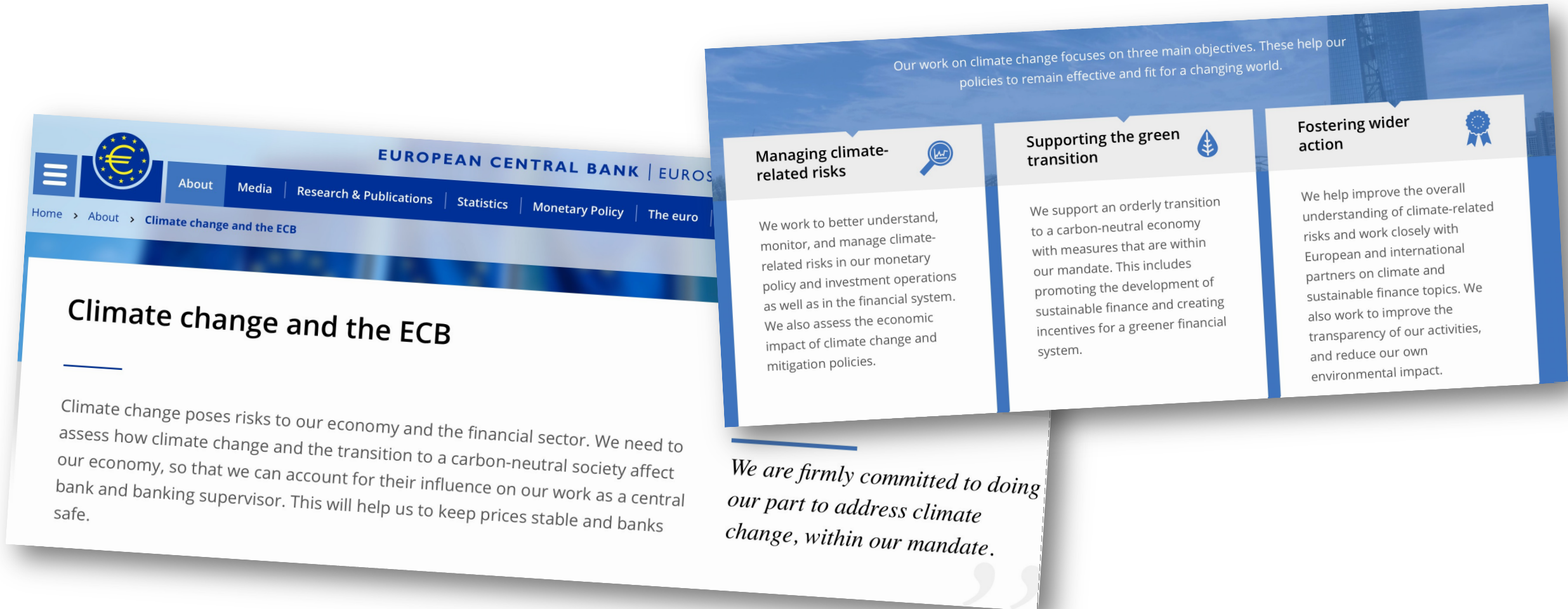
Il caldissimo prezzo dell'aria fresca

Carbon credit prices can skyrocket over the next 10-20 years



La moneta avrà un «carbon price»

First and alone, the ECB has included climate change targets in its monetary policy mandate



Le logiche di «Vendor Rating» dovranno includere i nuovi criteri ESG in logica Industry 5.0



La elettrificazione di ogni cosa: in cielo, in terra , in mare

2050 energy flows

Consumer Transformation

System Transformation

Leading the Way

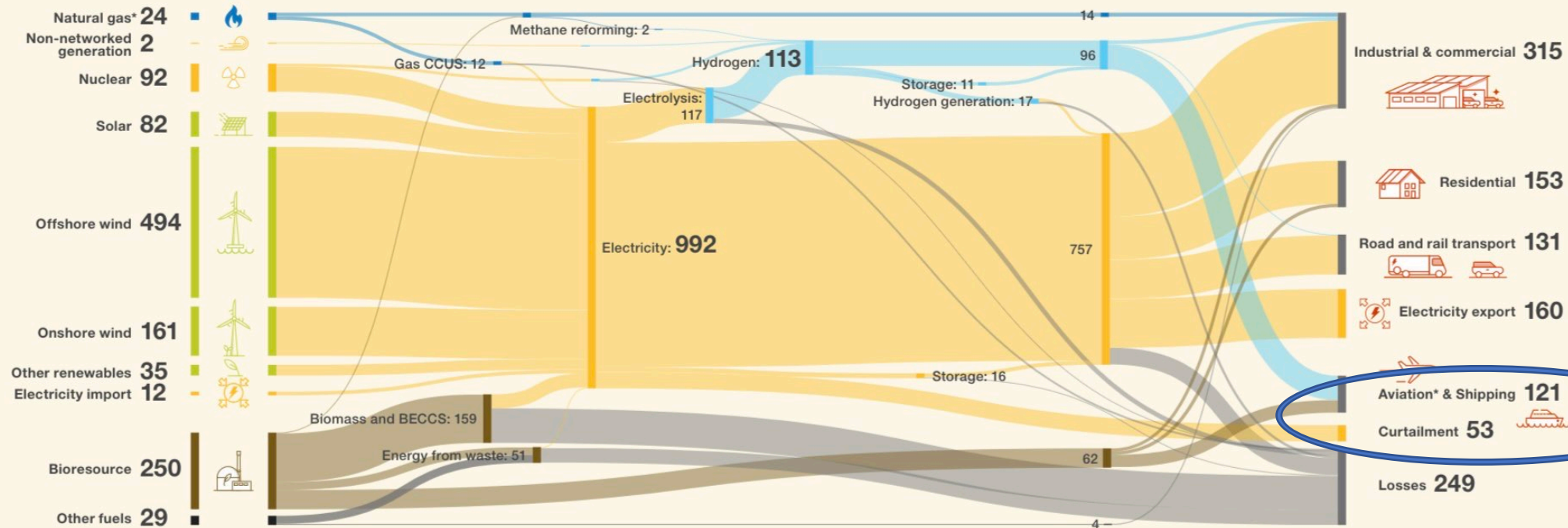
Falling Short

Consumer Transformation (1182 TWh)

- Home heating, transport and industry largely electrified
- High levels of energy efficiency combined with large-scale electrification lead to lowest end user energy demands across the scenarios
- Electricity generation capacity and output is highest in this scenario to meet high annual electricity demands
- High levels of renewable generation with low hydrogen production leads to highest levels of electricity curtailment across the scenarios



Hover over the scenario you wish to view.



*excluding exports

*Aviation excludes some demand met by petroleum products

Che tipo di fornitori serviranno alla cantieristica civile, industriale e militare di domani?

1. ESG-bound

2. Data-driven

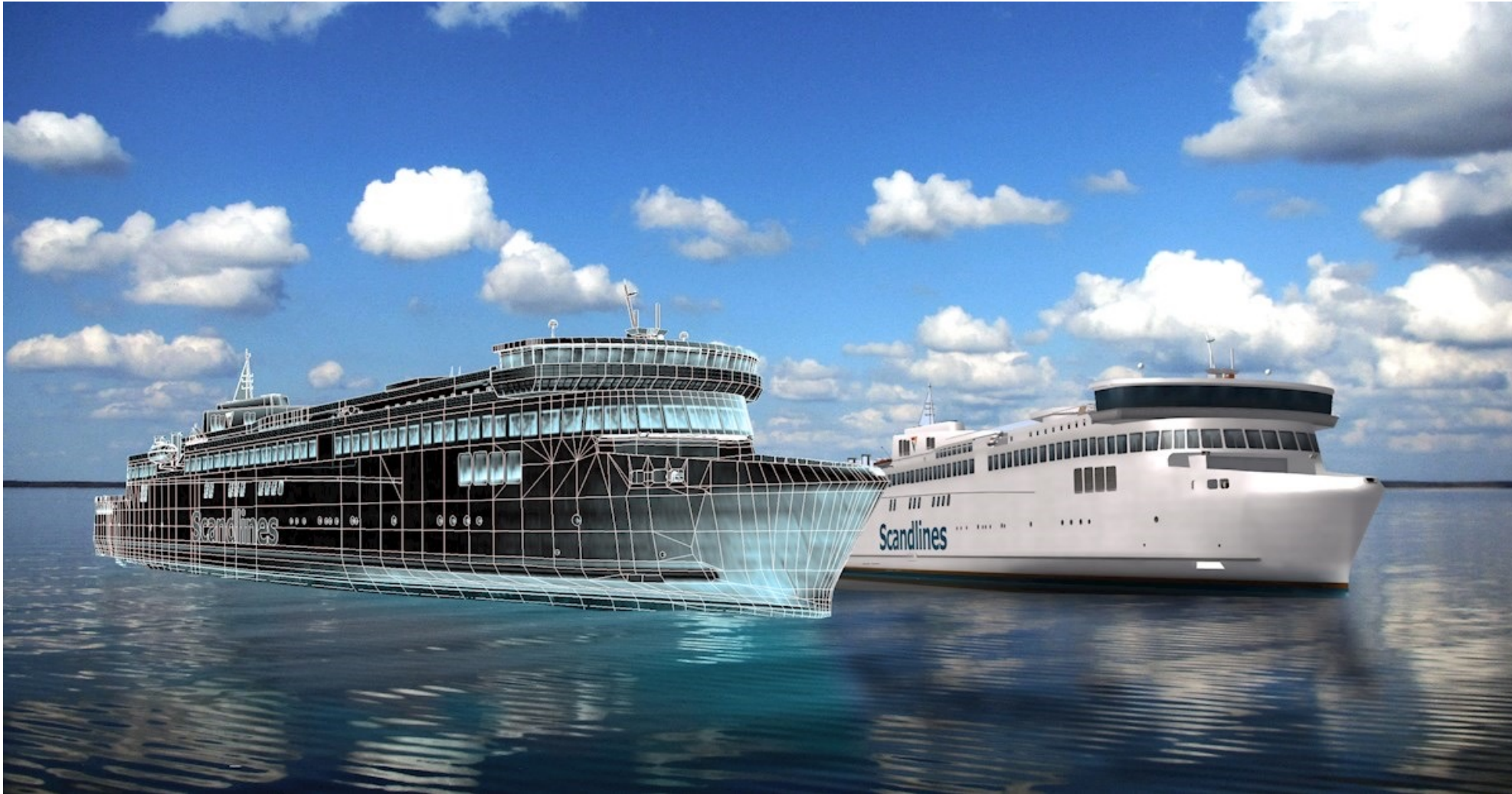
3. Service-oriented



Ogni kg di ferro avrà bisogno di un terabyte di dati

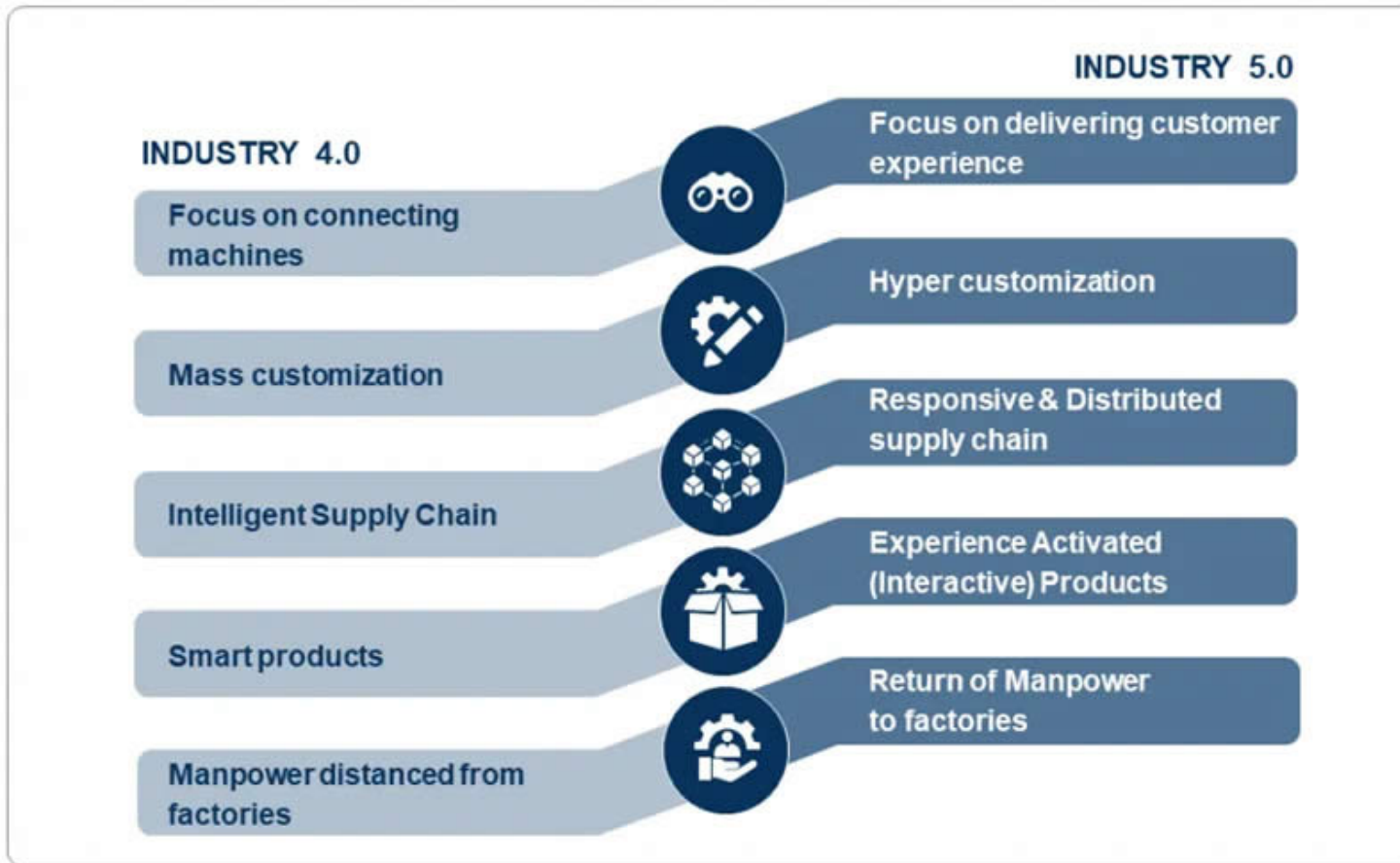


Digital Twin: uno va all'armatore, l'altro resta a disposizione della filiera. Ma rimangono legati per tutta la vita.



Verso Industry 5.0: la digitalizzazione end-to-end dei processi manifatturieri diventa sostenibile, inclusiva e resiliente

Highlights of Industry 5.0 compared to Industry 4.0



INDUSTRY 5.0



Human-
centric



Sustainable



Resilient

Interreg
Europe



Co-funded by
the European Union

Industry 5.0: From theory to practice

I troppi “silos” dell’Europa digitale

Frammentazione e incomunicabilità dei dati e delle infrastrutture



Data

Untapped, fragmented, disjoint,
no secure exchange mechanism

Data Ecosystem



Health



Industrial



Mobility



Public



Media



Agriculture



Culture



Green



Security



infrastructures

Segregated, non-reversible, non-interoperable,
closed architectures, private standards

Network/
Interconn.
Providers

CSP
(e.g. Regional,
specialized,
Hyperscalers)

HPC
(e.g. research...)

Sector specific
clouds

EDGE

Infrastructure Ecosystem



L'Europa Digitale evolve verso un modello distribuito e federato, fatto di “data spaces” e di infrastrutture interconnesse e interoperabili



Advanced Smart Services

(Cross-) Sector Innovations/ Market places/ Applications



Data Spaces

Interoperable & portable (Cross-) Sector data-sets and services



Gaia-X Services

Decentralized Services to verify trust, sovereign data exchange, and federation across nodes



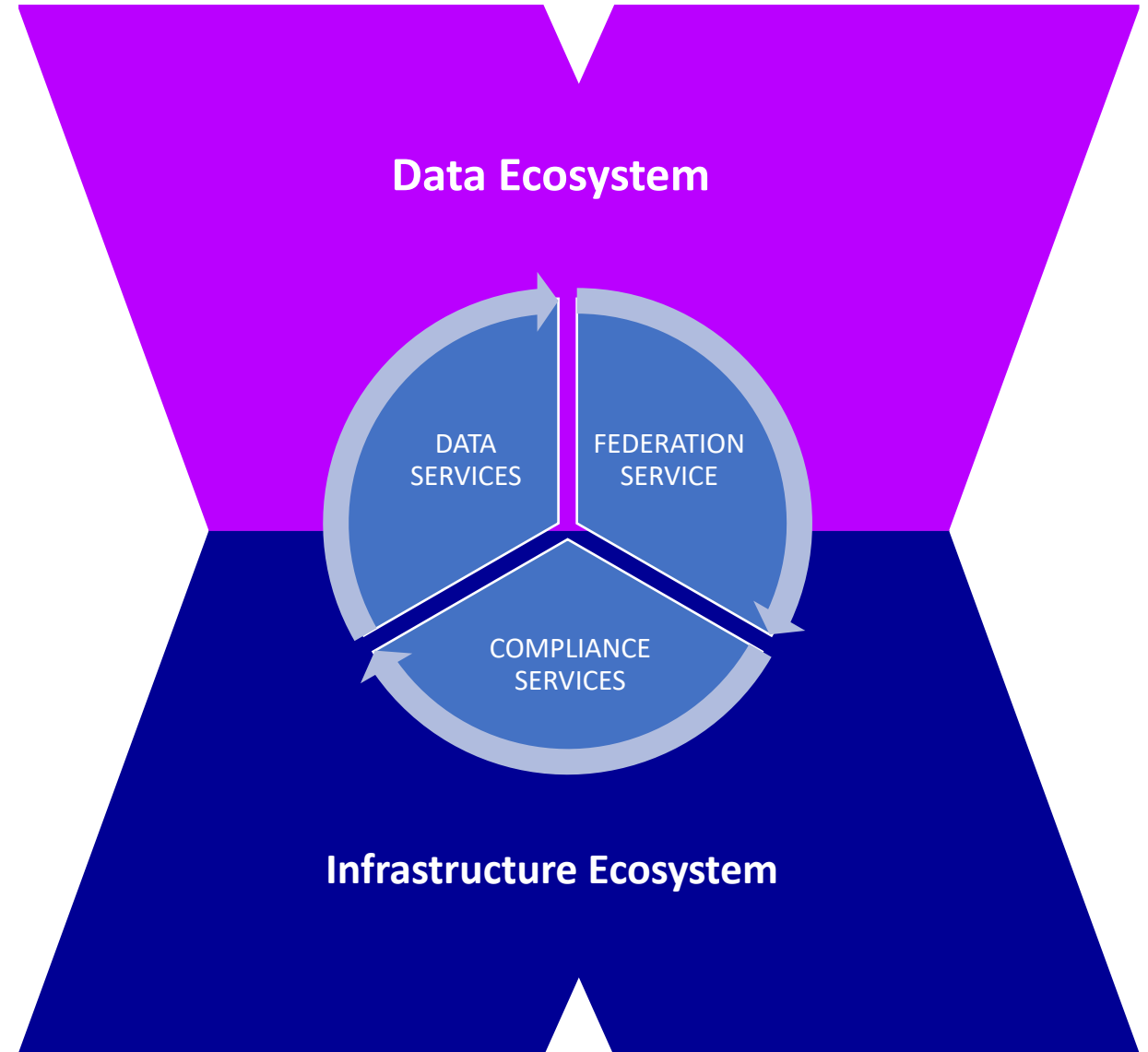
Portability, Interoperability & interconnectivity

Technical: Architecture and Specifications
Commercial: Policies and Labels



Compliance

Legal: Regulations



“Data Spaces” dei settori industriali europei nel consorzio Gaia-X



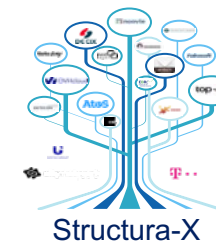
<https://catena-x.net/en/>

Automotive Supply Chain



<https://agdatahub.eu/en/>

Agriculture



<https://bit.ly/3aJYgZL>

Manufacturing, Industry 4.0



<https://smart-connected.nl/en>

Electronics Supply Chain



<https://euprogigant.com/en/>

Manufacturing, Industry 4.0



<https://mobility-dataspace.eu/>

Mobility

Quale ruolo di leadership può giocare la filiera Fincantieri nel quadro della European Technology Platform «Waterborne»?

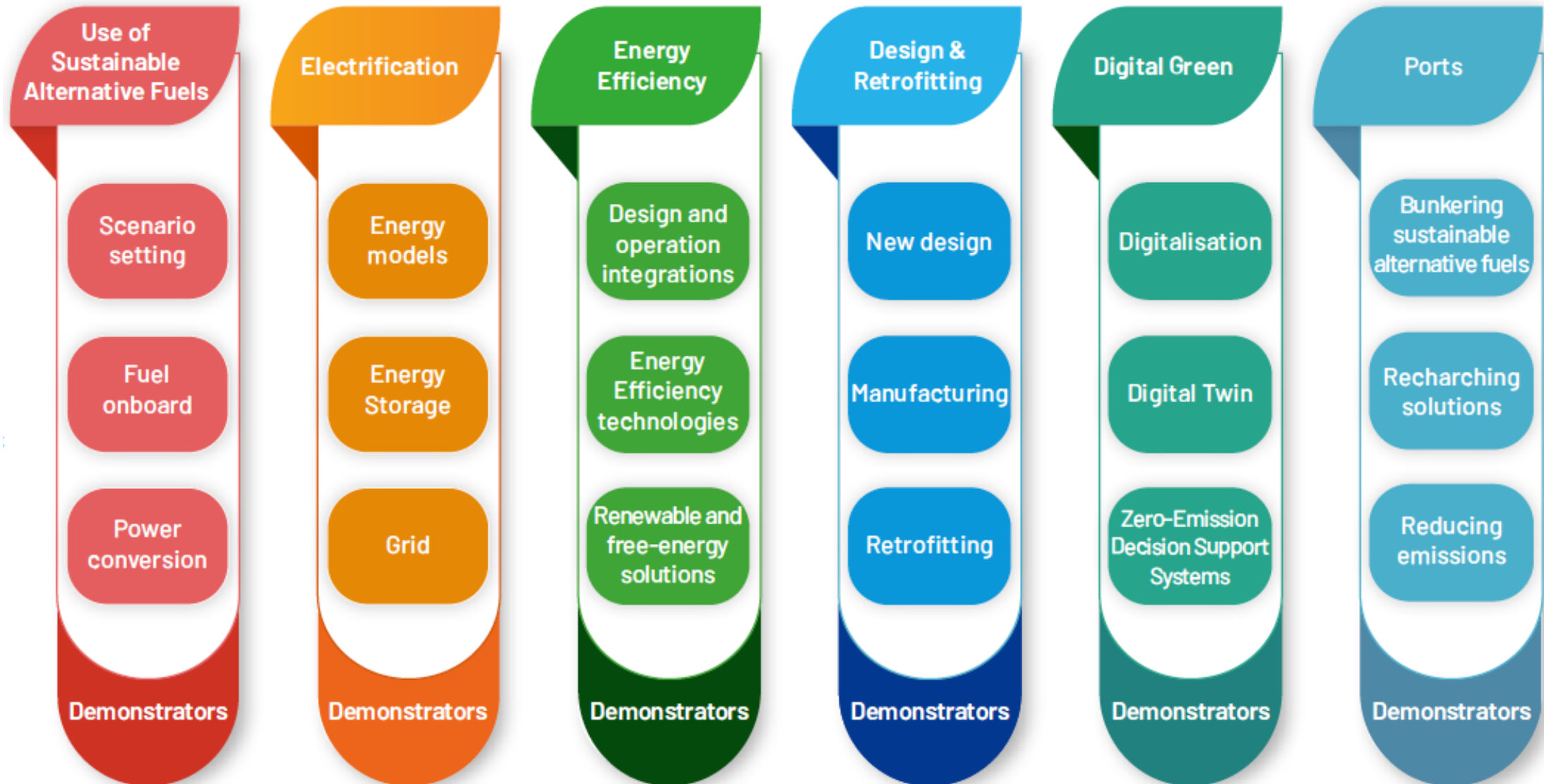


DRAFT VERSION
STRATEGIC RESEARCH
AND INNOVATION AGENDA
FOR THE PARTNERSHIP ON
**ZERO-EMISSION
WATERBORNE
TRANSPORT**

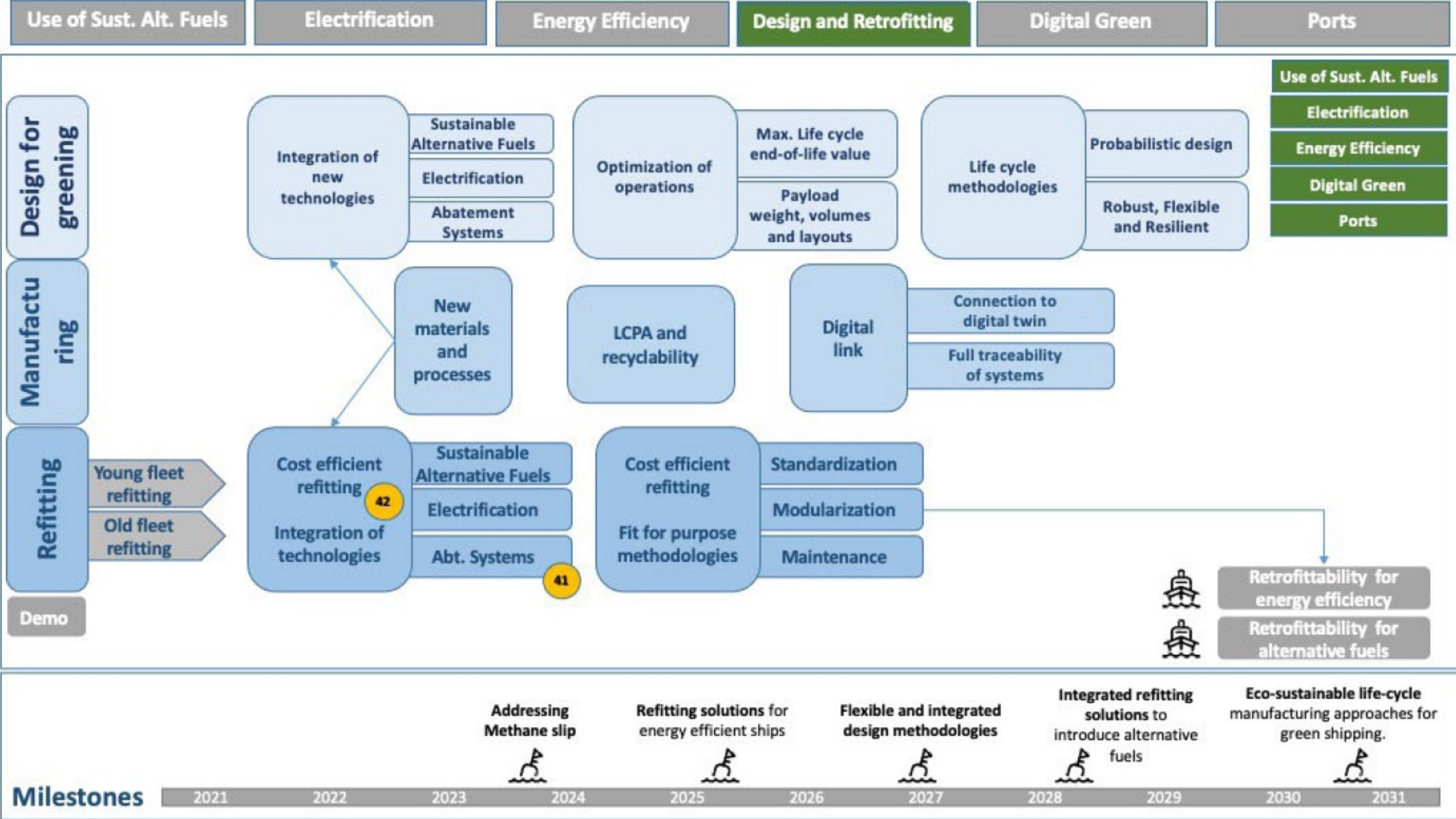


Marine SRIA: strategic research and innovation agenda

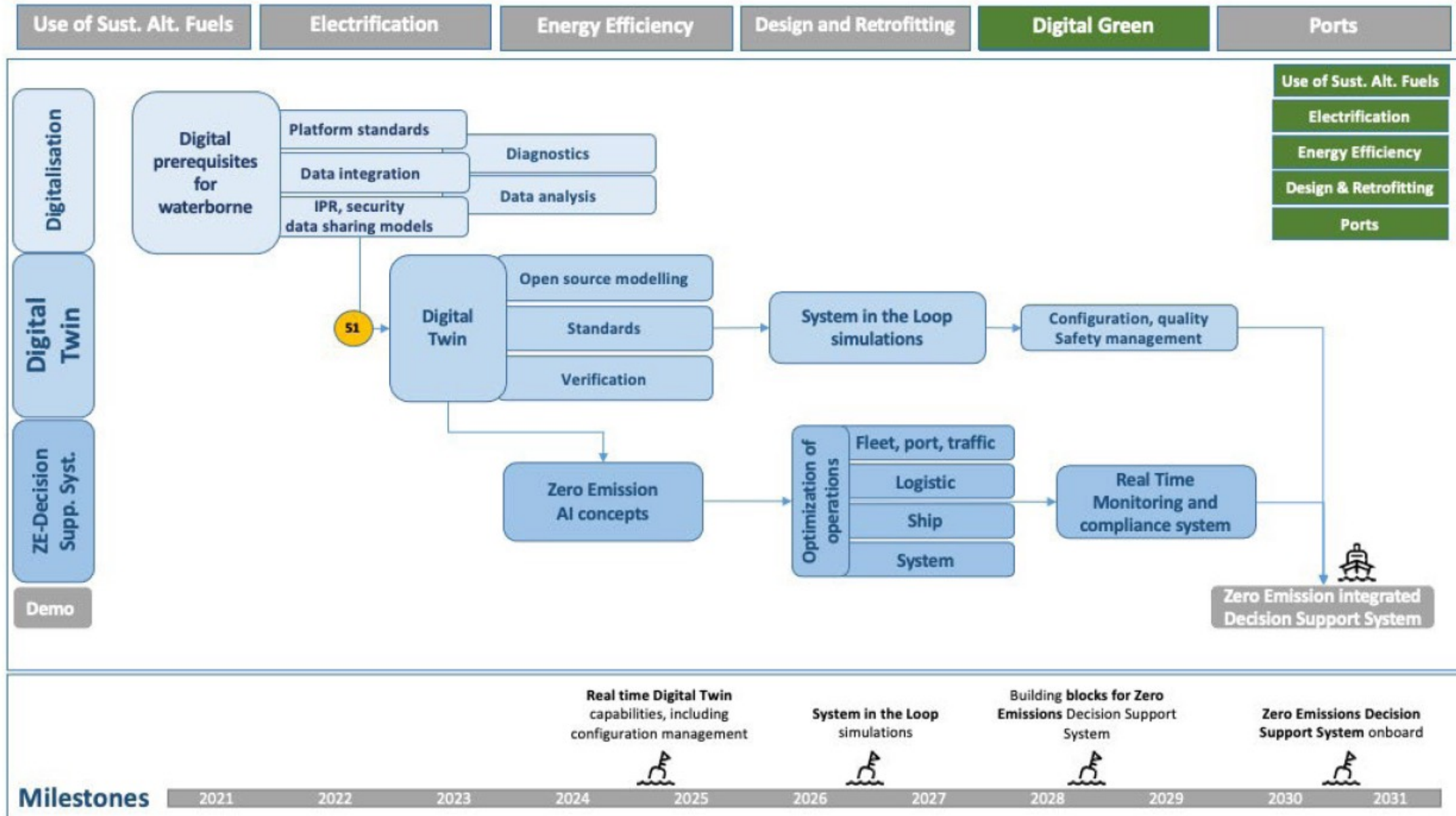
Gli impatti sulla filiera di Fincantieri



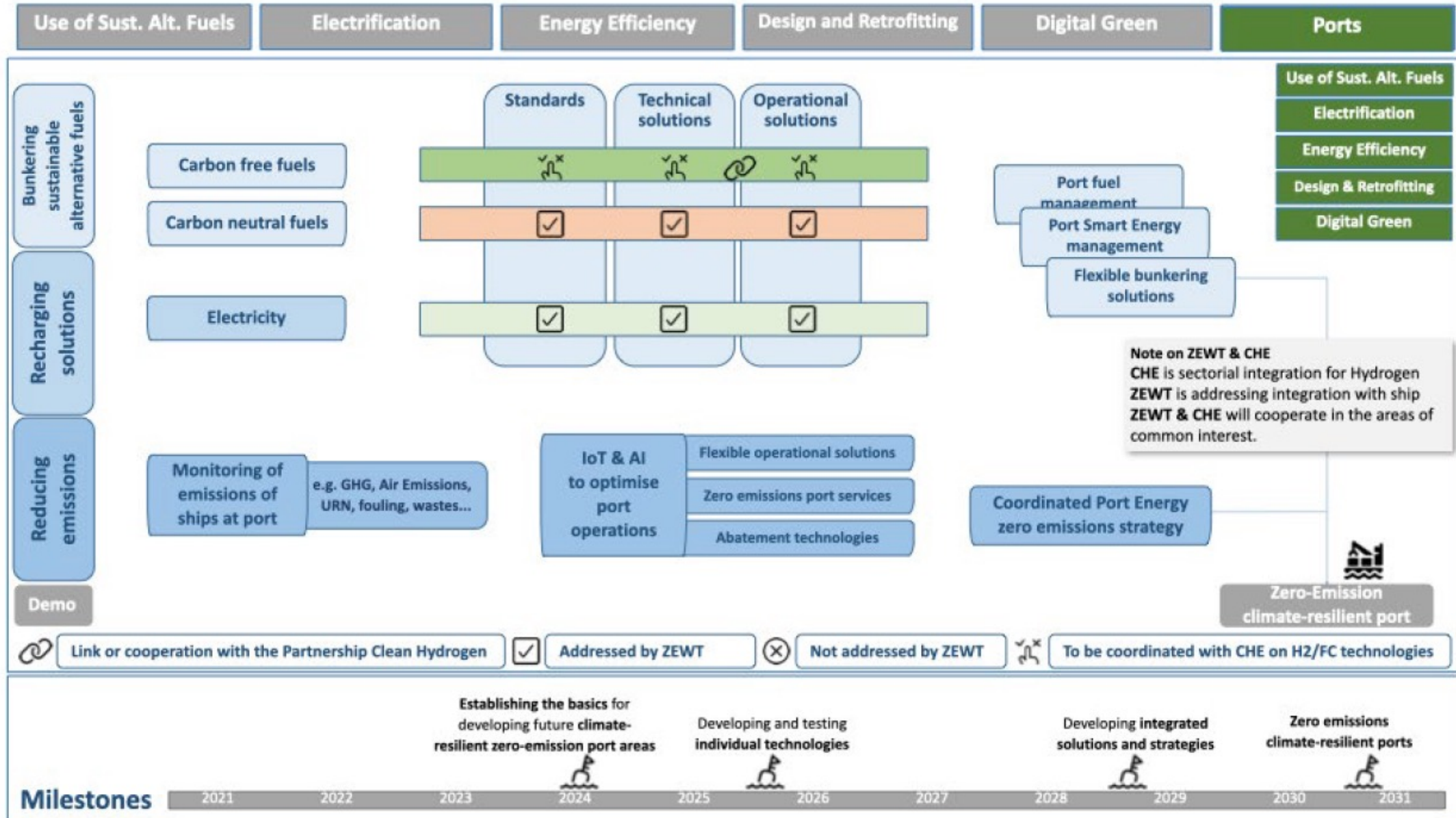
Design & retrofitting



Digital Green & Digital Twin



Porti & Infrastruttura



Che tipo di fornitori serviranno alla cantieristica civile, industriale e militare di domani?

1. Data-driven
2. ESG-bound
3. Service-oriented



A young girl with light brown hair and blue eyes is wearing a bright yellow raincoat with a hood. She has a serious expression and is looking directly at the camera. The background is a blurred outdoor setting with a grey wall and some graffiti. On the left side of the image, there is a small red horizontal line at the top and a white horizontal line below it.

Lo tsunami ESG sta arrivando.

Stop selling. Start «servitizing».

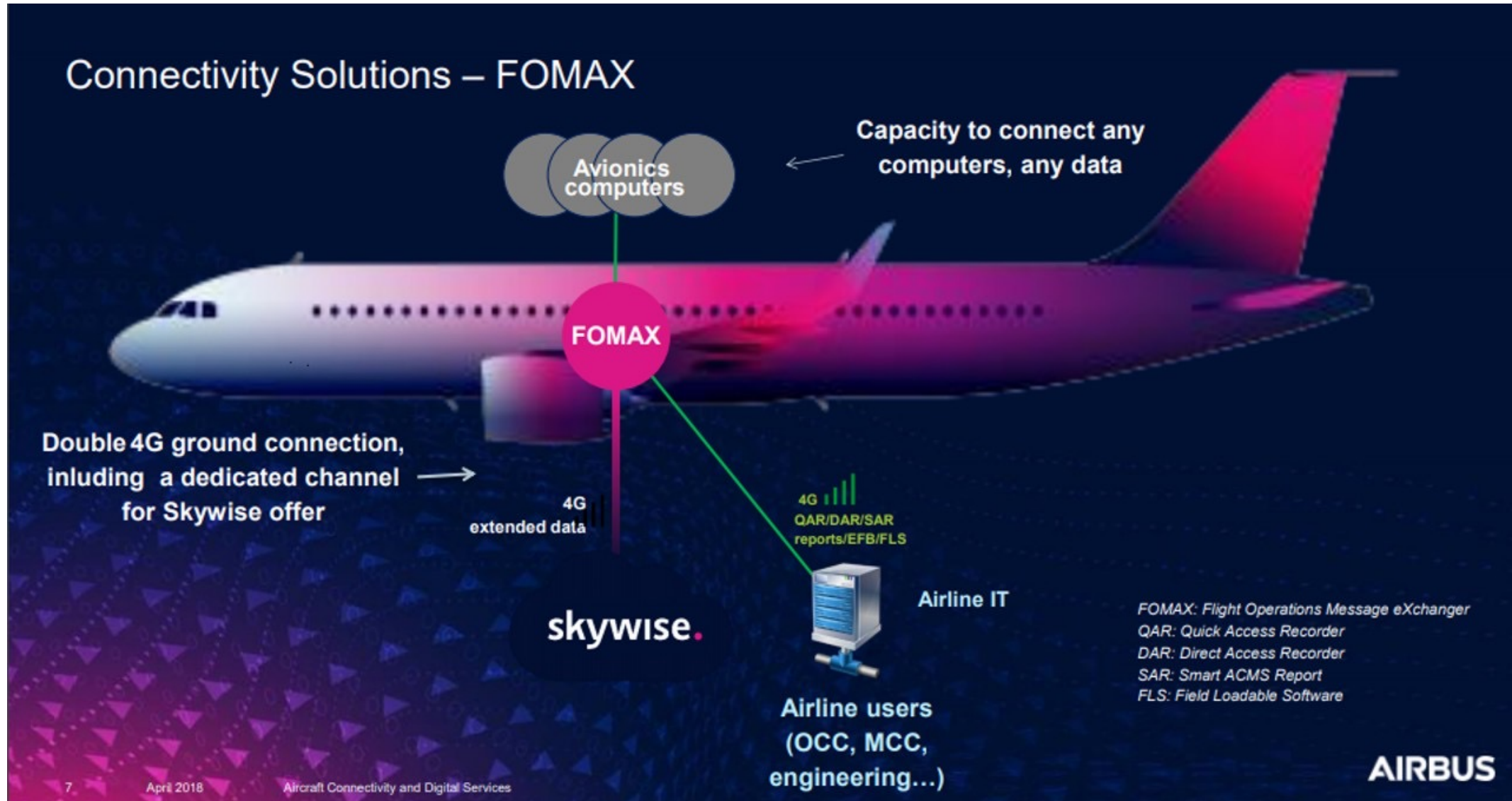
“Everything-as-a-service”



A hand-drawn illustration featuring the word "Servitization" in a large, bold, sans-serif font. The letters are filled with a diagonal hatching pattern. Above the word, there are seven hand-drawn question marks of varying sizes, arranged in a slightly curved line. The background is a light blue gradient.

"The process through which (originally) product focussed companies change their strategies and value proposition to services." - Baines and Lightfoot, 2013

Airbus's FOMAX is capable to record and transmit up to 24000 parameters (30GB information per flight) from A320 aircraft



Airbus's SKYWISE open data platform provides access to sensors, manufacturing, operational and maintenance data

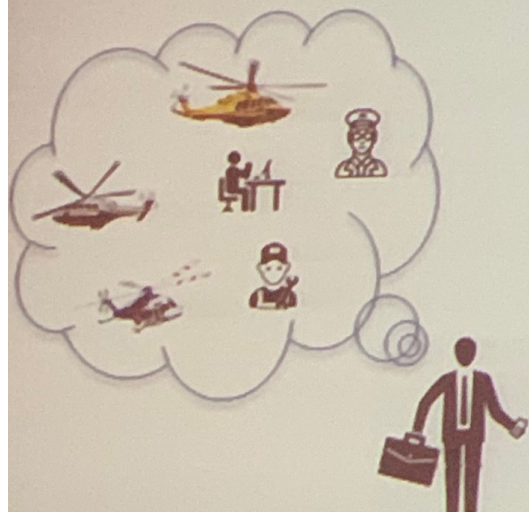
Data platform that provides the airlines access to a data lake containing different scopes of data related to the aircraft coupled with advanced analytics will enable them to monitor their fleet's performance, trends, alerts and build their own health monitoring KPI's to perform predictive maintenance activities.

The Maintenance Operations Control (MOC) center monitors the data continuously to predict the maintenance requirements thus eliminating the unplanned downtime and achieving maximum serviceable life of the component.

Airbus has introduced their open data platform "Skywise". Skywise provides its subscribers access to the sensor data, manufacturing data, operational and maintenance data of the aircraft. Using its analytical and report generation tools, the airlines can monitor and predict the maintenance requirements before any unplanned failure occurs.

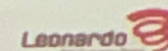
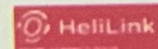
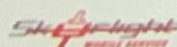


CUSTOMER NEEDS VS LEONARDO ADVANCED SERVICES



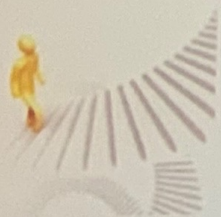
CUSTOMER OPERATIONAL VALUE CHAIN

Crew Rostering	Mission Planning & Flight Prep	Electronic Flight Bag	Monitor Helicopter Data Health	Update Maintenance Record	Troubleshooting	E-Commerce Parts ordering	Ensure Personnel qualification & readiness
Flight and Duty Times Management	Feasibility - Re-plan	Manuals/Log Flight data	In flight Data Transmission	Reliability & Predictive Maintenance *	Investigation support and analysis	Stock Management	Predictive Training
	Updated Mission	Debriefing					



...	Skyflight	Skyflight	Heliwise & RT HUMS	RFID & Digital Equip. List	Heli-link & Virtual PSE	Leonardo Portal	AW Training & Capture IT
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SUPPORT PLATFORM & SECURE INFRASTRUCTURE



Telematics integration	Data Lake & analytics*	Knowledge base content platform	AI & intelligent engine			
B2B ICT connectors	...	SAP	IETP	HFP	...	HFP

* Linked with Initiative Leonardo 4.0 through the coordination of the Corporate Dept. "Innovation and Technology Governance"

Servitization on the land: Caterpillar & John Deere

Servitization in Action: Caterpillar



Caterpillar's machines are often integral to their user's operations; downtime can mean inconvenience and financial losses. Services provided through its renowned dealer network



Our Services Growth Opportunity

Services growth is a core focus of our strategy. We have an aspirational goal of growing Energy and Transportation (ME&T) services revenues to \$28 billion by 2026.

Our services set us apart from the competition by allowing us to provide unique insights and customer-focused solutions throughout the lifecycle of our products. With about one million connected assets, outstanding field technology, and decades of product, service and application expertise, we can transform traditional offerings into services that make our customers more successful.



Double to \$28B by 2026

Year	Revenue (\$B)
2016 Baseline	~\$14B
2020 Actual	~\$16B
2026 Target	~\$28B

Note: ME&T Services Revenues include, but are not limited to, aftermarket parts and other service-related revenues and exclude most Financial Products' revenues, discontinued products and captive dealer services.

Service ADVISOR 5.2 Offline



JOHN DEERE CF AG

SERVITIZATION CASE STUDY

ALSTOM TRANSPORT



ALSTOM'S SERVICES OFFERINGS



MAINTENANCE

Maintenance services utilise Alstom's expertise in supply chain and industrial organization and its system engineering competency to provide train availability. Services range from accident repair, technical support and spare parts agreements to fully-outsourced maintenance whereby Alstom takes all responsibility for technical risk, allowing the operator to concentrate on their own core business



SUPPORT

The competencies that Alstom has developed in order to deliver outsourced maintenance are also available as support services to operators. These services include training, e-documentation, obsolescence management, asset management, depot design, recycling and integrated fleet support



MODERNISATION

These services address some of the customer's key concerns about future proofing, competitiveness and business sustainability. They support the customer with life time extension, energy consumption and comfort. Services are designed around: energy saving, diesel upgrades, hybrid trains, signaling, passenger experience and accessibility



PARTS AND REPAIRS

Alstom provides day-to-day support and technical assistance for operators who carry out their own maintenance. Services help customers with: spare parts, repairs, availability, overhaul and test benches

Progettare gemelli digitali suddivisi su tre strati

L'approccio del Virtual Twin si basa su tre layer

- il layer di **Sustainable Engineering**, che definisce il ciclo di vita di un Virtual Twin di prodotto
- Il layer di **Service Design**, che incorpora le metriche ESG per massimizzare il valore netto sistemico lungo l'intero ciclo di vita dell'asset.
- Il layer di **Asset Management**, collegato alle dinamiche finanziarie e di net present value

Layer economico-finanziario

Asset Management

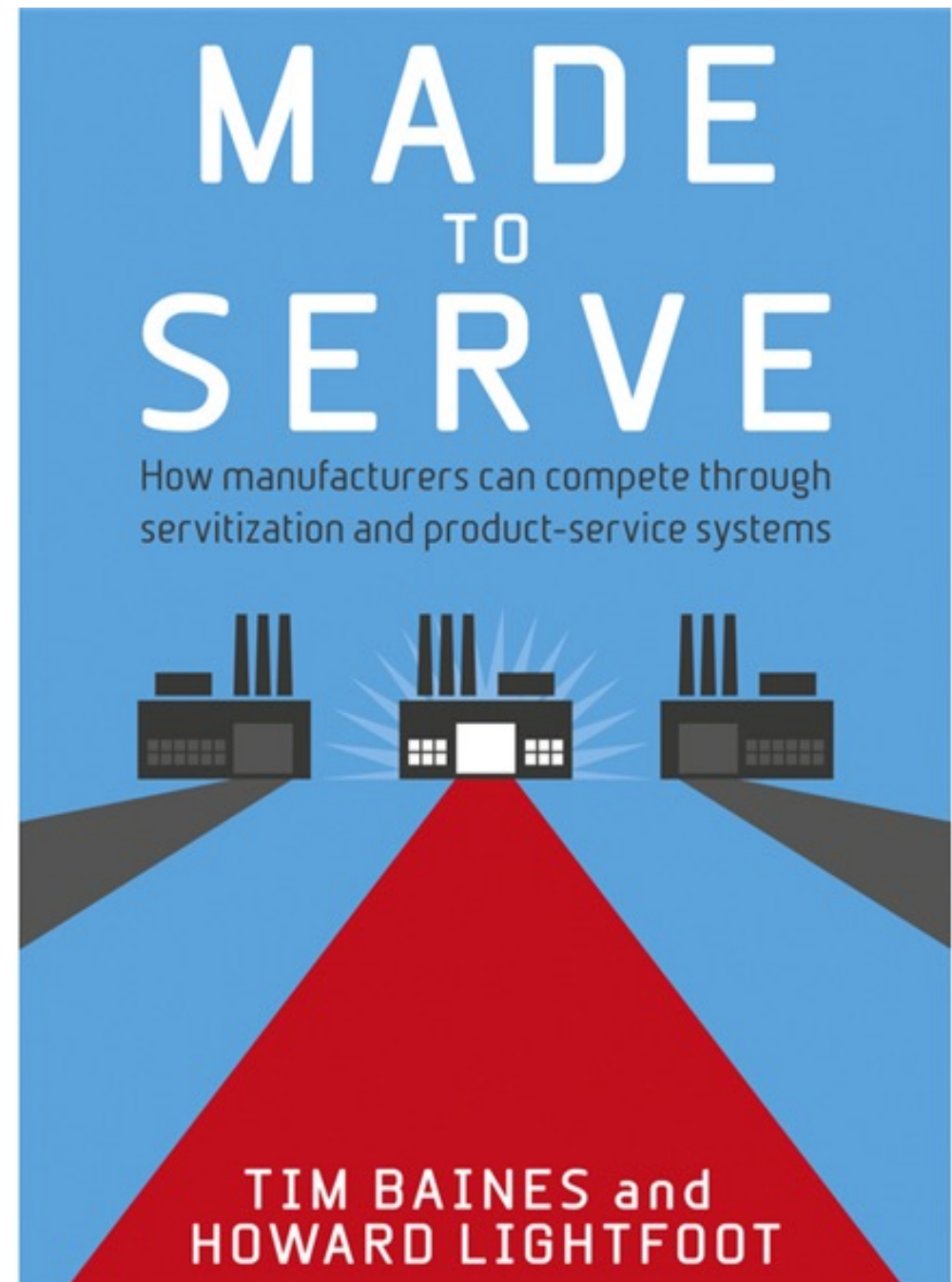
Layer Organizzativo

Service Design

Layer Tecnologico

Sustainable Engineering

«Design to Serve»



Qualità di prodotto vs qualità di processo

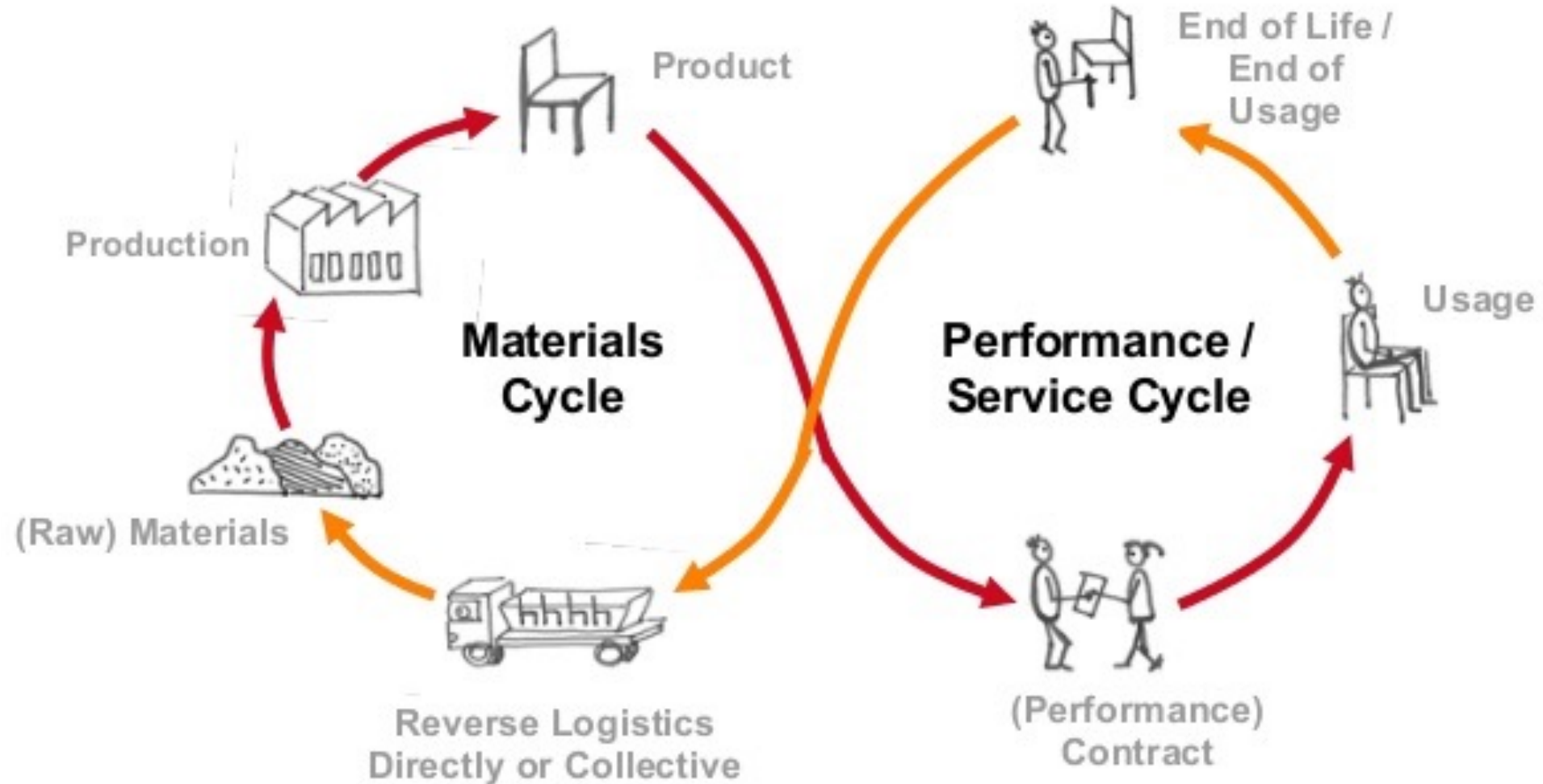
*Nel nuovo contesto
regolatorio e tecnologico,
si vende il processo e
non solo il prodotto*

Process

VS

Product

La sostenibilità è un cerchio doppio



«Capitano, risalga a bordo, c...(aspita)!»

- Il nuovo ruolo della filiera cantieristica è affiancare costruttore e armatore nella gestione dell'intero ciclo di vita della nave e delle sue componenti, dalla progettazione al decommissioning.



L'incrocio delle nuove rotte

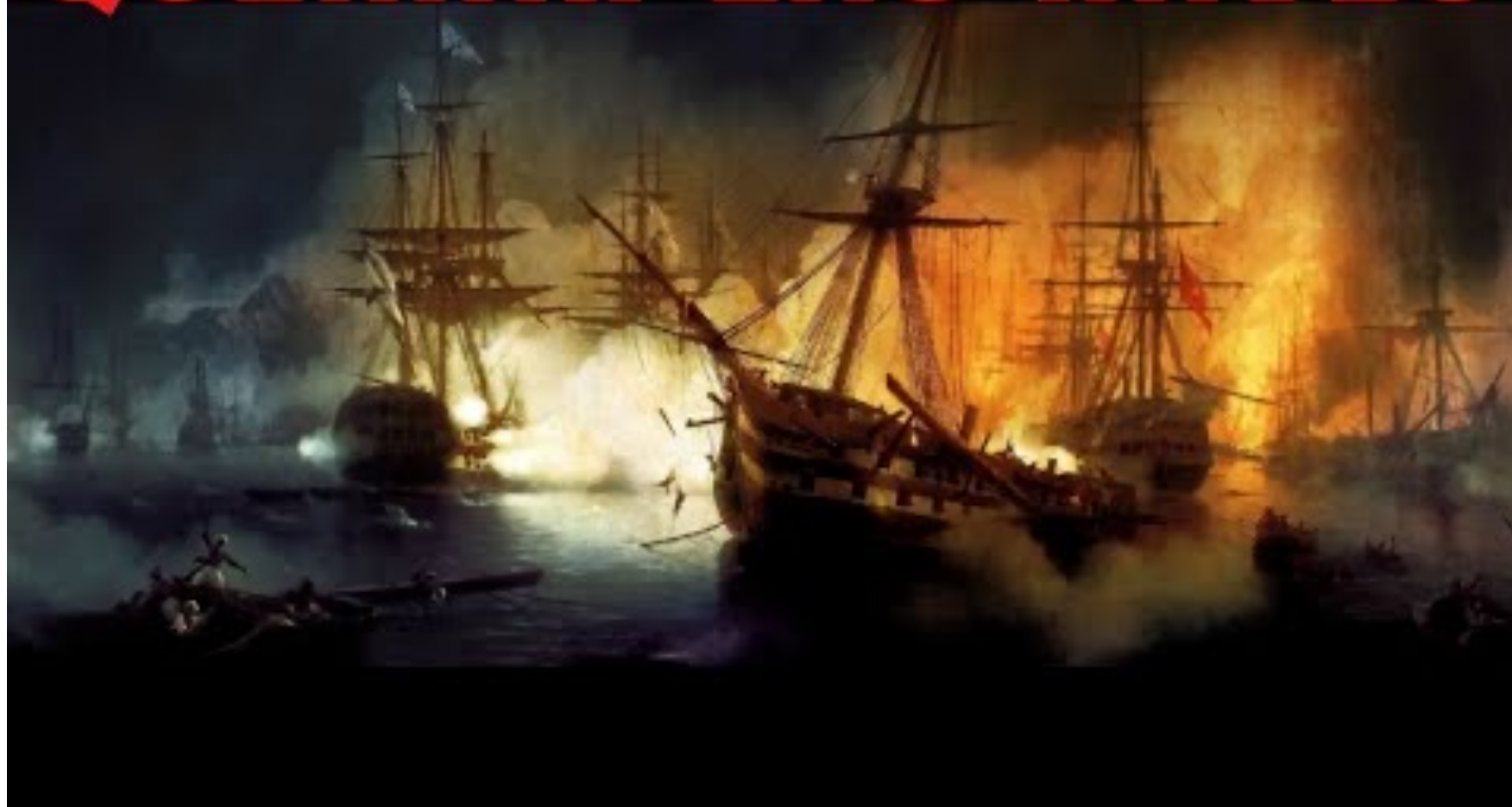


LA NAVE DI ULISSE



**Un viaggio
infinito tra le
tentazioni di
fermarsi
all'isola di Circe**

QUEMAR LAS NAVES



**«Bruciare
le navi»**

(Hernán Cortés)

Thanks!

Arrivederci...

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La nave di Teseo

Il paradosso della nave di Teseo

*Quando cambiano
tutti i pezzi, rimane
l'identità originaria?*