UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

SUSTAINABLE DEVELOPMENT GOALS

IMPACT ASSESSMENT OF COVID-19 ON THAILAND'S MANUFACTURING FIRMS

SURVEY RESULTS MAY-JUNE

Acknowledgments

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Key Findings

i) From overall observations based on information provided by responding firms, **small-size and low-tech firms have been hit the hardest** by the crisis and containment measures. Small-size firms furthermore have the least access to support provided by government stimulus schemes.

ii) **Demand reduction poses the biggest challenge** for firms. Reduced orders have led to a decrease in revenue flows. While firms have tried to obtain additional loans to compensate for the cashflow shortage, difficulties in obtaining loans have exacerbated their situation. Cutting operational costs is another measure firms have implemented. Firms are also concerned about wage payments to employees, social security contributions as well as the repayment of loans to commercial banks.

iii) **The shortage of inputs**, including of raw materials, is reported as being **the second biggest problem** for firms associated with the lockdown and other restrictions resulting from the pandemic. The containment measures have led to disruptions of supply chains due to international border closures and restrictions to domestic movement. Interestingly, we find that regardless of engagement in global value chains (GVC), domestic upstream and domestic downstream firms have experienced nearly the same level of shortages of inputs. This could imply that firms source raw materials both from abroad and domestically.

iv) **Consequently, the majority of firms anticipate extreme loss of revenue. We find that 90 per cent or more of firms**, regardless of their location (whether within or outside provinces with high infection rates), expect extreme revenue loss of **over 50 per cent in 2020 compared to 2019**. Most firms expect such an extreme revenue loss because of their reliance on GVC, particularly small-size firms. Firms engaged in GVCs rely on the situation in those countries where their trade partners are located; the global situation might unfortunately not improve in coming months.

v) The prolonged containment measures such as restrictions of movement worsen firms' prospects. **Should the containment measures be extended for a longer period, 52 per cent of small-size and 44 per cent of domestic downstream firms expect to close down in less than three months**. A small share—16 per cent of small-size and 25 per cent of domestic downstream firms—could be operation for over one year. The easing of the lockdown in mid-May could gradually slow down the pace of the current crisis and bring a positive turn to the situation.

vi) While one-third of 307 respondent firms have benefitted from at least one form of government support, the **lowest share was received by small-size and domestic upstream firms** with 26 per cent and 27 per cent, respectively.

vii) **Tax rate reductions or tax deferrals and a reduction of social contributions** are the most preferred government support measures among firms at 49 per cent and 35 per cent, respectively. In addition, other means to reduce operational costs, including **rent and utility costs (32 per cent) and better loan terms (27 per cent)** are the next preferred measures.

viii) The COVID-19 measures had the strongest negative impact on the **automotive sector** within the manufacturing sector, **as indicated by the drop in the manufacturing performance index (MPI) in April 2020, namely around 82 per cent on a year over year basis, registering the lowest production since 1987**. According to the Office of Industrial Economics, Ministry of Industry,[1] the **overall manufacturing performance index** of April 2020 decreased by **17.21 per cent** compared to April 2019. The five sub-sectors and products that declined the most due to the negative effects of COVID-19 were **automotive, petroleum and petroleum products, malts and malt beverages, air conditioning systems and sugar.**

ix) On the other hand, the five sub-sectors and products that registered an increase of MPI in April 2020 were **concrete and cement, medicine, electronic circuit board, frozen seafood and animal feed,** ranging between **10 per cent to nearly 40 per cent in a year over year comparison**[2].

x) Nonetheless, the expected loss in revenue might lead to redundancies, as nearly half of the respondent firms reported that wages and social security contributions represented the biggest financial burden. This finding is in line with the projection on layoffs by the state planning agency National Economic and Social Development Council (NESDC). The NESDC announced on 28 May that COVID-19 could result in **8.4 million people becoming unemployed, of which 1.5 million work in the manufacturing sector**. The malts and malt beverages and automotive industries have been hit particularly hard, registering the largest drop in performance. Some **automotive and spare parts manufacturers already closed** in May.[3] The manufacturing sector employs about 5.9 million people.[4] Of the projected 8.4 million unemployed people, 4.4 million work in non-tourism-related service sectors, such as malls, and 2.5 million in the tourism sub-sector.

[1] http://indexes.oie.go.th
[2] http://indexes.oie.go.th
[3] https://www.posttoday.com/economy/news/623937
[4] https://www.posttoday.com/economy/news/624626

xi) The pandemic has potentially affected targets for Sustainable Development Goal 9 on Inclusive and Sustainable Industrial Development (ISID), particularly **Targets 9.2, 9.3 and 9.4, while Target 9.b could remain stagnant**.

xii) Recommended policy options include **job retention programmes, an extended period of tax exemption and loan deferrals and tailored support programmes for micro and small firms**. Building on UNIDO's expertise in **industrial development facility, manufacturing repurposing and the adoption of Industrial Revolution 4.0 (4IR)** is also recommended.

Table of Contents

1 Rationale

The COVID-19 pandemic is unprecedented, and its impacts have been substantial. According to the United Nations' Thailand Economic Focus, the pandemic has caused a profound contraction of the manufacturing sector in the first quarter of 2020. All three key sectors experienced economic losses during the first quarter of 2020: agriculture (-5.7 per cent), industry (-1.9 per cent) and services (-1.1 per cent). Construction activities were stalled and dropped by 9.9 per cent in the first quarter, while the reduction in tourism negatively impacted accommodation and food service activities (-24.1 per cent). All figures are year over year.[5]

UNIDO aims to investigate these sectors, in particular the manufacturing sector, to highlight the impacts firms have experienced, how they have been coping with the pandemic crisis, and what types of support they have received so far. Additionally, we discuss the extent to which these impacts have affected the country's progress towards inclusive and sustainable industrial development as embedded in Sustainable Development Goal (SDG) 9 to build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. Lastly, we make some policy recommendations.

This micro-level impact assessment serves two key purposes. Firstly, it aims to contribute to Thailand's United Nations Country Team's (UNCT) *Socio-Economic Impact Assessment COVID-19 in Thailand: Actions to Safeguard the Country's Progress towards the SDGs*, led by UNDP and UNICEF. Secondly, the assessment offers a baseline for UNIDO's global assessment to be conducted at a later stage. UNIDO (Department of Policy Research and Statistics together with the Regional Hub Office in Thailand) has carried out similar assessments in other countries in Asia, including Cambodia, Lao PDR, Malaysia, Mongolia, Pakistan and Viet Nam. As a part of the global assessment, UNIDO plans to conduct a similar exercise in these countries in coming months to examine the development of the impacts and their situations over time.

2 Method and data

2.1 Online survey

UNIDO launched an online survey to collect data from 15 April to 15 May 2020. In collaboration with the Ministry of Industry, the Industrial Estate Authority of Thailand and the Small and Medium Enterprise Institute under the Federation of Thai Industries and UNIDO's networks in Thailand (such as project partners and firms participating in UNIDO projects), the online survey was circulated to firms nationwide. Due to the COVID-19 situation and government containment

[5] Thailand Economic Focus by Office of the UN Resident Coordinator, Thailand 21 May 2020.

measures to contain the pandemic, the response rate was limited. A nationwide curfew from 10pm to 4am came into force on 3 April. In addition, the State Emergency Act enforced the closure of all shops, restaurants, bars and malls, including fitness, sport and leisure facilities. The government also encouraged people to stay home to stop the spread of the virus. The containment measures have been eased since 1 June, and the curfew reduced to 11pm to 3am. Shops, restaurants and malls have reopened with the obligation of implementing a tracking tool for all incoming and outgoing customers. The public is advised to wear face masks at all times when outside their residence.

The survey questionnaire was designed by UNIDO’s Department of Policy Research and Statistics and the Regional Hub Office in Thailand based on the questionnaire on the Resilience of Micro, Small and Medium Enterprises under the New Coronavirus Outbreak (COVID-19) included in the 2020 edition of the Enterprise Survey for Innovation and Entrepreneurship in China (ESIEC) led by Peking University.

The questionnaire contains 23 questions comprising four parts: i) expected impacts of COVID-19; ii) current impacts of COVID-19; iii) dealing with COVID-19, including government support, and; iv) general information about responding firms.

2.2 Typology of firms

In our analysis, we separate the information into three categories:

i) Firm size. Based on definitions established by the Department of Industrial Promotion, Ministry of Industry, our analysis classifies firms into small, medium and large.[6]

ii) Engagement in global value chains (GVCs). We identify three types of firms: GVC firms, domestic upstream and domestic downstream. “GVC firms” refer to firms that fall into one of the following categories:

- Producing intermediate inputs and selling a large share to foreign customers or to domestically located MNCs;
- Subsidiaries of MNCs with a large share of exports and/or imports;
- Two-way traders.

[6] We use the universal definition of SMEs. Small firms are those with less than 20 employees; medium firms are those with employees between 21 and 100 employees and large firms have more than 100 employees.

"Domestic upstream" firms refer to non-GVC firms that sell intermediate goods, whereas "domestic downstream" firms signifies non-GVC firms that sell finished goods.

iii) Firms' level of technology. We categorize firms into: i) low-tech; ii) medium- to low-tech, and; iii) medium to high- and high-tech firms. Table 1 present manufacturing industries and their level of technology.

Table 1 Manufacturing industries and level of technology

ISIC full description	Abbreviation used in this report	ISIC code Revision 3	Technology group
Food and beverages	Food and beverages	15	Low tech
Tobacco products	Tobacco	16	Low tech
Textiles	Textiles	17	Low tech
Wearing apparel, and fur & leather products, and footwear	Wearing apparel	18 & 19	Low tech
Wood products (excluding furniture)	Wood products	20	Low tech
Paper and paper products	Paper	21	Low tech
Printing and publishing	Printing and publishing	22	Low tech
Furniture; manufacturing n.e.c.	Furniture, n.e.c.	36	Low tech
Coke, refined petroleum products, and nuclear fuel	Coke and refined petroleum	23	Low/medium tech
Rubber and plastic products	Rubber and plastic	25	Low/medium tech
Non-metallic mineral products	Non-metallic minerals	26	Low/medium tech
Basic metals	Basic metals	27	Low/medium tech
Fabricated metal products	Fabricated metals	28	Low/medium tech
Chemicals and chemical products	Chemicals	24	Medium/high tech
Machinery and equipment n.e.c. & office, accounting, computing machinery	Machinery and equipment	29 & 30	Medium/high tech
Electrical machinery and apparatus & radio, television, and communication equipment	Electrical machinery and apparatus	31 & 32	Medium/high tech
Medical, precision and optical instruments	Precision instruments	33	Medium/high tech
Motor vehicles, trailers, semi-trailers & other transport equipment	Motor vehicles	34 & 35	Medium/high tech

n.e.c. = not elsewhere classified.

Source: UNIDO Industrial Statistics Database

2.3 Data

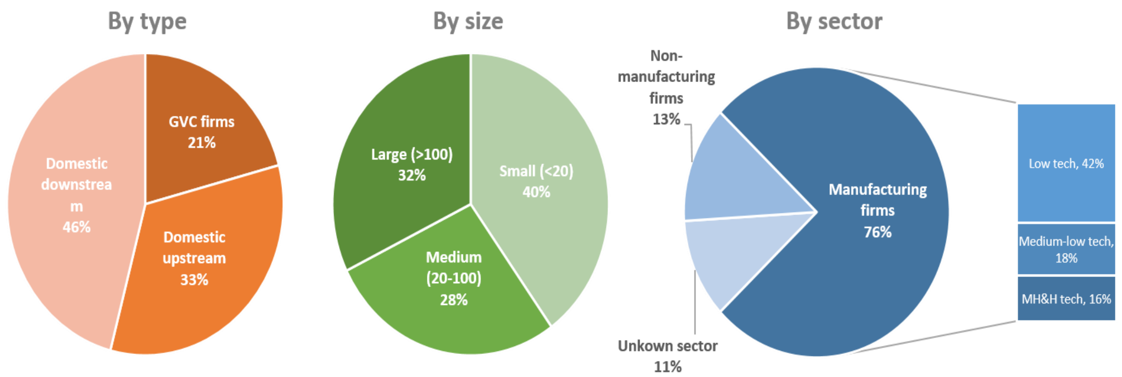
Around 320 firms responded to the online survey, with 314 firms providing complete surveys which were used for the analysis. Of the 314 firms, 40 per cent were small firms, 28 per cent were medium-size and 32 per cent were large firms. Answers to some questions were not quantifiable. We included only valid responses that could be quantified, and excluded those responses that could not be quantified, such as “don't know” or “too early to state”. As a result, the response rate for certain questions is lower than the sample size of 314 firms. The response rate is mentioned in such cases.

Additionally, we capitalized on secondary data from official sources for certain sections. For the discussion on SDG-9 (Section 4.1), we used secondary data from the Office of Industrial Economics, the Ministry of Industry and Office of SME Promotion (OSMEP), and UNIDO’s SDG-9 monitoring platform. For the policy analysis of government support schemes (Section 4.3), we used data from the Ministry of Industry, discussions with the Federation of Thai Industries and the SME Bank’s website to gain insights about current support programmes and plans.

2.3.1 Respondent firms by type

The majority of respondents (79 per cent) were domestic firms that are not engaged in global value chains. Domestic upstream and domestic downstream firms accounted for 33 per cent and 46 per cent of responses, respectively. The remaining 21 per cent were GVC firms. Figure 1 illustrates the data by firm type.

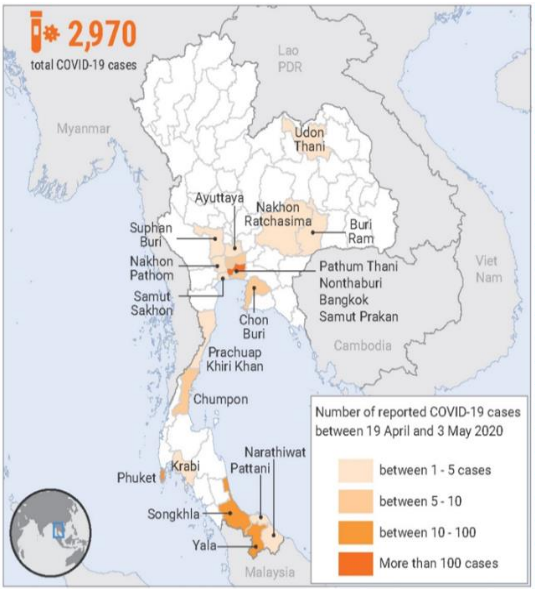
Figure 1 Responses by firm types



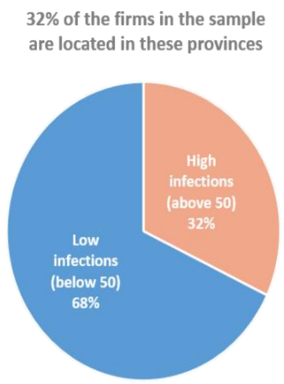
2.3.2 *Respondent firms and COVID-19*

Approximately 32 per cent of respondent firms are located in provinces with the highest number of infections – Bangkok, Phuket, Nonthaburi, Yala, Samut Prakan, Chonburi and Pattani. We used information on cases from the website of the Department of Disease Control, Ministry of Public Health,[7] and the UN Resident Coordinator Office's heatmap at the end of April, which seems to have been the worst period, with a total of 2,970 infections during the questionnaire's implementation. We then defined "provinces with high infection rates" as provinces with more than 50 cases, which was the case in seven provinces (Figure 2).

Figure 2 Reported cases and firms' location



Province	Cases
Bangkok	1,532
Phuket	224
Nonthaburi	156
Yala	125
Samut Prakan	115
Chonburi	85
Pattani	79
Songkhla	44
Chiang Mai	41
Pathum Thani	39
Narathiwat	32
Nakhon Pathom	22
Chumphon	21
Nakhon Ratchasima	19
Surat Thani	18
Krabi	17
Chachoengsao	17
Prachuap Khiri Khan	17
Ubon Ratchathani	15
Samut Sakhon	14
Phatthalung	14
Buriram	13
Nakhon Si Thammarat	12
Sa Kaeo	10



Source: UNRCO, Ministry of Public Health with UNIDO's analysis

3 Findings and analysis

3.1 Current impact of COVID-19

The shortage of cashflow and of inputs are reported to be the biggest challenge associated with the pandemic and containment measures. The majority of firms (82 per cent) reported that the shortage of cashflow was the biggest problem. The main reason for this are reduced sales due to drops in demand, which was reported by more than two-thirds of firms, as well as the increased difficulty of obtaining financing. The shortage of inputs was the second biggest challenge according to nearly 70 per cent of firms. Such shortages might have been caused by disruptions in value chains and logistics, including the inability to make deliveries, perhaps due to

[7] https://covid19.th-stat.com/en

containment measures such as border closures. In addition, over half of the firms have struggled to fulfil their contracts and faced labour shortages. Figures 3 and 4 highlight the main challenges firms are facing. The figures also indicate negligible differences between different types of firms in terms of size, GVC participation and level of technology.

Figure 3 Main challenges firms face

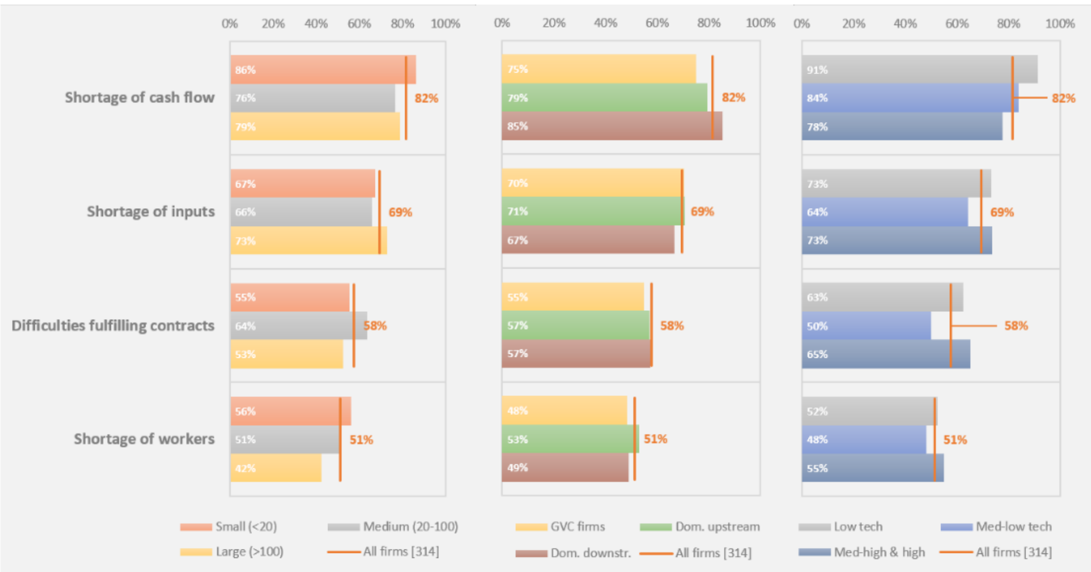
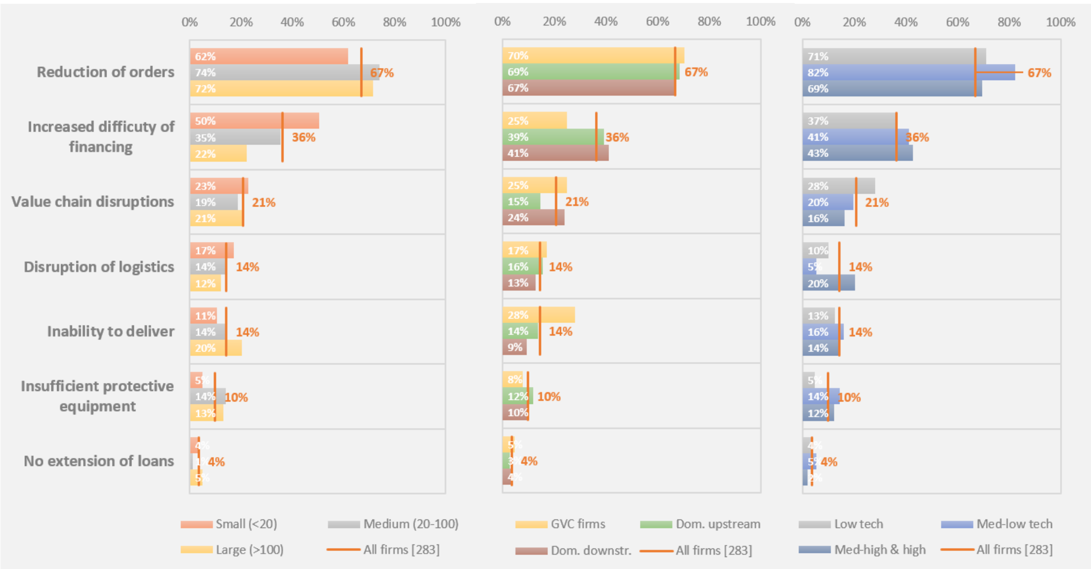


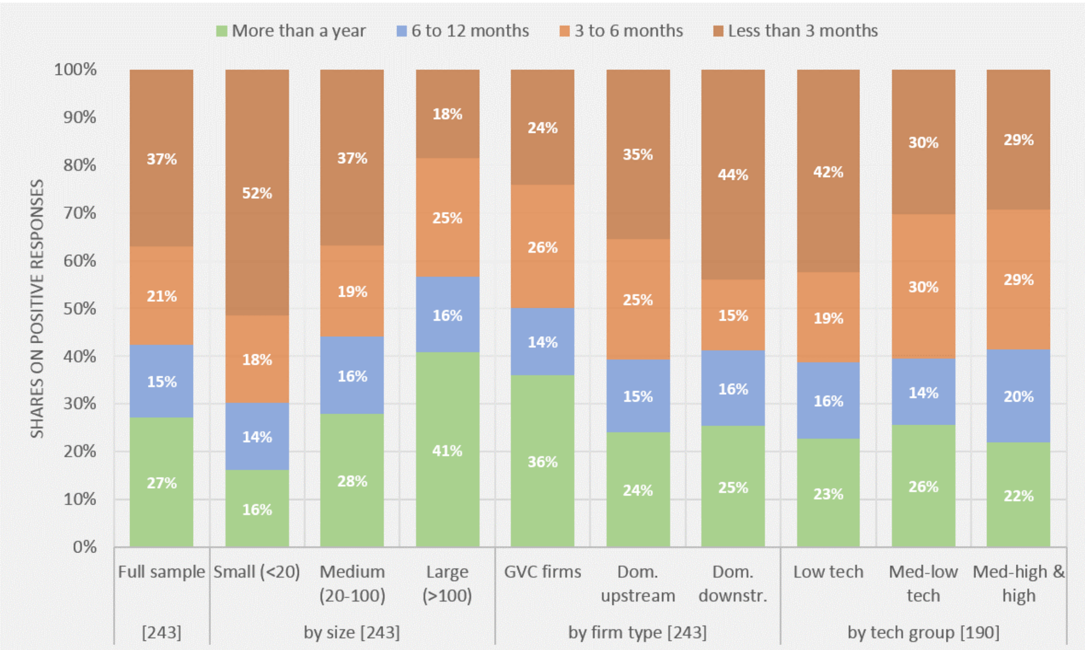
Figure 4 Main causes of challenges



Over 70 per cent of the 243 respondent firms with valid responses have been affected by the containment measures enforced by the government in April during the survey's implementation. We find that if the containment measures are extended for a longer period, the majority of small-size and domestic downstream firms would have to close down in less than three months. Only a small share of firms expect to be resilient enough to survive a year-long lockdown. This group of firms were predominantly food and beverage manufacturers, which have been least affected so far.

Among GVC firms, over one-third (36 per cent) could survive for more than one year, while nearly one quarter of GVC firms (24 per cent) expect to close down within three months if the containment measures continue. By contrast, albeit not so surprisingly, large firms are better equipped to cope with the government restrictions, with more than one-third (36 per cent) expecting to be able to survive for more than one year if the restrictions continue. Less than one quarter (24 per cent) expect to close down within three months if the restrictions are extended. Figure 5 illustrates this situation.

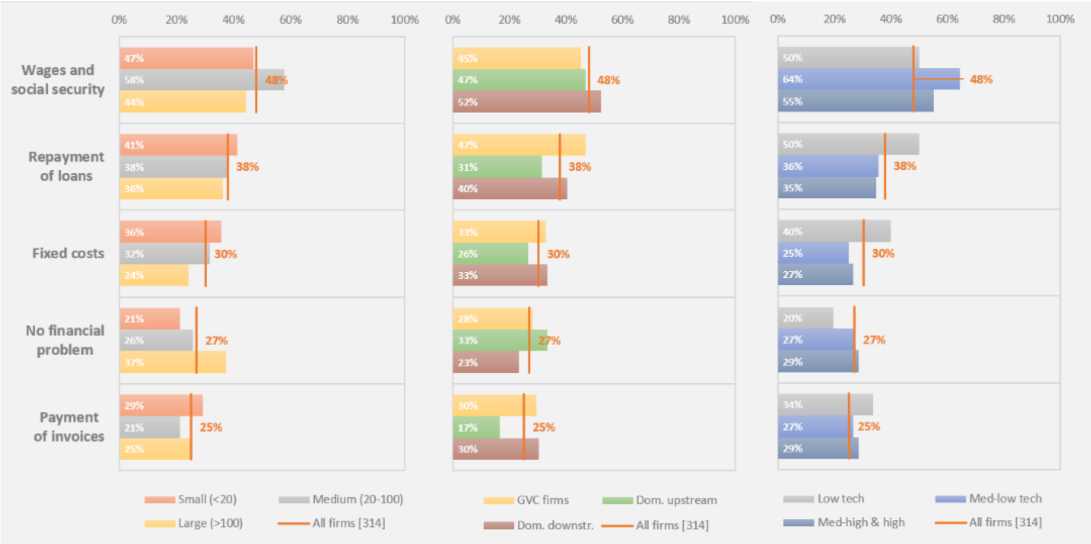
Figure 5 Expected survival of firms if restrictions continue in April



On the other hand, should restrictions be eased, about 40 per cent or more of the 307 respondent firms expect to be able to recover within one month. Among small-size and low-tech firms, 39 per cent and 34 per cent, respectively, stated that they would recover within one month. On a positive note, less than 18 per cent of the 307 firms expected recovery to take more than six months.

Payment of wages and social security posed the biggest financial concern across all firms, regardless of size, GVC participation and level of technology. Repayment of loans and fixed costs ranked second and third most common concern, respectively. Interestingly, over one-third (37 per cent) of large firms indicated no financial concerns; this compared to one-fifth (21 per cent) of small firms and a quarter of medium-sized firms reporting that they had no financial concerns.

Figure 6 Main financial concerns



Firms that are small and not engaged in global value chains have suffered the most from employees' inability to work. Firms' level of technology does not correlate with different results in terms of the impact of employees' inability to work. Of the 203 respondent firms with valid responses,[8] we find that 29 per cent of small firms were affected by a large share (between 76 per cent to 100 per cent) of their workforce being unable to work, while 37 per cent of firms reported that between 1 per cent and 25 per cent of their workforce could not work. Domestic-oriented and low-tech firms reported similar numbers in terms of impact. Approximately 21 per cent of such firms were affected by a large share of their employees (between 76 per cent to 100 per cent) being unable to work, and about half reporting that between 1 per cent and 25 per cent of their workforce could not work. By contrast, over half of GVC firms stated that only a low number of their workforce was unable to work.

3.2 Expected impact of COVID-19

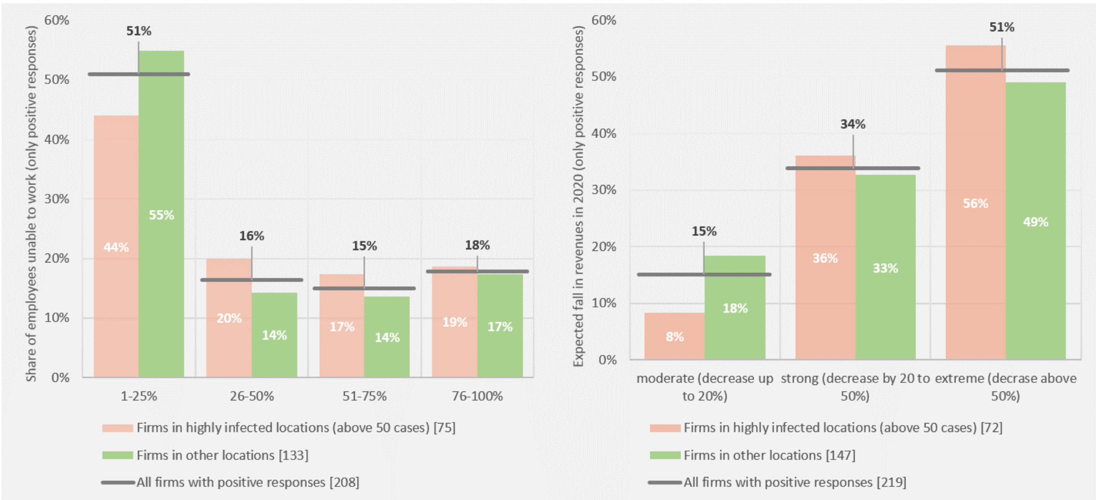
The majority of firms anticipate extreme revenue losses. We found that 90 per cent or more of respondent firms, regardless of their location, expected revenue losses of more than 50 per cent in 2020. Of the 219 respondent firms with valid responses, over half of the firm (56 per cent) in provinces with high infection rates and 49 per cent of firms outside these provinces expected a decrease of more than 50 per cent revenue in 2020. We find that less than one-fifth of the 208 firms providing valid responses reported that a majority of their workforce (76 per cent to 100 per cent) were unable to work. A majority of firms in- and outside those provinces reported that 1 per

[8] Valid responses means responses that can be quantified. Hence, we exclude those responses that could not be quantified, including responses such as "don't know" or "too early to state".

cent to 25 per cent of their workforce was unable to work. Figure 7 illustrates these findings. We furthermore found that 60 per cent of small-size and GVC firms expected to be impacted the most, with a more than 50 per cent decrease in revenues in 2020 (Figure 13).

Layoffs were not the most preferred mitigation measure. On the bright side, regardless of their type and size, over 80 per cent of the 307 firms with valid responses did not consider laying off employees as a coping measure. Small-size and domestic downstream firms showed slightly less optimism, with 76 per cent and 79 per cent, respectively, reporting that they did not plan to lay off workers. In addition, if small-size and domestic downstream firms were to cut staff, over 50 per cent of 55 respondent firms reported that they would reduce only 1 per cent to 25 per cent of their workforce.

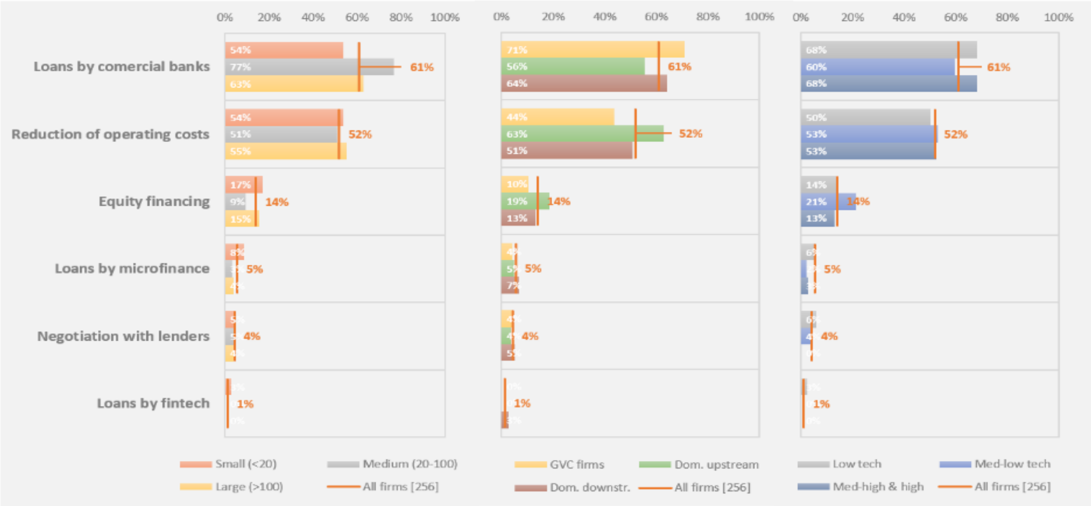
Figure 7 **Comparison: firms in- and outside provinces with high infection rates**



3.3 Dealing with COVID-19

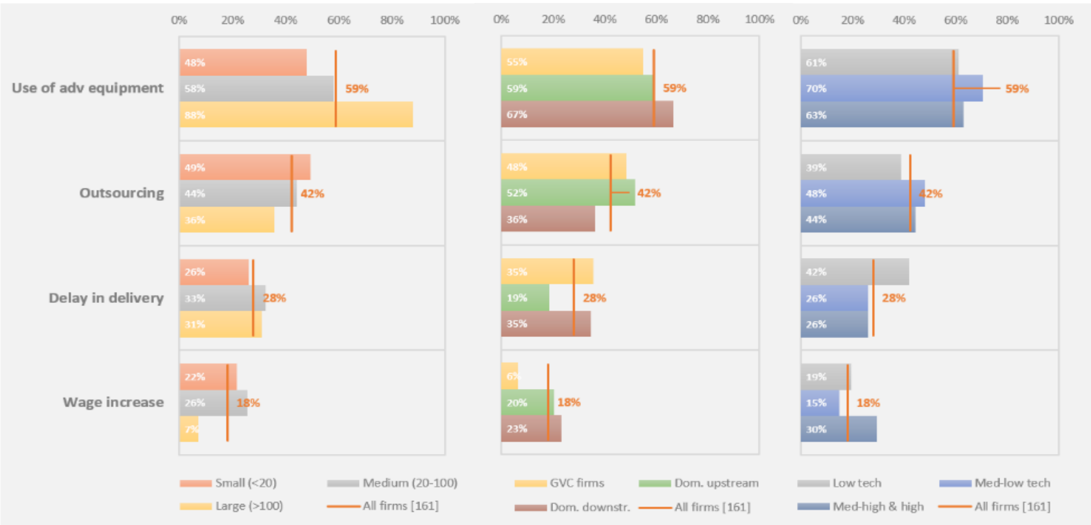
To cope with cashflow shortages, firms have taken loans and reduced their operating costs. We found that regardless of size and type, 61 per cent of all respondent firms took loans from commercial banks and around 52per cent cut their operating costs as their main coping measures (Figure 8).

Figure 8 **Shortage of cashflow coping measures**



Referring to Figure 9, the majority of firms (59 per cent), regardless of size and type, would consider using technology to compensate for the shortage of workers. Large firms had a significantly higher share, with 88 per cent taking advantage of technology as a countermeasure. Small-size and domestic upstream firms balanced between using technology as a countermeasure and outsourcing.

Figure 9 **Dealing with worker shortages**



Increasing procurement channels, new production channels and reduction of production were reported to be the most preferred measures to cope with the shortage of inputs by most firms, regardless of size and type. However, medium-, medium high- and high-tech firms preferred delaying deliveries as another coping measure.

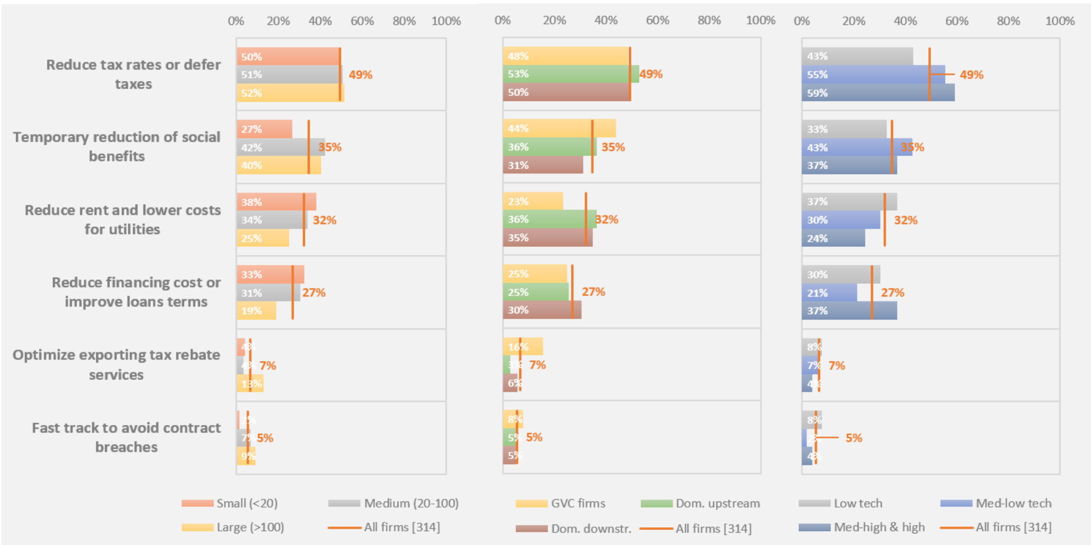
3.4 Stimulus package

Firms of different sizes and types showed slightly different proportions in terms of benefitting from at least one form of government COVID-19 support programmes. We found that GVC, medium- to low-tech, and medium-size firms showed the highest percentage of firms receiving government support, with 38 per cent, 39 per cent and 36per cent, respectively. This means that support schemes have not reached firms that are most in need, such as small-size firms.

Over 40 per cent of firms benefitting from support reported that it was beneficial to them, with medium-size, domestic upstream and low-tech firms demonstrating the highest share of satisfaction with government support received so far. One-third had neither positive nor negative feedback on support measures.

Tax rate reductions or tax deferrals and reduction of social security contributions ranked as the most preferred government support measures, at 49 per cent and 35 per cent of responses, respectively. Other means to reduce operating costs, including rent and utility costs (32 per cent) and improved loan terms (27 per cent) were the next most preferred measures. Figure 10 illustrates firm preferences. Our finding on firms' preferences matches the results from a survey of SMEs conducted by the Federation of Thai Industries.[9] This correlation confirms our understanding of firms' needs, in particular SMEs.

Figure 10 Firms' preferred government support measures



[9]https://www.fti.or.th/project_category/

4 Discussion

4.1 Inclusive and sustainable industrial development (ISID) – Sustainable Development Goal 9

Working with Thailand to achieve the SDGs lies at the core of the United Nations' mission in Thailand. This section discusses how the impacts at firm level could affect the country's progress towards achieving SDG-9, in particular with regard to ISID. We use UNIDO's own SDG-9 monitoring tool on UNIDO's Statistics Portal.[10]

4.1.1 Status of SDG 9.2, 9.4 and 9.b and impact of COVID-19

SDG Target 9.2 aims to significantly raise industry's share of employment and gross domestic product in line with national circumstances, and to double its share in least developed countries by 2030. Since 2015, we have witnessed an increase both in terms of financial value and percentage of the manufacturing sector's contribution to the country's GDP from USD 1,600 to USD 1,800 per capita, while the ratio of the manufacturing sector in overall employment dropped slightly by about 0.5 per cent. This could imply that the distribution needs to become more effective and accelerate to create more employment stemming from the increasing value of the manufacturing sector. The Target's status as of the end of 2019 indicated the need for accelerated, inclusive and sustainable industrialization to achieve the SDGs.

Taking into account the impact of COVID-19 on SDG 9.2, we project the situation in three scenarios. Figure 11.a shows the projection of SDG 9.2.1 and the manufacturing sector's percentage relative to GDP. Figure 11.b illustrates the projection of SDG 9.2.2 and the percentage of manufacturing employment in total employment. Scenario 1 is a continual trend up to 2030. Scenario 2 posits no pandemic using the GDP forecast by the Economist Intelligence Unit (EIU) in collaboration with UNDP and UNICEF.[11] In their forecast, real GDP growth of 2.1 per cent in 2020 and in 2021–22, brightening the prospects for exports to boost growth close to 4 per cent. We use the MPI's pre-COVID growth rate of 3 per cent predicted by the Office of Industrial Economics (OIE), Ministry of Industry.[12] We also use that report's projected total employment. Scenario 3 accounts for COVID-19 based on a decrease of 17.21 per cent of MPI according to OIE. We use GDP and total employment forecasts in the COVID-19 scenario with government support from the same report as Scenario 2. With the government stimulus package in place,

[10] https://stat.unido.org/SDG/THA
[11] COVID-19 Economic impact assessment for Thailand, final results, 22 May 2020 by the EIU in collaboration with UNDP and UNICEF in Thailand.
[12] https://indexes.oie.go.th/

Thailand's GDP contracts by 4.3 per cent in 2020. From 2021–25, we expect GDP growth to average at 3.2 per cent per year.

As a result, due to the drop in the overall manufacturing productivity index, the sector's expected reduction of revenue and the projection of the 1.5 million people to be laid off by the end of 2020, we see reduced contributions to GDP and employment, hence moving further away from the SDG Target as illustrated in Figures 11.a and 11.b. As the country's GDP and total employment are negatively impacted by the pandemic, the Target's relative contraction might not be so significant.

Figure 11.a SDG 9.2.1 projected scenario

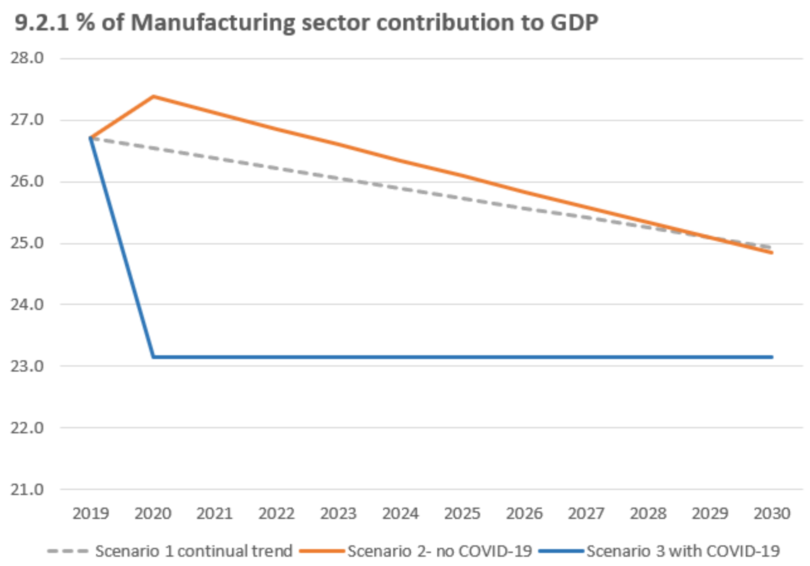
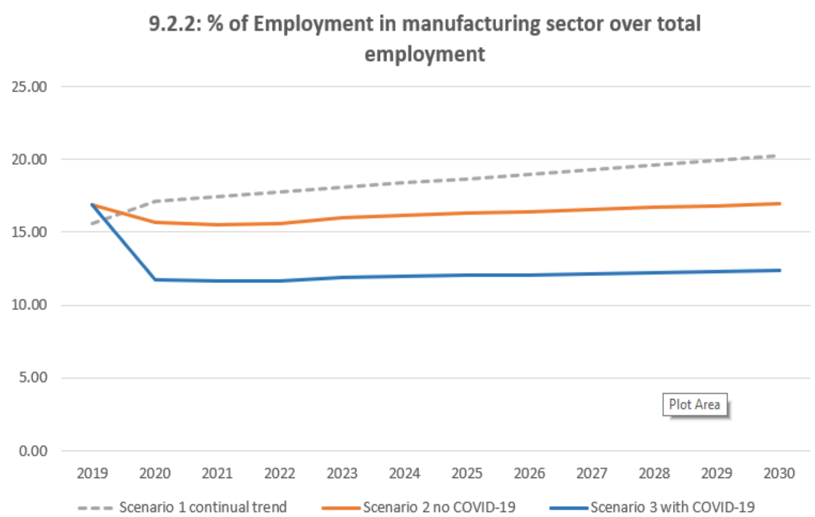
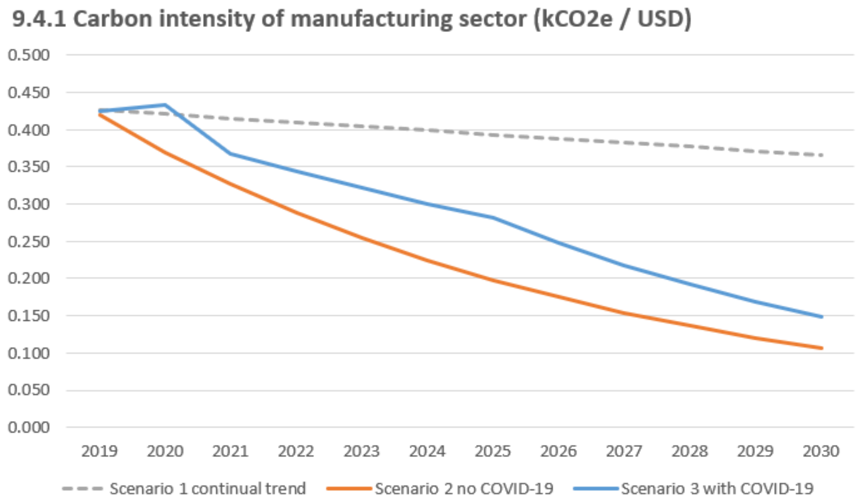


Figure 11.b SDG 9.2.2 projected scenario



SDG 9.4 on carbon emissions from the manufacturing sector measured by carbon emissions over manufacturing value added shows a declining trend since 2015. This trend leads us to believe that the country is on track in achieving the goal by 2030.

Figure 12 **SDG 9.4.1 projected scenario**



Taking the impact of COVID-19 into account, we project carbon emissions in three scenarios (Figure 12). Scenario 1 is a continued trend from the current one to 2030. Scenario 2 is the no-pandemic scenario and Scenario 3 is the COVID-19 scenario. We use the same manufacturing value added of Scenarios 2 and 3 from previous projections. For Scenario 2, we use percentage year-over-year carbon emissions from the manufacturing sector in a report by the Energy Policy and Planning Office (EPPO), Ministry of Energy.[13] The report shows a 9.1 per cent reduction in 2019 compared to 2018. For Scenario 3, we use the expected reduction in energy consumption in the manufacturing sector in 2020 due to COVID-19, also based on EPPO.[14] Our calculation indicates a reduction of 16 per cent of carbon emissions from the manufacturing sector after 2019. From 2021 to 2025, taking into account the improved economic situation, the manufacturing sector's energy consumption will rise, coupled with an expected increase in renewable energy's percentage in the country's energy mix[15] and hence we estimate the reduction of carbon emissions from the sector to be 12.5 per cent. From 2026, we expect the economy and investments in low carbon technologies, including renewables, to return to pre-COVID-19 levels. Therefore, carbon emissions from the manufacturing sector would be equivalent to those of the pre-COVID-19 situation, with a 9.1 per cent decrease.

[13]http://www.eppo.go.th/index.php/th/energy-information/situation-co2/half-year?orders[publishUp]=publishUp&issearch=1
[14]https://www.energynewscenter.com
[15] The global renewable energy is forecasted to increase by 3 per cent, https://www.energytimeonline.com/content.

Figure 12 demonstrates our estimations. In Scenario 3, we expect a spike in 2020 due to the huge drop in manufacturing value added (MVA). With the pandemic, carbon emissions from the manufacturing sector will decline, not because of the adoption of low carbon technologies but due to low production caused by reduced demand as a result of the crisis. In addition, GDP is expected to drop, but not enough to maintain the pre-COVID-19 trend.

Target 9.b on technological development is measured by the ratio of medium high- and high-tech industry value added in total value added. Technological development has been stagnant at 41 per cent of medium- to high-technology industry over total value added. Hence, ensuring a policy environment for industrial diversification and value addition to economic development is needed to boost progress. Consequently, the status as of the end of 2019 marked the need to accelerate progress to achieve the target. Taking the impact of COVID-19 and the economic downturn into consideration, the goal for firms to increase investments in higher technology adoption is now unlikely. Therefore, we expect progress on this Target to remain stagnant for an extended period.

4.1.2 SDG 9.3: Small and medium enterprises (SMEs)

Target 9.3 places importance on SMEs and their contribution to the country's overall economy and employment. Enabling the necessary ecosystem for SMEs to thrive could help the country's progress in terms of economic growth with equal distribution in the long run. In line with Target 9.3 Pillar III "Protecting jobs, small and medium-sized enterprises, and informal sector workers" under the United Nations framework for an immediate socio-economic response to COVID-19, UNCTs' recovery efforts should focus on protecting as well as extending financial support to SMEs.

According to both UNESCAP and UNIDO data, no information is available to measure progress on this Target. Therefore, in this discussion, we use statistics from the Office of SME Promotion[16] as our main source.

The Office of SME Promotion's White Paper on SME 2019[17] indicated that in 2018, SMEs' contribution to the country's GDP amounted to 43.0 per cent compared to 42.4 per cent in 2017. In the same year, with over 3.07 million enterprises, SMEs employed more than 11 million employees nationwide. Of these SMEs, 39.1 per cent are engaged in the service sector, 31.4 per cent in wholesale and retail, 22.6 per cent in manufacturing, and the remaining 6.9 per cent in

[16] http://www.sme.go.th/th/index.php
[17] https://www.sme.go.th/en/download.php?modulekey=94

utility, construction and mining. Considering that SMEs accounted for 43 per cent of GDP in 2018, manufacturing SMEs contributed almost 10 per cent to GDP.

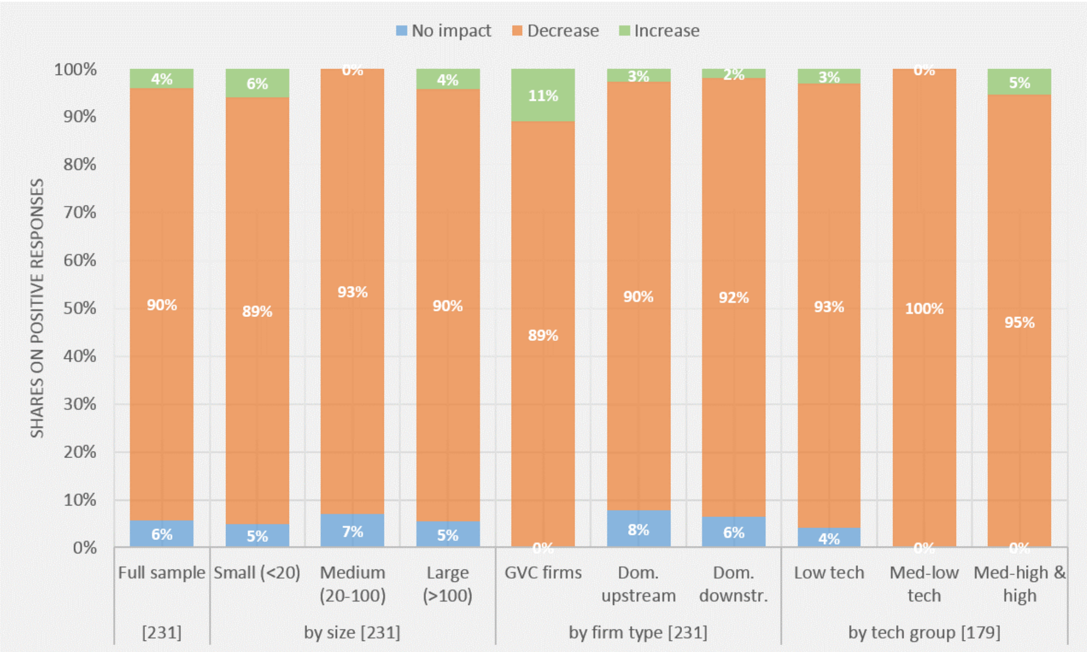
In previous years, SMEs in the largest sectors of trade and service continued to grow, largely due to the continued expansion of domestic demand, notably growth in government and private sector consumption, improved earning in the agriculture sector and revenue from inbound tourism. It is worth noting that 2019 saw a drop in total employment in SMEs to about 9.6 million employees. The total number of SMEs increased to 3.1 million enterprises, however. For manufacturing SMEs, around 530,700 enterprises employed more than 1.9 million employees in 2019.

Taking into account the current and expected impacts of the COVID-19 crisis, based on available data, Target 9.3.1 measured by the proportion of small-scale industries' contribution to total industry value added, will remain stagnant, with the possibility of achieving the Target by 2030 seeming unlikely. Extrapolating from the survey sample,[18] we found that 15 per cent of responding manufacturing SMEs expected to close down if lockdown measures continued for three months. Assuming that the same rate applies, this would translate into 79,605 enterprises with 245,000 worker losing their jobs in manufacturing SMEs alone.[19] The potential closure of these manufacturing SMEs would exacerbate the challenge of meeting the Target. In addition, a majority of SMEs expected a drop in revenues in 2020 (Figure 13), meaning that their contribution to GDP and specifically to the manufacturing sector would be lower. Target 9.3.1, which constitutes the ratio to the entire manufacturing sector, was expected to drop as well.

Therefore, the overall ratio of manufacturing SMEs to the manufacturing sector as a whole may remain unchanged or change only slightly. In addition, SMEs need a longer time to get back on their feet (Figure 14). Without concerted and effective efforts from the government's recovery schemes, increasing SMEs' contributions to the economy with reference to the Target seems unlikely.

[18] From Figure 1, there will have 30 per cent of the 314 firms assumed to be manufacturing SMEs and Figure 5 shows that 50% of them will close.
[19] Using 2019 statistics.

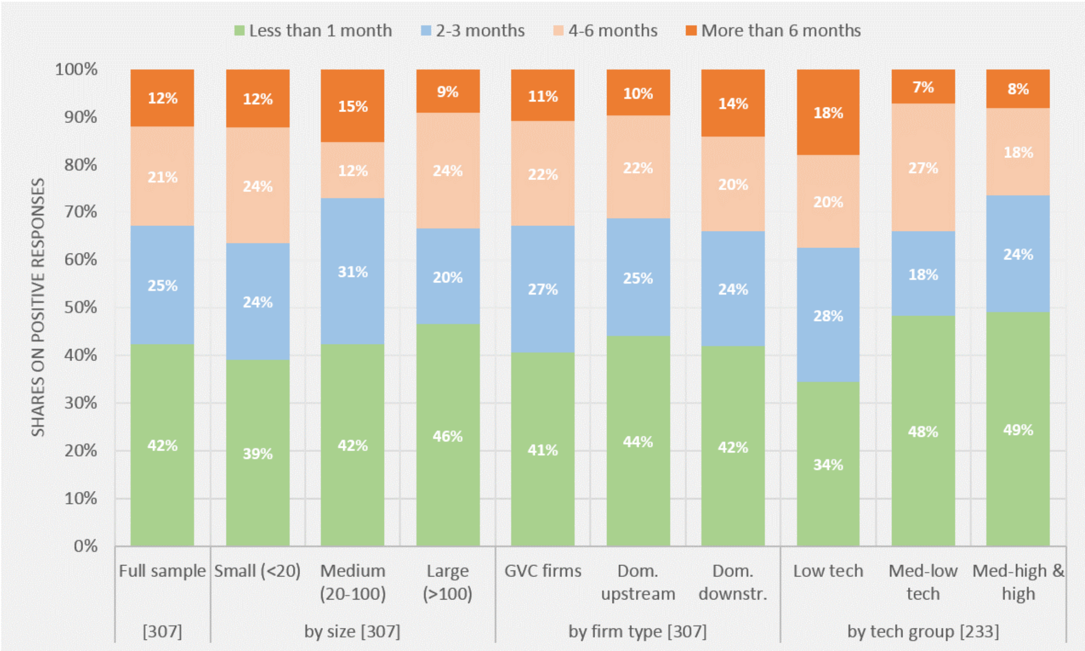
Figure 13 **Expected drop in revenue in 2020 by all firms**



Most importantly, the SMEs hit hardest are in the service sector, tourism in particular. For instance, employees at small hotels, bed and breakfasts, small tour operators and tourist bus operators are projected by the NESDC are at risk of unemployment or have already lost their jobs, as they rely on inbound and domestic tourists for revenue. Out of the total 3.9 million workers employed in the tourism sector, 2.5 million are expected to become redundant.[20] In other words, 64 per cent of employees in the sector face the prospect of unemployment. Repurposing SMEs in this sector might not be straightforward due to the nature of the business. Support schemes are therefore urgently needed.

[20] https://www.posttoday.com/economy/news/624626

Figure 14 Expected recovery times



4.2 GVC firms and the automotive industry

The automotive industry, which mostly consists of GVC firms, has been hit the hardest by the pandemic. According to our survey findings, 63 per cent of GVC firms expected a reduction of over 50 per cent of revenue in 2020. They have been affected by the reduction of orders (70 per cent of respondent firms), followed by an inability to make deliveries, difficulties in financing and value chain disruptions. Automotive products such as cars and trucks were ranked Thailand's top exports prior to the outbreak of COVID-19. Thailand houses a South East Asian production hub of the two major automotive giants Honda and Toyota, making the country the largest automotive producer among the ASEAN countries and the sixth largest in the world.[21]

In 2019, trade values of finished automotive goods amounted to USD 20,726 million, of which USD 18,175 million and USD 2,552 million represented export and import values, respectively.[22] The auto parts trade value amounted to USD 46,055 million, of which USD 24,371 million and USD 21,684 million constituted export and import values, respectively. Even before the pandemic, the sector was exposed to a prevailing threat from the trade dispute between the United States and China.

Unfortunately, the sector's trade partners include countries that have been severely affected by the pandemic, including China, Japan, Germany, Australia, the United Kingdom and the United

[21] https://www.mreport.co.th/news/industry-movement
[22] https://www.prachachat.net/columns/news-458855

States. Other trading partners such as Malaysia, Indonesia, Viet Nam and the Philippines have a significant number of infections as well, although they are not as severely affected as the first group of countries. As a result, demand from these countries has dropped tremendously. Containment measures such as border closures have exacerbated the situation by disrupting the value chains and making deliveries impossible. At the end of May, however, the situation in China showed positive signs of improvement and borders were opening up. The situation in other main trade partners remained difficult as the number of infection cases continued to rise, particularly in the UK and the US.

On the one hand, GVC firms in the survey demonstrated a faster recovery capacity because GVC firms reported better performance than other firms.[23] On the other hand, the recovery time for GVC firms largely depends on the situation in trade partners. Looking ahead, automotive GVC firms will continue to suffer as long as trade partners' situations do not improve.

4.3 Government support

Some key government support schemes launched since April are highlighted below.

i) In late April, the Bank of Thailand announced the Government Gazette on debt suspension for a maximum of six months for affected enterprises. Commercial banks are to implement this scheme.

ii) The SME Development Bank announced five measures to help firms. Firstly, 1 per cent debt rate is offered for one year for five business categories: hotels/dormitories, spas, restaurants, tourism guides and tourist transport. Secondly, capital and debt repayment can be deferred for six months for current customers. Thirdly, loan repayment periods can be extended for up to five years. Fourthly, debt repayment conditions can be renegotiated. Lastly, additional extra loans with a 3 per cent interest rate and transformation loans with a 4 per cent interest rate are being offered.

iii) Additionally, the Cabinet has implemented various relief measures to people and businesses. Grants of THB 5,000 are being paid to affected citizens with conditions under the social insurance system for three months. Personal tax payments can be deferred and social insurance payment rates reduced from March to May. Soft loans with a 0.1 per cent monthly interest rate for freelance earnings of less than THB30,000 per month are being

[23] OECD-UNIDO (2019), Integrating Southeast Asian SMEs in Global Value Chains: Enabling Linkages with Foreign Investors, Paris. www.oecd.org/investment/Integrating-Southeast-Asian-SMEs-in-global-value-chains.pdf

offered by the Government Saving Bank (GSB) and Bank of Agriculture and Agricultural Cooperatives (BACC).

iv) Utility usage is also being partially subsidized by utility agencies, including the provision of 10 GB free internet for everyone, free water supply provisions and a 20 per cent reduction in water tariffs for larger amounts for Bangkok households. Electricity deposit charges are being returned and reduced electricity tariffs applied for registered users living in Bangkok and other provinces.

v) On 2 June, the Minister of Industry, in partnership with the SME Development Bank, launched an extended loan scheme tailored to support SMEs.[24] This loan scheme aims to improve SMEs' access to the financial support schemes offered by the government. It aims to provide working capital, enhance the liquidity of employment, and enable recovery as soon as possible. The overall programme put forward by the Minister with a value of more than THB 40,000 million will help SMEs in approximately 24,000 businesses. As a result, the scheme is expected to help retain the employment of 120,000 workers and to boost the economic turnover (approximately THB 90,000 million). The funds for this extended loan scheme from the Ministry of Industry will be fed into existing financial support programmes for SMEs by the SME Development Bank and Office of Small and Medium Enterprises Promotion (OSMEP). The SME Development Bank will use additional funds to top up the Bank's existing schemes, such as the Civil State Loan and Small SMEs Credit schemes with an interest rate of 1 per cent per year. The OSMEP's existing scheme SME One will benefit from additional funds with a 1 per cent interest rate and an exemption of repayment up to 12 months.

According to the Federation of Thai Industries, 10 per cent of the loan scheme has been successfully accessed so far. This low access rate shows that barriers exist that are hampering affected firms from accessing the loan. In addition, based on our findings, 14 per cent of small-size firms reported that the support they received from the government was not beneficial. Therefore, prior to launching the next set of stimulus packages, the government should revisit and evaluate the existing programmes to better reach those who are most in need and to target recipients.

[24] http://iiu.oie.go.th/news/1195

5 Policy recommendations

The most helpful measure to support recovery is to immediately restart and stimulate demand for goods and services. Since the stimulus package and support programmes launched by the government so far are still in an initial phase, based on analyses and discussions in previous sections, we offer an initial set of policy recommendations.

These recommendations are by no means exhaustive. Our policy recommendations ultimately aim to help Thailand build a stronger manufacturing sector and get on track to achieve sustainable and inclusive industrial development in accordance with SDG-9. The United Nations Department of Economic and Social Affairs (UNDESA) emphasizes that how a stimulus package is implemented matters. Drawing on lessons learned from the economic crisis in 2008, UNDESA concludes that the key to crafting an effective package includes: i) protecting jobs better and avoiding layoffs; ii) expanding existing programmes is more effective than creating new ad hoc programmes, and; iii) groups that are often not protected need to be considered.[25] Our recommendations are based on these principles.

i) **Improvements in current support schemes.** As discussed in Section 4.3, several government agencies, such as the Ministry of Industry and Bank of Thailand, have announced and started implementing support schemes for affected firms. Some improvements should be considered so schemes can be more effective and targeted:

- Ease access and remove barriers to loans for firms to stay afloat.
- Expand the reduction of electricity and water tariffs for firms.
- Tax and social security contribution deferrals for a longer period of minimum three to five years.
- Customize support programmes for micro and small firms. Special programmes and fast-track applications should be tailored accordingly. This, for instance, could include tax exemptions for up to three years for SMEs and domestic downstream firms. To ease conditions for small firms to gain access to additional loans, the government could come in as a guarantor to commercial banks. The recently announced additional loan scheme for SMEs with a 1 per cent interest rate is a good model. However, a guarantor needs to

[25] https://www.un.org/development/desa/dpad/publication/un-desa-policy-brief-58-covid-19-addressing-the-social-crisis-through-fiscal-stimulus-plans/

be identified or a condition attached that would not require a guarantor under this new scheme.

ii) **Employment retention scheme.** Although layoffs are not firms' preferred measure, wages and social security contributions are reported to be the biggest financial burden. The efforts should help affected firms stay afloat. Worsening unemployment will aggravate income inequalities both at present and in the future. Various wage subsidy schemes are being implemented in many countries to sustain businesses and secure jobs. For instance, in Singapore, the government has subsidized up to 75 per cent of wages for nine months. Self-employed people in the UK can apply for grants in the amount of 80 per cent of their average monthly profits, up to GBP 2,500, while salaried employees are being provided with wage subsidies of 80 per cent.[26] Other countries have implemented wage schemes, including the Netherlands, Germany, Canada and Australia, among others.

- We propose the introduction of a wage subsidy of between 60 per cent to 80 per cent of salaries for six months, coupled with a short-term work scheme focussed on **micro-, small- and medium-size firms and domestic-downstream firms**. The wage subsidy could vary depending on firm type and size. Under the short-term work scheme, all employees' working time would be decreased accordingly, at least by 10 per cent, and the base wage cut proportionally. This scheme works for firms with continuing production.

- Another option for the wage retention scheme is to allow employees to take long leaves until demand and production resume. During this long leave, the government should consider subsidizing a proportionately reduced wage. For example, the German government is considering subsidizing two-thirds of workers' wages. This scheme fits those firms with low or no production.

iii) **Support the automotive sector**. An automotive industry association under the Federation of Thai Industries has explored the possibility of a "cash for clunkers" programme to stimulate demand for new cars. The programme incentivizes car owners to trade in old cars and buy a new one with some price offsets. This programme is also being considered in countries with automotive industries such as the US and Germany.[27] However, in Thailand, the programme might not benefit used car dealerships and that could cause problems if the programme is not

[26] https://www.bbc.com/news/business-51982005
[27] https://cars.usnews.com/cars-trucks/cash-for-clunkers

properly designed. We recommend a proper analysis to be carried out based on consultations with all concerned stakeholders as a foundation for the programme.

In addition, another way to create demand for new cars is through a mandatory scrapping policy. The scrapping policy could be implemented based on vehicle age, for example, banning cars that are older than 10 years; vehicle safety standards such as mandatory annual inspections and certification; and/or environmental standards such as emission controls. This would have significant collateral benefits in terms of average fuel efficiency and reduced air pollution.

iv) Lastly, UNIDO's support programmes leverage UNIDO's expertise to collaborate with Thailand to bring the manufacturing sector and businesses back from the crisis and at the same time move towards inclusive and sustainable manufacturing.

Industrial development facility. An independent body could be established to provide support for firms in various areas, such as technological and product improvement, production innovation, business expansion and how to cope with crises such as COVID-19. The body could be funded by diverting a small percentage of tax paid by firms and provide service to firms with minimal charges to cover operating costs for staff time and travel. The facility could use incoming revenue from the tax to subsidize firms with interest rates such as 2 per cent paid by the firm and 2 per cent by the facility for a rate of 4 per cent. The facility should have legal status and could be a guarantor for firms who are in need of support. This would benefit firms a great deal, in particular during the crisis, as many micro and small firms are facing difficulties in obtaining additional loans from commercial banks.

Investing in advanced technology – IR 4.0 technology. To achieve changes in the workplace, including the initial shortage of workers, advanced technology needs to be introduced. The COVID-19 crisis is likely to result in a structural transformation of manufacturing into a "new normal", which will most likely be more digitalized, more circular and more resilient. 4IR technology will be a defining factor, helping industry resume operations as soon as possible and providing a platform to develop new, more resilient operations, value chains and businesses.

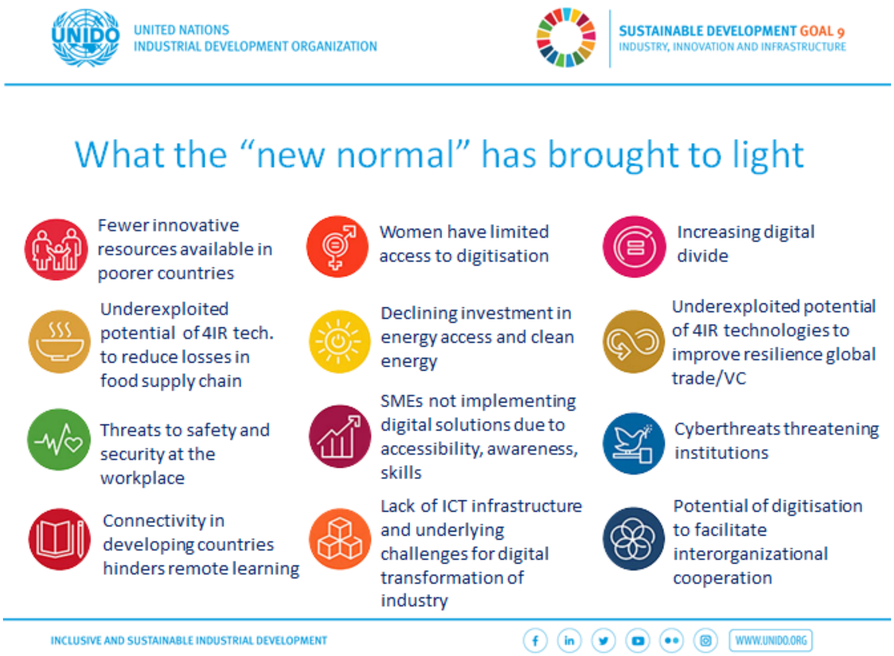
To support a smooth transformation, UNIDO leads in addressing opportunities, challenges and risks stemming from 4IR while ensuring that no one is left behind. To cater to the growing demand for 4IR-related services in light of the crisis, UNIDO has developed technical cooperation programmes and integrated packages for Member States, such as the COVID-19 Industrial Recovery Programme (CIRP), which will provide targeted support to national governments to restructure their industrial sector in the recovery period. Through its programmes focussed on SMEs, UNIDO supports the business sector in restructuring and responding to the disruptions through the adoption of advanced technologies and innovative solutions, building flexibility and long-term resilience (Figures 15 and 16).

Business repurposing scheme. One of the solutions proposed by UNIDO as an immediate response is repurposing manufacturers and service providers.[28] Repurposing is a rapid response solution to address the global shortage of COVID-19 critical items that can save lives by using idle manufacturing capacity. It can also contribute to ensuring business continuity and employment retention. Repurposing is, in principle, a temporary strategy that could be expensive and filled with challenges. Hence, to capitalize on opportunities that repurposing has to offer, policy responses are essential to help manufacturers address repurposing challenges and facilitate the transition to the 'new normal' during this COVID-19 crisis. Opportunities exist to leverage proven designs and methods.

Figure 15 4IR in the fight against COVID-19

[28] https://www.unido.org/news/covid-19-critical-supplies-manufacturing-repurposing-challenge

Figure 16 4IR and the 'new normal'



Annex 1: Questionnaire

COVID19: IMPACT ON MANUFACTURING FIRMS SURVEY

Current impact of COVID-19

1. Because of the pandemic, what is the percentage of your company's employees who are unable to physically come to work and cannot adequately work from home at present?

	_________% (_ _% women, _ _% men)
	I don't know

2. Please indicate the most significant financial problems for your firm during the outbreak (please select all that apply):

	Staff wages and social security charges
	Fixed costs, e.g. rent
	Repayment of loans
	Payments of invoices
	Other expenses, please specify: _________________
	No specific problem

3. Are there any other business problems your firm is facing due to the pandemic? (Up to two options)

	Reduction of orders
	Inability to deliver existing orders
	Increased difficulty of financing
	Existing loans cannot be extended
	Disruption of logistics
	Upstream and downstream chain disruptions
	Insufficient protective equipment (e.g. masks)
	Other, please specify: _____________________

Expected impact of COVID-19

4. What impact do you currently expect on your firm's revenue this year as a result of COVID-19?

	No impact
	Decrease of ____%
	Increase of ____%
	Too early to state
	I don't know

5. Is your firm currently considering layoffs, or has already done some because of the pandemic?

	Yes (go to question 5.1)
	No (go to question 6)

5.1. What percentage of staff are you expecting to (or have already) cut?

	_____% (go to question 5.2)
	Too early to state (go to question 6)

5.2. Do you expect these layoffs to be temporary or permanent (total should sum up to 100%)?

____%	Temporary (of which_ _% women, _ _% men)
____%	Permanent (of which__ % women, _ _% men)
____%	Too early to state

5.3. If possible, please indicate how these layoffs are distributed with respect to their qualification (please insert value as percent of total sales for every option; total should sum up to 100%)

___%	University degree
___%	Technicians
___%	Semi-skilled
___%	Unskilled
___%	Apprentice
	Unable to say at this stage

5.4. If possible, please indicate how these layoffs are distributed over the following areas (please insert value as percent of total sales for every option; total should sum up to 100%)

___%	Research and development
___%	Design
___%	Manufacturing / Assembly
___%	Customer Service
___%	Administrative
	Unable to say at this stage

6. Are there currently restrictions by your government that impact your normal way of operating as a business?

	Yes (go to question 6.1)
	No (go to question 7)

6.1. If the current restrictions in your country continue, how long can your firm's current cashflow maintain the company's operation?

	Indefinitely
	More than 12 months
	Between 6 and 12 months
	Between 3 and 6 months
	Between 1 and 3 months
	Less than 1 month

7. If the international COVID-19 crisis were to end today, how long would you estimate it would take for your company to get back to business as usual?

_____ days

Dealing with COVID-19

8. What is the main means you are considering to deal with the cashflow shortage? (Up to two options)

	Loans by commercial banks
	Loans by Internet finance
	Loans by microfinance companies or private individuals
	Negotiating with lenders to avoid withdrawing loans
	Equity financing (adding new shareholders or capital increase of former shareholders)
	Reduction of operating costs (e.g. layoffs and salary reductions)
	No cashflow shortfalls problem
	Other, please specify: ____________________

9. What is the main means you are considering to deal with the shortage of workers? (Up to two options)

	Wage increases
	Use of advanced equipment or software to reduce the amount of work
	Outsourcing of orders
	Delay in delivery
	No shortage of workers
	Other, please specify: ____________________

10. What is the main means you are currently considering to deal with the shortage of inputs such as intermediate goods and raw materials? (Up to two options)

	Reduction of production
	Outsourcing orders
	Increasing the procurement channels
	Seeking new production channels
	Delaying goods delivery
	No shortage of inputs
	Other, please specify: ____________________

11. What is the main means you are currently considering to deal with difficulties in fulfilling contracts?

	Settlement by mutual agreement
	Legal or arbitral settlement
	Expect the government to coordinate and provide clear disclaimer agreements
	Payment of liquidated damages
	No contractual performance issues
	Other, please specify: ____________________

12. Are there currently any measures / support packages by your government that your company is benefiting from?

	Yes (go to 12.2)
	No (go to 13)

12.1. Please specify what measures/support you are receiving:

	Loans up to THB 3 Million for SME at 3% interest rate for the first two years of taxes and fee cuts for debt restructuring with non-financial institution creditors
	Date for filing corporate income tax extended to August (Por Ngor Dor 50) and September (Por Ngor Dor 51)
	Filing of excise tax by service businesses extended by one month Filing of excise tax for oil products operators extended to the 15th of the following month for the next three months
	Filing of other taxes for affected operators extended by three months
	Exemption of import duty for products related to the prevention and treatment of Covid-19
	Exemption of taxes and fee cuts for debt restructuring with non-financial institution creditors
	Other, please specify: ____________________

12.2. To what degree this support is useful to your company

	Strongly beneficial
	Beneficial
	Neutral
	Almost beneficial
	Not beneficial
	Other, please specify: ____________________

13. In the face of the impact of the pandemic, governments at all levels and financial institutions have announced relief measures. Which policy do you believe is the most effective for your firm? (Up to two options)

	Reduce rent for small and medium-sized enterprises and lower costs for electricity, gas, logistics, etc.
	Reduction of tax rates, reduction or deferral of taxes
	Reduction of financing costs for SMEs, extension of loan terms or partial debt relief
	Temporary reduction of social insurance premiums and reimbursement of unemployment insurance to enterprises that do not lay off staff
	Optimization of exporting tax rebate services
	Provide fast-track "force majeure" certification to avoid contract breaches
	Others, please specify:__________________

Background Information:

Profile of the firm

14. When did the firm start to operate?

	Insert year

15. Please select the industry that best describes the products your firm produces:

	Food and beverages
	Tobacco products
	Textiles
	Wearing apparel, fur
	Leather, leather products and footwear
	Wood products (excl. furniture)
	Paper and paper products
	Printing and publishing
	Coke, refined petroleum products, nuclear fuel
	Chemicals and chemical products
	Rubber and plastics products
	Non-metallic mineral products
	Basic metals
	Fabricated metal products
	Machinery and equipment n.e.c.
	Office, accounting and computing machinery
	Electrical machinery and apparatus
	Radio, television and communication equipment
	Medical, precision and optical instruments
	Motor vehicles, trailers, semi-trailers
	Other transport equipment
	Furniture; manufacturing n.e.c.
	Recycling

16. What is the ownership structure of your company?

	100% nationally owned enterprise
	Foreign subsidiary
	Joint venture
	Other, please specify: ____________________

17. What was the number of employees of the firm at the end of 2019?

	Insert the number of employees at the end of 2019 (of which __ % women, _ _% men)

18. In relation to the main production activity, the firm produces predominantly (please select one option):

	Finished goods for consumers
	Finished goods for industrial business
	Intermediate inputs for agriculture
	Intermediate inputs for manufacturing
	Intermediate inputs for services

19. Which share of purchases of raw materials and intermediate goods corresponded to each of these categories in 2019? (please insert value as percent of total sales for every option; total should sum up to 100%):

___%	Import: foreign suppliers
___%	National: Multinational corporations/foreign-owned suppliers located in the county
___%	National: domestic suppliers

20. Which share of sales/turnover corresponded to each of these categories in 2019 (please insert value as percent of total sales for every option; total should sum up to 100%):

___%	Export: foreign costumers
___%	National: Multinational corporations /foreign-owned customers located in the country
___%	National: domestic customers

21. Has the firm run part of its production activity in another country in 2019 (offshores)? (please select one option):

	Yes, through direct investment (i.e. foreign affiliates/controlled firms)
	Yes, through contracts with domestic firms abroad (e.g. technical/manufacturing partnership agreement, licensing agreement)
	No

22. Which regions does you company have offices or production plants in?

	Bangkok
	Samut Prakan
	Pathum Thani
	Samut Sakhon
	Nakhon Pathom
	Nonthaburi
	Saraburi
	Sing Buri
	Chainat
	Ang Thong
	Lopburi
	Phra Nakhon Si Ayutthaya
	Chonburi
	Chachoengsao
	Rayong
	Trat
	Chanthaburi
	Nakhon Nayok
	Prachinburi
	Sa Kaeo
	Khon Kaen
	Udon Thani
	Loei
	Nong Khai
	Mukdahan
	Nakhon Phanom
	Sakon Nakhon
	Kalasin
	Nakhon Ratchasima

	Chaiyaphum
	Yasothon
	Ubon Ratchathani
	Roi Et
	Buriram
	Surin
	Maha Sarakham
	Sisaket
	Nong Bua Lamphu
	Amnat Charoen
	Bueng Kan
	Chiang Mai
	Lampang
	Uttaradit
	Mae Hong Son
	Chiang Rai
	Phrae
	Lamphun
	Nan
	Phayao
	Nakhon Sawan
	Phitsanulok
	Kamphaeng Phet
	Uthai Thani
	Sukhothai
	Tak
	Phichit
	Phetchabun
	Phuket
	Surat Thani
	Ranong
	Phang Nga
	Krabi
	Chumphon
	Nakhon Si Thammarat
	Songkhla
	Satun
	Yala
	Trang
	Narathiwat
	Phattalung

	Pattani
	Ratchaburi
	Kanchanaburi
	Prachuap Khiri Khan
	Phetchaburi
	Suphan Buri
	Samut Songkhram

Follow up

23. We would greatly appreciate your participation in a follow up survey in a few months. If you would like to participate, please leave your contact details

Name and Email (optional, mobile or landline number)

Vienna International Centre
Wagramerstr. 5, P.O. Box 300,
A-1400 Vienna, Austria

+43 (1) 26026-0

www.unido.org

unido@unido.org

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INDUSTRIAL DEVELOPMENT ORGANIZATION