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| Crisis management   | Business continuity management  | Acceleration of the development of business continuity plans to increase the resilience of crisis management approaches.  |
|   | Health and hygiene committee  | Set-up of a corporate health and hygiene (H&H) committee to oversee all H&H issues (higher frequency of meeting during the crisis).   |
|   | Rapid response process  | Developing agile crisis management processes at system level, involving all key stakeholders (see also Box 4 below).  |
| Passenger management  | Information   | Creation of new functions “transport ambassadors and enforcement officers” to ensure users of PT maintain safe distances and limit the numbers of users entering stations or buses (e.g., LTA Singapore).<br>Development of crowdsourcing app to report passenger attendance numbers (e.g., RATP).<br>Deployment of appropriate signage to encourage physical distance with the installation of stickers by field teams throughout the network. |
|   | Prebooking  | Compulsory prebooking of access to metro stations to avoid overcrowding (e.g., Beijing: booking of 30-minute slots to enter station).   |
|   | Reducing touch points with surfaces   | Digitalization of stations towards contactless accessibility: touchless buttons (rolling-stock doors, elevators) to minimize touchpoints and use of speech recognition (AI based).  |
|   | Tracking compliance with mitigation measure   | Mask wearing video detection (AI-based).  |
|   | Tracking of infected peoples  | Identification of infected passengers through thermal scanners or face recognition, including further tracking, also via facial recognition or via a dedicated app.   |
|   | Limiting access to infected people  | COVID-19 tracing systems connected to the citizen metro card, disabling its use in case of confirmed infection (e.g., Metro of Medellin).   |
|   | Detecting infections  | Alternative use of rail-car or mobility infrastructure to transport, cure or detect infected people.  |
|   | Staff management  | Flexibilization of staff (schedules, tasks)   |
| Set-up of backup teams to increase resilience in case staff members fall ill.   |   |   |
| Development of an AI-based staff planning process to increase flexibility through real-time demand and offer matching (e.g., Transport Lausanne).   |   |   |
| Shifting the role of controllers towards becoming client information agents.  |   |   |
| Deploy taxi drivers as transport ambassadors to monitor social distancing of passengers in stations.  |   |   |
| Several shared mobility MSPs have been using “rebalancing staff” to perform cleaning tasks.<br>Use of ride-hailing drivers for last-mile delivery for logistics companies or restaurants. |   |   |
| Automation  | Further development of autonomous mobility (e.g., driverless metro) is also expected to build resilience as it minimizes staff contact with surfaces and other people.  |   |
| Training  | Development of e-learning and communication platform, allowing training of and communication to staff via digital channels (e.g., training drivers and staff on new measures and behavior during COVID-19 period). Major cost saving is expected in terms of time and travel. |   |
| Subcontracting  | Increased usage of subcontracting for tasks such as cleaning to allow for more flexibility in terms of working time.  |   |
| Asset management  | Procurement of rolling stock  | Adaptations in rolling-stock procurement, with smaller buses included to gain flexibility (for routing and for limiting “mass”).  |
|   | Spare-parts management  | Increasing spare-parts inventory to mitigate the risk of lack of supply: negative impact on working-capital requirement; however, positive impact on maintenance regime due to increased spare-parts availabilities (considered to be maintained post-COVID).   |

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| Asset management                | Cleaning/sanitation measures  | Elevating the quality of cleaning in mass transit and shared mobility modes ("COVID-19 told us that we need to step up the hygiene level!").  |
|                                 |                               | Introduction of new or enhanced cleaning and disinfection material, such as enhanced air ventilation and antiviral or self-cleaning material for high-touch surfaces: <ul style="list-style-type: none"> <li>■ Applying nano silver titanium coating to areas frequently touched by passengers at stations.</li> <li>■ Bikes and e-scooters with self-cleaning handlebars (copper-infused handlebars for micro-mobility devices).</li> <li>■ Nebulization disinfection process with spraying of 20 micron drops of virucidal products.</li> </ul>   |
|                                 |                               | Deploying automated processes and devices: <ul style="list-style-type: none"> <li>■ Automated escalator handrail-cleaning devices and vehicle disinfection which utilize ultraviolet (UV) light to kill nearly every germ. In vehicles, UV tubes automatically light up when no one is inside and stop on their own after the process is completed. Benefits include reduction of the time for disinfection (in Pudong: from 40 to 4 minutes), and cleaning all corners without the smell of bleach and conventional disinfectants.</li> <li>■ "Vaporised Hydrogen Peroxide Robots" to conduct automated deep cleaning and decontamination in train compartments and stations.</li> </ul> |
|                                 |                               | Inspection teams auditing compliance with hygiene and health measures, and improvement of communications on health and hygiene issues.  |
|                                 |                               | Systematic disinfection of car sharing vehicles.  |
|                                 | Urban logistics               | Bus depot used as a warehouse for last-mile delivery of goods.<br>Car park used as drive-thru for grocery delivery.   |
|                                 | Entertainment                 | Car park used as drive-in cinema.   |
| Supplier management             | Tendering process             | Simplified tendering process during the crisis, allowing for reduced tendering time and more flexibility in contractual terms.  |
| Capital expenditures management | Replanning of investments     | Review of investment plans in light of expected reduction of funding.   |
|                                 | Prioritization of investments | Deprioritization of investments in road infrastructure, higher prioritization of investments in PT and shared mobility infrastructure.  |
|                                 |                               | Adaptation of investment criteria to prioritize capacity improvement within current infrastructure (e.g., signaling) versus investments in network extension.   |
|                                 |                               | Modularization of existing investment plans to give priority to investments positively impacting health and safety.   |
|                                 | Financing model               | Evolution of financing model: from cash investments towards leasing.  |