

Manufacturing & Supply Chain

Summary



COVID-19 needs to be addressed proactively to allow for managing through potentially recurring virus outbreaks

Objective: **Return to work** in a safe and controlled way and ensure **business continuity** over the weeks and months to come

Cross-functional taskforce (incl. supply chain, sales, procurement, manufacturing) needed as a **control tower** to coordinate all activities and to provide transparency

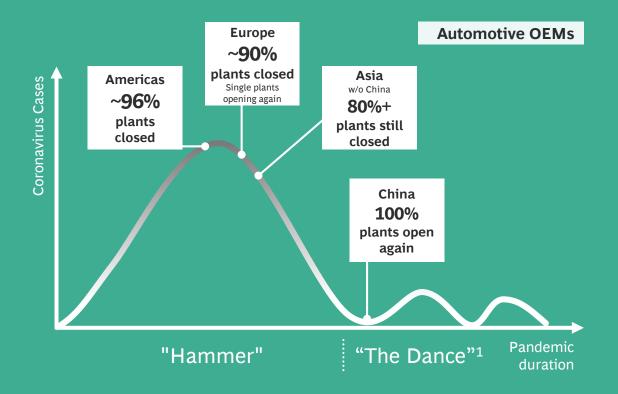
Return to work and business continuity should be managed along **5 dimensions** from workforce protection to communication management

Detailed checklists and **activity maps** as well as **best practice examples** can help to navigate through the recovery process

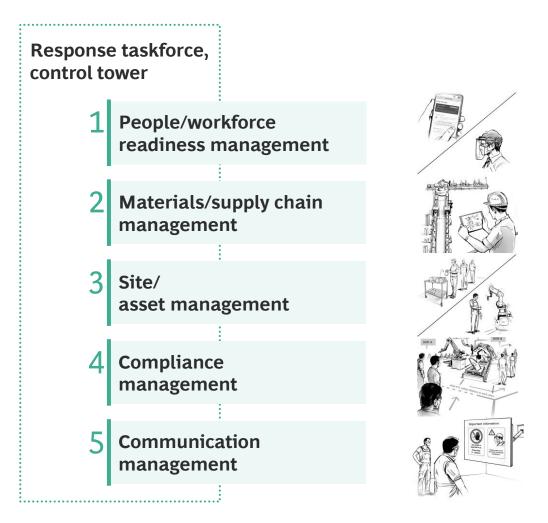
COVID-19 likely recurring in waves – proactive actions required



Companies to prepare for restart and business continuity ...



... in a safe, controlled way along 5 dimensions



1. Recurring small waves as containment measures are put in place and taken down again Source: "Hammer and Dance" COVID-19 model; IHS Markit Automotive (LV Production FC, April 2020); public company information; BCG

CG

People/workforce readiness management

Actions to be taken

Protection and Hygiene

- Prepare personal protection equipment
- Implement employee support & information points (e.g., hotline)
- Implement Safe@Work solutions (e.g., BCG COVID-19 app)
- · Track and monitor employee health status daily

Social Distancing

- Implement social distancing measures & monitor adherence
- Investigate need for A/B split of production teams

Organization and Shift Models

- · Assess and manage employee availability for prod. restart
- · Determine shift models and staffing accordingly
- Reinforce substitution rules for critical resources

BCG Safe@Work portal and app

Features

- 1 COVID-19 alerting
- 2 Employee self-reporting
- 3 Infection chain mgmt.
- 4 Infection chain tracing
- 5 Contingency staffing
- 6 Workspace tracking
- 7 Crowd density alerting



2 Materials/supply chain management

Actions to be taken

Production Planning

- Develop supply and demand scenarios
- Adjust production to asset/workforce availability
 & planned production volume/mix

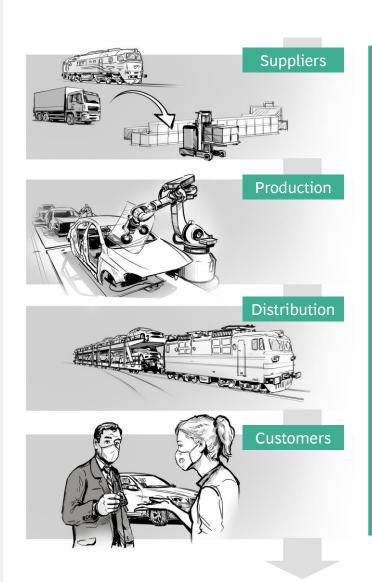
Supplier and Material Availability

- Check material availability
- Assess supplier risks & ensure key supplier liquidity while keeping own operability in mind
- Support suppliers in operational recovery plans & align on production restart
- Continuously monitor key supplier availability

In/Outbound Logistics

- Secure sufficient finished products storage space
- Ensure flexible logistics/transport capacities
- Continuously review & replenish stock levels for critical parts





Supplier disruptions

>20% of Chinese steering system component exports to the US originate from lockdown affected Wuhan region¹

High production variability

25-50% estimated capacity loss in auto industry due to significant (>20%) gaps in manpower²

Inadequate inventory buffers

High stock level reducing production flexibility

Transportation carrier issues

Customs clearance closures in mainland China (shippers understaffed)

Extreme demand spikes

20% decline of new vehicle sales in 2020 expected (40% worst case scenario)

^{1.} Area had been shut down for about 2 months starting January 23rd 2020

^{2.} Main reasons: social distancing requirements & skeleton crews

3 Site/asset management

5 Site/asset managem

Actions to be taken

Site Management

- Manage access to site
- Ensure implementation of & adherence to social distancing measures in all facilities
- · Prepare site services according to restart plan and timeline
- · Offer packaged food in canteens

Asset Management (on-site level)

- Prepare critical assets according to restart plan & conduct test runs
- Assess and review maintenance tasks (incl. ext. contractors)
- Consider opportunities for maintenance during lockdown (incl. remote support by suppliers)
- Define/review workforce back-up plans for critical assets
- Closely monitor capacities and production bottlenecks

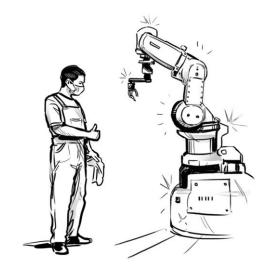




Preparation of manufacturing operations during shutdown & planning of critical

maintenance activities

Pre-packed food & distance marks in canteens to reduce infection risk



4 Compliance management

Actions to be taken

Regulatory Requirements Management

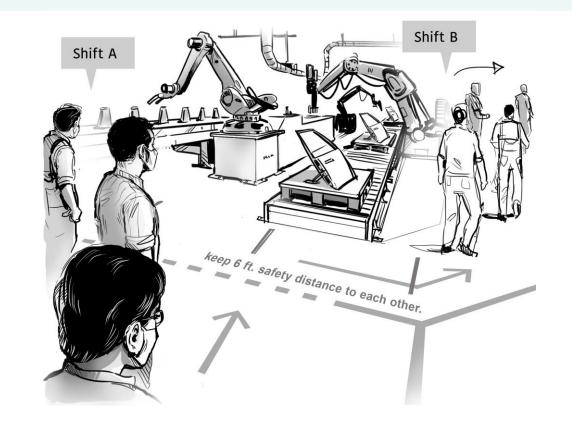
- Evaluate potential government support, subsidies and aide
- Execute strategies & compensation models to retain workforce
- Monitor regulatory requirements & analyze implications of restrictions on operations
- Investigate need for regulatory exceptions
- Proactively engage with authorities and regulators (e.g., for handling of COVID-19 case)
- Re-schedule auditing activities in line with restart plans

Social Partner Alignment

- Investigate need for alignment/exception handling with social partners
- Discuss week-end/night shifts



Continuous **review of regulatory requirements** (e.g., 6 feet distance & physical separation of different shifts)



Source: BCG

5 Communication management

Actions to be taken

Internal Communication

- Ensure open and direct communication with all employees
- Define communication channels both at home & at entry gates
- Ensure continuous information to all employees on evolving situation & changes
- Align all employees on restart plan
- Develop briefing on protection measures (safety and medical)
- Define clear communication cascade for new COVID-19 case (incl. distribution of cleaning/disinfection protocol)

External Communication

• Define communication towards external stakeholders



Direct communication channels

(e.g., information screens) on COVID-19 protection measures



Resources available to mitigate risks and optimize operations



BCG perspectives on response to COVID-19 (selected publications focused on Manufacturing & Supply Chain)



Managing the coronavirus outbreak – and preparing for the next one



Responding to the coronavirus impact on supply chains



COVID-19: Preparing the supply chain for the next disruption



Stabilizing manufacturing operations in response to COVID-19



COVID-19 response:

Manufacturing & supply chain –
return to work



COVID-19 response: Building the bionic supply chain



Stabilizing supply chains in response to COVID-19



COVID-19 response: Cash management for operations stability



COVID-19 response: Digital manufacturing



COVID-19 response: End-toend planning under extreme volatility



COVID-19 response: distribution & logistics



COVID-19 response: Rapid operations improvement - how to quickly reduce cost and cash new!

Key tools/ action plans













BCG

Disclaimer

The services and materials provided by Boston Consulting Group (BCG) are subject to BCG's Standard Terms (a copy of which is available upon request) or such other agreement as may have been previously executed by BCG. BCG does not provide legal, accounting, or tax advice. The Client is responsible for obtaining independent advice concerning these matters. This advice may affect the guidance given by BCG. Further, BCG has made no undertaking to update these materials after the date hereof, notwithstanding that such information may become outdated or inaccurate.

The materials contained in this presentation are designed for the sole use by the board of directors or senior management of the Client and solely for the limited purposes described in the presentation. The materials shall not be copied or given to any person or entity other than the Client ("Third Party") without the prior written consent of BCG. These materials serve only as the focus for discussion; they are incomplete without the accompanying oral commentary and may not be relied on as a stand-alone document. Further, Third Parties may not, and it is unreasonable for any Third Party to, rely on these materials for any purpose whatsoever. To the fullest extent permitted by law (and except to the extent otherwise agreed in a signed writing by BCG), BCG shall have no liability whatsoever to any Third Party, and any Third Party hereby waives any rights and claims it may have at any time against BCG with regard to the services, this presentation, or other materials, including the accuracy or completeness thereof. Receipt and review of this document shall be deemed agreement with and consideration for the foregoing.

BCG does not provide fairness opinions or valuations of market transactions, and these materials should not be relied on or construed as such. Further, the financial evaluations, projected market and financial information, and conclusions contained in these materials are based upon standard valuation methodologies, are not definitive forecasts, and are not guaranteed by BCG. BCG has used public and/or confidential data and assumptions provided to BCG by the Client. BCG has not independently verified the data and assumptions used in these analyses. Changes in the underlying data or operating assumptions will clearly impact the analyses and conclusions.

The situation surrounding COVID-19 is dynamic and rapidly evolving, on a daily basis. Although we have taken great care prior to producing this presentation, it represents BCG's view at a particular point in time. This presentation is not intended to: (i) constitute medical or safety advice, nor be a substitute for the same; nor (ii) be seen as a formal endorsement or recommendation of a particular response. As such you are advised to make your own assessment as to the appropriate course of action to take, using this presentation as guidance. Please carefully consider local laws and guidance in your area, particularly the most recent advice issued by your local (and national) health authorities, before making any decision.

