



Turun yliopisto
University of Turku

The impact of COVID-19 on global supply chains and the transport sector*

– an initial assessment with some conceptual tools and indicative policy recommendations

UPDATE 29 March 2020

Professor Lauri Ojala

lauri.ojala@utu.fi

Operations & Supply Chain Management, University of Turku, Finland

***) This presentation can be freely disseminated.**

If cited or re-used, please, provide the appropriate references to the original sources!

The largest help packages since mid-March 2020

- On Thu, [26 March 2020](#), [G20](#) economies announced to pump **US\$5,000 billion** into the world economy as part of a joint pledge to use all policy tools available to cushion the impacts of the global COVID-19 pandemic
- [IMF](#) stands ready to deploy US\$1,000 billion in lending capacity
- On 25 March 2020, IMF launched a [Tracker](#) of fiscal, monetary or macro-financial policies Governments are taking in response to COVID-19
 - **As of end-March 2020, the tracker includes 186 economies**
- On 17 March 2020, [World Bank Group Increases COVID-19 Response to US\\$14 Billion To Help Sustain Economies and Protect Jobs](#)
- **Macroeconomic country estimates based on COVID-19 impacts*:**
 - [The World Bank](#); [OECD](#);
 - [Fitch](#) ratings; [Standard & Poors](#);

**) Open access, but some may require registration*

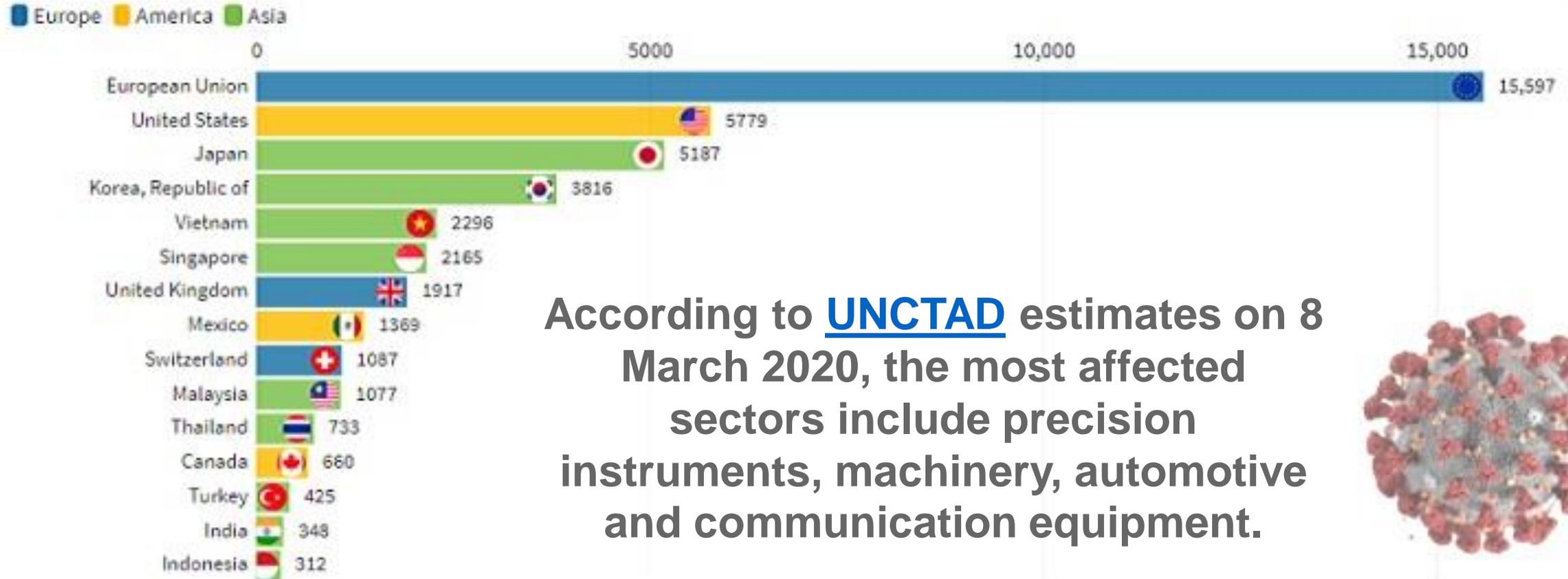
**How does COVID-19 impact on trade
and supply chains look like now*?**

***) March 2020**

Coronavirus outbreak has cost global value chains \$50 billion in exports by February 2020



Trade impact of the Coronavirus (COVID-19) Epidemic (USD Millions) Top 15 most affected economies



According to [UNCTAD](#) estimates on 8 March 2020, the most affected sectors include precision instruments, machinery, automotive and communication equipment.



Source: UNCTAD estimates • Estimates are based on a drop of Chinese supply in February 2020 as measured by the Chinese PMI. The list does not include Taiwan Province of China and Hong Kong, SAR of China

UNCTAD estimates released on 26 March 2020

- A new UNCTAD analysis of how the coronavirus pandemic will affect global foreign direct investment (FDI) prospects shows that the negative impact will be worse than [previously projected on 8 March](#).
- Updated estimates of COVID-19's economic impact and revisions of earnings of the largest multinational enterprises (MNEs) now suggest that the downward pressure on **FDI flows could range from -30% to -40% during 2020-2021, much more than previous projections of -5% to -15%**.
- Since then, 61% of the top 100 MNEs that UNCTAD tracks have issued earnings revisions that confirm the rapid deterioration of global prospects. And 57% have warned of the global demand shock's impact on sales, showing that COVID-19 is causing problems beyond [supply chain disruptions](#) after a production slowdown in parts of China.
- In addition, the top 5,000 MNEs, which account for a significant share of global FDI, have now seen downward revisions of 30% on average for 2020 earnings estimates. And the trend is likely to continue.
- The hardest-hit sectors are the energy and basic materials industries (-208% for energy, with the additional shock caused by the recent drop in oil prices), airlines (-116%) and the automotive industry (-47%).

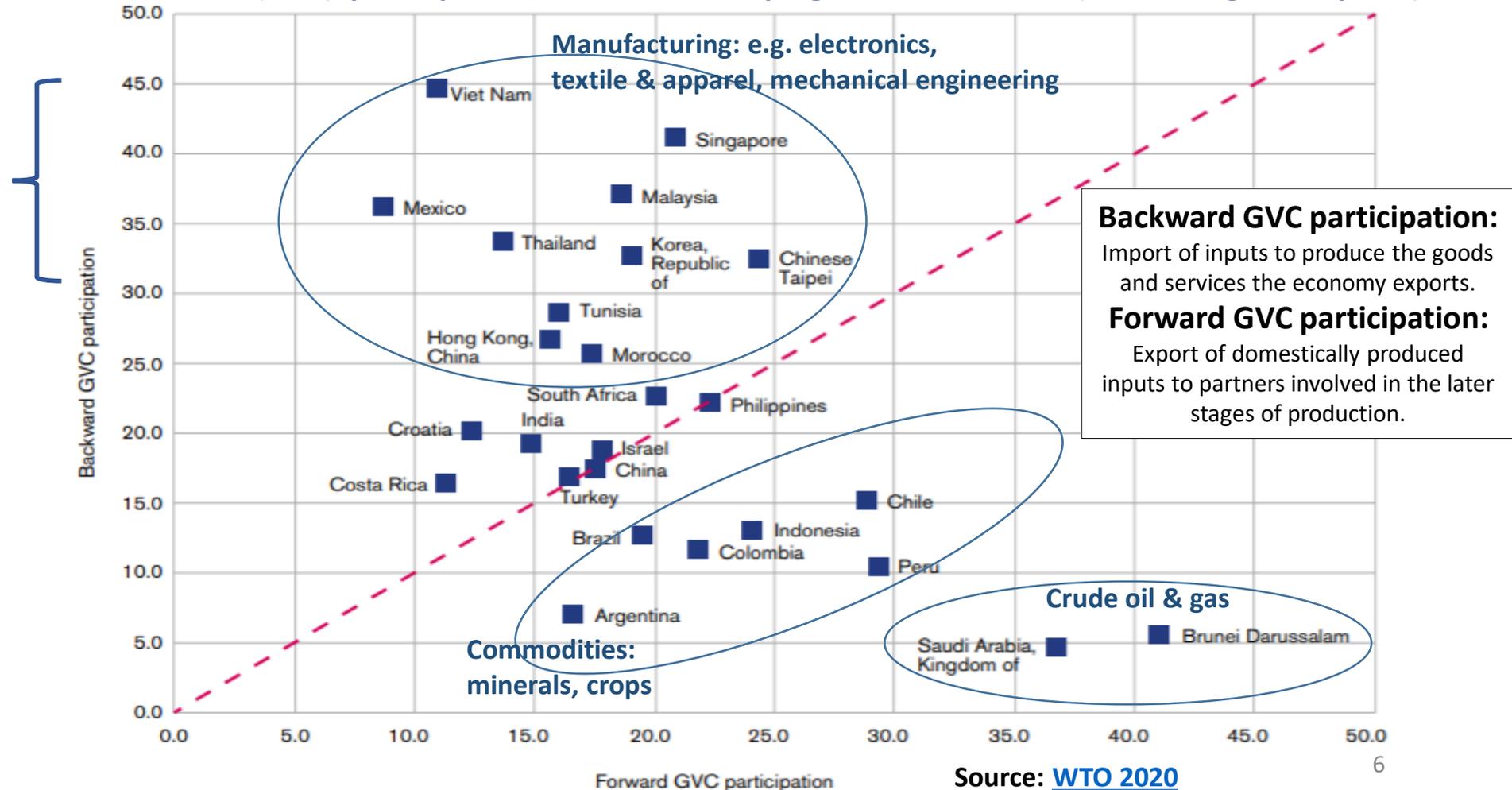
See also UNCTAD's Investment Monitor, March 2020 [here](#)

Supply value chains cannot be established overnight. It takes time and effort to qualify potential suppliers in areas of manufacturing quality, capacity, delivery, cost and their ability to respond to engineering or demand changes.

Thus, supply value chains are designed for longer-term needs. Once they are established, it can be difficult to change them quickly to adapt to unpredictable disruptions.

Backward and Forward Global Value Chain (GVC) participation, selected developing economies, 2015 (% in total gross exports)

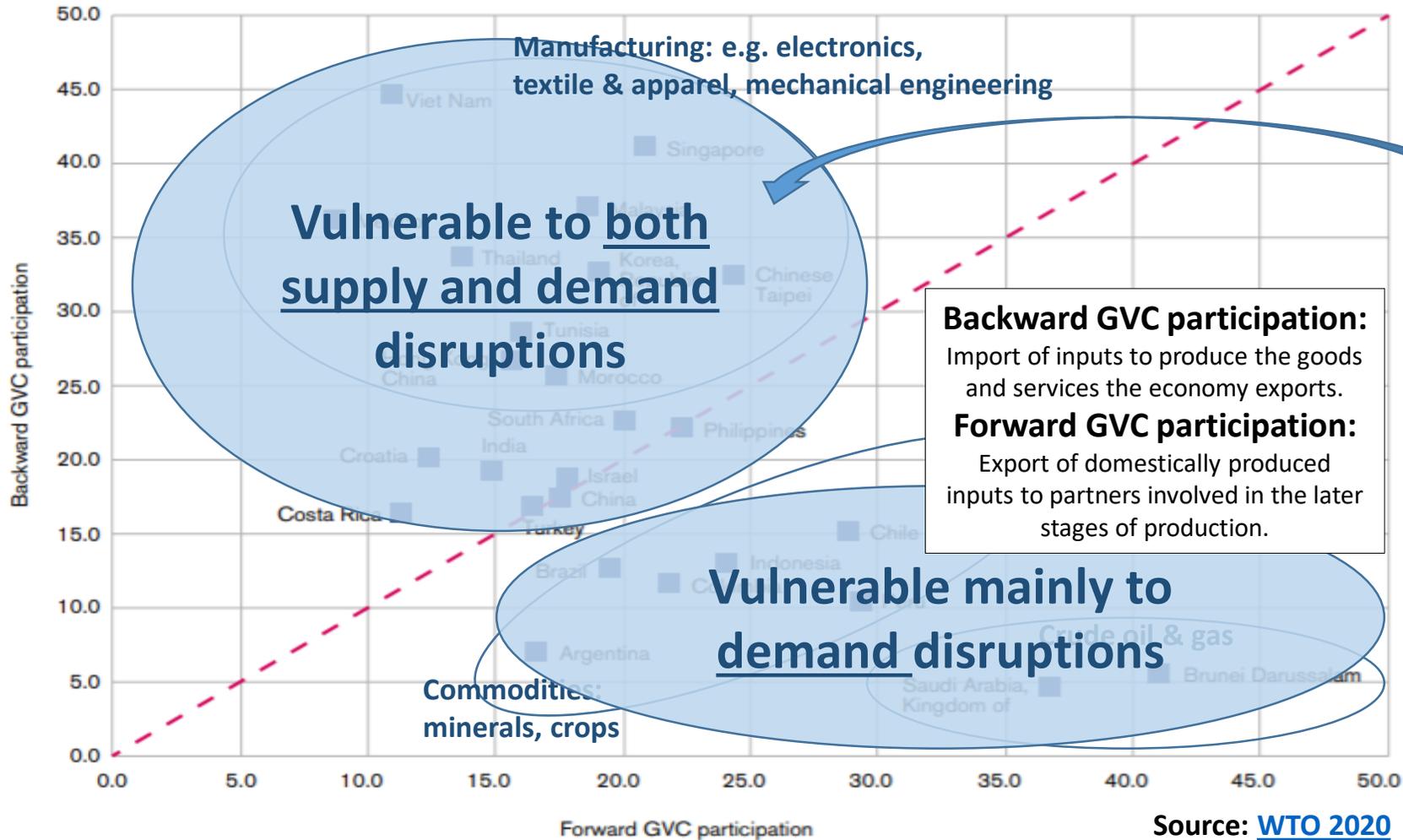
Explanation:
30 % to 45 % of the export value from these countries is first imported as inputs



Source: [WTO 2020](#)

The COVID-19 crisis has intensified the competition for valuable supply sources in several industrial sectors, such as in electronics and mechanical manufacturing

Backward and forward Global Value Chain (GVC) participation, selected developing economies, 2015 (% in total gross exports)



This has shifted the bargaining power from Original Equipment Manufacturers (OEMs) to suppliers.

This means that countries with a high share of Backward Global Value Chain participation tend to be hit hard by trade disruptions.

OECD estimates on 2 March 2020 on the impact of COVID-19 on GDP for years 2020 and 2021

OECD Base scenario: temporary blow

- Severe, short-lived downturn in China, where GDP growth falls below 5% in 2020 after 6.1% in 2019, but recovering to 6.4% in 2021.
- In Japan, Korea, Australia, growth also hit hard then gradual recovery.
- Impact less severe in other economies but still hit by drop in confidence and supply chain disruption.

Domino scenario: broader contagion

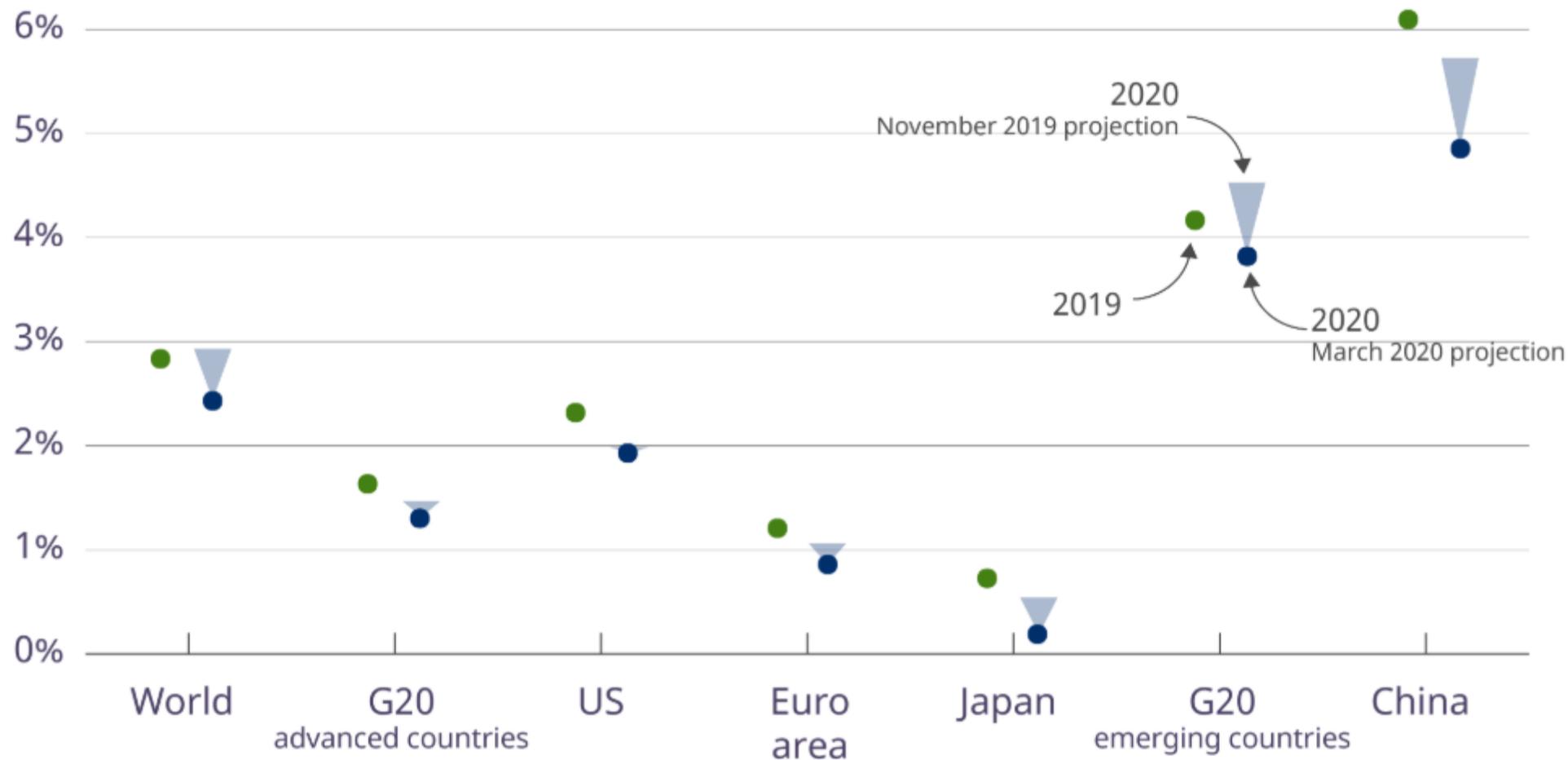
- Intensity of China impact repeated in northern advanced economies severely hitting confidence, travel, and spending.
- Global growth could drop to 1.5 per cent in 2020, half the rate projected before the virus outbreak.
- Recovery much more gradual through 2021.

OECD estimates on 2 March 2020 on the impact of COVID-19 on GDP for years 2020 and 2021

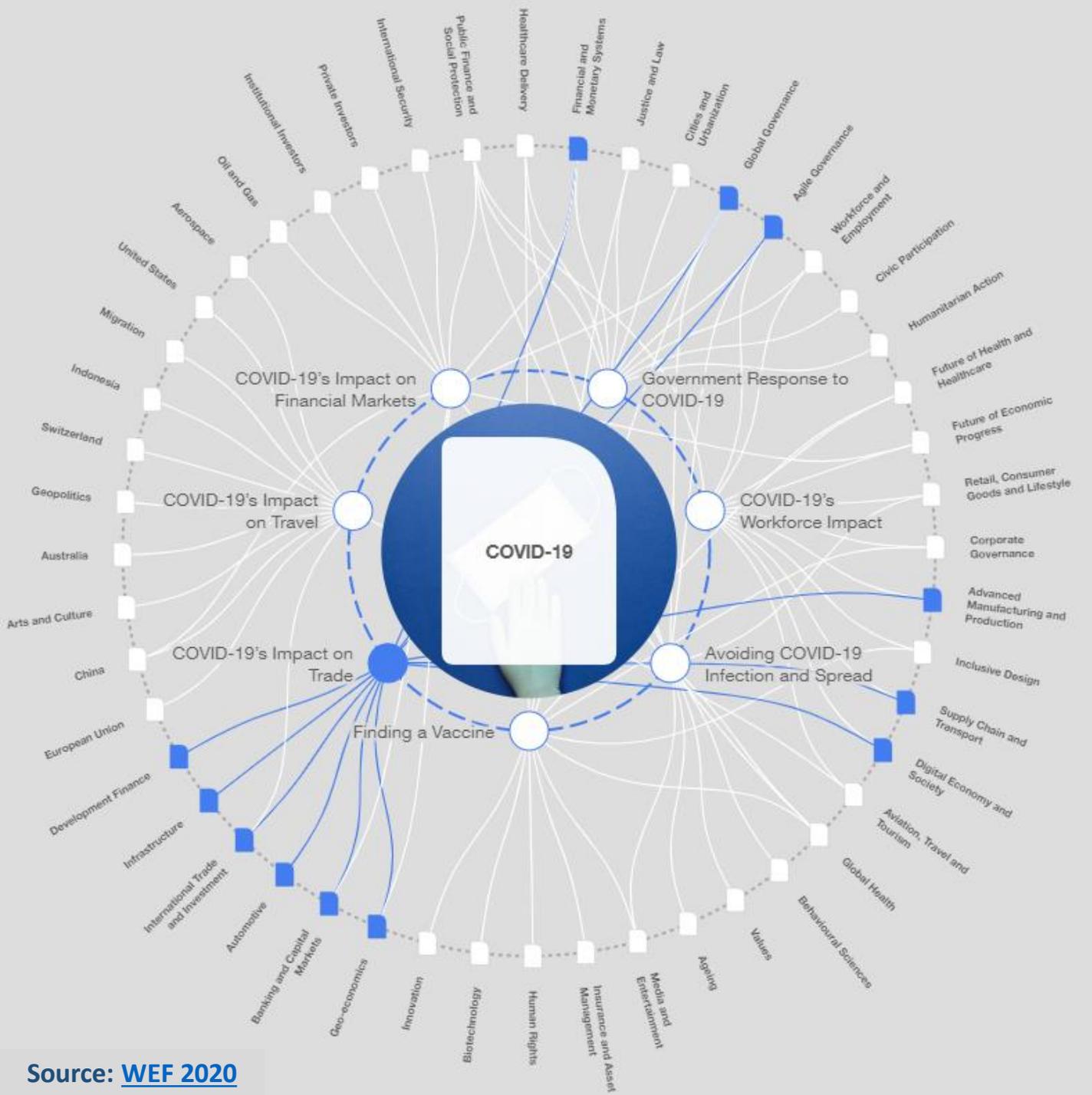
GDP Growth Projection

%, year on year, 2019 and 2020

Source: OECD Economic Outlook database



**How do transport and supply chains meet
the impact of COVID-19 in general?**



The COVID-19 crisis has intensified the competition for valuable supply sources in several industrial sectors, such as in electronics and mechanical manufacturing.

This has shifted the bargaining power from Original Equipment Manufacturers (OEMs) to suppliers.

This means that countries with a high share of Backward Global Value Chain participation tend to be hit hard by such a disruption.

Supply Risk and Recovery: The frequency and severity of supply chain disruptions are steadily increasing

Supply chains (SC) are vulnerable to a broad range of threats, including pandemics, extreme weather, cyberattack, and political crises.

The vulnerability of SCs has been highlighted by major incidents (COVID-19, the Petya cyberattack in 2017) and the hurricanes that hit the US in 2017 with estimated \$200 billion in damage.

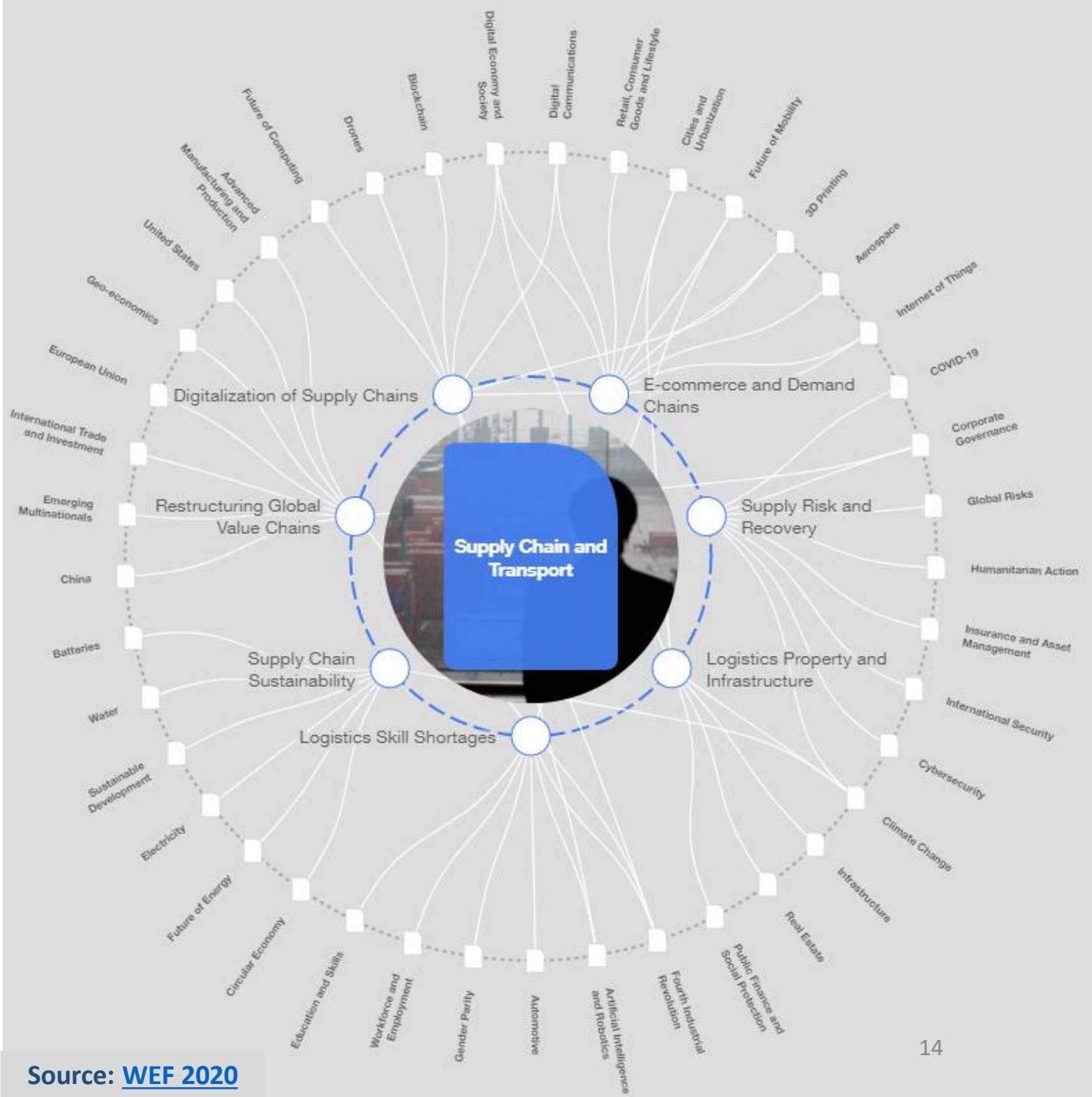
Ironically, the susceptibility of supply chains has been heightened by business practices, such as single-sourcing of supplies, inventory centralization, just-in-time replenishment, and the concentration of freight traffic at hubs. These improve economic performance, but also create greater risk exposure and lower resilience.

As a result of the globalization of SCs and a tighter coupling of logistical processes, the damaging effects of disruptions now spread much further and faster, and have a broader impact.

The human cost of SC disruption can also be high, as with the tsunami that hit Indonesia in 2018. In addition to the direct loss of life during natural disasters and military conflicts, death and suffering can occur when SCs relied upon to deliver medical and essential supplies are fractured.

The impact of COVID-19 on the functioning of GVCs encouraged SC professionals to seek out more robust supplier-monitoring systems that may help build resilience. In the corporate world, the management of SC risk is being given greater priority; risk auditing and business continuity planning are now widespread, particularly among larger companies.

However, strategic risk is not always adequately addressed at an operational level - and there is little evidence that companies are effectively reversing the long-term trends that have made their supply chains more vulnerable.



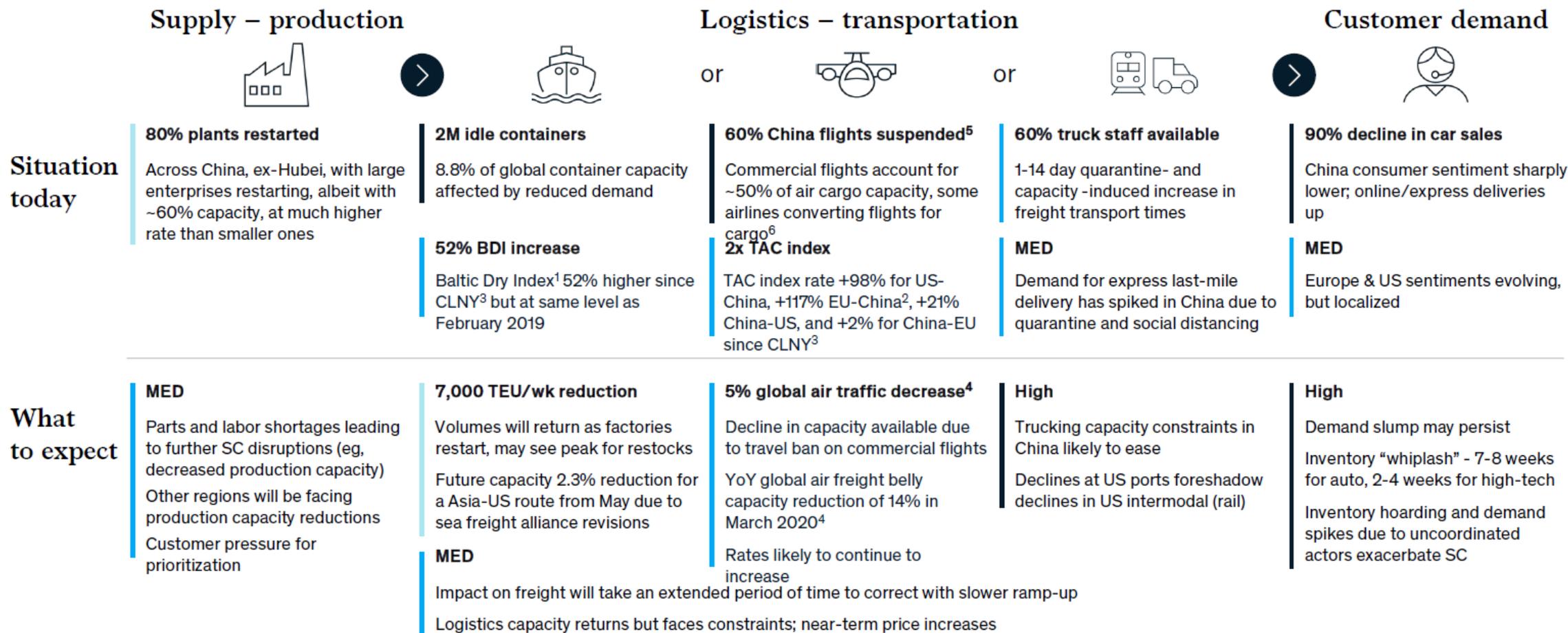
Source: [WEF 2020](#)

**Insights from McKinsey* on how
COVID-19 affects supply chains
and on how firms could try to cope with
the consequences**

***)16 March 2020**

Supply chains are being disrupted around the world, but the full impacts have not yet been felt

Impact ■ High
■ Medium
■ Low



1. Assessment of risk premium to ship raw materials on a number of shipping routes, data as of 3/13

2. Frankfurt (FRA) to Shanghai (PVG) used as a proxy

3. End of extended Chinese Lunar New Year holiday (2/7-3/13 for BDI, 2/10-3/2 for US-China TAC, 2/10-3/9 for other TAC routes)

4. Estimated prior to implementation of EU-US travel ban

5. Commercial flights from China

6. Companies such as Cathay Pacific and Singapore Airlines now starting to fly empty passenger aircrafts as dedicated cargo planes

Source: Baidu, WSJ, Bloomberg, Alphaliner, Quartz, TAC index, IATA, Seabury Consulting, A.P. Moller-Maersk Group of Denmark, Agility Logistics

B: There are multiple end-to-end immediate supply chain actions to consider in response to COVID-19

1 Create transparency on multi-tier supply chain

Determine critical components, and determine origin of supply

Assess interruption risk and identify likely Tier 2+ risk

Look to alternative sources if suppliers in severely affected regions

3 Optimize production and distribution capacity

Assess impact on operations and available resource capacity (mainly workforce)

Ensure employee safety and clearly communicate with employees

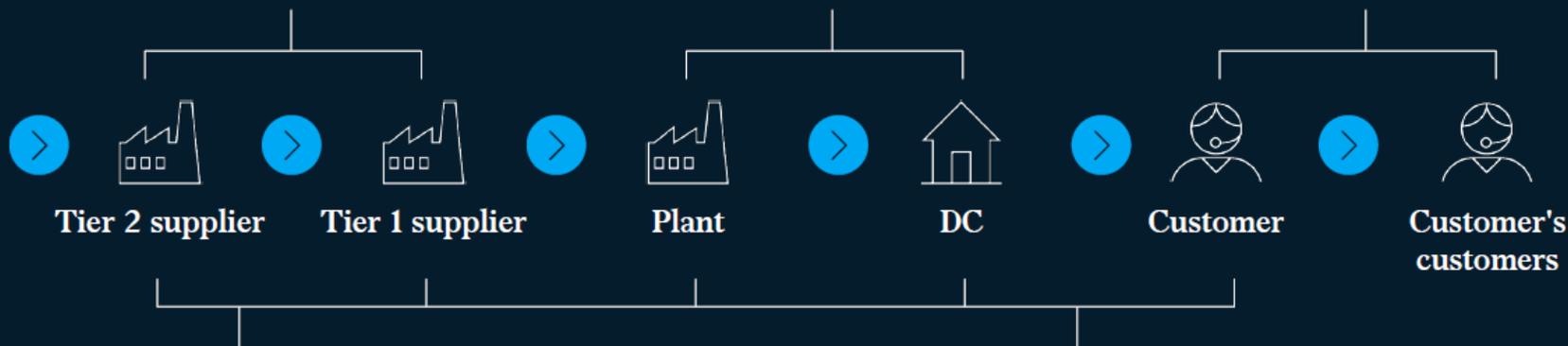
Conduct scenario planning and assess impact on operations based on available capacity

4 Estimate realistic final customer demand

Work with S&OP to get demand signal to determine required supply

Leverage direct communication channels with direct customer

Use market insights/external databases to estimate for customer's customers



2 Analyze available inventory

Estimate inventory along the value chain, including spare parts/ re-manufactured stock

Use after sales stock as bridge to keep production running

5 Leverage available logistics capacity

Estimate available logistics capacity for air/sea/road/rail

Accelerate customs clearance

Change mode of transport and pre-book air/rail capacity given current exposure

Collaborate with all parties to jointly leverage freight capacity

B: Supply chain actions to consider in the next two to four months



Continuously improve material supply stability

Evaluate alternative sourcing for all materials impacted – availability of suppliers, additional cost due to logistics, tariffs, estimated component price increases

Enhance the demand verification process to correct inflated demand to mitigate the whiplash effect

Provide continuous support to small and mid-sized tier 2-3 suppliers in financial trouble

Assess regional risks for current and backup suppliers



Kick off designing resilient supply chain for the future

Establish a supply chain risk function

Digitize process and tools to integrate demand, supply, and capacity planning

Trigger the new supply network design for resilience

Codify the processes and tools created during the crisis management as formal documentation

Convert war room into a reliable risk management process



Build collaborative relationships with external partners

Work with public agencies to explore opportunities for support

Engage investors and other stakeholders to improve transparency and get help

Example of market information on COVID-19 in the public domain

March 2020

Ex. of market intelligence gathering on COVID-19 in the public domain:

[DHL Ocean freight market update, March 2020](#)

- Global supply chains integrities under pressure as the Coronavirus outbreaks increase and extend beyond China with large reported increases in Korea and Italy Overall port operations in China remain normal, exception being Wuhan’s barge service. All carriers report reefer plug shortages in Shanghai, Tianjin and Ningbo.
- Local Chinese governments have restricted truck operations and imposed a 14 day self-quarantine for those crossing city or province borders, impacting capacity and rates. Globally normal port operations including Korea and Italy.
- Carriers have announced blank sailings to counter the resulting cargo supply/demand imbalances. New cancellations are announced by the carriers without the usual notice periods. This in turn has created equipment imbalances now impacting the global capacity.
- DHL Global Freight (DGF) has declared “Force Majeure” for the Europe-Asia trade lanes with immediate effect as the situation is unforeseeable and beyond our reasonable control. We will continuously review this positon and will communicate any updates, including a potential widening of the “Force Majeure” scope as deemed appropriate.
- Any carrier imposed surcharges (with different naming conventions) will be communicated pro-actively and with full transparency and billed forward as Emergency Cost Recovery Surcharges.
- Return of normal post-Lunar New Year cargo flows not foreseen until March/April [2020]

DHL Ocean freight market update, March 2020

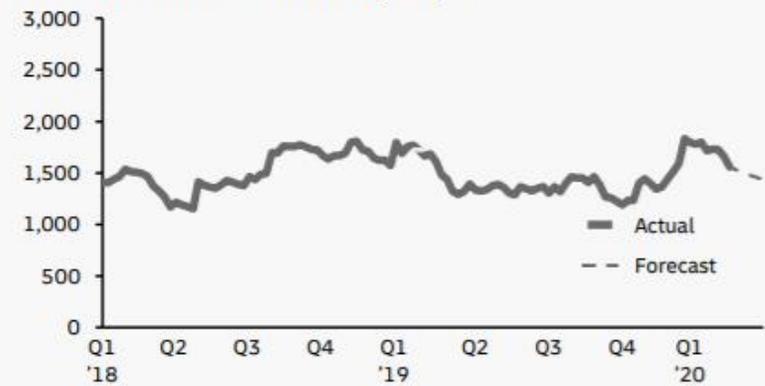
ECONOMIC OUTLOOK GDP GROWTH BY REGION¹⁾

	2020F	2021F	2022F	2023F	2024F	CAGR (2021-24)
EURO	1.1%	1.2%	1.5%	1.6%	1.6%	1.5%
MEA	2.7%	2.7%	2.9%	3.2%	3.4%	3.2%
AMER	1.9%	1.9%	1.6%	1.6%	2.0%	1.7%
ASPA	4.2%	4.3%	4.3%	4.4%	4.4%	4.4%
DGF World	2.5%	2.6%	2.6%	2.7%	2.9%	2.8%

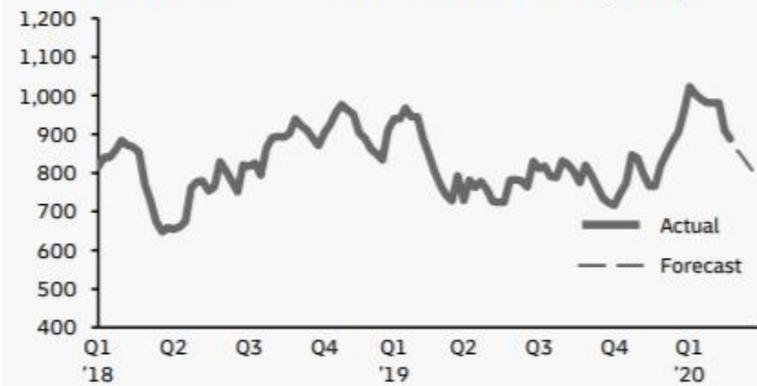
DHL TRADE BAROMETER⁶⁾



WORLD CONTAINER INDEX (WCI)³⁾



SHANGHAI CONTAINERIZED FREIGHT INDEX (SCFI)⁴⁾



BUNKER PRICES⁵⁾



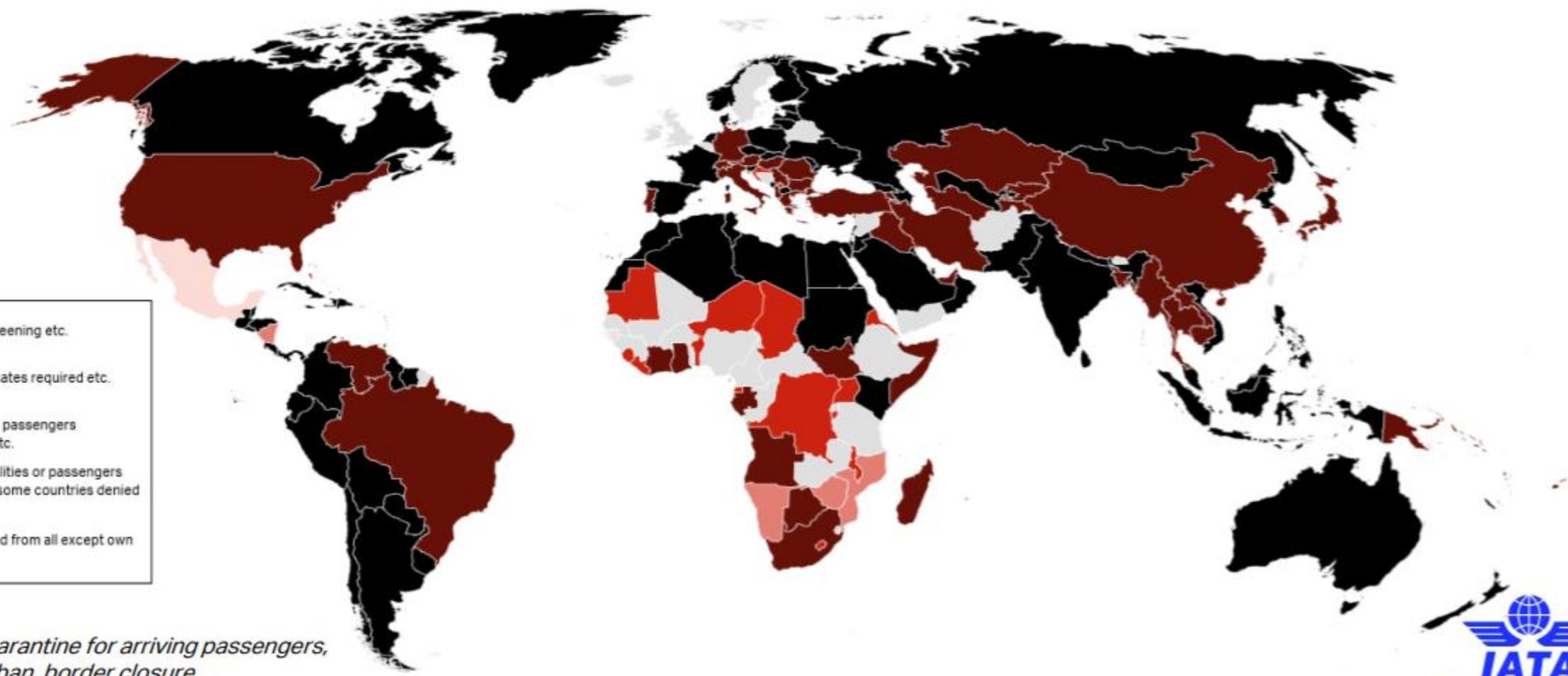
1) real GDP, Global Insight, Copyright © IHS, Q4 2019. All rights reserved. 2) Demand growth = Port-to-Port Container Traffic growth. Supply growth = Fleet Growth. Source: Drewry Maritime Research. 3) Drewry, in USD/40ft container, including BAF & THC both ends, 42 individual routes, excluding intra-Asia routes. 4) Shanghai Shipping Exchange, in USD/20ft container & USD/40ft ctnr for US routes, 15 routes from Shanghai. 5) Source: DHL. 6) DHL Global Trade Barometer Jun19, index value represents weighted average of current growth and upcoming two months of trade, a value at 50 is considered neutral, expanding above 50, and shrinking below 50.

IATA's assessment (24 March 2020)

- The International Air Transport Association (IATA) updated its analysis of the revenue impact of the COVID-19 pandemic on the global air transport industry.
- Owing to the severity of travel restrictions and the expected global recession, IATA now estimates that industry passenger revenues could plummet \$252 billion or 44% below 2019's figure. This is in a scenario in which severe travel restrictions last for up to three months, followed by a gradual economic recovery later this year.
- IATA's [previous analysis](#) of up to a \$113 billion revenue loss was made on 5 March 2020, before the countries around the world introduced sweeping travel restrictions that largely eliminated the international air travel market.
- *"The airline industry faces its gravest crisis. Within a matter of a few weeks, our previous worst case scenario is looking better than our latest estimates. But without immediate government relief measures, there will not be an industry left standing. Airlines need \$200 billion in liquidity support simply to make it through. Some governments have already stepped forward, but many more need to follow suit,"* said IATA's Director General and CEO, Alexandre de Juniac.
- See also IATA's briefing
- <https://www.iata.org/en/iata-repository/publications/economic-reports/third-impact-assessment/>

Travel restrictions are closing down international aviation

Markets with severe* restrictions cover 98% of global passenger revenues



**Including quarantine for arriving passengers, partial travel ban, border closure*

Source: [IATA](https://www.iata.org)

In road freight transport, most European borders are currently free of major slow-downs, with some exceptions that you can find on the map. Situation as at Sun 29 Mar 2020 18:00 (CET)



Real-time updates available at (public domain):

<https://covid-19.sixfold.com/>

How do various type of major disruptions affect the transport sector?

Some simplified and generic illustrations

A generic illustration of the demand & composition dynamics upon disruptions in freight & logistics and passenger transport

The type of disruption or disaster is decisive on what type of and how severe the impacts will be (see next slide).

E.g. COVID-19 has caused a simultaneous and an almost global drop in both (industrial or mobility) demand and supply.

As transport demand for passengers and freight is derived from the underlying mobility needs, the change in transport services is typically much bigger than the change in the underlying demand.

COVID-19 has certainly proved this true especially in air travel, passenger shipping and long-distance bus and rail as well as in commuter traffic – not to speak of cruise shipping.

Freight transport and logistics services		<-- Decrease		Demand	Increase -->	
		Significant	Somewhat	About the same	Somewhat	Significant
Cargo types and/or transport modes	Remain the same	Overcapacity, service level deterioration, financial strain	Capacity, service and freight level adjustments	No change	Capacity, service and freight level adjustments	Significant capacity and freight increases, service level deterioration
	Change somewhat	Severe overcapacity, financial and service level deterioration	Overcapacity and service deterioration	Slight adjustments under market conditions	Undercapacity, service level deterioration, freight level rises	Significant capacity and freight increases, service level deterioration
	Change significantly	Extreme overcapacity, financial strain and service deterioration	Severe simultaneous over- and under-capacity, service deterioration	Severe supply and demand imbalance of vehicles, units, staff and infrastructure	Severe simultaneous over- and under-capacity, service deterioration	Extreme capacity constraints and management & cost implications
Passenger transport and traffic		Decrease		Demand	Increase	
		Significant	Somewhat	About the same	Somewhat	Significant
Traffic modes	Remain the same					
	Change somewhat					
	Change significantly					

The impact (of COVID-19) will be different for each transport mode, and differs also between domestic and international transport/logistics services.

E.g. in scheduled air traffic up to 90 % or more of flights have been cancelled in many parts of East and South Asia and Europe.

40 % to 50 % of air freight volumes e.g. in Asia has been so-called belly cargo. Now passenger aircraft have been refitted to freight for longhaul routes b/w [U.S.](#), Europe and Asia.

In early March 2020, 2M empty containers are stuck in China, and container shipping capacity substantially lower than in December 2019.

[Ferry operations](#) have practically lost all passengers, freight operations maintained.

Long-distance as well as local bus and rail travel declined over 50 %, in many cases over 90 %

Source: Lauri Ojala 2020

Freight transport and logistics services		Decrease		Demand		
		Significant	Somewhat	About the same	Somewhat	Significant
Cargo types and/or transport modes	Remain the same	Overcapacity	Service	No change	Capacity, service and freight	Significant capacity
	Change somewhat	financial service level	deterioration	Slight adjustments under market conditions		
Traffic	Remain the same				supply and imbalance of	capacity
	Change somewhat				over- and under-	capacity
Traffic modes	Remain the same					
	Change somewhat					
	Change significantly					

Pandemia;
severe natural catastrophe or
severe economic slowdown

Armed conflict

Severe overcapacity of infrastructure, vehicles, units and staff

- Significantly less services offered
- Severe financial losses, bankruptcies
- Large-scale lay-offs
- **Infra & equipment largely intact**

Demand for capacity increases

- Mobilization of troops
- Changed infrastructure priorities
- Modal and cargo type changes
- Displacement of civilians

Pandemia;
severe natural catastrophe or
severe economic slowdown

Armed conflict

A generic illustration on response dynamics in freight & logistics demand, when capacity becomes constrained

Scaleable either at the firm (micro), industry (meso) or e.g. national security of supply level (macro)

		Availability of suitable transport and logistics capacity (incl. warehousing and materials management)		
		Abundant	Constrained	Not available
Available modes and/or routes	Logistics impact of the disruption			
	Transport distances may grow, while modes & types remain the same	Regular freight levels and other logistics costs	More expensive freight or other logistics costs	Depending on the severity and duration of the disruption, substituting products needed and/or creating own transport or logistics capacity. Government intervention and ransoning required.
	Transport distances grow, more expensive modes & types required	Market-based freights; logistics cost grows by distance and/or more expensive modes/types	Significantly higher logistics costs compared to a normal situation	
	Transport distances and/or times grow significantly, much more expensive modes & types required			
No transport options available, or they are extremely expensive	Costs of available logistics options extremely high	Unbearably high logistics costs; substitutes are needed		

Source:
Lauri Ojala

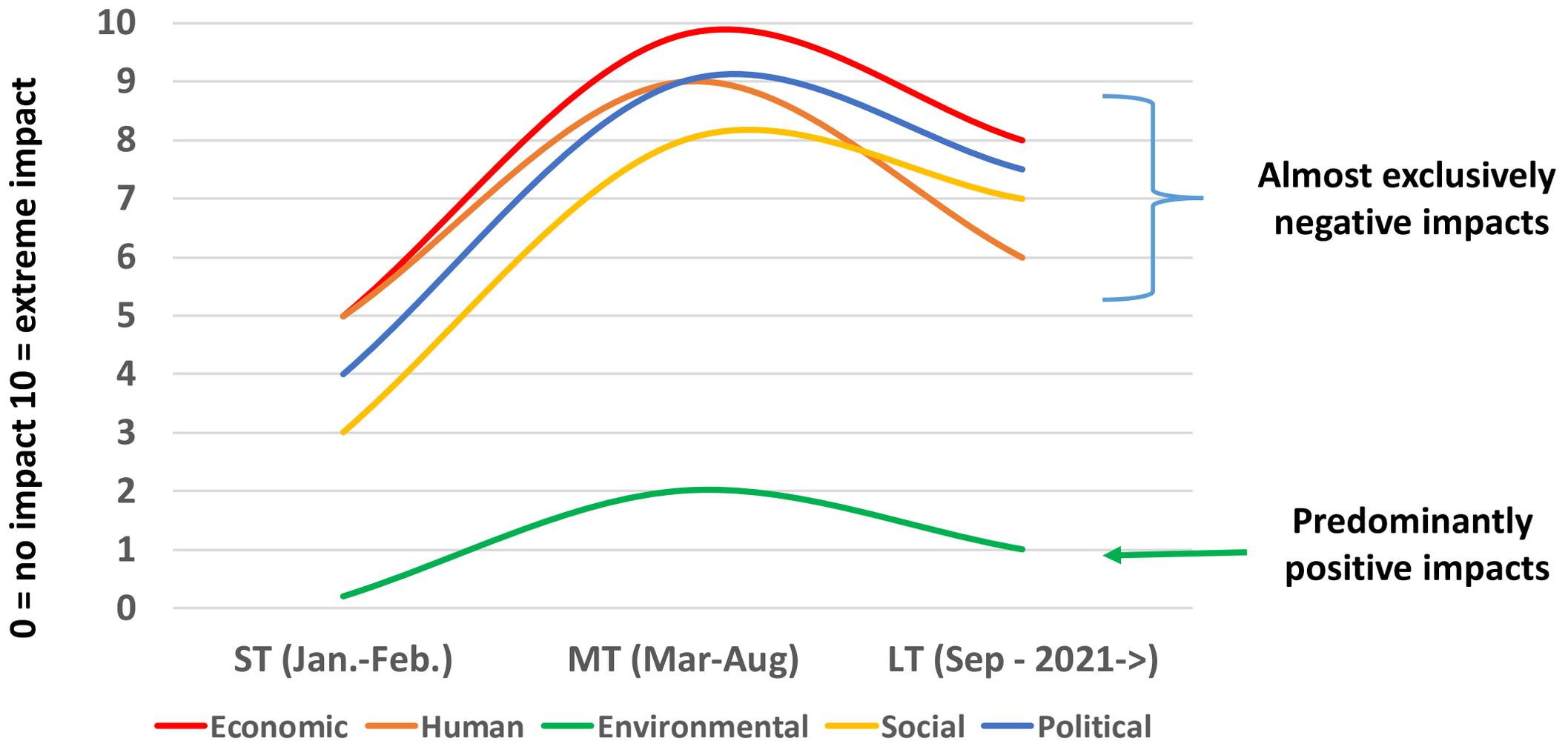
See also:
Hybrid CoE 2019

How long will this last ?

– well, too early to say:

**nobody seems to have the answer right now, only
good or less good guesses...**

A back-of-the-envelope "questimate"* of the Short, Medium and Long term broader impacts of COVID-19 on e.g. most EU countries as well as those with a high Backwards GVC participation



***) N.B. This is purely for illustration purposes, and reflects the Author's personal "questimate" in end-March 2020**

Some indicative policy actions

COVID-19: Severity of impacts and policy responses exemplified in the transport sector

Passenger or freight		COVID-19 impacts			Policy responses exemplified
Mode	Vehicle / service	Mobility	Financial	Social inclusion	
Road transport	Bus, Taxi, Minivans	Very negative			Financial assistance to service providers: loan guarantees, loans, tax cuts or payment deferrals, cash handouts as a last resort.
	Road haulage	Negative to Mixed		n.a.	Ensure speedy authority operations especially for border-crossing traffic. Taking care of road safety issues for freight and passenger car movements.
Rail transport		Very negative for passengers; mixed to negative for freight			Rapid need of financial assistance to service providers: loan guarantees, tax cuts, payment deferrals and/or cash handouts. If there is Government ownership in rail or air transport operations, eligible subsidies or capital endowments to operators. Also government purchases of air transport capacity e.g. for repatriation of nationals, supply of emergency and medical products. Very large lay-offs to be expected especially in airlines but also in rail passenger operations. Significant impact also on air traffic control capacity, where large lay-offs already taking place. This may also partly happen in rail network management. It is extremely important not to compromise safety and security in these.
Air transport	PAX & belly cargo	Catastrophic for passengers and belly cargo			
	Cargo only	Positive to Mixed		n.a.	
Maritime transport	Cruise shipping	Catastrophic			Cruise shipping is commercial recreational business without national Security of Supply potential, so new government bail-outs unlikely. However, substantial financial (Gov:t) guarantees to shipyards and cruise operators exist, which may materialize. For flag states the impact is likely to be very negative. For Port-of-Call states, not much to be done, as shipping companies need to survive first.
	PAX & cargo	Very negative for passengers Negative on cargo			With or without a national merchant fleet, every effort needs to be made to ensure the functionality of the Sea Lines of Communications, and the commercial viability of services. Gov:t purchases of cargo space to secure national supplies already in use e.g. in Finland. The part of merchant fleet and crew in a country's ship register that serves national supply needs may require financial support or relaxation of some fees or taxes, i.e. fiscal implications highly likely. Ensure speedy rotation of ships and enable necessary crew changes at ports. Ensuring safety and security in shipping by maintaining operational Vessel Traffic Management services, and viable operations in main seaports.
	Cargo only	Negative to mixed due to cargo type & route		n.a.	

Source: Lauri Ojala, Update 29 March 2020

COVID-19: Severity of impacts and policy responses exemplified in the transport sector

- A more fine-grained illustration of Slide 27

Source: Lauri Ojala
Update 29 March 2020

Type and mode of passenger or freight transport				COVID-19 impacts					
Mode	Vehicle type		PAX	Freight	Type or speed of impact	Mobility	Financial	Social inclusion	
Road transport	Taxis and minivans		Primary use	Parcels and courier shipments possible	Immediate on intracity and commuter traffic	Very negative			
	Bus	Local		Seldom					
		Intercity		Widely used: parcels and special goods	Immediate on passenger mobility, parcel logistics				
		International	Seldom	Immediate on passenger mobility					
	Road haulage (Light < 3.5 ton; Heavy > 3.5 ton)	Light vehicles	X	Exclusive use		Negative to Mixed: overcapacity in city logistics; undercapacity in home deliveries	Negative to Mixed		n.a.
		Domestic heavy vehicles							
International heavy vehicles									
Rail transport		Local	Exclusive	Exclusive freight trains	Immediate on intracity and commuter traffic	Very negative to catastrophic for passengers. Negative for freight; exception: China-Europe			
		Intercity							
		International			Immediate on passenger mobility				
Air transport	Passenger routes	Domestic	Primary	Mail, parcels & courier	Dramatically decreased demand of domestic and transfer travel and of mail & parcel services	Very negative to catastrophic for passengers and for belly cargo freight			
		Short haul		Mail, belly cargo (high unit value)	Immediate on passenger mobility & loss of belly cargo capacity				
		Long haul							
		Charter		Belly cargo					
	Cargo	Scheduled	X		Mail, parcels & courier	Increased demand due to rapid loss of belly cargo capacity	Positive		n.a.
		Heavy lift			Special cargoes	Mixed: due to cargo type	Mixed		
Maritime transport	Cruise shipping		Exclusive	X	Immediate and devastating	Catastrophic			
	PAX & cargo	Passenger cruise ferries	Primary	Roll on- roll off cargo	Immediate on passenger mobility & loss of belly cargo capacity	Very negative to catastrophic			
		Ro-ro shipping	Some		Decreased demand on most short sea shipping routes	Negative			
	Cargo	Container shipping	X		Containers	Rapid decrease in volumes; large backlog of empty boxes in China	Mixed		
		Dry bulk			Large bulk shipments	Negative to Mixed: due to cargo type			
		Liquid bulk							
Other		Special cargoes							

Some useful sites to follow

Some useful sites to follow:

- [EU Mobility and Transport](#)
- [IMO](#) on COVID-10
- European Maritime Safety Agency [EMSA listings on MS actions](#)
- Global COVID-19 impacts on road haulage by [IRU](#)
- Aviation industry by IATA: <https://www.iata.org/en/>
- Wilhelmsen COVID-19 [Global Port Restrictions Map](#) (a very good one!)
- Logistics firms updates:
 - [DB Schenker](#)
 - [DHL](#)
 - [DSV](#)
 - Kuehne & Nagel https://www.kn-portal.com/updates_on_coronavirus

Selected sources

- [DHL Ocean freight market update](#) (March 2020)
- Hybrid CoE (2019) [HANDBOOK ON MARITIME HYBRID THREATS](#) — *10 Scenarios and Legal Scans*
- [IATA](#) (24 March 2020) *Deeper Revenue Hit from COVID-19*
- McKinsey (16 March 2020) [COVID-19 Briefing Note](#)
- [UNCTAD](#) (26 March 2020) *Coronavirus could cut global investment by 40%*
- [WEF a\)](#) (March 2020) , World Economic Forum
- [WEF b\)](#) (23 March 2020) , *How China can rebuild global supply chain resilience after COVID-19*
- [WTO](#) (2020) World Trade Statistical Review 2019

Thank you – and take care!



[I got the flight path via:](#)

Jan Hoffmann, UNCTAD,
27 March 2020

-Lauri