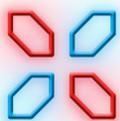




**LUXINNOVATION**

TRUSTED PARTNER FOR BUSINESS

POST COVID-19  
MARKET TRENDS  
**MARKET ANALYSIS**



JULY 2020



MARKET INTELLIGENCE REPORT

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# INTRODUCTION

Governments' first priorities in tackling the COVID-19 pandemic have been to overcome the health emergency and to implement rapid economic rescue measures. As the health crisis gradually abates in some countries, attention is now turning to preparing stimulus measures for triggering **economic recovery** (OECD, 2020)<sup>1</sup>. In Europe, the European Commission has already proposed a recovery plan<sup>2</sup> (European Commission, 2020)<sup>3</sup>. According to the McKinsey Global Institute, the difference between a weak and strong recovery in the Eurozone could be as much as €1.7 trillion (Mc Kinsey, 2020) .

The objective of this report is to **identify the main market trends and innovations identified as key drivers in the Post COVID-19** economies. The COVID-19 crisis has accelerated some of these trends (e.g. digitalisation), while new trends have emerged significantly (e.g. remote working). Recovery strategies will be driven by these trends, while they could in return have a strong impact on facilitating their implementation.

## **THIS REPORT IS BASED ON THREE MAIN TYPES OF SOURCES:**

1. Existing recovering strategies available at national level in Europe, as well as the European Commission Recovery Plan and Position papers provided by international organisations;
2. Technology and Innovation market reports taking into account the COVID-19 crisis impacts;
3. Specialised press, providing different points of view on current market trends in the Post COVID-19 period.

As a result, the analysis shows that Post COVID-19 recovery will be shaped by four main megatrends:

1. **Digitalisation** was already a strong trend before the crisis. It accelerated with the use of remote working or online commerce. It will remain key in the future, also as a pivotal element of new business models.
2. The crisis is seen as an opportunity to achieve **Sustainability**. Many governments have recognised the need and opportunity of a sustainable recovery. For example, in April 2020, the G20 Finance Ministers agreed to “commit to support an environmentally sustainable and inclusive recovery” (G20, 2020)<sup>5</sup>.
3. **Resilience** is the capacity to absorb and adapt to external shocks. The COVID-19 provides valuable lessons learned on our vulnerabilities and recovery strategies should focus on building more resilient economic systems;

4. While businesses are now dealing with the severe short-term impacts of the crisis, many of them will have to reconsider their **business strategies** in the post crisis period, taking into account the new-normal situation.

The COVID-19 crisis has reinforced the pressure to reform, not delayed it. The stakes are huge—not just in terms of euros and competitiveness, but also in the well-being of individuals and society at large. If policy makers and business leaders seize the initiative, Europe could emerge from this crisis stronger and better prepared for the future (OECD, 2020)<sup>6</sup>.

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<sup>1</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <http://www.oecd.org>

<sup>2</sup> Including a new recovery instrument of €750 billion which will boost the EU budget with new financing raised on the financial markets for 2021-2024 and a reinforced long-term budget of the EU for 2021-2027 (€ 1 100 billion)

<sup>3</sup> Recovery plan for Europe. Retrieved from <https://ec.europa.eu>

<sup>4</sup> Navigating the post-COVID-19 era: A strategic framework for European recovery. Retrieved from <https://www.mckinsey.com>

<sup>5</sup> G20 Finance Ministers and Central Bank Governors Meeting 15 April 2020 [Virtual]. Retrieved from <https://g20.org>

<sup>6</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <http://www.oecd.org>

# OVERVIEW

The following figure provides an overview of the **16 trends** and **45 related** topics identified as key market trends impacting the post COVID-19 economic recovery.

[Figure 1] - Main market trends impacting the post COVID-19 recovery

- |  |   |
|--|---|
| <b>1.</b> DIGITAL TRANSFORMATION ACCELERATION      | 1. Investment in digital infrastructures<br>2. Legal & standardised data frameworks<br>3. New business models based on digitalisation |
| <b>2.</b> TRACKING PRIVACY & SECURITY              | 4. Privacy and GDPR's implementation<br>5. Cybersecurity & cyber resilience   |
| <b>3.</b> EMBRACING INDUSTRY 4.0                   | 6. Robotics and automation<br>7. Digitalised manufacturing<br>8. Data-driven factories  |
| <b>4.</b> ACHIEVING THE ENERGY TRANSITION          | 9. Renewable energy and power flexibility<br>10. Energy efficiency for sustainable cities<br>11. Smarter and cleaner mobility         |
| <b>5.</b> SHIFTING TO A CIRCULAR ECONOMY           | 12. Circular economy business models<br>13. Maximising resource use<br>14. Circular Economy regulation                                |
| <b>6.</b> RETHINKING THE FOOD VALUE CHAIN          | 15. Sustainable food production<br>16. Local food supply chains<br>17. Focus on qualitative food                                      |
| <b>7.</b> INVESTING IN SUSTAINABLE INFRASTRUCTURES | 18. Climate resilient infrastructures   |



# POST COVID-19 MARKET TRENDS

## RESILIENCE

## BUSINESS STRATEGIES

### 8 FOCUSING ON THE HEALTHCARE SYSTEM

### 9 BUILDING REGIONAL SUPPLY CHAINS

### 10 INVESTING IN EDUCATION & RE-SKILLING

### 11 COMMITTING TO AN INCLUSIVE DEMOCRACY

### 12 RECONSIDERING BUSINESS STRATEGIES

### 13 EMBEDDING INNOVATION

### 14 NEW WORKING TRENDS

### 15 CONSUMPTION PATTERNS EVOLUTION

### 16 EMERGING ENTERTAINMENT TRENDS

- 19. Preventive healthcare
- 20. Personalised medicine
- 21. Digital Health

- 22. Bring production home
- 23. Smarter supply chains
- 24. Diversified supply chains

- 25. Education programs to prepare tomorrow's workers
- 26. Worker's re-skilling & training
- 27. Distance learning

- 28. Inclusive growth
- 29. Participative democracy
- 30. Fight fake news & misinformation

- 31. Know and understand customers
- 32. Reshape Value proposition
- 33. Extending reach
- 34. Develop an agile operating model

- 35. Integrate the innovation ecosystem
- 36. Intellectual Property issues

- 37. Remote working
- 38. More agile and safe workspace
- 39. Physical health and emotional well-being of employees

- 40. Online shopping
- 41. Safe Delivery automatisatation (Robots & Drones)
- 42. Digital and Contactless Payments
- 43. Keeping spaces safe

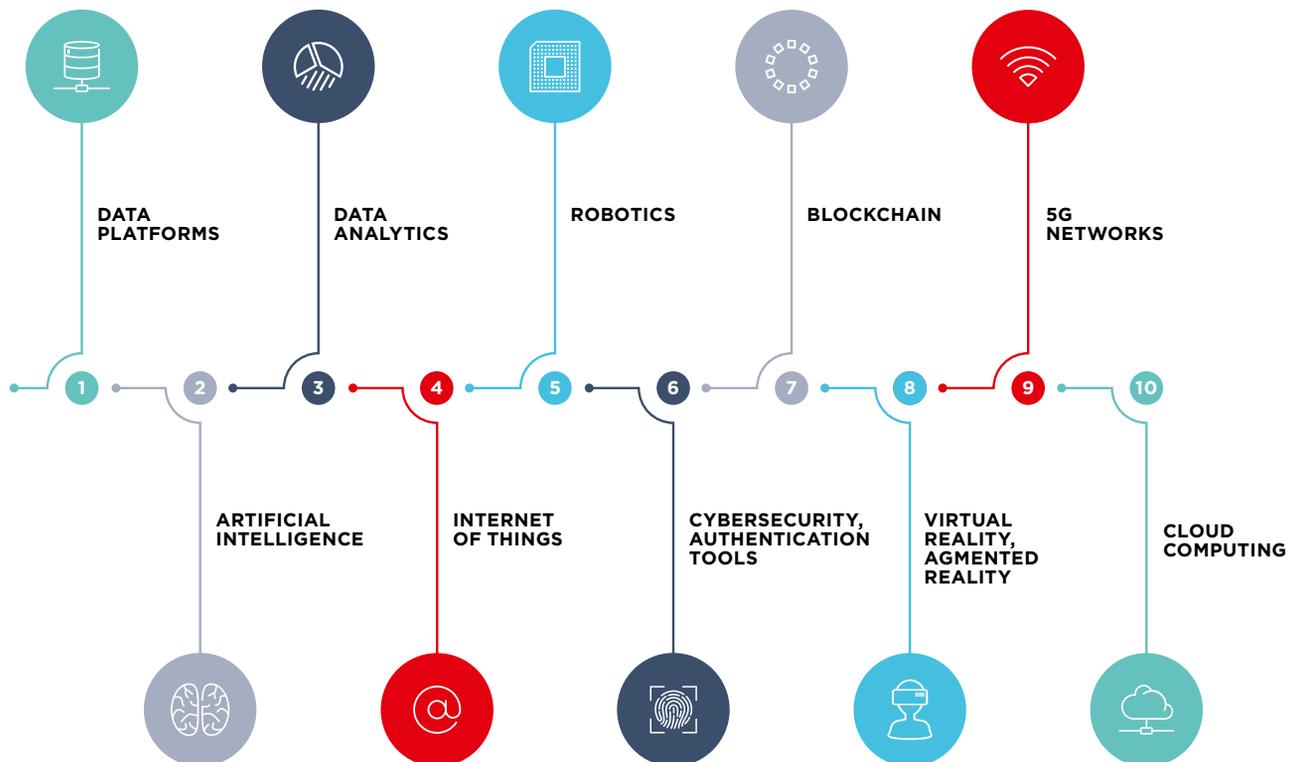
- 44. New entertainment era
- 45. Virtually visit places and events

# KEY TECHNOLOGIES

Linked to these market trends, the following technologies appear to be the 10 most relevant:

1. Data Platforms
2. Artificial Intelligence
3. Data Analytics
4. Internet of things
5. Robotics
6. Cybersecurity, Authentication tools
7. Blockchain
8. Virtual Reality, Agmented Reality
9. 5G networks
10. Cloud computing

[Figure 2] - Key technologies related to post COVID-19 market trends



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# DIGITALISATION

Already long before the COVID-19 breakout, the digital economy has been playing an increasingly significant role as a **new driver for economic growth and social transformation**. While during the crisis, digitalisation allowed responses to short-term requirements such as remote working, distance learning, telemedicine or e-commerce, these trends have the potential to become long-standing shifts in the digital landscape. In 2019, the McKinsey Global Institute estimated that if Europe were to catch up with the United States in digital and artificial intelligence technologies, it could add €3.6 trillion in GDP by 2030 (Mc Kinsey, 2020)<sup>7</sup>. The classical entry barriers of digitalisation are the lack of funds (especially for the initial financial investments), talents shortage and difficulties in finding proper business models (Offices of Science and Innovation, 2020)<sup>8</sup>.

Though, in a recent survey conducted by Tencent Research Institute among 1638 Chinese companies about their COVID-19 exit strategy, the majority of surveyed enterprises declared that they will **increase their digital investments in the future by 10% - 30%**. Investments will target four top key technologies: big data, IoT, cloud computing and 5G. Recovery strategies should acknowledge how ICT and digital technologies are continuously changing the business and market dynamics, while supporting these trends (Offices of Science and Innovation, 2020)<sup>9</sup>.

In synthesis, three main market trends have emerged from the COVID-19 crisis: (1) the accelerated adoption of digitalization in the economy and society, (2) the need to address security and privacy issues and (3) the opportunities related to Industry 4.0 [Figure 3].

[Figure 3] - Main market trends impacting the post COVID-19 recovery related to Digitalisation



<sup>7</sup> Navigating the post-COVID-19 era: A strategic framework for European recovery. Retrieved from <https://www.mckinsey.com>

<sup>8-9</sup> COVID-19 and digital transformation - What do we see now and what will we see soon? Retrieved from <https://sweden-science-innovation.blog>

## 1. DIGITAL TRANSFORMATION ACCELERATION

The **accelerated adoption of digitalisation in the economy** and the society will be favored by increased investments in digital and data-related infrastructures, improving connectivity (e.g. 5g networks) or computing power (e.g. supercomputers). Agreements on standards, interfaces or data-sharing will be key to increase data exchanges.

Companies will also position themselves for fundamental business-model innovation, applying a digital-first lens and adapting to changes in consumer behavior (Mc Kinsey, 2020)<sup>10</sup>. It is worth highlighting that SMEs, globally less digitalized, show a high potential for digitalization, although they may lack the right capacities.

### TREND: DIGITAL

| Topics  | Citation(s)   |
|---|---|
| <b>Investment in digital infrastructures</b>  | <p>“Policy makers should support the transition to digital technologies and sustainable business models [...] by building a <b>strong digital infrastructure</b>”<sup>11</sup></p> <p>“Building the necessary infrastructure to support a digitized world and stay current in the latest technology will be essential for any business or country to remain competitive in a post-COVID-19 world”<sup>12</sup>.</p> <p>“Investing in more and better <b>connectivity</b>, especially in the rapid deployment of 5G networks”<sup>13</sup></p> |
| <b>Legal &amp; standardised data frameworks</b>   | <p>“Policy makers should support the transition to digital technologies and sustainable business models [...] by <b>harmonizing technology regulations and standards</b>, agree on standards and interfaces, or set up data-sharing agreements”<sup>14</sup></p>  |
| <b>New business models based on digitalisation</b>  | <p>“To some extent, business leaders in these sectors should also position themselves for fundamental business-model innovation, applying a <b>digital-first lens</b> and adapting to changes in consumer behavior.”<sup>15</sup></p>   |
| <p><b>Key Technologies:</b> Quantum Computing, 5G, Cloud Computing, Supercomputing, Data Governance Platforms, Data Exchange Platforms, Artificial Intelligence, Big data, Blockchain</p> |   |

<sup>10-11</sup> Navigating the post-COVID-19 era: A strategic framework for European recovery. Retrieved from <https://www.mckinsey.com>

<sup>12</sup> WEF - 10 technology trends to watch in the COVID-19 pandemic. Retrieved from <https://etradeforall.org>

<sup>13</sup> Europe's moment: Repair and prepare for the next generation. Retrieved from <https://ec.europa.eu>

<sup>14-15</sup> Navigating the post-COVID-19 era: A strategic framework for European recovery. Retrieved from <https://www.mckinsey.com>

## 2. TACKLING PRIVACY AND SECURITY

As society and businesses become more digitalised, **security and privacy** become paramount issues. Tighter controls on data and privacy, a higher risk awareness in digital enterprises, the transition of business models to cloud-based or managed services triggered a strong growth of the global cybersecurity market before the crisis. The same market is forecast to grow at a slower average rate of 6.2% per year to 2023 due to the economic

consequences of the coronavirus pandemic in 2020 (Globenewswire, 2020)<sup>16</sup>.

Though, security has become an increasingly strategic issue and enterprises are less able to dispense with it when cost-cutting, although some projects may be delayed. Technologies related to identity & access management, cyber resilience or blockchain are expected to be key sectors for investments.

### TREND: TACKLING PRIVACY AND SECURITY

| Topics   | Citation(s)  |
|--|--|
| <b>Privacy and GDPR's implementation</b>   | " <b>Privacy technologies</b> must become the standard for enterprises and governments alike, to ensure people are best equipped to facilitate wide-scale privacy-enabled data collaboration before the next crisis unfolds." <sup>17</sup>  |
| <b>Legal &amp; standardised data frameworks</b>  | <p>"The large-scale adoption of work-from-home technologies, exponentially greater use of cloud services and explosion of connectivity allow companies to continue operations even with social distancing and "stay at home" orders. However, the paradigm shift is putting immense pressure on <b>cybersecurity operations</b>. As organizations are making extraordinary efforts to protect their workers and serve their customers during the pandemic, exposure to cyberthreats is increasing significantly."<sup>18</sup></p> <p>" Foster a culture of <b>cyber resilience</b>:</p> <ul style="list-style-type: none"> <li>• Focus on protecting the organization's critical assets and services</li> <li>• Balance risk-informed decisions during the crisis and beyond</li> <li>• Update and practice the organization's response and business continuity plans as business transitions to the "new normal"</li> <li>• Strengthen ecosystem-wide collaboration"<sup>19</sup></li> </ul> |
| <b>Key Technologies:</b> Authentication, Tokenisation, Data Privacy Management Solutions, Consent/data Subject Rights Management, Enterprise key management (EKM), Encryption, Identity & Access management, Cloud Data Protection |  |

<sup>16</sup> Economic Impact of COVID-19 on Global Cyber Security Market. Retrieved from <https://www.globenewswire.com>

<sup>17</sup> How to restore data privacy after the coronavirus pandemic. Retrieved from <https://www.weforum.org>

<sup>18-19</sup> WEF - 5 principles for effective cybersecurity leadership in a post-COVID world. Retrieved from <https://etradeforall.org>

### 3. EMBRACING INDUSTRY 4.0

Digitalisation is also at the heart of **Industry 4.0**, focused on enhancing traditional manufacturing, industrial platforms and processes with emerging technologies. COVID-19 is having a much bigger impact on continuity of operations than any other recent pandemic. Automation and digitalization appear as key elements of business model resilience during the crisis (Gartner G00722606, 2020).

The global smart manufacturing market size is estimated to reach USD 514.3 billion by 2027, registering a CAGR of 11.8% over the forecast period, according to a study by Grand View

Research, Inc. (Grand View research, 2020)<sup>20</sup>. The growing adoption of digital technologies such as **industrial IoT, autonomous robots, and big data analytics**, to enable the fourth industrial revolution, are the prime driving factors for the market growth. Moreover, growing emphasis on increasing production efficiency and gaining visibility across the entire value chain will also boost the prospects of smart manufacturing. The availability of advanced technologies such as **3D printing, manufacturing execution systems (MES), and plant asset management solutions** to small and medium enterprises is further fuelling the market growth.

### TREND: EMBRACING INDUSTRY 4.0

| Topics   | Citation(s)   |
|--|---|
| <b>Robotics and automation</b>   | <p>“The post-COVID-19 era will see an increase in <b>robotics and automation</b>. The presence of robots in Industry 4.0 manufacturing floors, distribution, warehousing, and logistics is going to not only increase but accelerate.”<sup>21</sup></p> <p>“Industrial robots can boost output, streamline processes and work continuously without breaks. All of those advantages are particularly appealing as companies devote attention to their recoveries. Robots can become <b>crucial elements of businesses’ adoption processes</b>. Some countries overcame the worst of their coronavirus outbreaks, but the possibility remains of experiencing workforce shortages when exposed persons need to self-quarantine.”<sup>22</sup></p> |
| <b>Digitalised manufacturing</b>   | <p>“Digitally transformed processes are connecting digitally transformed factories through digitally transformed business models. They are driving value, speed and efficiency for the savvy companies using them and they are delivering a new digitally enabled level of agility and resilience.”<sup>23</sup></p>  |
| <b>Data-driven factories</b>   | <p>“Kroupenev also believes manufacturers will increasingly view <b>data as a valuable asset</b>, spending money on sensors, dashboards and other products that reveal how companies excel and where room for improvement exists. He brought up how digitization will prove its worth by giving competitive advantages to the companies that pursue it.”<sup>24</sup></p> <p>“According to the results, 49% of those polled said analytics were more or much more important than before the pandemic. Also, most respondents from the industrial and manufacturing sectors <b>planned to maintain analytics</b> spending.”<sup>25</sup></p>   |
| <p><b>Key Technologies:</b> Artificial Intelligence, Value-Stream-As-A-Service, Big Data, Cloud Computing, Internet-of-Things, blockchain, Robotics-as-a-Service (RaaS), Smart Manufacturing Platforms, Digital twin, Automation, Robotics, Additive Manufacturing, M2M Connectivity, Data Analytics, Predictive Maintenance</p> |   |

<sup>20</sup> Smart Manufacturing Market Size Worth \$514.3 Billion By 2027. Retrieved from <https://www.grandviewresearch.com>

<sup>21</sup> 3DP, Blockchain, IoT, & VSaaS Trends for COVID-19: Part II. Retrieved from <https://www.rtinights.com>

<sup>22</sup> How Will Industry 4.0 Shift in a Post-COVID World? Retrieved from <https://www.enterpriseitworld.com>

<sup>23</sup> Post COVID-19, The Answer Is Digital Transformation, Now What's The Question? Retrieved from <https://www.forbes.com>

<sup>24-25</sup> How Will Industry 4.0 Shift in a Post-COVID World? Retrieved from <https://www.enterpriseitworld.com>

# SUSTAINABILITY

For the economic recovery from the COVID-19 crisis to be durable and resilient, a return to 'business as usual' and environmentally destructive investment patterns and activities must be avoided (OECD, 2020)<sup>26</sup> While the economic shut-down has led to some widely-reported environmental improvements, such as reduced emissions of GHGs and air pollutants and less water pollution, these in themselves will have almost no long-term impact (Le Quéré et al., 2020)<sup>27</sup>. If economic activity resumes as before, they are likely to be temporary and quickly erased. In this regard, the crisis is a real opportunity to **“Build back better”**.

The Sustainable Development Goals listed in the 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015 (United Nations, 2015)<sup>28</sup>, as well as the **European Green Deal** (European Commission, 2019)<sup>29</sup> and the related Investment Plan<sup>30</sup> are expected to be cornerstones of the recovery strategies.

While sustainability is supported by various trends, the COVID-19 crisis has highlighted specifically four of these trends: (1) the need to achieve the energy transition, (2) to shift to circular economy, (3) to rethink the food production value chain, and (4) to invest in sustainable infrastructures [Figure 4].

[Figure 4] - Main market trends impacting the post COVID-19 recovery related to Sustainability

- |   |   |
|---|---|
| <p><b>4.</b> ACHIEVING THE ENERGY TRANSITION</p>          | <ul style="list-style-type: none"> <li>9. Renewable energy and power flexibility</li> <li>10. Energy efficiency for sustainable cities</li> <li>11. Smarter and cleaner mobility</li> </ul> |
| <p><b>5.</b> SHIFTING TO A CIRCULAR ECONOMY</p>           | <ul style="list-style-type: none"> <li>12. Circular economy business models</li> <li>13. Maximising resource use</li> <li>14. Circular Economy regulation</li> </ul>                        |
| <p><b>6.</b> RETHINKING THE FOOD VALUE CHAIN</p>          | <ul style="list-style-type: none"> <li>15. Sustainable food production</li> <li>16. Local food supply chains</li> <li>17. Focus on qualitative food</li> </ul>                              |
| <p><b>7.</b> INVESTING IN SUSTAINABLE INFRASTRUCTURES</p> | <ul style="list-style-type: none"> <li>18. Climate resilient infrastructures</li> </ul>   |



<sup>26</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <http://www.oecd.org>

<sup>27</sup> Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement. Retrieved from <https://www.nature.com>

<sup>28</sup> Transforming our world: the 2030 Agenda for Sustainable Development. Retrieved from <https://sustainabledevelopment.un.org>

<sup>29</sup> A European Green Deal: Striving to be the first climate-neutral continent. Retrieved from <https://ec.europa.eu>

<sup>30</sup> Financing the green transition: The European Green Deal Investment Plan and Just Transition Mechanism. Retrieved from <https://ec.europa.eu>

#### 4. ACHIEVING THE ENERGY TRANSITION

In a global economy shaken deeply by COVID-19, short-term demand declines for fossil fuels, while **renewables** are estimated to grow slightly<sup>31</sup> (International Energy Agency, 2020)<sup>32</sup>. Whereas large-scale renewables remain important, trends show that distributed renewables improving the **flexibility** of the power system, and demand-side **energy efficiency** are also important opportunities (Resources for the Future, 2020)<sup>33</sup>. Cities and the building sector more broadly, are key targets for **energy efficiency** improvements. A Roland Berger's report on Energy Efficiency Services in Europe concludes that the volume of such services will double by 2025, producing a market worth some EUR 50 billion (Roland Berger, 2019)<sup>34</sup>. The **smart mobility** market is also a key element of smarter cities.

Smart mobility includes the promotion of environmental-friendly transport modes such as electric vehicles, shared transportation services, and on-demand smart mobility services. It is expected to grow at a CAGR of 19.9% during the forecast period 2017-2023 (Cole Market Research, 2020)<sup>35</sup>.

While current projections suggest that the world may be on the cusp of its first true energy transition, more ambitious public policies and technological innovations are still needed (Resources for the Future, 2020)<sup>36</sup>. In the Post COVID-19 recovery phase, economic stimulus packages could help accelerate the shift towards a zero-carbon, climate-resilient societies while creating jobs (OECD, 2020)<sup>37</sup>.

<sup>31</sup> The International Energy Agency (IEA) estimates that primary energy demand in 2020 could decline for oil (-9%), coal (-8%), natural gas (-5%), and nuclear (-2%), while renewables would grow by 1%. Solar power has grown from supplying less than 0.01% of the world's electricity in 2008 to more than 2% in 2018. By 2040, multiple scenarios project that solar will provide over 20% of the world's electricity.

<sup>32</sup> The COVID-19 Crisis and Clean Energy Progress. Retrieved from <https://www.iea.org>

<sup>33</sup> Global Energy Outlook 2020: Energy Transition or Energy Addition? Retrieved from <https://www.rff.org>

<sup>34</sup> Energy efficiency services market to grow to EUR 50 billion in Europe by 2025. Retrieved from <https://www.rolandberger.com>

<sup>35</sup> Smart Mobility Market to Witness over X.X% Growth 'in Revenue During the COVID-19 Pandemic. Retrieved from <https://coleofoduty.com>

<sup>36</sup> Global Energy Outlook 2020: Energy Transition or Energy Addition? Retrieved from <https://www.rff.org>

<sup>37-38-39</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <http://www.oecd.org>

## TREND: ACHIEVING THE ENERGY TRANSITION

| Topics  | Citation(s)   |
|---|---|
| <b>Renewable energy and power flexibility</b>   | <p>“Economic stimulus packages can help accelerate the <b>shift towards a zero-carbon</b>, climate-resilient electricity system while creating jobs. While large-scale renewables remain important in this regard, distributed renewables, demand-side energy efficiency and improving the flexibility of the power system are also important opportunities. Energy investment is expected to decline sharply in 2020, even for renewables (IEA, 2020). In this context, using stimulus spending to invest in and mobilise finance for ‘shovel-ready’ utility-scale renewables (e.g. wind and solar photovoltaic) remain key levers for a sustainable economic recovery.</p> <p>The lock-down measures imposed during the COVID-19 crisis have shone a spotlight on the importance of <b>grid system flexibility</b>, because falling demand has raised the share of renewables due to their priority dispatch and low-running costs.”<sup>38</sup></p>   |
| <b>Energy efficiency for sustainable cities</b>   | <p>“Energy efficiency is a clear candidate for a green recovery package but it is essential to achieve climate goals and is often generally labour-intensive. Beyond power, an important target for energy efficiency is the <b>building</b> sector.</p> <p>To achieve the goals of the Paris Agreement, there is a strong need both for <b>retrofit of existing building stock and for new builds</b> to meet stringent energy-efficiency standards.”<sup>39</sup></p>   |
| <b>Smarter and cleaner mobility</b>   | <p>“For passenger transport, stimulus packages should aim to combine support for a transition to less polluting cars with investments that initiate a <b>shift towards accessibility-based mobility</b>. As governments consider longer-term support for ailing car manufacturers, they can ensure that such support is contingent on environmental improvements including accelerating the shift to electric cars as well as more efficient, cleaner ICE vehicles.”<sup>40</sup></p> <p>“Active transport modes and <b>micro-mobility</b> (e.g. electric scooters, bike sharing schemes) will be key to prevent a big shift from public transport to the car;”<sup>41</sup></p> <p>“<b>Reconfiguration of road-space</b> should also consider the need to better accommodate freight movement (particularly of last-mile travel inside dense city areas) and ensure transition to cleaner fleets; especially as urban freight volumes could increase with higher demand of e-commerce post-COVID.”<sup>42</sup></p> <p>“Including the installation of one <b>million charging points for electric vehicles</b> and a boost for rail travel and clean mobility in our cities and regions”<sup>43</sup></p> <p>“Energy efficiency across the economy can also mean a switch to electricity for energy uses previously directly using fossil fuels, such as electrification in industry, roll-out of electric vehicles and electric heat pumps as part of building energy efficiency measures (IEA, 2018). While this electrification trend can have substantial benefits for reduced air pollution at the point of use, the implications for GHG emissions depend on the <b>decarbonisation of the underlying electricity system</b>, as well as its ability to handle the increased demand pattern.”<sup>44</sup></p> |
| <p><b>Key Technologies:</b> Carbon Capture Technologies, Energy Storage, Smart Grids, Energy Management Platforms, Building Innovation Models, Retrofitting, Smart buildings, Smart Cities, Electric vehicles, Smart Mobility Apps, Traffic Management, Logistics 4.0</p> |   |

<sup>40-41-42</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <http://www.oecd.org>

<sup>43</sup> Europe's moment: Repair and prepare for the next generation. Retrieved from <https://ec.europa.eu>

<sup>44</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <http://www.oecd.org>

## 5. SHIFTING TO A CIRCULAR ECONOMY

The COVID-19 crisis has highlighted the vulnerabilities of our linear production model: the early stages of the crisis have revealed the brittleness of many global supply chains, not limited to but illustrated by medical equipment availability issues, for example. In this specific case, **circular principles provide credible solutions**: design and product policy factors such as reparability, reusability and potential for remanufacturing offer considerable opportunities in resilience (stock availability) and competitiveness.

As an example, the **global refurbished medical devices** market is expected to grow by over 10 percent a year between 2020 and 2025, which represents market opportunities as well as increased asset use rates (therefore less reliance on new raw materials). Implementing Circular economy would also promote water and nutrient security as well as security or resiliency in materials, while mitigating what experts believe to be this century's biggest global threat to health: climate change (Ellen MacArthur Foundation, 2020)<sup>45</sup>.

**Circular business models** (Product-as-a-Service, Sharing economy, etc.) are emerging, as well as the demand to adapt the regulation (e.g. waste regulation to allow re-use) or for more **incentives** (taxation, public procurement, etc.). The EU Circular Economy Action Plan already introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value (European Commission, 2020)<sup>46</sup>. Following the European Commission, applying circular economy principles across the EU economy has the potential to increase EU GDP by an additional 0.5% by 2030 creating around 700 000 new jobs. There is a clear business case for individual companies too: since manufacturing firms in the EU spend on average about 40% on materials, closed loop models can increase their profitability, while sheltering them from resource price fluctuations (European Commission, 2020)<sup>47</sup>.

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<sup>45</sup> The COVID-19 recovery requires a resilient circular economy. Retrieved from <https://medium.com>

<sup>46</sup> EU Circular Economy Action Plan: A new Circular Economy Action Plan for a Cleaner and More Competitive Europe. Retrieved from <https://ec.europa.eu>

<sup>47</sup> Communication from the commission to the european parliament, the council, the european economic and social committee and the committee of the regions: A new Circular Economy Action Plan For a cleaner and more competitive Europe. Retrieved from <https://eur-lex.europa.eu>

## TREND: SHIFTING TO A CIRCULAR ECONOMY

| Topics  | Citation(s)  |
|---|--|
| <b>Circular economy business models</b>   | <p>“<b>Sharing models</b> developed to exchange products may not be perceived well in this pandemic due to hygiene concerns. However, had the “pay for performance” or “access over ownership” service models been in place, they could have been a great solution to provide flexibility.”</p> <p>“Circular sharing models and products as a service can <b>benefit from increased digital adaptation</b>. The ride will be rough on the short run, but on the long run the prospect for circular economy should be better than ever.”<sup>48</sup></p>   |
| <b>Maximising resource use</b>  | <p>“Manufacturing and supply-chain shortages within the health sector have, for example, driven circular innovation. We already see results in the use of sterilization agents to decontaminate N95 masks and give them a second life as well as spurred fabrication laboratories (fab labs) that are banding together to innovate prototype designs and processes for medical use. It is notably telling that the global refurbished medical devices market is expected to grow by over 10% a year between 2020 and 2025, which represents market opportunities as well as increased asset utilisation rates (therefore less reliance on new raw materials).”<sup>49</sup></p>  |
| <b>Circular Economy regulation</b>  | <p>“Over the course of the last decade, a number of leading businesses have stepped onto and invested in this transformative path, while pioneering institutions and government bodies put forward <b>significant legislative proposals</b> to enable the transition. This is notably true in the European Union and in China but it plays out in other regions as well, at national and municipal levels with the same degree of vitality.”<sup>50</sup></p> <p>“Similarly, the European Union and South Korea have both adopted <b>Green Deals</b> as central pillars to their economic recoveries, both leveraging regenerative models and circular economy principles.”<sup>51</sup></p> <p>“For example, the EU Circular Economy Action Plan presents initiatives along the entire lifecycle of products, promoting circular economy production processes, fostering sustainable consumption and closing loops. These actions can <b>be accelerated with the support of the COVID-19 rescue plan.</b>”<sup>52</sup></p> |
| <p><b>Key Technologies:</b> Product-as-a-Service, Cloud, Big data, M2M Communication, Robotics, Material banks, Robotics, 3D Printing, Laser Deposition, Automated Adaptive Machining</p> |  |

<sup>48</sup> Opportunities for a circular economy post COVID-19. Retrieved from <https://www.weforum.org>

<sup>49</sup> Circular Economy and COVID-19: a good moment for reflection. Retrieved from <https://hollandcircularchotspot.nl>

<sup>50</sup> The COVID-19 recovery requires a resilient circular economy. Retrieved from <https://www.greenbiz.com>

<sup>51</sup> The circular economy can support COVID-19 response and build resilience. Retrieved from <https://blogs.worldbank.org>

<sup>52</sup> How Europe's post-COVID-19 economy and environment can both prosper. Retrieved from <https://www.ey.com>

## 6. RETHINKING THE FOOD VALUE CHAIN

Another domain in which circular economy appears particularly relevant is the highly sensitive area of **food production** and distribution. Current industrial agricultural model yields outputs of questionable quality, relies on fossil fuels and practices that are damaging to ecosystems, and is built around supply chains that involve long-distance transport that make it vulnerable to border closures.

In certain cities, hastily implemented lockdowns have stressed food supply and emphasized the need for **shorter producer-to-consumer models**, which have seen a sudden rise in uptake. A heightened awareness around **food safety and a desire for more nutritious food** will also increase demand for eating

local (Forbes, 2020)<sup>55</sup>. As the Ellen MacArthur Foundation's research has highlighted, a circular scenario could lead to a 50 percent reduction of pesticides and synthetic fertilizer use by 2030 in Europe (compared to 2012 levels), while resulting in a 12 percent drop in household expenditure and better products (Ellen MacArthur Foundation, 2020)<sup>55</sup>. It therefore appears timely to further explore the potential of large-scale investment in regenerative, peri-urban production, together with digitally enabled precision agriculture. As an example, the global **vertical farming** market size was valued at \$2.23 billion in 2018, and is projected to reach \$12.77 billion by 2026, growing at a CAGR of 24.6% from 2019 to 2026 (PRNewswire, 2020)<sup>53</sup>.

### TREND: RETHINKING THE FOOD VALUE CHAIN

| Topics                             | Citation(s)  |
|------------------------------------|--|
| <b>Sustainable food production</b> | <p>"Even before the coronavirus outbreak, the food supply chain was in transition.[...]. More than ever, consumers are <b>health-conscious</b> and looking for fresh, additive-free food with traceable origins, with an increasing preference for local"<sup>56</sup></p> <p>"Human impact on the environment is increasing the risk of emerging infectious diseases in humans, over 60% of which originate from animals, mainly from wildlife. Plans for post-COVID-19 recovery, and specifically plans to reduce the risk of future epidemics, therefore need to go further upstream than early detection and control of disease outbreaks. They also need to lessen our impact on the environment to reduce the risk at its source. As part of Sustainable Development Goals, it is the responsibility of all sectors to protect nature and biodiversity, and to maintain and enhance a variety of their direct and indirect benefits to health and well-being."<sup>57</sup></p> <p>"<b>Permaculture</b> is a set of design principles centered on whole systems thinking, simulating, or directly utilizing the patterns and resilient features observed in natural ecosystems. It uses these principles in a growing number of fields from regenerative agriculture, rewilding, and community resilience."<sup>58</sup></p> |

| Topics  | Citation(s)   |
|---|---|
| Local food supply chains  | <p>"Yelp's Coronavirus Impact Report reveals that consumers are more likely to want to know the source of their food, making them increasingly desirous of food <b>from community-supported agriculture</b> (increase in demand of 430 per cent) and farms (increase in demand of 149 per cent). A heightened awareness around food safety and a desire for more nutritious food will also increase demand for eating local. On the supply side, the interruption of global supply chains and closure of borders due to COVID-19 will impact foreign food production and reduce imports."<sup>59</sup></p> <p>"<b>Urban agriculture</b> should be fostered with emerging growing practices and edible green infrastructures, such as vertical farming, hydroponics, aeroponic, aquaponic, and rooftop greenhouses. Notwithstanding the limitations of traditional urban farming activities, innovative and disruptive solutions and short food supply chains of fresh agricultural products might play a positive role in lessening uncertainties from global systemic risks."<sup>60</sup></p> <p>"There is hardly any way that we can envisage a future operating under long-term restrictions without encouraging local alternative supplies and opening up local markets. This is what a circular economy encourages – local supply chains to allow local <b>circulation of nutrient flows</b>."<sup>61</sup></p> |
| Focus on qualitative food   | <p>"There is likely to be an increase in <b>demand for organic food</b>, vegan, vegetarian and other healthy foods as a result of the pandemic.[...] The March performance of organic food companies such as Nourish Organics, which experienced an increase in sales of approximately 30 per cent and the surge in demand for organic vegetable box delivery in the United Kingdom are evidence of this trend."<sup>62</sup></p> <p>"The food systems of tomorrow must embrace the "<b>One Health vision</b>" and advance positive interactions between human health, livestock health, wildlife health and ecosystem health"<sup>53</sup></p> <p>"One Health is a collaborative, multisectoral, and transdisciplinary approach – working at the local, regional, national, and global levels – with the goal of achieving optimal health outcomes recognizing the <b>interconnection</b> between people, animals, plants, and their shared environment."<sup>54</sup></p>   |
| <p><b>Key Technologies:</b> Permaculture, Big Data, Internet of Things, Blockchain-enabled Traceability, Sensors, Urban Agriculture, Vertical Farming, Hydroponics, Aquaponic, Rooftop greenhouses, Hydroponics, Aeroponic, Rooftop Greenhouses</p> |   |

<sup>53</sup> Five Ways That Coronavirus Will Change The Way We Eat. Retrieved from <https://www.forbes.com>

<sup>54</sup> The COVID-19 recovery requires a resilient circular economy. Retrieved from <https://medium.com>

<sup>55</sup> The global vertical farming market size was valued at \$2.23 billion in 2018, and is projected to reach \$12.77 billion by 2026, growing at a CAGR of 24.6% from 2019 to 2026. Retrieved from <https://www.prnewswire.com>

<sup>56</sup> COVID-19 has broken the global food supply chain. So now what? Reshaping food supply chains to prepare for the post-outbreak era. Retrieved from <https://www2.deloitte.com>

<sup>57</sup> Protecting nature protects health – lessons for the future from COVID-19. Retrieved from <https://www.euro.who.int>

<sup>58</sup> What is Permaculture. Retrieved from <https://resilientsoutheasternalberta.com>

<sup>59</sup> Five Ways That Coronavirus Will Change The Way We Eat. Retrieved from <https://www.forbes.com>

<sup>60</sup> Food First: COVID-19 Outbreak and Cities Lockdown a Booster for a Wider Vision on Urban Agriculture. Retrieved from <https://www.mdpi.com>

<sup>61</sup> Opportunities for a circular economy post COVID-19. Retrieved from <https://www.weforum.org>

<sup>62</sup> Five Ways That Coronavirus Will Change The Way We Eat. Retrieved from <https://www.forbes.com>

<sup>63</sup> HOW TO REIMAGINE OUR FOOD SYSTEMS FOR A POST-COVID WORLD. Retrieved from <https://afr100.org>

<sup>64</sup> One Health Basics. Retrieved from <https://www.cdc.gov/onehealth/basics/index.html>

## 7. INVESTING IN SUSTAINABLE INFRASTRUCTURES

Resilience to climate change is one specific aspect of improving the overall resilience of economies and societies. In particular, infrastructure networks will face increasing pressures from the impacts of climate change, but also play an important role in building society's resilience to those impacts.

Infrastructure investment is likely to be a **key component of recovery measures** in many countries – in part because of job creation potential – and it is important to ensure

**that infrastructure investments are climate resilient** and do not increase exposure and vulnerability. This will reduce direct economic damages from climate related disasters and minimise the indirect costs created by the cascading impacts caused by the disruption of both critical services and economic activities. New infrastructure investments, including in low-carbon developments, need to build in resilience against future climate impacts, by assessing climate risks across the lifetime of the project (OECD, 2020)<sup>65</sup>.

### TREND: INVESTING IN SUSTAINABLE INFRASTRUCTURES

| Topics                            | Citation(s)  |
|-----------------------------------|--|
| Climate resilient infrastructures | "Infrastructure investment is likely to be a <b>key component of recovery measures</b> in many countries – in part because of job creation potential – and it is important to ensure that infrastructure investments are climate resilient and do not increase exposure and vulnerability.[...]" <sup>66</sup> |

<sup>65-66</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <http://www.oecd.org>

# RESILIENCE

Although this is not the first economic crisis to impact our societies, the depth and breadth of the current COVID-19 crisis have brought the issue of resilience and preparedness high in the public consciousness. Resilience can be defined as the ability to recover from setbacks, adapt well to change, and keep going in the face of adversity (Harvard Business Review, 2015)<sup>67</sup>.

Resilience is grounded on six principles: redundancy, diversity, modularity, capacity to evolve, integration, and the precaution principle (Harvard Business Review<sup>68</sup>, 2020).

The COVID-19 crisis shows that resilience has much to do with (1) resilient supply chains, (2) the education and re-skilling of the workforce, (3) democracy and specifically with (4) a robust healthcare ecosystem (Figure 5).

[Figure 5] - Main market trends impacting the post COVID-19 recovery related to Resilience



<sup>67</sup> What Resilience Means, and Why It Matters. Retrieved from <https://hbr.org>

<sup>68</sup> Harvard Business review, "Gérer votre entreprise malgré le coronavirus", HBR, Juin-Juillet 2020.

## 8. FOCUSING ON THE HEALTHCARE SYSTEM

COVID-19 is expected to have major long-term consequences on the healthcare industry. COVID-19 has reemphasized the importance of remote diagnosis, consultation and treatment, as part of the growing **digital health market**, expected to reach USD 385.8 Billion by 2025 from an estimated market size of USD 103.1 Billion in 2019 (Valuates report, 2020)<sup>69</sup>. The outbreak has also stressed the need for **preventive healthcare**, i.e. dealing with the prevention of illness to decrease the burden of disease and associated risk factors (Journal of mhealth, 2020)<sup>70</sup>. The global preventive healthcare technologies and services market size is expected to reach USD 432.4 billion by 2024. The growth of this market is attributed to the adoption of advanced technology and

development of preventive measures, including vaccines, screening & monitoring devices, and smart devices to reduce medical errors (Grand View Research, 2016)<sup>71</sup>.

The increasing amount of data, which use needs to be addressed by additional regulation, allows thinking in terms of an entirely new ecosystem for health care, integrating all personal health data around the individual patient. Standing at the center of the future ecosystem, the individual will become the focus for a **hyper-personalized approach** to health and wellness. The global personalized medicine (PM) market size is expected to reach USD 3.18 trillion by 2025 registering a CAGR of 10.6% over the forecast period (Grand View Research, 2020)<sup>72</sup>.

## TREND: FOCUSING ON THE HEALTHCARE SYSTEM

| Topics                | Citation(s)  |
|-----------------------|--|
| Preventive healthcare | <p>“The repercussions of COVID-19 will be felt for many years to come. The outbreak has stressed the <b>need for detecting the onset of such pandemics</b> beforehand and brace for impact. The under preparedness has cost thousands of life and pushed the world economy into recession. Preventive care should be the basis of effective healthcare systems. However, this transition will be complex, and should be carried out in phases over the next few years. Health leaders emphasize that psychological and financial depletion of healthcare systems are likely to escalate this transition. Preventive healthcare system will completely change the way healthcare services are measured and delivered.”<sup>73</sup></p> <p>“<b>Preventive healthcare</b> deals with the prevention of illness to decrease the burden of disease and associated risk factors. Preventive measures can be applied at all stages across the lifespan and along a disease spectrum, to prevent further decline over time.”<sup>74</sup></p> |

<sup>69</sup> Digital Health Market Size to Reach USD 385.8 Billion by 2025 | Valuates Reports. Retrieved from <https://www.prnewswire.com>

<sup>70</sup> COVID-19 and its Impact in Healthcare Tech Across the Globe. Retrieved from <https://thejournalofmhealth.com>

<sup>71</sup> Preventive Healthcare Technologies and Services Market Worth \$432.3 Billion By 2024. Retrieved from <https://www.grandviewresearch.com>

<sup>72</sup> Personalized Medicine Market Size Worth \$3.18 Trillion By 2025. Retrieved from <https://www.grandviewresearch.com>

<sup>73</sup> COVID-19 and its Impact in Healthcare Tech Across the Globe. Retrieved from <https://thejournalofmhealth.com>

<sup>74</sup> Preventative Health Care. Retrieved from <https://chcmedical.com.au>

| Topics   | Citation(s)   |
|--|---|
| <b>Personalised medicine</b>   | <p>“New data-based tools and technologies make a more personalized approach to health and wellness possible. In particular, there are five areas where organizations must focus their efforts to build this potential data-driven future:</p> <ol style="list-style-type: none"> <li>1. The explosion of <b>health care data</b> requires a new ecosystem, built around the individual, that will accelerate affordable, accessible care</li> <li>2. With sensors in, on and around us, 5G and artificial intelligence will create a new network transforming health care</li> <li>3. To personalize health, organizations must use data to understand and influence behaviour</li> <li>4. A trusted intelligence system is needed to secure the participation of the patient-consumer and other stakeholders</li> <li>5. Organizations must be decisive in the business model they choose to pursue in the future.”<sup>75</sup></li> </ol>  |
| <b>Digital Health</b>  | <p>“In the midst of current outbreak, <b>digital health and telehealth</b> have taken a front seat. COVID-19 has reemphasized the importance of remote diagnosis, consultation and treatment. With many healthcare providers giving consultation over video conferencing and phone calls at present, the growth of this segment will augment many folds within the next two years. The social distancing measures have mandated patients with mild symptoms to opt for remote consultation. Further, it greatly reduces the burden on hospitals already swamped by scores of COVID-19 patients. The pandemic has led to major resource constraints. This will lead to development of alternate pricing models and value-based pricing.”<sup>76</sup></p> <p>“COVID-19 has firmly established the need for active action and the establishment of <b>a robust, collaborative, scalable, and agile digital healthcare infrastructure.</b>”<sup>77</sup></p> <p>“The digital development accelerated by the COVID-19 pandemic will have far reaching effects across policies for the following three major elements:</p> <ul style="list-style-type: none"> <li>• For Payers: There will be a pressing need to reduce, simplify, or eliminate co-pay and pre-authorization (PA) for treatment as well as re-evaluate cover charges for COVID-19.</li> <li>• For Providers: The focus is already shifting towards enabling immediate and universal secure online visits to physicians, availability of online testing and at-home preventive healthcare.</li> <li>• For Federal and State Governments: These developments will create the need for <b>consistent regulatory guidance</b> for the healthcare industry, connected patient health management programs that focus on Medicare and Medicaid patients.”<sup>78</sup></li> </ul> |
| <p><b>Key Technologies:</b> Artificial Intelligence, Predictive Analysis, IoT, Big Data Analysis, Wearable Health Devices, 5G, Sensors, Data-Driven, Wearable IoT Devices, Bots, Telemedicine Platforms, Virtual Reality, Augmented Reality, Machine Learning, Blockchain, Cloud-Based Platforms</p> |   |

<sup>75</sup> Five trends driving the emergence of the personalized health ecosystem. Retrieved from <https://www.ey.com>

<sup>76</sup> COVID-19 and its Impact in Healthcare Tech Across the Globe. Retrieved from <https://thejournalofhealth.com>

<sup>77-78</sup> Next Steps: Revisiting Global Healthcare in a Post-COVID World. Retrieved from <https://health.economictimes.indiatimes.com>

## 9. BUILDING REGIONAL SUPPLY CHAINS

The urgent need to design smarter, stronger and more diverse supply chains has been one of the main lessons of this crisis. This is particularly true in the healthcare sector, where the scramble for protective equipment has laid bare the inherent risks of inventory and single-sourcing models driven exclusively by cost control. One likely consequence is that global firms will **diversify** their supply chains in the future. We will also see a decentralization of manufacturing capacity, with companies looking to **bring production home**.

Policymakers may be increasingly pressured to consider whether certain products need to be

manufactured in the country or the region. The transition to a new model for supply chains will be underpinned by digitalisation. With technologies like artificial intelligence and the Internet of Things, supply chains could quickly switch to alternative providers when regular suppliers face disruption (World Economic Forum, 2020)<sup>79</sup>. The global smart and mobile supply chain solutions market is expected to witness progressive growth and reach the market value of around \$ 23.8 billion by 2024 on account of increasing demand for industrial automation and rapid increase in e-commerce activities (PRNewswire, 2019)<sup>80</sup>.

### TREND: FOCUSING ON THE HEALTHCARE SYSTEM

| Topics   | Citation(s)   |
|--|---|
| <b>Bring production home</b>   | <p>“The impact of China’s lockdown and its dominance in key areas of manufacturing have further highlighted the problem with modern supply chains.”<sup>81</sup></p> <p>“We will also see a decentralization of manufacturing capacity, with companies looking to <b>bring production home</b>. This trend grew with the likes of automation and small batch production, which had become so cheap that a number of countries started moving portions of their supply chain back home.”<sup>82</sup></p> <p>“Logistics hubs will re-emerge at the regional level. To <b>eliminate single-source dependencies</b>, and to establish a flexible and adaptable supply chain, product integrators, sub-system suppliers and component suppliers will source, assemble and deliver from their own backyards.”<sup>83</sup></p> |
| <b>Smarter supply chains</b>   | <p>“The transition to a new model for supply chains will be underpinned by a rapid and wholesale <b>digitization</b> of the paperwork that accompanies global trade.”<sup>84</sup></p> <p>“With technologies like <b>artificial intelligence and the Internet of Things</b>, supply chains could quickly switch to alternative providers when regular suppliers face disruption.”<sup>85</sup></p>  |
| <b>Diversified supply chains</b>   | <p>“The coronavirus crisis has revealed the fragility of the modern supply chain.[...]. <b>Diverse sourcing</b> and digitization will be the key to building stronger, smarter supply chains and ensuring a lasting recovery.”</p> <p>“When Chinese factories closed, manufacturers struggled to pivot due to a lack of flexibility in their supplier base. One likely consequence is that global firms will diversify their supply chains in the future, instead of relying only on China.”</p>  |
| <p><b>Key Technologies:</b> Logistics platforms, Real-time data analysis, traceability technologies, Track-and-trace solutions, IoT, smart logistics technologies, Data Analytics, Machine Learning, Smart Manufacturing</p> |   |

<sup>79</sup> Here’s how global supply chains will change after COVID-19. Retrieved from <https://www.weforum.org>

<sup>80</sup> Global Smart and Mobile Supply Chain Solutions Market By Component, By Enterprise Size, By Industry, By Region, Competition, Forecast & Opportunities, 20240. Retrieved from <https://www.prnewswire.com>

<sup>81-82</sup> Here’s how global supply chains will change after COVID-19. Retrieved from <https://www.weforum.org>

<sup>83</sup> A post COVID-19 outlook: the future of the supply chain. Retrieved from <https://www.imd.org>

<sup>84-85</sup> Here’s how global supply chains will change after COVID-19. Retrieved from <https://www.weforum.org>

## 10. INVESTING IN EDUCATION & RE-SKILLING

The COVID-19 has resulted in schools shut all across the world. Globally, over 1.2 billion children are out of the classroom. As a result, education has changed dramatically, with the distinctive rise of **e-learning**, whereby teaching is undertaken remotely and on digital platforms. Even before COVID-19, there was already high growth and adoption in education technology, with global edtech investments reaching US\$18.66 billion in 2019 and the overall market for online education projected to reach \$350 Billion by 2025.

In addition, it is clear that this pandemic has utterly disrupted an education system that many assert was already losing its relevance. Lessons learned from the crisis are, among

others, that skills such as critical thinking and adaptability will be more important for success in the future. Trends such as the digitalisation will also trigger **new education programs** aiming at filling the current gaps in talent's shortages. **Re-skilling** the current workforce is as a key element of resilience: according to the McKinsey Global Institute, 30 to 40 percent of employees in developed economies will have to change professions or undergo complete retraining by 2030 (Mc Kinsey, 2020)<sup>86</sup>. Most resilient businesses are encouraging employees to develop critical skills that potentially open up multiple opportunities for their career development, rather than preparing for a specific next role (Gartner, 2020)<sup>87</sup>.

### TREND: INVESTING IN EDUCATION & RE-SKILLING

| Topics  | Citation(s)  |
|---|--|
| <b>Education programs to prepare tomorrow's workers</b> | <p>"To meet the challenges of the 21st century, students need to be empowered and feel that they can help shape a world where well-being and sustainability – for themselves, for others and for the planet – are achievable. The OECD Learning Compass 2030 identifies three "<b>transformative competencies</b>" that students need in order to contribute to and thrive in our world, and shape a better future: creating new value, reconciling tensions and dilemmas, and taking responsibility"<sup>88</sup></p> <p>"As part of the OECD Learning Compass 2030, knowledge includes theoretical concepts and ideas in addition to practical understanding based on the experience of having performed certain tasks. The Education and Skills 2030 project recognises <b>four different types of knowledge</b>: disciplinary, interdisciplinary, epistemic and procedural."<sup>89</sup></p> <p>"Skills are the ability and capacity to carry out processes and be able to use one's knowledge in a responsible way to achieve a goal. The OECD Learning Compass 2030 distinguishes <b>three different types of skills</b>: cognitive and metacognitive; social and emotional; and practical and physical"<sup>90</sup></p> |

<sup>86</sup> Navigating the post-COVID-19 era: A strategic framework for European recovery. Retrieved from <https://www.mckinsey.com>

<sup>87</sup> 9 Future of Work Trends Post-COVID-19. Retrieved from <https://www.gartner.com>

<sup>88-89</sup> OECD Future of Education and Skills Project background. Retrieved from <https://docplayer.net>

<sup>90</sup> OECD Future of Education and Skills 2030. Retrieved from <https://www.oecd.org>

| Topics  | Citation(s)  |
|---|--|
| <b>Worker's re-skilling &amp; training</b>  | <p>To build a more responsive organization, design roles and structures around outcomes to increase agility and flexibility and formalize how processes can flex. Also, provide employees with varied, adaptive and flexible roles so they acquire <b>cross-functional knowledge and training</b>.<sup>91</sup></p> <p>"As organizations recover from the effects of the pandemic, many will reimagine key aspects of their business models. The imperative for HR leaders is to identify where and what the impact will be for their organization's talent and skill needs."<sup>92</sup></p>   |
| <b>Distance Learning</b>  | <p>Distance Learning "Even before COVID-19, there was already high growth and adoption in education technology, with global <b>edtech investments</b> reaching US\$18.66 billion in 2019 and the overall market for online education projected to reach \$350 Billion by 2025. While some believe that the unplanned and rapid move to online learning – with no training, insufficient bandwidth, and little preparation – will result in a poor user experience that is uncondusive to sustained growth, others believe that a new hybrid model of education will emerge, with significant benefits"<sup>93</sup></p> <p>"Prepare the technical, organizational and regulatory environment for a rapid transition to <b>distance education</b> in the event of circumstances making access to classrooms dangerous or at risk."<sup>94</sup></p> <p>"Concerns about distance learning include the possibility the technologies could create a <b>wider divide</b> in terms of digital readiness and income level. Distance learning could also create economic pressure on parents – more often women – who need to stay home to watch their children and may face decreased productivity at work."<sup>95</sup></p> |
| <p><b>Key Technologies:</b> Edtech Technologies, E-Learning Platforms, HR Tools, Artificial-Intelligence-Enabled Robot Teachers, Languages Apps, Virtual Tutoring, Video Conferencing Tools, Online Learning Software</p> |  |

<sup>91</sup> 9 Future of Work Trends Post-COVID-19. Retrieved from <https://www.gartner.com>

<sup>92</sup> Workforce Planning for Competitive Advantage Post-COVID-19. Retrieved from <https://www.gartner.com>

<sup>93</sup> COVID-19 has changed education forever – here's how. Retrieved from <https://apolitical.co>

<sup>94</sup> Designing an Interactive Learning Environment to Support Children's Understanding in Complex Domains. Retrieved from <https://www.researchgate.net>

<sup>95</sup> 10 technology trends to watch in the COVID-19 pandemic. Retrieved from <https://www.weforum.org>

## 11. COMMITTING TO AN INCLUSIVE DEMOCRACY

The health crisis has also brought to light the inequalities and fragility of our societies, bringing the issues of **inclusive recovery strategies**, as well the need to reinforce the democratic nature of our systems, as key pillars of resilient societies. **Democracy tech** (e.g. online parliamentary sessions) and deliberative democracy community (e.g. participative budget) will emerge to build greater trust in public institutions and open up traditional processes to wider deliberation, bringing people closer to the source of democratic power (Tony Blair Institute for Global Change, 2020)<sup>96</sup>.

In this context, **fight against fake news** is also very important: “Along with more and more people using the internet and social media, we see a faster spread of fake news and disinformation to a level that has even prompted governments and the private sector to come up with measures to fight these threats” (Pitchbook, 2020)<sup>97</sup>.

### TREND: COMMITTING TO AN INCLUSIVE DEMOCRACY

| Topics  | Citation(s)  |
|---|--|
| <b>Inclusive growth</b>   | <p>“The health crisis has also brought to light the inequalities and fragility of our societies. At the beginning of the crisis, 40% of households in the OECD were three months away from poverty.[...]We must ensure the post-COVID recovery integrates inclusiveness with climate and biodiversity concerns.[...] <b>Poverty and income inequality can limit severely</b> their chances to emerge stronger in the post-COVID world.”<sup>98</sup></p> <p>“ A central dimension of building back better is the need for a <b>people-centred recovery</b> that focuses on well-being, improves inclusiveness and reduces inequality”<sup>98</sup></p> |
| <b>Participative democracy</b>  | <p>“COVID-19 has created an unprecedented challenge for parliaments and legislatures. Social distancing and restrictions on movement have forced parliaments to consider <b>new methods of scrutiny, debate, and voting</b> [...] the crisis has presented a unique window of opportunity to innovate.[...]. Parliamentarians should use what they’ve learned and the expertise of the democracy tech and deliberative democracy community to build greater trust in public institutions and open up traditional processes to wider deliberation, bringing people closer to the source of democratic power.”<sup>100</sup></p>                         |
| <b>Fight fake news &amp; misinformation</b>   | <p>“Along with more and more people using the internet and social media, we see <b>a faster spread of fake news and disinformation</b> to a level that has even prompted governments and the private sector to come up with measures to fight these threats.”<sup>101</sup></p>  |
| <p><b>Key Technologies:</b> Femtech, Assistive Technologies, Digital Democracy Platforms, Voting Apps, Online Crowdsourcing, Participative Budgets, Authentication Technologies, Civic Tech, Participatory Budgeting, Artificial Intelligence, Blockchain, Big Data, Analytics Platform</p> |  |

<sup>96</sup> How COVID-19 Is Accelerating the Rise of Digital Democracy. Retrieved from <https://institute.global>

<sup>97</sup> Startups battle the spread of fake news surrounding the pandemic. Retrieved from <https://pitchbook.com>

<sup>98</sup> Tackling coronavirus (COVID-19): Contributing to a global effort. Retrieved from <http://www.oecd.org>

<sup>99</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <https://www.oecd.org>

<sup>100</sup> How COVID-19 Is Accelerating the Rise of Digital Democracy. Retrieved from <https://thelivinglib.org>

<sup>101</sup> 10 European startups fighting fake news and disinformation. Retrieved from <https://www.eu-startups.com>

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# BUSINESS STRATEGIES

To date, the main concern for companies is to deal with the immediate consequences of the crisis (decrease of orders, lack of liquidity, avoid bankruptcies, etc.). After the crisis, businesses may (1) **reconsider their business strategies** in the light of the experience and lessons learned gained from the crisis. Recovery strategies should acknowledge the main trends likely to impact the way businesses rethink

their business models, in particular (2) the changes in the consumption patterns, (3) the emergence of new forms of entertainment and tourism and (4) the importance taken by the remote working. Some technologies are emerging, exploiting the potential of digitalisation, while (5) embedding innovation will be a key differentiating factor (Figure 6)

[Figure 6] - Main market trends impacting the post COVID-19 recovery related to Business Strategies

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## 12. RECONSIDERING BUSINESS STRATEGIES

Technologies aiming at supporting **business strategies** are growing, favoured by digitalisation. As an example, business intelligence software enables businesses to make informed decisions based on logical facts involving market trends and consumer buying patterns. The global business intelligence software market size was valued at USD 24.9 billion in 2018 and is expected to witness a CAGR of 10.1% from 2019 to 2025 (Grand View research, 2020)<sup>102</sup>.

Digital marketing software allows companies to build and strengthen their customer relationship using multiple digital marketing channels. The various digital marketing software tools include email software, web analytics, CRM, and market automation software. The global digital marketing software market size was valued at USD 43.8 billion in 2019 and is expected to register a CAGR of 17.4% from 2020 to 2027 (Grand View Research, 2020)<sup>103</sup>.

### TREND: RECONSIDERING BUSINESS STRATEGIES

| Topics   | Citation(s)   |
|--|---|
| <b>Know and Understand customers</b>   | “Insight and understanding of customers: The strongest and most consistent actions relate to businesses improving the <b>depth of understanding</b> that organizations have on their customers and markets. Given the profound changes that COVID-19 has brought to the circumstances of many customers, suppliers will need to “right size” their offerings in line with <b>new customer needs</b> . Allied to this, strong levels of interest in CRM also suggest the need to better operationalize customer and market insights.” <sup>104</sup>   |
| <b>Reshape Value proposition</b>   | <p>“<b>Product development / innovation:</b> This ranks within the top 3 priorities of every region. This is very likely linked both with product innovation and improvements to organizations’ customer service approaches. This is encouraging, as innovation might possibly be expected to be an area where spending is stripped back in a crisis.”<sup>105</sup></p> <p>“To come back stronger, companies should <b>reimagine their business model</b> as they return to full speed.”</p> <p>There are four strategic areas to focus on: recovering revenue, rebuilding operations, rethinking the organization, and accelerating the adoption of digital solutions.”<sup>106</sup></p> |
| <b>Extending Business reach</b>  | <p>“Extending reach – looking to new sectors and territories: As demand falters in markets closer to home, it is natural for companies to look to new opportunities. This takes two forms – Diversification into new industries (a priority in all regions) and exploration of opportunities in new countries / territories (seen more prominently in Europe).”<sup>107</sup></p> <p>“62% of firms state that they’re likely to further develop their eCommerce and online sales capabilities, while 54% potentially intend to invest in and build out their own delivery / “last mile” infrastructure in the future.”<sup>108</sup></p>  |
| <b>Develop an agile operating model</b>  | “In this sense, “agile” means putting in place a new operating model built around the customer and supported by the right processes and governance [...] Similarly, fast decision making between local sales and global business units and the rapid reallocation of resources between them require a stable sales-pipeline-management process.”  |
| <b>Key Technologies:</b> Market Intelligence platforms, Business intelligence platforms, CRM |   |

<sup>102-103</sup> Business Intelligence Software Market Size, Share & Trends Analysis Report [...], 2019 – 2025. Retrieved from <https://www.grandviewresearch.com>

<sup>104-105</sup> Business Strategies Post-COVID: Re-appraising Customer Needs, Social Responsibility and Direct-To-Customer Business Models Emerge as Top Trends. Retrieved from <https://www.b2binternational.com>

<sup>106</sup> From surviving to thriving: Reimagining the post-COVID-19 return. Retrieved from <https://www.mckinsey.com>

<sup>107-108</sup> Business Strategies Post-COVID: Re-appraising Customer Needs, Social Responsibility and Direct-To-Customer Business Models Emerge as Top Trends. Retrieved from <https://www.b2binternational.com>

### 13. EMBEDDING INNOVATION

Regarding **innovation**, the COVID-19 crisis has undoubtedly forced a new normal. In particular, it has shown that open innovation has the potential to widen the space for value creation. The German multinational Siemens, for instance, opened up its Additive Manufacturing Network to anyone who needs help in medical device design (Harvard Business Review, 2020)<sup>109</sup>. Through **collaboration**, public-private partnerships can innovate for a better normal

in a post-COVID world (TechUK, 2020)<sup>110</sup>. This emphasizes the need to build real innovation ecosystems (Mc Kinsey, 2020)<sup>111</sup>.

The crisis has also **questioned the current Intellectual property schemes**. The pandemic has created an unprecedented situation whereby IPR holders may be forced, even temporarily, to allow third-parties to use their IPRs, example patents or designs, for the public interest (Lexology, 2020)<sup>112</sup>.

## TREND: EMBEDDING INNOVATION

| Topics   | Citation(s)  |
|--|--|
| <b>Integrate the innovation ecosystem</b>  | <p>“Policy makers should support the transition to digital technologies and sustainable business models by continuing to develop the vibrant Europe-wide ecosystem of companies working on frontier technologies, by <b>expanding state-funded research and development</b>”<sup>113</sup></p> <p>“Governments play a key role in <b>fostering an innovation ecosystem</b>, well beyond funding basic research and development. However, the COVID-19 pandemic will affect cultural norms and behaviour in ways that are not yet known. To be effective at creating jobs and improving resilience, stimulus packages need to take into account potential behaviour changes that could affect the saliency of different policy measures, including for innovation. For example, tackling reluctance to take public transport by encouraging measures to reduce crowding, improve hygiene and to encourage “active” transport modes; introducing measures that better support remote working (including well-being aspects) in order to reduce demand for transport such as encouraging remote working and events”<sup>114</sup></p> <p>“Working collectively is now a global imperative to nurture scientific collaborations and support rapid research without duplication of efforts”<sup>115</sup></p> |
| <b>Intellectual Property issues</b>  | <p>Enhancing <b>intellectual property rights</b> and the actual set of rules proved to be able not only to adjust to different kind of situations, leveraging limitations and exceptions, but also that a high-quality IP system better reacts to crisis given the readiness of its business environment.”<sup>116</sup></p> <p>“Dr David Nabarro, special envoy to WHO on COVID-19, released a special video message to the ICC Commission on Intellectual Property, which emphasised the importance of IP rights in protecting against the manufacturing and dissemination of counterfeit essential medical supplies, such as face masks and medicines.”<sup>117</sup></p> <p>“The impact of COVID-19 on intellectual property has pushed many to encourage <b>relaxed IP rules</b> to foster equal and accessible medical care.”<sup>118</sup></p>  |
| <b>Key Technologies:</b> Market Intelligence platforms, Business intelligence platforms, CRM |  |

<sup>109</sup> Why Now Is the Time for “Open Innovation”. Retrieved from <https://hbr.org>

<sup>110</sup> Driving innovation for a better normal post-COVID. Retrieved from <https://www.techuk.org>

<sup>111</sup> Navigating the post-COVID-19 era: A strategic framework for European recovery. Retrieved from <https://www.mckinsey.com>

<sup>112</sup> COVID-19 and its effects on Intellectual Property. Retrieved from <https://www.lexology.com>

<sup>113</sup> Navigating the post-COVID-19 era: A strategic framework for European recovery. Retrieved from <https://www.mckinsey.com>

<sup>114</sup> OECD Policy Responses to Coronavirus (COVID-19): Building Back Better: A Sustainable, Resilient Recovery after COVID-19. Retrieved from <https://www.oecd.org>

<sup>115</sup> Open innovation for COVID-19 crisis. Retrieved from <https://www.innoget.com>

<sup>116</sup> Intellectual Property Resilience in the Era of COVID-19. Retrieved from <http://www.medialaws.eu>

<sup>117</sup> How intellectual property can strengthen our response to climate change and COVID-19. Retrieved from <https://iccwbo.org>

<sup>118</sup> Intellectual Property Resilience in the Era of COVID-19. Retrieved from <http://www.medialaws.eu>

## 14. NEW WORKING TRENDS

The success of remote working will probably durably impact the organisation of work. A Gartner research shows that 48% of employees will work remotely after the pandemic, up from 30% pre-pandemic (Gartner, 2020)<sup>119</sup>. Yet remote working also imposes challenges to employers and employees. Information security, privacy and timely tech support can be big issues, as revealed by recent class actions filed against Zoom. Remote work can

also complicate labour law issues, such as those associated with providing a safe work environment and income tax issues. Laws and regulations must be updated to accommodate remote work – and further psychological studies need to be conducted to understand the effect of remote work on people (World Economic Forum, 2020)<sup>120</sup>. Remote working will also impact the **offices real-estate sector**, calling for more flexibility.

### TREND: NEW WORKING TRENDS

| Topics  | Citation(s)  |
|---|--|
| Remote working  | <p>“The coronavirus pandemic will have a <b>lasting impact on the future of work</b> in nine key ways, among which increase in remote working or expanded data collection on employee’s monitoring and well being.”<sup>121</sup></p> <p>“Laws and <b>regulations</b> must be updated to accommodate remote work – and further psychological studies need to be conducted to understand the effect of remote work on people.”<sup>122</sup></p>  |
| More agile and safe workspace   | <p>“The <b>future operating models around workspace</b> will be much more focused on the specifics of how much space is required, accurate assessment of utilisation and the ability to flex those requirements up and down in accordance with headcount. But companies are going to want to move forward after a long period of remote working and getting them client-facing and collaborating in the most agile way possible will be key.”<sup>123</sup></p> <p>“All providers of office space, whether traditional or flexible, will need to consider <b>new ways to attract and retain occupiers</b> in order to minimise voids. Technology will have a big part to play in ensuring that the workplaces of the future are safe and landlords who are early adopters of these technologies will have a product which has a competitive edge. New technologies are constantly being developed which will improve the real estate sector’s response to the crisis.”<sup>124</sup></p> |
| Physical health and emotional well-being of employees   | <p>“The pandemic has increased the trend of employers playing an expanded role in their <b>employees’ financial, physical and mental well-being</b>. Support includes enhanced sick leave, financial assistance, adjusted hours of operation and child care provisions.”<sup>125</sup></p> <p>“It is also fundamental to design a system that checks on your team’s mental health, for example, studies done by Buffer found that 22% of remote employees report that unplugging after work is their biggest challenge and 21% say that the biggest struggle of working remotely is loneliness.”<sup>126</sup></p>   |
| <p><b>Key Technologies:</b> Virtual Private Networks (VPNs), Voice Over Internet Protocols (VOIPs), Virtual Meetings, Cloud Technology, Work Collaboration Tools, Facial Recognition Technologies, Employee Monitoring Tools, Workforce Management Tools, Data Analytics, Machine Learning, Artificial Intelligence</p> |  |

<sup>119</sup> 9 Future of Work Trends Post-COVID-19. Retrieved from <https://www.gartner.com>

<sup>120</sup> 10 technology trends to watch in the COVID-19 pandemic. Retrieved from <https://www.weforum.org>

<sup>121</sup> 9 Future of Work Trends Post-COVID-19. Retrieved from <https://www.gartner.com>

<sup>122</sup> 10 technology trends to watch in the COVID-19 pandemic. Retrieved from <https://www.weforum.org>

<sup>123</sup> Post COVID-19: Workspace is at a Tipping Point. Retrieved from <https://www.theinstantgroup.com>

<sup>124</sup> Flexible workplaces – the COVID-19 effect. Retrieved from <https://www.dacbeachcroft.com>

<sup>125</sup> 9 Future of Work Trends Post-COVID-19. Retrieved from <https://www.gartner.com>

<sup>126</sup> Coworking: The Future For Safe, Flexible and Innovative Workspaces Post COVID-19. Retrieved from <https://talentgarden.org>

## 15. CONSUMPTION PATTERNS EVOLUTION

Consumption patterns have also seen dramatic changes: in late 2002, the SARS outbreak led to a tremendous growth of both business-to-business and business-to-consumer online marketplace platforms in China. Similarly, COVID-19 has transformed **online shopping** from a nice-to-have to a must-have around the world (World Economic Forum, 2020)<sup>127</sup>. Online shopping needs to be supported by a robust logistics system, but also triggers innovation for contactless delivery services

or **robot deliveries**. **Digital payments** is also essential (World Economic Forum, 2020)<sup>128</sup>. For instance The global digital payment market size was valued at USD 43.5 billion in 2018 and is expected to register a CAGR of 17.6% from 2019 to 2025. Increased use of smartphones, coupled with high internet penetration, is expected to propel the market over the forecast period. Easy accessibility of digital payment mobile applications is further expected to fuel market growth (Grand View research, 2020)<sup>129</sup>.

### TREND: CONSUMPTION PATTERNS EVOLUTION

| Topics  | Citation(s)   |
|---|---|
| <b>Online shopping</b>  | <p>"Statistics from ACI Worldwide showed a 74% increase in e-commerce transactions for most retail sectors in March 2020 compared to that month in 2019."<sup>130</sup></p> <p>"An analysis of data generated by Chinese shoppers during and after the lockdown reveals several new trends. Big shifts are taking place in what consumers are purchasing - and how. [...] A big step forwards in online shopping habits"<sup>131</sup></p>  |
| <b>Safe Delivery automation (Robots &amp; Drones)</b>   | <p>"Online shopping needs to be supported by a <b>robust logistics</b> system. In-person delivery is not virus-proof. Many delivery companies and restaurants in the US and China are launching <b>contactless delivery</b> services where goods are picked up and dropped off at a designated location instead of from or into the hands of a person. Chinese e-commerce giants are also ramping up their development of robot deliveries. However, before robot delivery services become prevalent, delivery companies need to establish clear protocols to safeguard the sanitary condition of delivered goods."<sup>132</sup></p> |
| <b>Digital and Contactless Payments</b>   | <p>"<b>Contactless digital payments</b>, either in the form of cards or e-wallets, are the recommended payment method to avoid the spread of contagious diseases. Digital payments enable people to make online purchases and payments of goods, services and even utility payments, as well as to receive stimulus funds faster. The availability of digital payments also relies on internet availability, devices and a network to convert cash into a digitalized format."<sup>133</sup></p>  |
| <b>Keeping spaces safe</b>  | <p>"Right now, people are obsessively reaching for their hand sanitizer as they move through their daily lives. But as this moment starts to pass, they'll revert to less hygienic habits, although their desire to remain safe and well will be stronger than ever. Which will create a huge opportunity: for providers of physical spaces to <b>embed health-boosting measures</b> into the very spaces that their customers pass through, making staying healthy effortless."<sup>134</sup></p>  |
| <p><b>Key Technologies:</b> E-Commerce Platform, Robots, Drones, Last-Mile Delivery Technologies, Fintech, Digital Payment Technologies, Secure Transaction, Contactless Technologies, E-Wallets, Automated Cleaning, Robotic Vacuums, Contactless Technology, Automatic Doors, Voice Controls, Building-Specific Smartphone Apps, Digital Check-In</p> |   |

<sup>127-128</sup> 10 technology trends to watch in the COVID-19 pandemic. Retrieved from <https://www.weforum.org>

<sup>129</sup> Digital Payment Market Size, Share & Trends Analysis Report [...], 2019 - 2025. Retrieved from <https://www.grandviewresearch.com>

<sup>130</sup> How Will Industry 4.0 Shift in a Post-COVID World? Retrieved from <https://www.enterpriseworld.com>

<sup>131</sup> 4 new shopping trends revealed in post-lockdown China. Retrieved from <https://www.weforum.org>

<sup>132-133</sup> 10 technology trends to watch in the COVID-19 pandemic. Retrieved from <https://www.weforum.org>

<sup>134</sup> 10 CROSS-INDUSTRY TRENDS THAT ARE ACCELERATING BY THE COVID-CRISIS. Retrieved from <https://info.trendwatching.com>

## 16. EMERGING ENTERTAINMENT TRENDS

The post-COVID scenario for the **media and entertainment** industry is expected to be that of increased digital integration into everyday life with short-term and long-term impact on consumer behaviour (World Economic Forum, 2020)<sup>135</sup>. Meanwhile, the stage is being set for a new battle of dominance amongst streaming services, gaming platforms and other forms of at-home entertainment services. The global

home entertainment devices market size was valued at USD 225.0 billion in 2018 and is expected to grow at a compound annual growth rate (CAGR) of 6.3% from 2019 to 2025 (Grand View Research, 2020)<sup>136</sup>. New trends will also impact the tourism and hospitality Industry Post-COVID-19, switching to in-persons events to virtual ones. Virtual and Augmented Reality are key technologies.

### TREND: EMERGING ENTERTAINMENT TRENDS

| Topics   | Citation(s)  |
|--|--|
| <b>New entertainment era</b>   | <p>“Although quarantine measures have reduced in-person interactions significantly, human creativity has brought the <b>party online</b>. Cloud raves and online streaming of concerts have gain traction around the world. Chinese film production companies also released films online. Museums and international heritage sites offer virtual tours. There has also been a surge of online gaming traffic since the outbreak.”<sup>137</sup></p> <p>“The greater interest in <b>gaming</b> may accelerate a shift towards the delivery of games via mobile and cloud-based platforms; Widening of monetization avenues through subscription and free-to-play models; Increase of gaming industry partnerships with other entertainment sectors. Some video games become so popular that they spill over into cultural discourse; Analysts have described <b>e-sports</b> as being “popularized and legitimized in an unpredictable and profound way”<sup>138</sup>.</p> <p>“Quite simply, as people become accustomed to digital assistants and chatbots their expectations will evolve, and some people will start <b>to seek out virtual personalities</b> that have the power to entertain, educate, befriend and heal. The crisis will see people turning to these virtual companions, and once the genie is out of the bottle, these behaviors to persist once the crisis subsides.”<sup>139</sup></p> |
| <b>Virtually visit places and events</b>   | <p>“The psychosocial fallout of the pandemic is yet to be ascertained, however, it is not without reason to assume that previous models of entertainment such as crowded events, gatherings, movie theatres, concerts are likely to be avoided until trust in such interactions is restored. “</p> <p>“New Trends and Issues Will Shape the Tourism and Hospitality Industry Post-COVID-19:</p> <ul style="list-style-type: none"> <li>• Form in-person events to virtual ones</li> <li>• Local, authentic and smaller</li> <li>• Increase of health and wellness considerations</li> <li>• Sustainable practices</li> <li>• Innovation in virtual events”<sup>140</sup></li> </ul>  |
| <p><b>Key Technologies:</b> At-Home Entertainment Services, Online Streaming, Online Gaming, Cloud-Based Platforms, Free-To-Play Models, Ultra-High-End Gaming, Virtual Museums, Virtual Events Platforms, Virtual And Augmented Reality</p> |  |

<sup>135</sup> How COVID-19 is taking gaming and esports to the next level. Retrieved from <https://www.weforum.org>

<sup>136</sup> Home Entertainment Devices Market Size, Share & Trends Analysis Report [...], 2019 - 2025. Retrieved from <https://www.grandviewresearch.com>

<sup>137</sup> 10 technology trends to watch in the COVID-19 pandemic. Retrieved from <https://www.weforum.org>

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<sup>139</sup> 10 CROSS-INDUSTRY TRENDS THAT ARE ACCELERATING BY THE COVID-CRISIS. Retrieved from <https://info.trendwatching.com>

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