

How manufacturing can emerge stronger

Policies to support industrial recovery and growth after COVID-19

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This policy brief has been produced by the Policy Links Unit from IfM Education and Consultancy Services, at the University of Cambridge.

Policy Links forms part of **Cambridge Industrial Innovation Policy (CIIP)** alongside the Centre for Science, Technology & Innovation Policy at the Institute for Manufacturing (IfM) and the Babbage Policy Forum. The IfM is a division of the University of Cambridge's Department of Engineering.

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This policy brief is part of a series of studies produced for the Department for Business, Energy and Industry Strategy (BEIS) and was conducted under the supervision of Clare Porter, Head of Manufacturing at BEIS.

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Published by the University of Cambridge Institute for Manufacturing

Title: How manufacturing can emerge stronger: Policies to support industrial recovery and growth after COVID-19
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Key Messages

- Governments around the world have attempted to seize the Covid-19 crisis as an opportunity to modernise, improve the sustainability and strengthen the resilience of their manufacturing industries.
- While new measures have been established, a more common approach has been to provide additional funding and relax the eligibility criteria of existing programmes. Institutions and initiatives established prior to the crisis have been used for the rapid delivery of emergency support.
- Our international review identified five priority areas in the international manufacturing policy agenda to support industrial recovery and growth.

Key emerging messages, with implications for the UK Industrial Strategy, include:

- **Critical contribution of the manufacturing sector to crisis response and long-term economic resilience.** Across the countries reviewed, there is broad recognition of the critical role that manufacturing firms, and related engineering capabilities, have played during the crisis. In countries such as South Korea and Singapore, there is also clear recognition that manufacturing industries have offered “pockets of resilience” that have prevented a more pronounced recession and which will be critical to long-term economic recovery.
- **New evidence for future industrial strategy.** New manufacturing know-how is required to inform recovery strategies that account for the heterogeneous impacts and needs of different industries and regions. Forward-looking studies will be needed to gain insights into how Covid-19 might reshape industries for years to come.
- **Renewed interest in industrial innovation and digital technology deployment.** National strategies are being developed to support the transformation of industries such as automotive, aerospace and pharmaceuticals through R&D and innovation. Initiatives to accelerate the deployment of digital technologies have been announced in most of the countries reviewed.



The policy mix employed by the countries reviewed includes:

1. **More resilient** – Trade facilitation, capability mapping studies, supply–demand coordination, business advisory services and reshoring incentives.
2. **More sustainable** – “Green New Deals”, R&D incentives, “green” infrastructure investment, consumer incentives, public procurement of energy-efficient products.
3. **More innovative** – Start-up support, R&D grants, training subsidies, capital investment allowances, relaxation of regulations.
4. **More global** – Export advice and finance, market intelligence, insurance financing.
5. **More inclusive** – Preferential support to most affected regions, industries, firms and workers; consumption incentives; expansion of digital infrastructure; training grants.

Five priority areas



More resilient

Increasing domestic supply of critical items today and becoming more disruption-proof in the future



More sustainable

Accelerating the development and deployment of ‘green’ processes and products



More innovative

Rejuvenating existing industries and developing emerging ones



More global

Accessing international sources of supply and demand



More inclusive

Supporting most affected industries, regions, firms and workers

1. Seizing the COVID-19 challenge

In early March 2020 the World Health Organization (WHO) announced the need to increase global production of critical medical goods by 40 per cent.¹ Governments and industry responded by bringing together capabilities, repurposing production lines and reconfiguring supply chains to rapidly scale up the development and production of life-saving products. The role of domestic manufacturing capabilities was again high on the policy agenda of developed and developing countries alike.²

Diversification of production towards medical products has allowed a number of firms to partially compensate for the losses from their core businesses. However, this has not been nearly enough. The global manufacturing output fell by 6 per cent in annual terms in the first quarter of 2020.³ In the UK manufacturing production fell by over 20 per cent in annual terms in April and May.⁴ Automotive, apparel and plastics are among the most affected manufacturing industries.

As the world experiences the economic effects of the pandemic, governments are devising strategies to help companies survive and protect workers' livelihoods. Policy-makers face the compound challenge of supporting a swift economic recovery in the short term, while addressing the structural challenges affecting the economy even before the pandemic, including: regional disparities; population ageing; gender gaps; climate change; skills gaps; and a rise of trade protectionism.

As governments adopt an "open wallet" approach, with significant public sector support for industry, there is increasing interest in seizing the Covid-19 crisis as an opportunity to modernise, improve the sustainability and strengthen the resilience of the industrial base.

This briefing note provides a synthesis of key policy instruments aimed at supporting the recovery and future growth of manufacturing industries. It draws on a policy review of 12 countries and the European Union. The note concludes by discussing the implications for the UK industrial strategy.

“There is increasing interest in seizing the COVID-19 crisis as an opportunity to modernise, improve the sustainability, and strengthen the resilience of the industrial base”.

2. Policies to emerge stronger

“As [we] deal with the immediate challenges, businesses must also prepare to emerge stronger during the recovery. The global economy is undergoing structural changes, with supply chains shifting and technological developments accelerating. New opportunities will come with these shifts.”

MINISTRY OF TRADE AND INDUSTRY, SINGAPORE (FEBRUARY 2020)

In seeking to support the recovery with a long-term perspective, a number of countries are using umbrella terms to describe their policy response packages.

Examples include: Next Generation EU in the European Union (€750 billion); Emerge Stronger in Singapore (~£2.3 billion); New Deal in South Korea (~£20 billion); and the Relief and Revitalisation Plan in Taiwan (~£27 billion).

Table 1 describes the five priority areas identified in the international manufacturing policy agenda to support

industrial recovery and growth post-Covid-19. While countries have established a range of new measures, a more common approach has been to provide additional funding and relax the eligibility criteria of existing programmes.

The time frames of new and enhanced measures typically range from one to five years. It is also worth noting that countries have employed various types of institution and initiative, established prior to the crisis, for the rapid delivery of emergency support.

Area	Targets	Typical policy instruments
More resilient 	<ul style="list-style-type: none"> Rapid production and delivery of critical goods Increasing “sovereign capabilities” in selected critical goods Strengthening long-term resilience of supply chains 	<ul style="list-style-type: none"> Trade facilitation and logistics support Domestic capability mapping and supply chain risk analysis Supply chain coordination through national task forces Reshoring incentives
More sustainable 	<ul style="list-style-type: none"> Increasing energy efficiency of production systems towards “net zero” Accelerating the development of low-emission products and technologies Fostering demand for “greener” products and services 	<ul style="list-style-type: none"> “Green new deals” with emphasis on infrastructure investment R&D incentives for low-carbon technologies Public procurement and conditionality of financial aid favouring low-carbon technologies Consumption incentives
More innovative 	<ul style="list-style-type: none"> Strengthening “sovereign technological capabilities” Accelerating development and adoption of new technologies for manufacturing modernisation Promoting new COVID-related products and business models 	<ul style="list-style-type: none"> Grants for start-ups R&D and training incentives Capital investment allowances Support for industrial digitalisation Relaxation of regulatory frameworks
More global 	<ul style="list-style-type: none"> Increasing SME participation in international markets Diversifying export markets Reconfiguring supply chains to address dependencies in specific countries/regions 	<ul style="list-style-type: none"> Export advice and provision of market intelligence Export financing Insurance financing
More inclusive 	<ul style="list-style-type: none"> Supporting SMEs severely hit by the crisis Narrowing regional disparities Promoting digital inclusion 	<ul style="list-style-type: none"> Support to the most affected regions, industries and firms Consumption incentives decreasing with income Expansion of digital infrastructure Digital skills development programmes targeted to vulnerable workers



2.1. More resilient

“Facing changes to the global order, we need to keep key industrial chains in Taiwan and maintain a certain degree of self-sufficiency in the production of face masks, medical and daily supplies, energy and food.”

TSAI ING-WEN, PRESIDENT OF TAIWAN (JULY 2020)

The concept of resilience has featured predominantly in recent policy discussions. Most of the international policy efforts have focused, in practice, on the domestic capacity to produce critical goods in order to respond to the medical emergency.

Germany, for example, established a Task Force for Production Capacity and Production Processes to foster and expand German and European production capacity of personal protection equipment (PPE), test kits and active ingredients.⁵ This initiative resembles the US Federal Emergency Management Agency (FEMA) COVID-19 Supply Chain Task Force, which monitors the shortage of critical supplies and coordinates their production and distribution. The task force seeks to increase the supply of critical

protective resources in the short term, while expanding domestic production in the long term.⁶

Efforts have also been established to better understand domestic capabilities. Countries including Australia, China, India and the US have attempted to map domestic facilities (manufacturing sites, research laboratories, demonstration facilities, other university facilities, etc.) that could be used for the production of critical medical items.⁷

Research organisations – in countries including Australia, Germany, Taiwan and the US – have played a key role in coordinating national efforts to address supply shortages by coordinating firm consortia, simplifying and supporting certification procedures and providing technical advice.⁸

“As we all know – there’s a long, hard road ahead. One of the markers that our Government has set for that road is to secure our nation’s economic sovereignty by building an even stronger local manufacturing sector.”

Karen Andrews MP, Minister for Industry, Science and Technology, Australia (May 2020)

In Taiwan the Industrial Technology Research Institute (ITRI), the Metal Industries Research and Development Center (MIRDC) and the Precision Machinery Research and Development Center (PMC) have been key actors of “Team Taiwan”. Together with machine tool and medical device producers, Team Taiwan managed to triple the national production of masks in six weeks.⁹

Some longer-term efforts to enhance the resilience in supply chains beyond medical goods were identified in the countries reviewed. This includes the coordination and monitoring of different transportation modes, simplification of logistic procedures and changes in customs duties. It also includes firm-level supply chain risks assessments. In Ireland, for example, subsidised advisory support is provided for firms to develop plans for business resilience post-crisis, strategic sourcing, transport and logistics.¹⁰

In countries including Japan and South Korea, governments have provided financial support, fiscal incentives and advisory services for the reshoring of companies. This includes: tax breaks proportional to the percentage of reduced output at their overseas sites; subsidies conditional to linkages with SMEs; and grants for the adoption of smart manufacturing and industrial robots.¹¹ It must be noted, however, that most reshoring efforts identified in our

review had already been initiated before the pandemic, in response to international trade tensions.

Since 2013 the Korea Trade-Investment Promotion Agency (KOTRA) has been running a support programme for “U-turn” firms. However, on 2 April 2020 the agency announced a target to help 100 firms reshore to South Korea by 2022. The total budget allocated for this purpose is over ₩6 trillion (~£4 billion).¹² In Japan the government has allocated a budget of ¥220 billion yen (~£1.6 billion) in 2020 to support companies in both reshoring production to Japan and in diversifying their production in ASEAN countries.¹³

Finally, discussions on the role of manufacturing for economic recovery and long-term economic resilience are also taking place. In Korea and Singapore there is also clear recognition that manufacturing industries have offered “pockets of resilience” that have helped them to prevent a more pronounced recession and which will be critical to economic recovery. In South Korea government analyses have explicitly recognised that the country’s rapid economic rebound has been largely “thanks to manufacturing and ICT.”¹⁴ In Australia there have been calls to rethink the low share of GDP that manufacturing contributes to the economy in order to enable long-term economic resilience.¹⁵

2.2. More sustainable

“We intend to press forward with the technological advancement of our country and to create the conditions that will enable us to achieve a climate neutral economy by 2050.”

OLAF SCHOLZ, MINISTER OF FINANCE, GERMANY (JUNE 2020)

In several of the countries and regions reviewed, short-term relief measures are being used to accelerate a “green” manufacturing future. As before the pandemic, there is emphasis on reducing the carbon emissions of industrial operations to contribute to “net zero” targets. In addition, there is increased interest in gaining a competitive edge on “green” products expected to underpin future sources of demand in order to support a post-Covid-19 recovery.

Examples include the European Commission’s Next Generation EU, the aim of which is to invest in a “green, digital and resilient Europe”, and South Korea’s Green New Deal, which involves investments in public infrastructure for over £8 billion and funding for green start-ups for over £1 billion, among other measures.¹⁶

Australia, France and Germany have also announced plans to increase their investments in R&D and infrastructure to reduce greenhouse gas emissions and boost their leadership in the development of energy-efficient technologies. In Australia the government is developing national low-emissions technology investment roadmaps “to ensure Australia remains at the forefront of the global low emissions”.¹⁷ In Germany the Future Package (€50 billion) includes a €2.5 billion investment in electric vehicle charging infrastructure and R&D in the field of electromobility and battery cell production.¹⁸

In France the government has announced the Automotive (over €8 billion) and Aeronautics (€15 billion) support plans, involving significant investments to accelerate the “sustainable transformation” of these sectors. As a condition of access to financial support from these schemes, firms are required to develop and adopt energy-efficient production systems.¹⁹ Similarly, the French and German governments are using public procurement – through the “greener” renewal of vehicles – to support the automotive and aeronautics industries.

Finally, new consumer incentives for purchases of energy-efficient automobiles and home appliances have been established in France, Germany, New Zealand and South Korea. These include tax reductions and payment refunds, some of which focus on low-income households or decrease with household income. In New Zealand subsidies for insulation and heating retrofits are being provided to low-income households.²⁰ Where these measures were already in place, support amounts have been increased and eligibility criteria relaxed in order to include more households.

2.3. More innovative

“Start-ups have demonstrated resilience and adaptability that will make them a key driving force of growth and job generation in the future.”

BRUNO LE MAIRE, MINISTER OF ECONOMY AND FINANCE, FRANCE (JUNE 2020)

Lessons from previous crises have shown that innovative firms tend to be more resilient and, conversely, that longer-term impacts are more likely to occur when firms' innovation capacities are affected.²¹ Whether or not this was their intention, governments around the world have deployed policy instruments to help technology companies survive and retain talent; accelerate manufacturing modernisation; stimulate the development of new technologies and related capabilities; and support the commercialisation of new Covid-related products and business.

Expanded support for existing and new start-ups has been established in a number of countries. Singapore's Startup SG Equity Scheme has announced an additional \$300 million (~£172.5 million) in start-ups over the next five years. Through this programme, the government co-invests in start-ups alongside private actors. Priority sectors include: advanced manufacturing; pharmaceuticals and medical technologies (med-tech); and agri-food technologies. To increase the flexibility of the programme, the investment cap for each start-up has been increased from \$4 million (~£2.3 million) to \$8 million.²²

The relaxation and expansion of R&D support schemes was a common approach identified in several of the countries reviewed. The government of France announced the Support Plan for Technology Companies, a comprehensive programme to support the “recovery, creation and growth of technology companies”. It includes, among other measures, a French Tech Sovereignty fund (€150 million) to support both established companies and start-ups developing technologies associated with high investment risk (in areas including quantum, health, cyber-security and AI).²³

In New Zealand a Short-Term Research and Development Loan Scheme was developed to provide immediate cash support to businesses performing R&D. Through this scheme, businesses will be able to apply for a loan of up to \$400k (~£200k) to support R&D activities. Repayment instalments are not compulsory for the first three years and interest (3%) is waived if the loan is repaid in full within the first year.²⁴

Measures aiming to support the modernisation of manufacturing industries include: tax incentives for capital investments (Australia, Germany and Japan); online training subsidies (China, Germany, Ireland and Taiwan); enhanced and new technical and financial support for the adoption of digital technologies, with a particular focus on SMEs (Australia, Singapore and South Korea); and the removal of regulatory barriers for digitalisation (France).

South Korea announced a New Deal, which includes the Green New Deal, discussed in the previous section, and a Digital New Deal. The latter involves, among other measures: the investment of ₩13.4 trillion (~£9 billion) by 2022 to strengthen the country's data, network and artificial intelligence ecosystem (“DNA”), and the creation of 330k jobs; investments in digital infrastructure; vouchers to adopt artificial intelligence (AI) solutions for 600 SMEs; and a ₩1 trillion (~£664 million) fund to invest in AI start-ups.²⁵

South Korea's government is also taking advantage of its successful approach to containing the spread of the epidemic by systematising and establishing the so-called “Korea quarantine model” (also branded “K-quarantine”) and promoting it as a series of international standards. Additionally, the government is promoting exports of “K-quarantine” products.²⁶

2.4. More global

“We will continue to pursue market diversification and internationalisation, to strengthen our economic resilience and capture new opportunities.”

MTI COMMITTEE OF SUPPLY DEBATE 2020, SINGAPORE (MARCH 2020)

The global recession is already forcing companies to explore new markets in order to survive. As the effect of the collapse in global demand is felt across countries and recovery prospects remain uncertain, governments are seeing market diversification as a strategy to support future growth.

Countries including Germany, Ireland, Italy, New Zealand, Japan, Singapore, South Korea and Taiwan have expanded their support for the internationalisation of firms, particularly SMEs. Measures identified include: simplification of trade procedures; provision of market information; relaxation of conditions of export credit guarantees; e-commerce technical assistance; organisation of virtual meetings with potential buyers;

export insurance support; and finance for advertising and overseas expansion.

New Zealand’s government has allocated additional funds to double the number of companies that can receive export advisory services from New Zealand Trade and Enterprise (NZTE). Budget increase is expected to be sustained until the fiscal year 2023/24.²⁷ Through NZ Marketplace, NZTE helps companies to identify additional sources of input, including materials, technology and freight.²⁸

In Singapore support provided through Market Readiness Assistance, an existing scheme supporting SMEs to expand overseas, has been extended for 3 additional years. Funding of eligible costs was increased from 50 to 70 per



cent, and the grant cap was increased from \$20k (~£11k) to \$100k (~£57k) per new market.²⁹

The Japan Finance Corporation, a public agency, is providing loans of up to ¥1,440 million (~£10.7 million) to cover equipment and working capital costs of overseas expansion. Loans are to be repaid in 20 years with a 2-year grace period.³⁰



2.5. More inclusive

“Although the pandemic has affected every corner of the world, the economic earthquake unleashed by COVID-19 does not affect everyone in the same way. With fewer resources to ride out the storm, micro and small and medium-sized enterprises have been particularly vulnerable to the repercussions of the crisis.”

DOROTHY TEMBO, EXECUTIVE DIRECTOR, INTERNATIONAL TRADE CENTRE (JUNE 2020)

The impact of Covid-19 has been significant across industries and households. Although countries, industries and people are facing the “same storm”, it has become apparent that existing structural inequalities and different levels of dependence on social contact to generate earnings have placed us in “different boats”.

The automotive, aerospace and garment industries are among the most affected manufacturing industries. Workers in these industries have been strongly affected in terms of their incomes and job stability, as well as those working in hospitality and retail and in the informal sector.

There is also increasing evidence of how SMEs are being disproportionately affected in their business operations and revenues, particularly women-led and youth-led SMEs.³¹ Most deprived households and regions have been hit harder.

In order to support an inclusive recovery, different countries have prioritised access to economic stimulus packages for the most impacted industries, regions and households. For example, consumer incentives to purchase energy-efficient goods have targeted low-income households in New Zealand and South Korea;

while in France and Germany scheme access is based on income levels.³²

Consumer incentives to reactivate demand are also prioritising SMEs. In South Korea and Taiwan, programmes require consumer vouchers to be spent in local SMEs.³³

In South Korea the government allocated ₩250 billion (~£160 billion) to support businesses in North Gyeongsang Province, the region most severely hit by the Covid-19 outbreak in the country.³⁴

In China the government is producing a set of policies designed to protect the livelihoods of persons with disabilities, including: safety nets, job hunting assistance, enforcement of regulations and tax deductions.³⁵

To address the disproportional impact on women, the government of South Korea has announced a 24-hour care service and a safety net for female-headed households. South Korea has also announced digital inclusion projects, including free high-speed Internet networks, Wi-Fi in public areas and digital education centres for the elderly.³⁶

3. Implications for the UK Industrial Strategy

1. Critical contribution of the manufacturing sector to crisis response and long-term economic resilience.

Across the countries reviewed, there is broad recognition of the critical role that manufacturing firms, and related engineering capabilities, have played during the crisis – whether addressing the spike in demand for critical medical goods or ensuring the continuous provision of consumer goods such as food.

In some countries, such as South Korea and Singapore, there is also clear recognition that manufacturing industries have offered “pockets of resilience” that have prevented a more pronounced recession and which will be critical to long-term economic recovery. Countries such as France and Germany anticipate that “green” manufacturing products will become the markets of tomorrow.

There have also been calls to increase the share of manufacturing in GDP as a way to strengthen long-term economic resilience.

2. New evidence for future industrial strategies.

The need for a better understanding of manufacturing capabilities, supply chain vulnerabilities and key system actors (e.g. research and technology organisations) has been evidenced during the crisis. Such understanding is critical for the rapid design, coordination and implementation of emergency support measures, such as the repurposing of production lines to increase the supply of critical items, including personal protective equipment and ventilators.

Beyond the crisis, manufacturing know-how will be required to inform recovery strategies that account for the differentiated impacts, needs and long-term prospects of different industries and regions. Forward-looking studies will be needed to gain insights into how Covid-19 might reshape industries for years to come..

3. Renewed interest in industrial innovation and digital technology deployment.

Countries including Australia and France have emphasised the role of government in supporting the international leadership of national industries and their technological sovereignty. Specific measures are being deployed to support the transformation of industries such as automotive, aerospace and pharmaceuticals through R&D and innovation. Major new initiatives have been announced in technology domains, including low-emissions technologies, AI, quantum, health and agri-tech.

As the crisis has further accentuated the potential of digital technologies to support the continuity, flexibility and competitiveness of industrial operations, national initiatives to accelerate the deployment of digital technologies have been announced in most of the countries reviewed.

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About this policy brief

This policy brief is part of a series of studies produced for the Department for Business, Energy and Industry Strategy (BEIS). The studies are sponsored by the University of Cambridge EPSRC COVID-19 Rapid Response Grant (NMZM/447).

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REPORT PREPARED FOR:



Department for
Business, Energy
& Industrial Strategy

Department for Business, Energy and Industrial Strategy:

Building a stronger, greener future by fighting coronavirus, tackling climate change, unleashing innovation and making the UK a great place to work and do business.



Cambridge Industrial Innovation Policy is based at the Institute for Manufacturing (IfM), a division of the University of Cambridge's Department of Engineering. CIIP brings together the Centre for Science, Technology & Innovation Policy at the Institute for Manufacturing, the Policy Links Unit from IfM ECS, and the Babbage Policy Forum.

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