International Labour Organization

VISION ZERO FUND

Assessment of Drivers and Constraints for Occupational Safety and Health in the Construction Global Supply Chain in Myanmar



December 2021
International Labour Organization
Liaison Office in Myanmar

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▶ Foreword

The construction industry produces a wide range of products and employs a significant number of mostly unskilled workers worldwide. However, it is notorious for being relatively hazardous compared with other occupations. The tendency among enterprises in construction (as in other industries) to outsource the supply of goods and services required in the production process poses additional challenges to managing safety and health effectively on construction sites and along the entire supply chain. Myanmar is no exception to these trends – but several of its own challenges and opportunities make an analysis critical to overcome occupational safety and health deficits in construction.

The protection of workers in the construction sector has always been a major concern for the ILO. Several instruments specific to the construction sector exist, such as the Safety and Health in Construction Convention 1988 (No. 167) and the Safety and Health in Construction Recommendation 1988 (No. 175). The ILO implements projects like Vision Zero Fund in order to support Member States in their adoption and implementation of these and other relevant International Labour Standards, actively promoting impactful activities among workers and employers in hazardous sectors such as construction. This timely report will explore the dynamics in the industry, and the drivers and constraints related to occupational safety and health, including the identification of potential intervention models.

I would like to thank Mariana Infante Villarroel, Senior Technical Officer, and Khin Akari Tar, National Programme Coordinator, ILO Vision Zero Fund Myanmar, who prepared this assessment, with inputs and fieldwork from the Asper Consulting Ltd Team, Sebastien Moineau, Thida Win and Aung Myo Thant. Gratitude is owed to thank Ockert Dupper and Andrew Christian (ILO's Labour Administration, Labour Inspection and Occupational Safety and Health (LABADMIN/OSH) Branch); Yuka Ujita (ILO Decent Work Team, Bangkok), Patricia MacDonald and Steve Hartritch (ILO Liaison Office in Myanmar) and all the market actors and stakeholders of the Myanmar construction global supply chain at the national level who shared their experiences and opened the doors of their workplaces to the research team. Special thanks go to Vicky Bowman from the Myanmar Centre for Responsible Business for her support in linking the team with sector stakeholders.

Donglin Li



Liaison Officer/Representative

ILO Liaison Office in Myanmar


Imperial
Whisky

Table of contents

Foreword 05

Table of contents 07

List of tables 09

List of figures 10

List of acronyms 12

Executive summary 15

1. Introduction 24
- **1.1 Vision Zero Fund** 24
- **1.2 Assessment of OSH drivers and constraints** 24
  - 1.2.1 Objectives 24
  - 1.2.2 Methodology 25
  - 1.2.3 Data collection 27
  - 1.2.4 Specific methodology for workplace observation in construction sites 29
  - 1.2.5 Limitations 31

2. The construction value chain 33
- **2.1 Construction as a global supply chain and Myanmar's integration** 33
- **2.2 Step 1 on supply chain selection: a twin focus on the infrastructure and building industries** 35
- **2.3 Step 2: mapping of the construction value chain** 37
  - 2.3.1 Value chain structure 38
  - 2.3.2 Market channels 40
- **2.4 Stakeholders in the value chain** 42
  - 2.4.1 Market actors 42
  - 2.4.2 Supporting functions in the value chain 55
  - 2.4.3 Legal framework of the value chain in Myanmar 59

3. Step 3: analysis of OSH drivers and constraints 68
- **3.1 Market size and growth, heavily affected by Myanmar's political and health crises** 68
  - 3.1.1 Foreign direct investment 70
  - 3.1.2 China 71
  - 3.1.3 Other investors 73
  - 3.1.4 Government budget 73

3.2 Market opportunities **75**
3.3 Infrastructure **76**
3.3.1 Infrastructure investment need 76
3.3.2 Official development assistance 77
3.3.3 Special Economic Zones 79
3.3.4 Industrial zones 80
3.4 Buildings **81**
3.4.1 Population and urbanization 81
3.4.2 Housing needs 83
3.4.3 Yangon housing stock 84
3.4.4 Institutional buildings 86
3.4.5 Commercial buildings 86
3.5 Employment **86**
3.5.1 Child labour and young workers (10–17) 88
3.5.2 Worker profile 88

▶ **4. Workplace observations** **90**
4.1 Sites visited **90**
4.2 Data collection tools **91**
4.3 Identification of hazards, risks and control measures **91**
4.3.1 Site boundaries 91
4.3.2 Welfare facilities 92
4.3.3 Housekeeping 95
4.3.4 Personal protective equipment 98
4.3.5 Work at height 102
4.3.6 Working with vehicles 105
4.3.7 Groundwork 107
4.3.8 Moving materials/goods safely 109
4.3.9 Electricity 110
4.3.10 Fire 112
4.3.11 Other machinery and equipment 112
4.3.12 Slips and trips 113
4.3.13 Working environment 113
4.3.14 Administrative requirements 115
4.4 Risk management rating and conclusions on site observation **116**
4.5 Vulnerability profiles **120**

▶ **5. Preliminary interventions to improve OSH in construction** **125**

▶ **References** **133**

▶ List of tables

Table 1: Tools and approach used for the OSH assessment of the construction value chain 27
Table 2: Stakeholders met and sites visited as part of the OSH assessment in the construction sector 29
Table 3: Sector, industry, market, description and examples of construction projects 36
Table 4: Main construction market channels 40
Table 5: Key project developers in the building industry 47
Table 6: Key Myanmar conglomerates for selected markets in the infrastructure industry 50
Table 7: Top foreign investment source countries, cumulative 1988/89–2014/15 70
Table 8: Large-value procurement contracts 74
Table 9: Aggregate housing demand for the Yangon region 84
Table 10: Low-cost housing projects completed by DUHD, 2010–2018 85
Table 11: Overview of construction sites visited as part of the OSH assessment 90
Table 12: Personal protective equipment list 99
Table 13: Qualitative risk rating on large, medium and small sites in Yangon, by type of project 117
Table 14: Estimation of level of risk by tasks/function in sites visited 121
Table 15: Possible interventions to help address constraints to OSH in Myanmar's construction value chain 125

▶ List of figures

Figure 1: Methodology – Vision Zero Fund Global Value Chain Starterkit 26
Figure 2: Approach 28
Figure 3: Hierarchy of control 30
Figure 4: High-level mapping and focus of the construction value chain analysis in this assessment 37
Figure 5: Phases assessed as part of the OSH construction assessment 38
Figure 6: Value chain structure 39
Figure 7: Construction value chain in Myanmar 42
Figure 8: Number of construction permits issued, January 2020–August 2021 69
Figure 9: Decrease in employment and working hours in highly impacted sectors, Q2-2021 (percentage change from Q4-2020) 69
Figure 10: Map of the Belt and Road Initiative 72
Figure 11: Myanmar's infrastructure investment need for 2016–2040 (% of GDP) 76
Figure 12: Myanmar's infrastructure investment trends by sector for 2016–2040 (% of GDP) 77
Figure 13: Amount of JICA ODA approval (US$ millions) 78
Figure 14: Total amount of ADB investment in Myanmar, December 2020 78
Figure 15: Industrial zones in Yangon 81
Figure 16: Urban population by size class and urban settlement 82
Figure 17: Distribution of the construction working population by state/region and division (2014) 87
Figure 18: Gender-relative proportions in the top 10 sectors 87
Figure 19: Clear site boundaries on large construction sites 91
Figure 20: Eat and rest areas on large (left), medium (centre) and small (right) sites 92
Figure 21: Hand-washing facility (left) and water point on small site (right) 93
Figure 22: Temporary tents near the railroad for in-house workers during COVID-19 93
Figure 23: Supply of drinking water on different construction sites 94
Figure 24: Temporary toilets on large (left), medium (centre) and small (right) construction sites 94
Figure 25: Reception areas on two large construction sites (bridge, left; hospital, right) 95
Figure 26: Untidy reception area on medium and small construction sites 95
Figure 27: Waste from tree-cutting and demolition, and refuse stocks 96
Figure 28: Drums reused and waste management on one large construction site 97
Figure 29: 3Rs (left and centre) and waste collection (right) on a large construction site 97
Figure 30: Waste on small construction sites 98
Figure 31: Working with PPE on large construction site (left) and without PPE on small construction site (right) 100

Figure 32: Workers working with cutting tools and power tools without eye and hand protection on large building site 100
Figure 33: Masonry and concrete work without respiratory protection on medium and small sites 101
Figure 34: Worker using a disc cutter without hearing protection on a large building site 101
Figure 35: Working at height risk in tower scaffolding on the bridge construction site 103
Figure 36: Working at height with full body harness at the bridge site 103
Figure 37: Potentially hazardous scaffolding at a hospital site 104
Figure 38: Hazardous scaffolding installation on small construction sites 104
Figure 39: Unsafe work at height (left) and with ladder (medium and right) on medium construction sites 105
Figure 40: Pedestrian and vehicle routes at the bridge site 105
Figure 41: Traffic control for wayside construction work (right), temporary diversion for level crossing on railway site (left), traffic control on bridge site (bottom) 107
Figure 42: Groundwork on railway (left) and bridge construction site (centre and right) 108
Figure 43: Groundwork on a small construction site 108
Figure 44: Workers carrying glass on medium site (left), manual lifting on large site (centre and right) 109
Figure 45: Temporary power source – main panel board, power distribution board and generator on a large construction site 111
Figure 46: Temporary power line erection and control measures on small and medium construction sites 111
Figure 47: Fire control facilities at large construction sites 112
Figure 48: Air emission level at one construction site 113
Figure 49: Monthly safety award notice and safety poster on bridge construction site 115

▶ List of acronyms

3Rs	Reduce, Reuse and Recycle
5Ss	Sort, Set in order, Shine, Standardize, Sustain
ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
AWPT	Asia World Port Terminal
BCIMEC	Bangladesh-China-India-Myanmar Economic Corridor
BOT	Build-Operate-Transfer
BRI	Belt and Road Initiative
BWFM	Building and Wood Workers' Federation of Myanmar
CMC	Construction Management Consultant
CNPC	China National Petroleum Corporation
COC	Companies and Organizations Committee
CPIC	China Power Investment Corporation
CTUM	Confederation of Trade Unions in Myanmar
DFI	Development Finance Institution
DICA	Directorate of Investment and Company Administration
DUHD	Department of Urban and Housing Development
ECD	Environmental Conservation Department
EII	Employment Injury Insurance
ESIA	Environmental and Social Impact Assessment
EU	European Union
FDI	Foreign Direct Investment
Fed. MES	Federation of Myanmar Engineering Society
FGD	Focus Group Discussion
FGLLID	Factories and General Labour Laws Inspection Department

GDP	Gross Domestic Product
GSC	Global Supply Chain
HIA	Hazard Impact Assessment
HSCF	Health and Social Care Fund
ICT	Information and Communication Technology
IFI	International Financial Institution
ILO	International Labour Organization
IOM	International Organization for Migration
JICA	Japan International Cooperation Agency
JV	Joint Venture
MCDC	Mandalay City Development Committee
MCEF	Myanmar Construction Entrepreneurs Federation
MEAA	Myanmar Environmental Assessment Association
MEC	Myanmar Engineering Council
MoEE	Ministry of Electricity and Energy
MIA	Myanmar Industrial Association
MIC	Myanmar Investment Commission
MICS	Myanmar Industries, Crafts and Services Trade Union Federation
MIMU	Myanmar Information Management Unit
MNBC	Myanmar National Building Code
MoC	Ministry of Construction
MoHS	Ministry of Health and Sport
MoLIP	Ministry of Labour, Immigration and Population
MoNREC	Ministry of Natural Resources and Environmental Conservation
MoTC	Ministry of Transport and Communication
MoU	Memorandum of Understanding
NPTDC	Nay Pyi Taw Development Committee

ODA	Official Development Assistance
ODI	Overseas Development Institute
OEHD	Occupational and Environmental Health Division
OSH	Occupational Safety and Health
OSHL	Occupational Safety and Health Law
PEFA	Public Expenditure and Financial Accountability
PPE	Personal Protective Equipment
PPP	Private–Public Partnership
SEZ	Special Economic Zone
SOE	State-Owned Enterprise
SSB	Social Security Board
SSL	Social Security Law
UK	United Kingdom
UMEH	Union of Myanmar Economic Holding
UN	United Nations
UMFCCI	Union of Myanmar Federation of Chambers of Commerce and Industry
US	United States
WSH	Workplace Safety and Health
YCDC	Yangon City Development Committee

▶ Executive summary

The general objective of this assessment of occupational safety and health (OSH) drivers and constraints in the construction global supply chain (GSC) in Myanmar is to provide an understanding of the construction market; its opportunities and its market environment; stakeholders involved in production and supporting functions; OSH deficits in work processes involved; and the drivers and constraints related to OSH improvement. This analysis will help identify potential interventions models that can help address OSH deficits in the sector.

The assessment involved three phases: scoping; value chain analysis and workplace observation; and intervention design. It covered projects in both the building and the infrastructure industries. The desk study identified relevant literature on OSH and construction in Myanmar, as well as on the enabling environment, to identify drivers, constraints and opportunities related to better OSH practice in the sector. The workplace observation in this report is based on site observation conducted at 11 construction workplaces visited in Yangon in November and December 2020.

The double crises Myanmar is currently facing (COVID-19 and 1 February) had severe implications for the development of this assessment. Site observations were limited to the Yangon region and often involved sites at half capacity. Social partners, in particular trade unions, could not actively participate in consultations, meaning the final consultations for intervention design did not take place. Therefore, the interventions mentioned in Section 5 represent preliminary designs that will need to be further refined with workers and employers at the time of implementation.

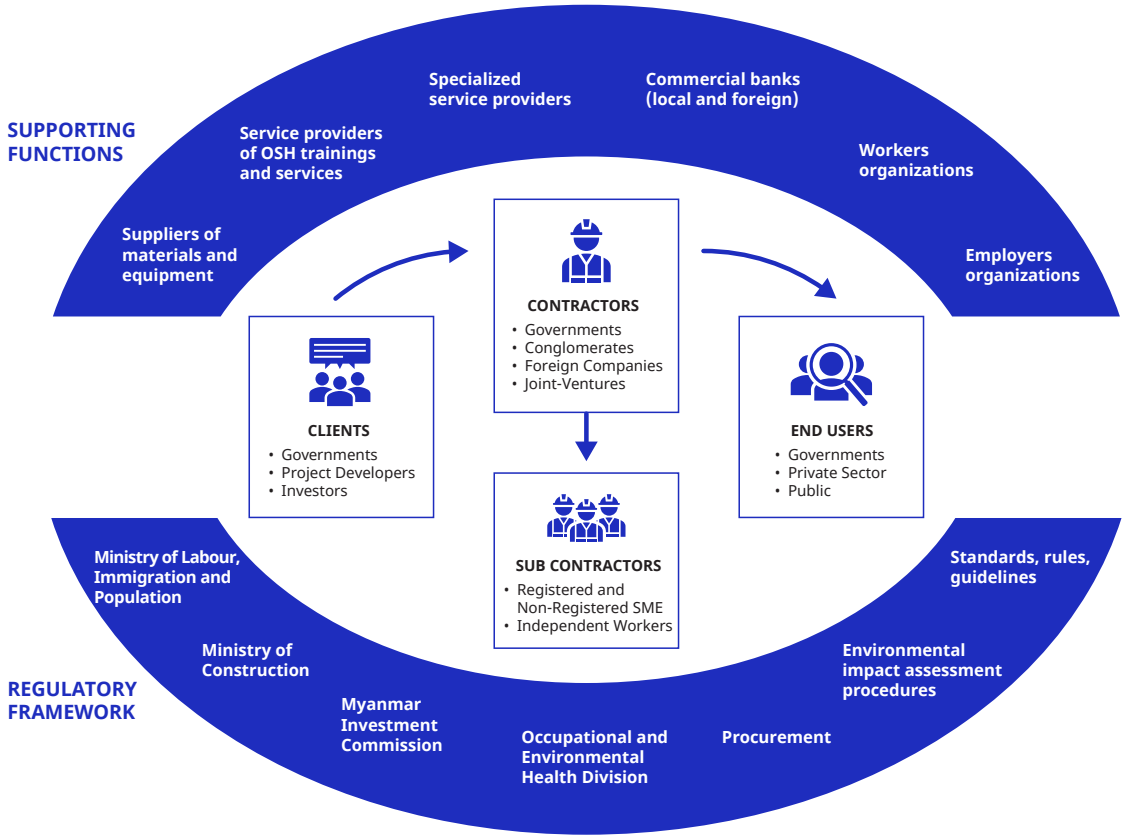
- *Infrastructure* for the production and supply of energy, transportation networks, goods and materials (i.e. Special Economic Zones, industrial zones), water (i.e. irrigation and other water uses), waste management and information and communication technology (ICT);
- Residential and commercial *buildings.*

The construction sector in Myanmar is often divided by project type into commercial, industrial, infrastructure, energy and utilities, institutional and residential.[1] For the purpose of this study, the sector is grouped into building and infrastructure industries,[2] which allows us to understand similar market dynamics and actors involved across the different markets and projects in each of these two categories.

[1] GASD Reports (2021) "Construction in Myanmar - Key Trends and Opportunities to 2025". June. https://www.asdreports.com/market-research-report-585698/construction-myanmar-key-trends-opportunities-h

[2] Together, the building and infrastructure industries are referred to as "the construction sector" in this report.

Construction value chain in Myanmar



Source: Authors (2021).

A diversity of stakeholders are engaged in the construction value chain. These can be grouped by function in the chain, as in the figure above. The government, Myanmar conglomerates, foreign companies, JVs and Myanmar companies are involved in the infrastructure and building industries. Projects can be government, private or JV.

In Myanmar, government agencies (especially the Ministry of Construction, MoC) have a unique character. Planning, design and delivery by a single government agency is particularly problematic from an OSH perspective as the client and the construction developer involved are the same entity, which can therefore play the role of regulator, operator and client as well as financial supervisor. This is the case with, for instance, MoC as well as development committees in cities like Yangon and Mandalay; both the Yangon City Development Committee (YCDC) and the Mandalay City Development Committee (MCDC) have an employer, contractor, contract administrator, planner and legislator role.

Budgeting for OSH is absent in government projects but it is a component of projects financed through official development assistance (ODA). A detailed review of OSH requirements in procurement methods used by the government and private companies/conglomerates could be conducted to assess how OSH is taken into account and scored (technically and financially) and to generate recommendations on improving OSH planning in tender processes. This could be particularly useful to benchmark best practices by government departments and organizations and to create alignment.

Myanmar's largest developers are in Yangon and often operate in multiple sectors. Most large property developers are Myanmar-owned conglomerates belonging to international corporations. The number of employees ranges from fewer than 100 (Green Vision) to over 7,000 (Shwe Taung Development Co. Ltd and Capital Development Limited). Beyond these large developers, Yangon also has a mix of small and medium-sized developers. However, the combined capacity of these private sector developers is not very significant.

Large companies employ OSH managers regularly and value overseas experience. Interviews with contractors confirmed that OSH officers and managers who had worked overseas, for example in Malaysia or Thailand, were paid a higher salary than their peers who had worked only in Myanmar. This is because they are found to have better practical and theoretical knowledge of OSH management. Type of project, location, working conditions, activity and position of the employer in the supply chain (e.g. contactor, subcontractor tiers 1, 2, 3 and 4) are also key determinants of the employment of OSH staff and managers. For example, contractors operating in oil and gas are considered to have higher OSH standards.

Contractual arrangements and enforcement between contractors, subcontractors, self-employed workers, suppliers and service providers were found to be a driver of OSH risk. Flow-down of OSH clauses (in the case of foreign direct investment, FDI) from the head contract to second- and third-tier suppliers leads to a dilution of risk and responsibilities to companies that are less equipped to deal with these requirements. When contracts are not in place, there is not even a formal obligation for subcontractors to follow OSH requirements, nor for contractors to monitor their implementation. This can lead to poor OSH practices.

Lead suppliers of materials, power tools, equipment and machinery have an interest in improving OSH and extending the benefits of their innovations to clients. However, their involvement in the prevention of and protection from exposure to hazards associated with the utilization of their products is limited.

OSH training is in high demand in construction, and several local and foreign companies provide training on a range of specific topics. However, the OSH Law is not yet clear about a training and accreditation framework for Myanmar; it is expected that the accompanying regulation will clarify the roles and functions of OSH service providers. In addition, the Law is not specific in mentioning the need for on-site experience in issuing an OSH training certificate. Consultations revealed that employers prioritise on-the-job training and safety courses, such as on scaffolding, crane operation, working at height and other hazardous processes. Alongside training qualifications, including accreditation frameworks, there is also a need for a system of OSH guidelines for the sector.

According to conglomerates, foreign companies and JVs, development finance institutions (DFIs) are one of the main OSH drivers in the construction market. Projects funded by bilateral and multilateral agencies generally involve a pre-feasibility check; a feasibility study, including budget preparation and an environmental and social impact assessment (ESIA); procurement; contracting; monitoring; and commissioning. These contracts generally require that a construction management consultant (CMC) closely monitor OSH and environmental and safety performance. It is important to understand the degree to which CMCs oversee OSH and the potential conflict of interest involved in CMCs being contracted by and controlling the performance of the main contractor. Construction companies that have contracts with DFIs are contractually obliged to have OSH management in place for these projects but may not use the same standards for projects not funded by DFIs. It is also vital to understand how the incentives in DFI contracts work and how can they be replicated in contract awarding elsewhere in the sector and applied and monitored among lower tiers of suppliers and independent workers. DFI OSH practices also need to be aligned with International Labour Standards and Codes of Practice.

Several workers and employers organizations have important OSH functions in the construction value chain, including in OSH training and awareness-raising. Before the crises, bipartite cooperation was positive and concrete, including the signing of a memorandum of understanding (MoU) between the Confederation of Trade Unions in Myanmar (CTUM), the Building and Wood Workers' Federation of Myanmar (BWFM) and

the Myanmar Construction Entrepreneurs Federation (MCEF) to implement the OSH Law (OSHL) in the sector. These and other organizations are expected to play a pivotal role in improving OSH in the sector.

Several ministries are involved in regulating the sector, the Ministry of Labour, Immigration and Population (MoLIP) being the primary one. The new OSHL is yet to be enacted but it has several elements that, when enforced, could change the landscape of OSH compliance in Myanmar. One of the key highlights is the inclusion of sectors previously excluded from the labour and OSH inspection system, such as agriculture and construction; the drafting of a construction regulation is underway. The second highlight is the establishment of a new tripartite National OSH Council, which is expected to be made up of worker and employer representatives and the government and will be in charge of OSH policy development and monitoring. Third, the OSHL will require employers to set up OSH committees at workplace level and to count on OSH personnel (e.g. OSH officers) with specific functions. These elements are expected to strengthen national and enterprise-level social dialogue as a key element of OSH compliance.

▶ OSH drivers and constraints

In 2018, the Myanmar construction sector had a value of more than US$9.5 billion, representing a share of around 16.5 percent of the country's gross domestic product (GDP).[3] Prior to the third and deadliest COVID-19 outbreak in mid-2021 and the change of 1 February 2021, Myanmar's construction industry was expected to grow by 9.1 percent in 2020.[4] However, the health and political crises have shattered any expectations of GDP growth, with sectors like construction particularly hard-hit by the expected contraction. The World Bank Economic Monitor of July 2021 predicts a contraction equivalent to 18 percent of GDP in FY2021[5] as a result of contractions in every major economic sector (agriculture, industry and services).[6]

The construction sector in Myanmar has been one of the most affected by the dual crises. Suspension of projects, declining investment and increased operating risks, including cash shortages that make it difficult to pay wages and materials, have all contributed to reversing the recovery registered by December 2020, after the first waves of COVID-19.[7] According to MCEF, and also reported by the World Bank Economic Monitor of July 2021, prices of key inputs such as cement have increased substantially, reducing the profitability of ongoing projects.

Economic contraction is already having profound effects on employment, particularly in labour-intensive sectors like construction. More than 1.2 million workers were no longer employed in Myanmar by June 2021, compared with December 2020, with construction reporting a decrease of 39 percent between December 2020 and June 2021.[8] This decrease accounts to approximately 400,000 jobs and 70 percent less working hours. Construction workers are often poorer informal daily wage workers, which makes the impact of these job losses particularly concerning from a humanitarian and equity perspective.

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[3] Wong, S. (2019) "Myanmar Report : Construction Market Update". Rider Levett Bucknall, June. https://www.rlb.com/asia/insight/rlb-myanmar-construction-market-update-june-2019/

[4] Market Research.com. (2020) "Construction in Myanmar – Key Trends and Opportunities to 2024". November. https://www.marketresearch.com/GlobalData-v3648/Construction-Myanmar-Key-Trends-Opportunities-13854988/

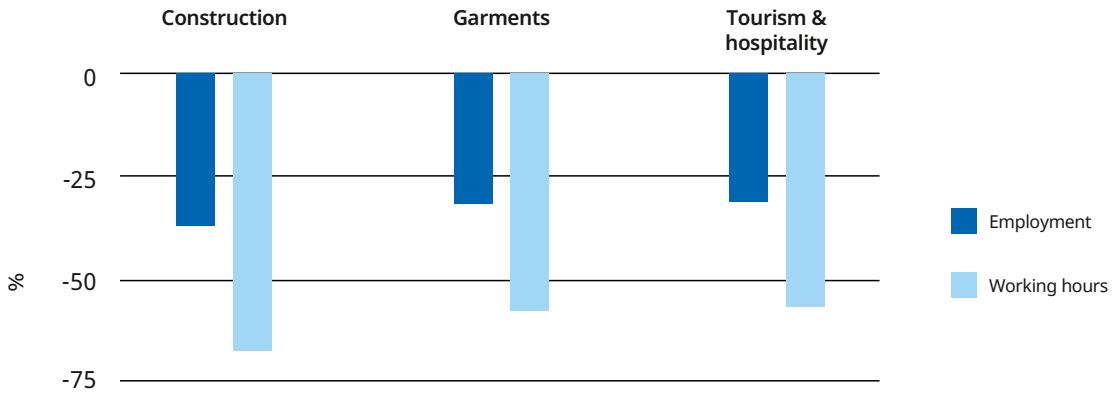
[5] The Myanmar government has decided to change the country's fiscal year calendar from the previous system, which ran from 1 April to 31 March, to a new system, which runs from 1 October to 30 September.

[6] Lwin, S.S. and Edwards, K.A. (2021) Myanmar Economic Monitor JULY 2021: Progress Threatened; Resilience Tested. Washington, DC: World Bank.

[7] Ibid.

[8] ILO (2021) "Employment in Myanmar since the Military Takeover: A Rapid Impact Assessment". Geneva: ILO.

Decrease in employment and working hours in highly impacted sectors, Q2 2021 (percentage change from Q4 2020)



Source: ILO (2021) "Employment in Myanmar since the Military Takeover: A Rapid Impact Assessment", based on Myanmar Labour Force Survey and ILOSTAT database.

The crises have affected FDI and several projects have been suspended. It is important here to monitor the evolution of the situation to assess the opportunities arising from linkages with new and resuming projects. Myanmar infrastructure gaps remain a potential driver for investment in the sector and an opportunity to mainstream OSH into the bidding, procurement and development processes of such projects. ODA-financed projects and those funded by DFIs are identified as a driver for OSH in the sector.

Once investment resumes, market-based opportunities for OSH promotion exist in Special Economic Zones (SEZs) and industrial zones through engagement with industrial zone developers, management committees and private companies investing in these zones. Area-based models, where information, training and enforcement of labour laws can be a shared initiative by public and private actors, can help build OSH awareness and replicate good practices.

The need for residential housing in major urban centres is expected to remain in the medium term, although demand is not yet clear. Despite urban to rural migration following the events of 1 February, the pressure on the housing market will continue, once migrants go back to urban centres for jobs. The current housing stock is mostly informal in cities like Yangon, adding to the need for more residential projects. It is, however, unclear how long it will take for housing demand to recover after the current crises, and how much capacity developers have to finalize current and start new projects in the current circumstances.

▶ Workplace observation

A key component of data collection involves workplace observation. This helps identify workplace hazards and control measures in different work processes on construction sites. It also sheds light on workers who are at highest risk and where intervention models may be more effective.

The site observations in this study were conducted on 11 sites in Yangon. The table below provides a summary of the main characteristics of the construction sites visited based on the size of the sites. The team estimated the size of the site based on the number of workers on site at the time of the visit. Large, medium and small construction sites involved more than 50, 20–50 and fewer than 20 workers, respectively.

Overview of construction sites visited as part of the OSH assessment

#	Type of site	Industry	Size of site			Approximate no. of workers on site at time of visit	High-rise building (12-storey and above)
			Large	Medium	Small		
1	Bridge	Infrastructure	√			200	N/A
2	Hospital (13-storey)	Building	√			180	Yes
3	Hospital (12-storey)	Building	√			180	Yes
4	Railway	Infrastructure	√			60	N/A
5	Private residential (5-storey)	Building		√		30	No
6	Mini-condominium (12.5-storey)	Building		√		20	Yes
7	Residential building (6-storey)	Building			√	10	No
8	Residential building (6-storey)	Building			√	10	No
9	Residential building (6-storey)	Building			√	8	No
10	Hostel (2-storey)	Building			√	6	No
11	Residential building (2-storey)	Building			√	6	No

Source: Authors (2021).

Scores are given by the research team based on the likelihood of the risk occurring and the severity of the harm (risk) and the presence of adequate control measures (risk management). For instance, falling from a height in the absence of adequate control measures could have severe consequences, including death.

Qualitative risk management rating of observations on large, medium and small construction sites in Yangon, by type of project

#	Are all of electrical	Infrastructure		Building		
	Category of hazard and risk control measures	Bridge (large)	Railway (large)	High-rise building (large)	High-rise building (medium)	Low-rise building (small)
1.	Site boundaries	3	3	2.5	1	0
2.	Welfare facilities and working conditions	3	2	2.6	0.5	0
3.	Housekeeping	3	2	2.4	0	0
4.	Personal protective equipment	3	2	2	0	0
5.	Administrative requirements	3	3	2.5	1.5	1
6.	Work at height	1	N/A	1.25	0	0
7.	Working with vehicles	1	2	2.5	1.5	2
8.	Groundwork	1	2	3	3	0
9.	Moving materials/goods safely	2	2	2.75	0	0
10.	Electricity	3	3	2	0.5	0
11.	Fire	3	3	2.5	0.5	0
12.	Slips and trips	3	2	2.5	0	0
13.	Confined space	N/A	N/A	2.5	N/A	N/A
14.	Working environment	3	2	2.4	1.5	0

Small and medium building sites appear riskier for workers than infrastructure development projects. Small building sites observed posed more, and more severe, risks to workers. Medium building sites present dangers for workers under several topics and work processes but better administrative controls and hazard identification are present compared with on smaller sites. Large infrastructure and building projects have better hazard identification and risk control, though improvements are needed when working at height, working with vehicles or performing ground work.

▶ Possible interventions to help address constraints to OSH in Myanmar's construction value chain

The table below identifies interventions that the Vision Zero Fund Myanmar team discussed with stakeholders and that, after thorough analysis, remained valid. It also includes interventions that Vision Zero Fund Myanmar has successfully conducted in the past in other value chains and that could be adapted to address constraints identified in construction. Consideration on immediate actions is given not only to those with higher impact and potential engagement but also to those that have been discussed or agreed with partners and remain feasible in the current constrained context.

Value chain production stage and type of actor	Expected impact on vulnerability pattern	Possible intervention	Stakeholders involved	Type of engagement
Regulatory functions: OSH Law	Decrease fragmentation in the legal and institutional framework	Provide technical assistance to tripartite structures (e.g. National OSH Council) in enactment and implementation of OSH Law in construction	Government, workers and employers organizations	Long term (given crisis constraints)
Regulatory framework: ESIAs	Address lack of incentives and budget for OSH in infrastructure development	Assess type and effectiveness of OSH requirements in tenders and procurement processes of projects financed through ODA, and suggest strategies to mainstream these in financing of other construction projects	Development partners, large construction companies. Not yet consulted	To consider medium term (exclusive of enforcement)
All phases of construction: small and medium sites	Improve OSH awareness on small and medium construction sites	Provide OSH awareness-raising sessions and support identification of low-cost risk control measures	OSH trainers and advisors, MCEF, UMFCCI, CTUM, MICS, BWFM, MEAA, (consulted and willing though crisis may pose challenges), workers and employers on small and medium sites	Immediate action and medium-term engagement
All phases of construction: OSH officers	Increase capacity of local OSH officers and strengthen OSH management in large and medium companies	Strengthen the capacity of local OSH officers by promoting knowledge exchange between foreigner and local experts	OSH officers and managers in large and medium construction companies. Not yet consulted	To consider as medium term

Supporting functions: suppliers of material and equipment	Decrease workers' exposure to hazardous substances and equipment	Strengthen capacity of suppliers of materials and equipment to provide advice on appropriate use of their products	Suppliers of inputs and materials. Only one material supplier was consulted	To consider as immediate action
Supporting functions: OSH training and service providers	Improve awareness on OSH hazards across all tasks and project types. Increase capacity of employers and workers to decrease exposure to OSH through developing functioning OSH management systems	Strengthen capacity of training providers and other actors to create awareness about OSH in construction and build good OSH management practices on large and medium construction sites, through training and provision of advisory services	OSH trainers and advisors, workers and employers on large and medium construction sites. Willingness is high among OSH trainers and advisors, as well as among some large companies	Immediate action
Supporting functions: workers and employers organizations	Increase awareness on OSH hazards across all tasks and project types and support the formation of OSH committees	Strengthen the ability of workers and employers organizations to deliver and monitor OSH services, including training of OSH committee members	MCEF, UMFCCI, BWFM, CTUM, MICS, MEAA, Fed. MES, MIA (consulted and willing though crises may pose challenges)	Medium term (despite constraints, willingness of stakeholders is high)
Supporting functions: workers and employers organizations	Increase formalization of construction workers	Provide technical assistance to workers and employers organizations to implement awareness-raising and facilitate access to social security	MCEF, UMFCCI, BWFM, CTUM, MICS (consulted and willing though crises may pose challenges)	Medium term

▶ 1. Introduction

1.1 Vision Zero Fund

Vision Zero Fund aims to prevent and reduce work-related accidents, injuries and diseases by strengthening public frameworks and establishing sustainable business practices in global supply chains (GSCs). Vision Zero Fund's work at country level is framed within a model of collective action that promotes transparent dialogue, knowledge-sharing and long-term collaboration and engagement between value chain actors, including multinational enterprises, governments, workers, employers, other actors and civil society.

Vision Zero Fund started operations in Myanmar in 2017. Vision Zero Fund Myanmar first assessed occupational safety and health (OSH) issues in two GSCs, garment and ginger, and designed interventions to address these. In addition, Vision Zero Fund Myanmar works at policy level to strengthen institutional frameworks and OSH and social security systems, and to support policy implementation within the ginger and garment GSCs. Vision Zero Fund Myanmar also coordinates activities of the International Labour Organization (ILO) Myanmar Occupational Safety and Health Project Portfolio. Vision Zero Fund Myanmar's Phase I ended in April 2020.

Vision Zero Fund Myanmar Phase II started in May 2020 and will be implemented until April 2023. Based on stakeholder consultations, the project will start activities in a third GSC – namely, construction. Activities in construction will help inform and be influenced by the regulatory framework established by the 2019 OSH Law (Pyidaungsu Hluttaw[9] Law No. 8 of 2019). The passage of the OSH Law (OSHL) represents a critical milestone in the development of Myanmar's national OSH system and provides clear opportunities for advancing, consolidating and replicating Vision Zero Fund achievements.

1.2 Assessment of OSH drivers and constraints

1.2.1 Objectives

The general objective of this assessment of OSH drivers and constraints in the construction GSC is to provide an understanding of the construction market; its opportunities and its market environment; stakeholders involved in production and supporting functions; OSH deficits in work processes involved; and the drivers and constraints related to OSH improvement. This analysis will help identify potential interventions models that can help address OSH deficits in the sector.

The specific objectives of the OSH assessment in the construction value chain are to:

- Define the scope of the value chain analysis with a focus on OSH in the construction sector in Myanmar;
- Provide an understanding of the systemic factors and conditions that affect OSH performance and its outcomes in the construction supply chain;

[9] Assembly of the Republic of the Union of Myanmar.

- Identify opportunities that can drive sustainable change in OSH practice by addressing the systemic factors and conditions that affect OSH performance and its outcomes in the construction supply chain;
- Identify and prioritize interventions needed to overcome bottlenecks to improve OSH practice in the construction value chain;
- Understand incentives and explore how to catalyse private sector and workers organization stakeholders to collaborate for improved OSH practice and industry performance in general.

1.2.2 Methodology

Vision Zero Fund uses a market system development that builds on the methodology on OSH in Global Value Chain Starterkit[10] established by the joint ILO–EU project on OSH in Global Supply Chains that was piloted in Colombia, Indonesia and Madagascar and adapted by Vision Zero Fund to assess OSH in the garment and ginger GSCs in Myanmar. The ILO methodology was further adapted and tailored to the needs and specificity of the construction value chain/market systems and the limitations arising as a result of COVID-19, and to fit with the project objectives.

The assessment involved three phases: scoping; value chain analysis and workplace observation; and intervention design. It started in October 2020. It is important to note that data collection and analysis took place in December 2020 and January 2021, before the military take-over on 1 February 2021. The analysis refers to the impact and implications of the subsequent crisis when relevant; however, the situation continues to be volatile, making any predictions or scenario-building difficult.

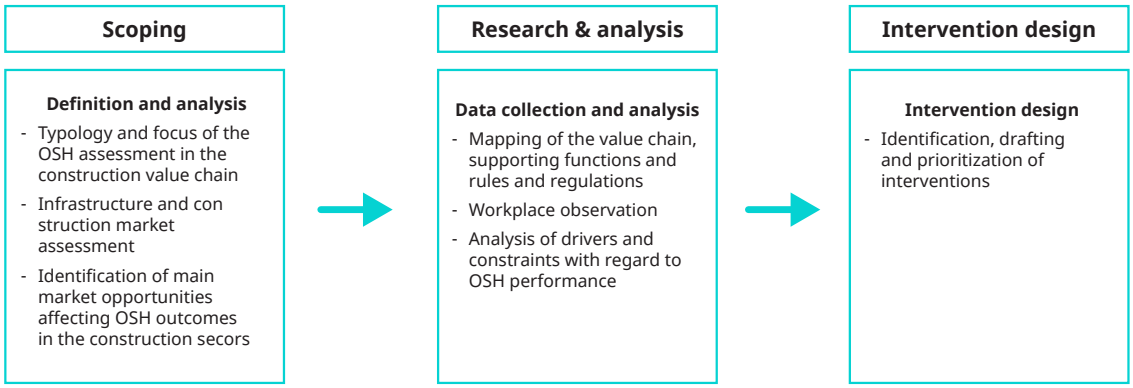
The main adaptations made to the methodology were as follows:

- Using the sector selection method/criteria normally used to assess the potential for OSH transformative impact of one sector over another (e.g. beans and ginger), to assess if Vision Zero Fund should focus on one of the two industries identified during the scoping phase of the OSH assessment (i.e. infrastructure and building, or both);
- Identifying and selecting stages and phases in the construction GSC where Vision Zero Fund has the greatest potential to improve OSH practice by determining entry points for intervention design and implementation. This differs from standard GSC value chain analysis, which normally assess all operations/steps in the value chains, from inputs to market.

[10] ILO (2018) Occupational Safety and Health in Global Value Chains Starterkit – Guide for Implementers. Geneva: ILO.

Figure 1 presents the three steps of the methodology.

Figure 1: Methodology – Vision Zero Fund Global Value Chain Starterkit



Source: ILO (2018) Occupational Safety and Health in Global Value Chains Starterkit – Guide for Implementers.

- **Scoping:** Defining the proposed scope was an iterative process. The scope of the OSH assessment in the construction value chain was defined by breaking down the sector into industries and markets, conducting an overall mapping of the construction sector, defining products and identifying market opportunities and drivers in health and safety improvement. This phase was conducted through a desk study augmented by some initial consultations with Myanmar and foreign contractors operating in Myanmar. Stakeholders and market actors to take part in primary data collection were also identified during the scoping phase, which took place in late October and early November 2020.
- **Research and analysis:** This stage involved researching, mapping and analysing the construction value chain/market systems and its main supporting functions, as well as rules and regulations that can affect OSH outcomes. The data collected during the consultations with market actors and stakeholders was analysed to assess the drivers, constraints and performance of market actors and job quality; and to identify underlying causes of OSH deficits, including in relation to relationships and value chain governance. The workplace observation involved the collection of data through interviews with construction site managers, as well as site visits to observe hazards, assess risks and identify potential control measures. The data from the workplace observations was then integrated into the analysis of opportunities for improved OSH. This phase took place from December 2020 to January 2021, and further analysis was needed in March–May 2021 (see section on limitations).
- **Intervention design:** The result of the analysis was used to prioritize Vision Zero Fund areas for intervention, and to identify and draft interventions to overcome the bottleneck of OSH underperformance. In parallel to intervention design, Vision Zero Fund identified market actors and stakeholders with which the project could engage to initiate and catalyse improvement of OSH outcomes in construction. This phase took place in June–July 2021.

Table 1 provides an overview of the research tools and approach used during the scoping and research and analysis phase of the assessment.

Table 1: Tools and approach used for the OSH assessment of the construction value chain

Phase	Tool kit	Approach
Scoping	Research tool 1: Scoping and selection matrix for the infrastructure/ building	Desk study and initial virtual consultation
Research and analysis	Research tool 2: Multinational and Myanmar construction and demolition companies	Online consultation Online FGDs
	Research tool 3: Government interview guidelines	
	Research tool 4: Wholesalers and retailers of material, equipment, tools, machinery and specialized services interview guidelines	
	Research tool 5: Construction workers focus group discussion (FGD) guidelines	
	Research tool 6: Workers and employers organizations consultation agenda	
	Research tool 7: Interview guide for site manager or equivalent	During workplace observation or online virtual consultation
	Research tool 8: Site observation records	

Source: Adapted by authors from ILO (2018) Occupational Safety and Health in Global Value Chains Starterkit – Guide for Implementers.

1.2.3 Data collection

The assessment and intervention design were carried out using a consultative, participatory and observatory approach. Figure 2 presents the approach, involving six data collection phases.

The approach aimed to collect primary data and to collect, collate, clean, analyse and triangulate secondary data to make it possible to carry out the value chain/market systems analysis and workplace observation, and to identify opportunities, drivers and constraints to OSH improvement.

The desk study identified relevant literature on OSH and construction in Myanmar, as well as on the enabling environment, to help identify drivers, constraints and opportunities with regard to better OSH practice in the sector. The desk study was also used to adapt the existing OSH in Global Value Chain Starterkit to ensure data collection tools would be suitable for online consultations and construction site observations.

Given the risks posed by COVID-19, most consultations and focus group discussions (FGDs) with market actors and stakeholders were carried out online in October–December 2020. Consultations involved Myanmar conglomerates, foreign companies, joint ventures (JVs) and Myanmar companies. Stakeholders and social partners consulted included the Ministry of Labour, Immigration and Population (MoLIP), the

Ministry of Health and Sport (MoHS) and the Ministry of Construction (MoC), as well as employers organizations (e.g. Union of Myanmar Federation of Chambers of Commerce and Industry, UMFCCI, and Myanmar Construction Entrepreneurs Federation, MCEF), workers organizations (Confederation of Trade Unions in Myanmar, CTUM, Builders and Wood Workers' Federation of Myanmar, BWFM, and Myanmar Industries, Crafts and Services Trade Union Federation, MICS) and workers.

Figure 2: Approach



Source: Authors (2021).

A key component of the assessment was the site visits/workplace observations to understand and assess OSH management, including hazards, risks and control measures. Site visits/observations involved a virtual meeting with the OSH manager/officer in charge of workplace safety and health for large construction sites, followed by an actual visit of the site, including a review of OSH policies and documents available on site, to record and score information collected primarily during workplace observations. See the next section for more details on the methodology of the site visits.

Intervention design concluded the assessment. Given the current circumstances in Myanmar, with twin political and health crises, validation discussions are limited (see section on limitations).

Table 2 presents the sample of market actors and stakeholders consulted during the assessment.

Table 2: Stakeholders met and sites visited as part of the OSH assessment in the construction sector

Type of actors/sites	Number
Market actors	
Foreign contractors	5
Myanmar conglomerates	4
Joint ventures	2
Service providers	3
Stakeholders	
Government agencies/department	3
Workers organizations	2
Employers organizations	4
Others	
Workers	5
International organizations	2
Construction sites	
Large sites (>50 workers)	4
Medium sites (20–50 workers)	2
Small sites (<20 workers)	5

Source: Authors (2021).

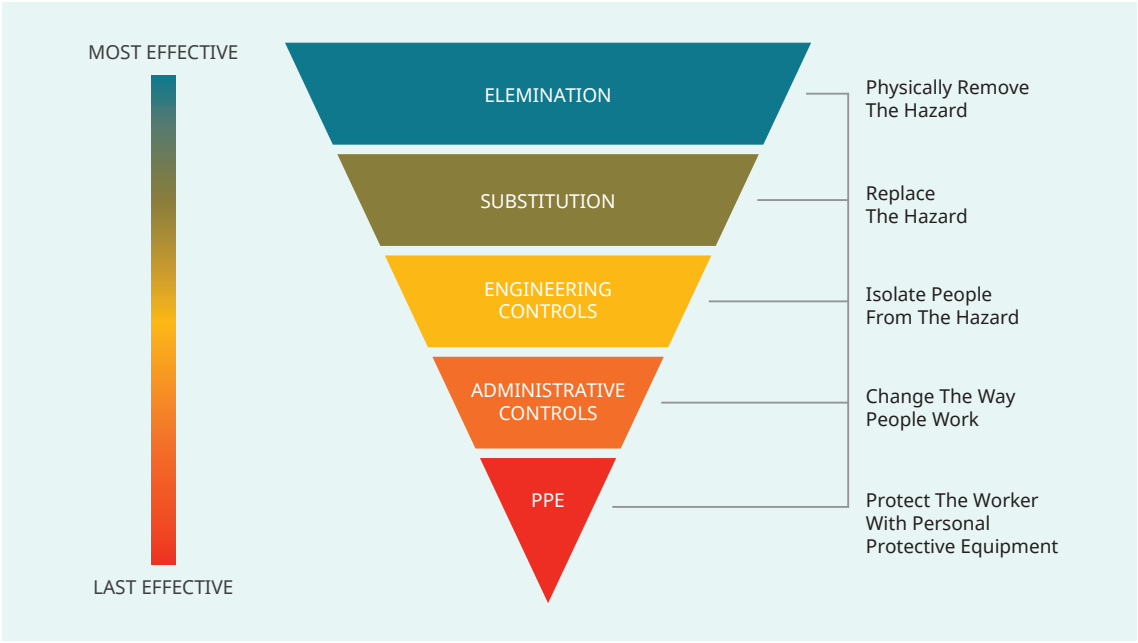
1.2.4 Specific methodology for workplace observation in construction sites

The workplace observation in this report is based on site observation conducted at 11 construction workplaces visited in Yangon in November and December 2020. The observation involved planning and preparation of the visit, including adapting data collection tools; conducting the visit and observation; reporting; and discussing and analysis of the results. The observation aimed to (i) observe and identify the hazards to which workers are exposed in different work processes; (ii) identify the level of risk at the time of the visit; and (iii) assess control measures in place at the time of the visit.

Adequacy of control measures was assessed based on the hierarchy of risk control:

- Elimination: removal of the hazard, e.g. remove the need to work at height;
- Substitution: e.g. replace the material or process in question with a less hazardous one;
- Engineering controls: e.g. prevent access or reduce exposure to the hazard;
- Administrative controls: e.g. identify procedures/instructions to work safely and supervisory methods;
- Personal protective equipment (PPE): when all the above measures have been found to be ineffective.

Figure 3: Hierarchy of control



Source: ILO (2021) Improving Occupational Health and Safety in Small and Medium-Sized Enterprises.

The site observation research tool was developed and tested twice on construction sites and refined prior to site visits. The research team from Asper Consulting was trained on how to conduct site observations by Vision Zero Fund Myanmar staff, who provided inputs and guidance on how to conduct workplace observation based on prior experience in ginger and garments. The Asper Consulting team had solid sectoral knowledge that facilitated the adaptation of workplace observation processes in a construction site set-up. This was the first time that a Vision Zero Fund project had conducted this exercise on a construction site and this was therefore a rewarding learning experience for all involved.

All sites were located in the Yangon region as the team could not travel outside Yangon given COVID-19 travel restrictions imposed by the government at the time of the assessment. The site observation checklist included site boundaries; welfare and safety facilities; housekeeping; PPE; administrative requirements; work at height; working with vehicles; groundwork; moving materials/goods safely; electricity; slips and trips; and health hazards and associated health risks. For each of these categories, the team was looking at particular checkpoints on site. For example, on electricity, the team performed visual checks of collective control measures (power distribution boards, cables, ground circuit fault interrupters, lockout/tagout).

Sites were selected based on the willingness and availability of stakeholders with regard to allowing the research team to visit. Various types and sizes of construction sites (e.g. railways, bridges, high-rise buildings, low-rise buildings, others) were assessed to capture as much diversity as possible (risks, hazards and control measures).

Scores were given based on the measures in accordance with the following rank:

Scoring principles	
Not applicable to the enterprise	N/A
Hazard or risk neither identified nor managed (severity and probability high)	0
Hazard or risk identified but inadequately managed (severity and probability high)	1
Hazard or risk identified but somewhat managed (severity and probability medium)	2
Hazard or risk identified but adequately controlled (severity and probability low)	3

Source: ILO (2018) Occupational Safety and Health in Global Value Chains Starterkit – Guide for Implementers.

1.2.5 Limitations

There are several limitations of the study, which can be grouped around operational restrictions owing to COVID-19 and the implications of the political crisis for the study.

COVID-19 posed several challenges to the study. The first relates to the number and locations of workplace observations. Team members of Asper Consulting based outside of Myanmar were unable to travel to Myanmar for face-to-face consultations and sites visits owing to the closure of Myanmar International Airport from March 2020. However, this limitation was addressed by working with two national consultants from Asper Consulting, who were able to conduct site visits in Myanmar under the guidance of Vision Zero Fund Myanmar and the rest of the Asper Consulting team. The second limitation related to inability of the Vision Zero Fund Myanmar team to visit workplaces given COVID-19 restrictions.

Third, travel restrictions between cities limited the number and locations of workplaces the Asper Consulting national team could visit. The geographic distribution of site visits/observations was limited to Yangon because of the restrictions imposed by the government on domestic travel. This meant that the national research team was unable to travel to other regions and states, or to rural areas outside Yangon, to capture some of the specificities of the value chain that could not be observed in Yangon. This is an important limitation not only for understanding other geographical areas but also for assessing the role of gender in the construction value chain as, according to some interviewees, women are often involved in the construction of primary and secondary roads in rural areas.

All these issues limited the type, range and depth of interactions possible with market actors, organizations and individuals. In addition to fewer workplaces visited, there was limited access to workers on sites, to avoid direct physical interaction. Worker interviews were therefore conducted off-site and online. This limited the way in which the assessment could shed light on gender in construction in Yangon as well, as limited interactions with workers off-site included only male workers, and, given that fewer workers were observed onsite, observations were mostly of male workers. Only around 5–10 percent of workers were women, including engineers and site workers.

COVID-19 also changed the way in which construction sites operated, giving a picture under COVID-19 that may not be a true representation of how the sites normally work. During this period, several construction companies reduced their workforce to comply with preventive measures and only 50 percent of the workforce work on site, acquiring the permissions from relevant authorities (Yangon City Development Committee (YCDC) and Yangon Region Government). Some work processes were not operating at full capacity; welfare facilities observed were also not meant for full capacity.

The economic and social effects of the removal of the democratic government on 1 February are affecting the construction sector's economic and employment prospects. This meant the Vision Zero Fund Myanmar team had to reassess some of the sources and conclusions of the desk review and to incorporate new information throughout the assessment. In addition, due diligence and feasibility were elements that needed to be reassessed in the design of intervention models, further delaying the assessment's publication.

Several social partners, particularly those within CTUM, BWFM and MICS, are not able to discharge their functions and actively participate in the activities of the ILO at the time of writing. The most severe implications of this were for the consultation process on intervention models. Therefore, the interventions mentioned in Section 5 are preliminary designs that will need to be further refined with workers and employers at the time of implementation. The Vision Zero Fund team hopes to have inputs from CTUM, BWFM and MICS in the near future, so that further development and replication of intervention models can be carried out with their support.

2. The construction value chain

2.1 Construction as a global supply chain and Myanmar's integration

It is not common to see construction defined as a supply chain, let alone a global supply chain. However, this approach is applicable and particularly helpful in the Myanmar context, as it aids in identifying the market actors, responsibilities and power dynamics that shape OSH management. A supply chain approach for any construction project includes "specific variations within a fixed framework of distinct stages—design, production and conversion of raw materials into manufactured products, and construction itself. Each of these comprises its own internal stages, processes, stakeholders, and aspects that interact to bring a project to fruition. The distinctness of these processes, as well as the fixed-term, project-based nature of relationships along the supply chain, results in a highly fragmented industry structure."[11]

Globalization has significantly transformed the construction industry and supply chain in the past decades. The traditional construction industry has been influenced by the increasing circulation of people, goods, material, equipment, information, technology and innovation. The growing use of engineered material is also transforming the sector. Financial globalization has significantly impacted the globalization of the construction industry too by making global finance available for commercial projects through foreign direct investment (FDI) and development finance institutions (DFIs).

Cross-border organization of activities can involve the deployment of staff and short-term experts, as well as technology, materials, machinery, equipment and tools. FDI and international finance provided by DFIs also require cross-border organization to deliver infrastructure and buildings used to provide public and private services to consumers. Consumers/end users of the construction sector include people, private and public organizations and governments.

Cross-border activities are dynamic and depend upon a number of factors, such as the evolution of demand, supply, price, investment by market actors and governments, product competitiveness, trade policies and strategies. For example, a study by the Oxford Business Group on construction in Myanmar indicates that the country is self-sufficient in cement production and can meet 90 percent of its annual demand of 11–12 million tonnes through domestic production, importing only in areas close to China where it is easier to bring supplies from across the border.[12] However, the political and health crises currently affecting Myanmar have changed these prospects. This will be discussed more in the section on markets.

[11] IFC (2018) Construction Industry Value Chain: How Companies are Using Carbon Pricing to Address Climate Risk and Find New Opportunities. Washington, DC: IFC.

[12] Oxford Business Group (2020) "Infrastructure Development Supports Construction Growth in Myanmar." The Report: Myanmar 2020. Vol. Construction and Real Estate Chapter. https://oxfordbusinessgroup.com/overview/concrete-foundation-mega-projects-and-infrastructure-development-support-growth

According to some interviewees from the private sector in Myanmar, the integration of the construction sector into GSCs started when the country opened up in 2008. This integration was further accelerated in 2012 when the government embarked on a triple transition: "from an authoritarian military system to democratic governance; from a centrally-directed economy to market-oriented reforms; and from 60 years of conflict to peace in the border areas."[13]

This triple transition led foreign companies to explore opportunities and secure works contracts in Myanmar. However, the government was unable to reassure foreign investors of its capacity to execute this triple transition. Limits regarding the enabling environment, the size of the construction market compared with neighbouring countries like Thailand and Vietnam, timely decision-making in procurement and contracting, and the enforcement capacities of the government have undermined European investments in Myanmar. This wariness has been somewhat confirmed by the current crises. Nevertheless, some European companies have joined the cohort of Asian companies (e.g. Japanese and Chinese) in delivering construction projects driven by an increased flow of capital investment.

Historically, local market actors have driven the construction supply chain. Globalization and Myanmar's progressive integration into the global economy have influenced and transformed the local value chain into a GSC. For example, the adoption of international procurement practices and standards has, according to some contractors, incentivized foreign market actors to create JVs with local companies. These JVs have enabled the transfer of technology, material, working methods and corporate culture, including employment, employment benefits and OSH, from international to Myanmar companies. In turn, local companies that have benefited from these partnerships have raised awareness of foreign investors/companies on Myanmar business environment, local culture, know-how and ways of working, including employment protection and benefits as well as OSH or the lack of thereof.

The presence of foreigner actors in the Myanmar context accounts for the "global" element of the supply chain and has an important role to play in shaping OSH management. Foreign and local market actors, along with the fragmentation and project-based nature of labour relations in the construction supply chain, help determine OSH practices in Myanmar, as later chapters discuss.

Therefore, in Myanmar, the construction GSC can be defined as the global system that the government, public agencies and private companies (Myanmar, foreign, consortia, conglomerates and JVs) use to create or upgrade:

- *Infrastructure* for the production and supply of energy, transportation networks, goods and materials (i.e. Special Economic Zones, SEZs, industrial zones), water (i.e. irrigation and other water uses), waste management and information and communication technology (ICT);
- *Residential and commercial buildings.*

[13] World Bank (2012) "Summary for Consultations: World Bank Group Draft Interim Strategy Note for Myanmar (FY13-14)". Draft for Consultation.

2.2 Step 1 on supply chain selection: a twin focus on the infrastructure and building industries

Construction products entail the infrastructure and buildings used to produce goods, commodities and utilities, and to provide services to people, communities, organizations and governments.[14] Construction products are defined by their design, function and use. They are generally the result of supply-driven market demand or market creation by one or several people, communities, organizations and/or governments. In the context of this assessment, construction products are the results of initiatives and work undertaken by market actors, including government(s).

The construction sector in Myanmar is often divided by project type into commercial, industrial, infrastructure, energy and utilities, institutional and residential projects.[15] This study groups it into the building and infrastructure industries,[16] to allow us to understand similar market dynamics and actors involved across the different markets and projects in each of these two categories. As Table 3 shows, these include the traditional project types often used to describe the sector, and some others. This division will also help Vision Zero Fund Myanmar identify whether a particular industry or GSC should be prioritized over another given its comparative likelihood of achieving results, as per step 1 of the StarterKit methodology.

Building and infrastructure products are built, altered and/or repaired to provide shelter and accommodation; generate power and distribute energy; and enable the circulation of people, goods, material, data, information and know-how.

The two industries include several markets of their own. In Myanmar, infrastructure products can be divided into energy and power; industrial and economic zones; transport; water and sanitation; and communication. Building products can be divided into four main markets: residential, commercial, institutional and religious. It is important to note that some complex building products can include different markets. For example, the Junction City development includes accommodation, offices, a shopping mall and a supermarket.

Table 3 presents the typology of industries and markets adopted in this assessment. The column on the right provides a description and some examples of construction projects in the two industries in Myanmar.

[14] Adapted from Mokhtariani, M., Sebt, M.H. and Davoudpour, H. (2017) "Construction Marketing: Developing a Reference Framework". Advances in Civil Engineering, 23 August.

[15] Ibid.

[16] Together, the building and infrastructure industries are referred to as "the construction" sector in this report.

Table 3: Sector, industry, market, description and examples of construction projects

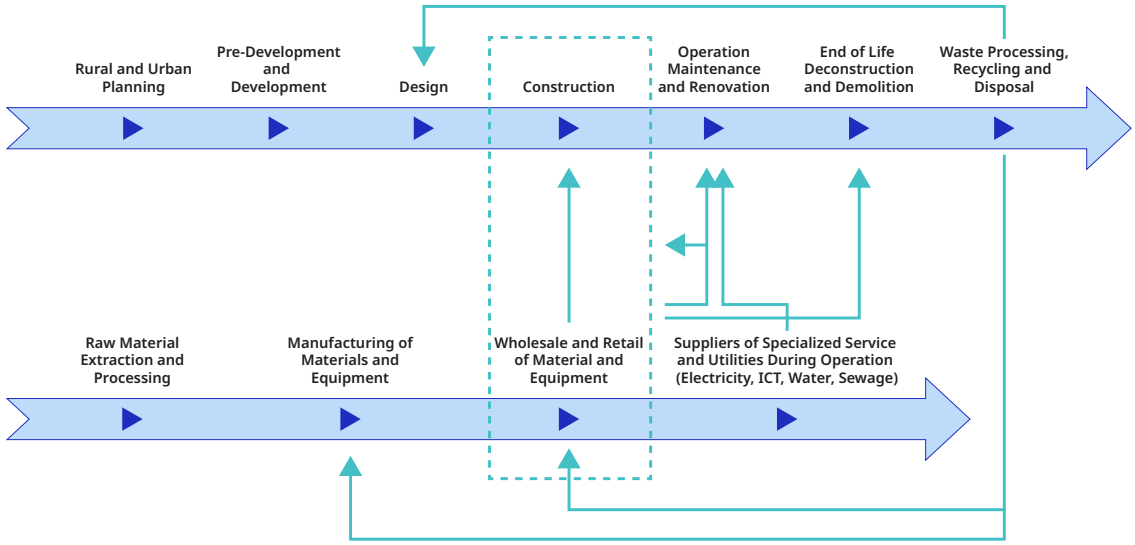
Sector	Industry	Market	Description
Construction	Infrastructure	Energy and power	On- and off-shore oil and gas platforms, coal plants, photovoltaic solar plants and hydro power built to extract non-renewable and renewable resources to produce power to then transmit through energy infrastructure such as oil and gas pipelines, energy transformation and storage, as well as power transmission.
		Industrial and economic zones	SEZs in development: Kyauk Phyu in Rakhine state, Dawei in Thanintharyi region and Thilawa in Yangon region. Over 100 industrial zones are in development or planned. Some examples: Kaladan Multi-Modal Transit Transport Project, Muse-Mandalay Railway, Three Border Economic Cooperation Zone, Myitkyina Economic Development Zone (aka Namjim Industrial Zone), Mandalay Port Project, Myotha Industrial Project, Thilawa Special Economic Zone, Pathein Industrial City; Maubin Industrial Zone (Plan), Htantabin Industrial Zone (Plan), Hlegu (Plan).
		Transport	Highway, roadways including elevated highways, bridges, regional airports, deep-sea ports, ports, heavy rail, light rail, urban transport infrastructure, commuter rail and alternative transport options (e.g. water-taxi). Examples of transport infrastructure: Semikhon Port, Mandalay Dry Port, Yangon Mandalay Old Road Upgrade, Maubin Phya Pon Road Rehabilitation, New Thaketa Bridge, Yangon–Dala Bridge, Chindwin Bridge, Yangon Airport Terminal 3, Yangon–Mandalay Railway Improvement, Yangon Circular Railway Project, Yangon Elevated Expressway, Yangon Inner Ring Road Project.
		Water and sanitation	Water supply and sanitation systems for human, industry and agricultural consumption in rural and urban areas. Examples: Ayeyarwaddy River Bank Erosion near Nyaung Don and River Bank Protection Project.
		Communication	Telco towers, fibre networks, submarine cables by international telco providers such as Telenor from Norway (sold to M1 Group in July 2021), Ooredoo from Qatar, Myanmar Post and Telecommunication (historical operator) and Mytel.
	Building	Residential	Property development including condominiums, towers, housing, low-cost housing and public housing, wholesale market projects.
		Commercial	Factory and manufacturing, offices, retail, serviced apartments, residential and hospitality projects, individual home construction. Example: Mindama Hotel, 9 Hotel (Zealax), Grand Park Hotel.
		Institutional	Schools, hospitals, social housing, prisons, government offices as well as mega ongoing public projects in Myanmar.
		Religious	Pagodas, churches, mosques, temples, etc.

Sources: YCDC (n.d.) "Yangon City Development Committee (YCDC)". https://www.ycdc.gov.mm/; DICA (n.d.) "Special Economic Zones". https://www.dica.gov.mm/en/special-economic-zones; The Myanmar Builders Guide (n.d.) "Developer Updates, Project Showcase, Tender". https://www.buildersguide.com.mm/article/projects

2.3 Step 2: mapping of the construction value chain

An initial mapping of the construction supply chain was carried out to understand on which stage(s) of the construction cycle, and the associated supply chain, the OSH assessment should focus to deliver practical, feasible, sustainable and scalable solutions to address OSH risks and constraints at both organizational and institutional levels. Figure 4 presents the results of this initial mapping to scope the focus of the value chain analysis.

Figure 4: High-level mapping and focus of the construction value chain analysis in this assessment



Source: Adapted from One Planet Network (2020) "Analysis of the Construction Value Chain: Understanding the Value Chain & Identifying Hotspots".

The initial mapping of the construction value chain identified seven main stages in the construction cycle: (i) urban and rural planning; (ii) pre-development (concept and assessments) and development (implementation); (iii) design and engineering; (iv) construction; (v) operations, maintenance and improvements; (vi) renovation and demolition; and (vii) disposal, waste, recycling and upcycling. Each stage involves management, coordination and monitoring of tasks, products and services to produce a functional infrastructure or building.[17]

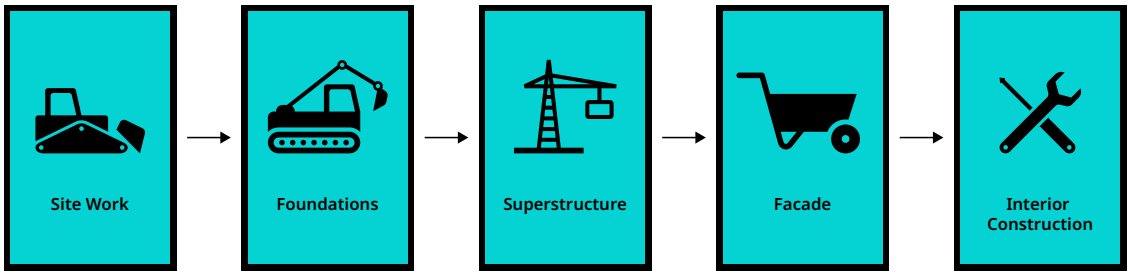
Each of the seven stages can play a role in addressing OSH. However, the initial desk research and consultations with market actors indicated that the actual construction process (Stage iv) is the stage at which there are the greatest needs and opportunities in Myanmar. Market actors also indicated that the construction stage was a critical stage for Vision Zero Fund Myanmar to improve OSH for a larger number

[17] One Planet Network (2020) "Analysis of the Construction Value Chain: Understanding the Value Chain & Identifying Hotspots". 10 December.
https://www.oneplanetnetwork.org/sites/default/files/value_chain_analysis_construction_-_draft_201210_-_for_inputs.pdf

of workers. In addition, the initial findings of the Myanmar construction value chain analysis showed that market actors were vertically integrated organizations providing planning, design, operations and maintenance, renovation, demolition services and even finance. The focus of this analysis is therefore on the actual construction process in Myanmar.

For the purpose of this assessment, the construction stage is defined as encompassing five phases: (i) site work, (ii) foundations, (iii) superstructure, (iv) façade and (v) interior construction.

Figure 5: Phases assessed as part of the OSH construction assessment



Source: Authors (2021) adapted from ILO (2017) Conducting Labour Inspections on Construction.

The construction supply chain is connected through backward linkages to the extractives industry for the production, import and supply of material, equipment, specialized services and utilities. This supply chain is represented in the lower part of Figure 4.

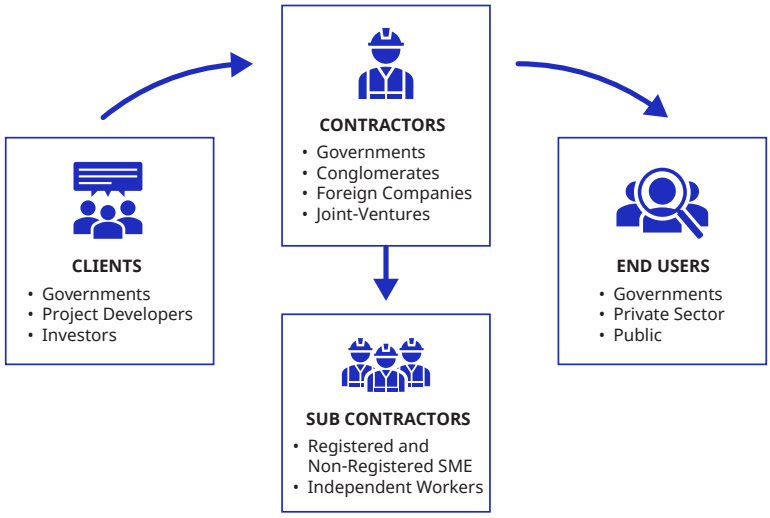
The extractives industry and the manufacturing of material and equipment come under different sectors and have therefore been excluded from the scope of this assessment. Similarly, the supply of utilities has been excluded because it relates to the utilities market (e.g. electricity). The wholesale and retail of material, equipment and supplies is included because it was identified as a potential entry point for the prevention and mitigation of OSH risks for workers at scale. This is aligned with the Occupational Safety and Health Convention 1981 (No. 155) (Article 12) and is because materials are necessary inputs for all construction sites (e.g. cement and bricks), irrespective of their size and location, and can be hazardous. Inputs provided by wholesalers and retailers represent an integral part of the actual construction process and are associated with several hazards present on construction sites (e.g. dust, fumes).

Construction activities also involve the use of equipment including hand and power tools to perform activities, which can be hazardous (e.g. unguarded power tools). Some of the heavy-duty machinery and vehicles (e.g. trucks and cranes) used to lift, move and transport material can also represent a significant hazard to workers' health and safety.

2.3.1 Value chain structure

Building and infrastructure value chain actors were identified on the basis of the literature review, preliminary interviews with stakeholders and workplace observations that took place from October 2020 to December 2021. Core market players can be grouped into four main categories, as described in the schematic overview of the construction value chain in Myanmar in Figure 6.

Figure 6: Value chain structure



Product	Development plan Legal framework Business structure Investment plan	Infrastructure Building	Infrastructure Buildings
Size	Ministries/agencies 3 main SEZs developers Est. 9 main property developers 1000s of investors 100s of project developers	Ministries/agencies 3 Est. 20 main conglomerates Est. 200 Foreign compaines 12s of joint-ventures Est. thousands of SMEs Est. 1 m workers	53 million consumers Est. 68,000 registered companies in Myanmar
Operations	Planning Designing & drafting Budgeting/financing Contract administration	Planning Design & drafting Budgeting/financing Site work & Foundation Superstructure & Facade Interior construction	Power generation Extraction Trade and transportation Distribution ICT Housing & commercial activities

Source: Authors adapted from printed journals, online databases (Builder's Guide, Project Bank), reports by IFIs (World Bank, ADB, etc.), government and other regulatory body publications (i.e. MoC rules and regulations).

2.3.2 Market channels

A market channel can be defined as an array of exchange relationships that create customer value in the acquisition, consumption and disposition of products and services.[18] In the context of this assessment, market channels can be used by governments, investors and project developers to execute construction projects, as presented in Table 4. Clients provide finance and facilitate the investment. Clients contract market actors to deliver the actual construction work, and, often, the planning, design and operations of the infrastructure or building. In addition to the main 14 market channels identified, governments and private sector have access to a multitude of possible corporate and governance set-ups and arrangements to finance and build infrastructure and buildings.

Table 4: Main construction market channels

Nationality	#	Clients	Markets actors
Foreign, Myanmar or JV	1	Government	1. Government 2. Myanmar conglomerates 3. Foreign-owned companies 4. JVs 5. Myanmar companies
	2	Project developer	
	3	Investor	

Source: Authors (2021).

Corporate, public and private–public partnership (PPP) structures used for the construction of infrastructure and buildings can involve one or several government departments or agencies, project developers and investors depending on the legal and governance structure of the project, its size and the nature of construction operations. They can also involve a DFI.

The most common corporate and governance set-up for large construction projects is for companies to create a JV, generally between one conglomerate and one or several foreign companies. JVs can also involve government(s).

PPPs using a build-operate-transfer (BOT)[19] model are increasingly used by the union government and companies for mega and large public projects. Company policies, set-up, legal structure and/or source of funding, as well as inter-firm relationships and communication, influence the overarching approach to OSH on construction sites. For example, two companies in a JV may have different OSH management systems, or one may have one and the other not. Lack of communication and coordination and different corporate cultures on OSH were cited several times by foreign contractors as a main challenge in Myanmar. This challenge also extends to working with subcontractors.[20]

[18] Pelton, L.E., Strutton, D. and Lumpkin, J.R. (2001) Marketing Channels: A Relationship Management Approach. Edinburgh: Edinburgh Business School, Heriot-Watt University.

[19] BOT is a type of contract used to finance large infra-projects, developed through PPPs. It refers to the initial concession by a public entity, such as a local government, to a private firm to both build and operate the project in question. After a set time period, typically two or three decades, control over the project is returned to the public entity.

[20] FGDs and consultation with foreign contractors.

Project set-up can also evolve over time according to the need, size, value, complexity and maturity of the construction project. For example, Kyau Phyu SEZ was originally a project between the governments of China and Myanmar that was later handed over to a private project developer and contracted out to a JV. These changes, too, can have an impact on OSH. In this example, the Myanmar government was first the implementer and the legislator, and then the contract administrator. The change in the role of the government affects the level of accountability of the different market actors involved in the project. Similarly, the government and the JV are likely to have different approaches to OSH, hence project set-up influences this too.

It is also important to note that investors can also be project developers, and vice versa. Investors can be manufacturing companies investing in a SEZ or an industrial zone. The Myanmar government can also create a JV with another government through a state-owned enterprise (SOE).

Arrangements can be formal, informal or both and have a direct influence on OSH. The number of government departments and agencies and market players and the power balance between these different market players too can influence OSH.

Approaches to OSH also vary according to the nationality/origin of the construction company. Interviews suggested that the approach of Japanese, Korean, French and other Organisation for Economic Co-operation and Development country companies to OSH is aligned with their country standards. Of key importance and relevance to OSH in all market channels presented in Table 4 is the prevalence of formal and informal subcontractors (tiers 1, 2, 3 and 4), including independent workers.

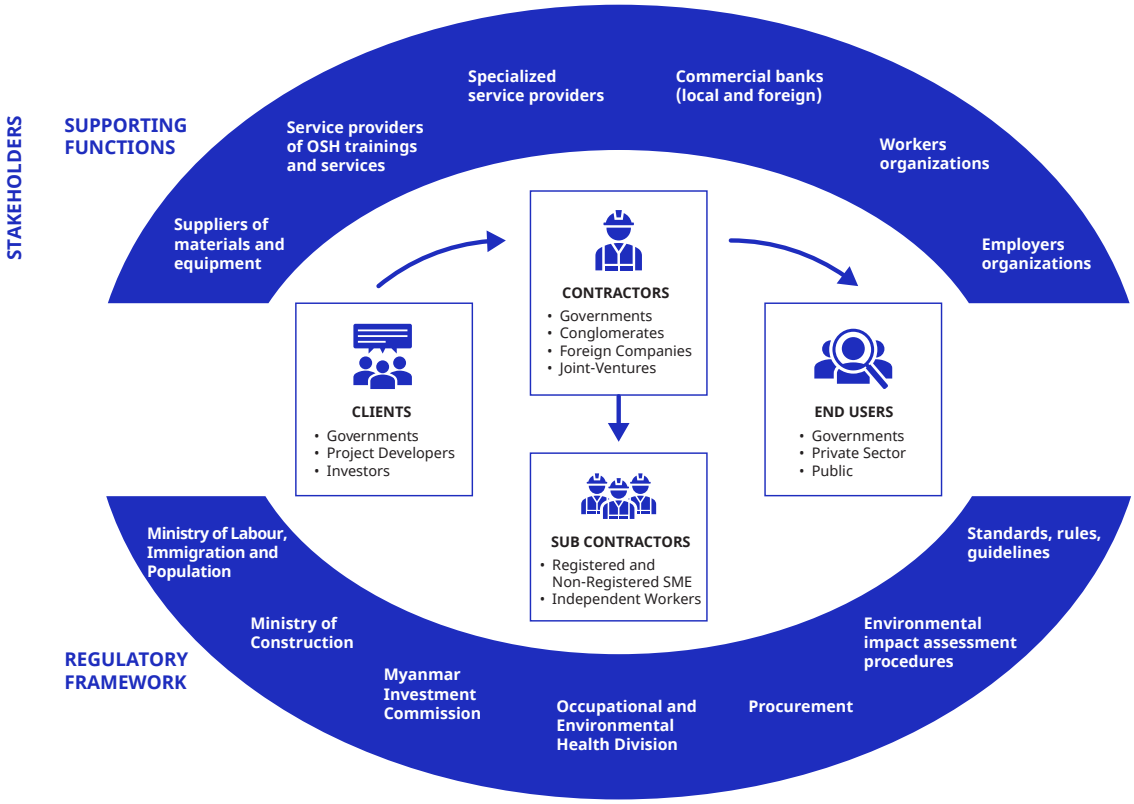
Governments, project developers and investors have access to a large number of possible corporate, operational and financial set-ups that can serve an equally vast number of geopolitical, diplomatic, strategic and financial objectives. Project developers can develop projects to increase energy supply, or raise public and/or private capital through various investment vehicles. The large number of FDI projects coming from the British Virgin Island and the Cayman Islands is an illustration of this. Exploring these different objectives and mechanisms in details is outside the scope of this report but it is important to mention these as they are key features of GSCs in the construction sector, where large operations generally involve complex and multi-layered corporate structures, a large number of market players and several governments in several countries.

In Myanmar, the construction sector is characterized by a multitude of market places where companies, the government, investors and project developers can notify the market about tender opportunities, works and services contracts.

The market places that the contracting authority/client chooses depend on their requirements and procurement rules. If the project originates with a government department or agency, with or without a DFI, and has a value of over 100 million kyat, the work is generally procured through a public tender and advertised in international or local tender market places. Choices about market places also depend on the type construction project. Government tenders can be advertised on government line ministry websites or on private websites in English or the Myanmar language or both, in newspapers, etc. The procurement notice generally explains the procurement method (one of several stages, contract for government-originated contract, Swiss challenge for unsolicited projects, etc.). An assessment of market places in English and the Myanmar language could provide further information on OSH requirements in procurement and contribute to a better understanding of the demand for OSH service providers, trainers and staff.

2.4 Stakeholders in the value chain

Figure 7: Construction Value Chain in Myanmar



Source: Authors (2021).

2.4.1 Market actors

A diversity of stakeholders are engaged in the construction value chain. These can be grouped by their functions in the chain, as presented in Figure 7. The government, Myanmar conglomerates, foreign companies, JVs and Myanmar companies are involved in infrastructure and building industries. Projects can range from government projects to JV projects to private projects.

2.4.1.1 Government

In this report, "government" refers to the Myanmar government, a government agency, department or organization or an SOE, unless specified otherwise in the text.

Normally in government projects, the government plans the work and on-sources or outsources the design. It can then tender out the work, or contract directly the construction, or the construction and operations. There are many cases in which the government agency (e.g. the respective departments under MoC) implements and carries out the work itself. There are also cases where infrastructure projects of one ministry (e.g. Ministry of Education) are implemented by another ministry (e.g. MoC).

Construction projects can be financed by the government, using own financial reserves, DFIs, private investors, project developers' capital investment or a combination of one or more sources of finance. Construction projects can also be financed by other governments. For example, the China State Construction Engineering Corporation, an SOE, has built a major complex at the Polo Club, where the land is owned by the Myanmar Economic Corporation, a military-controlled conglomerate.

Public infrastructure and building projects funded by the government are implemented by line ministries, agencies or departments responsible for the planning and design, and sometimes implementation, of construction work. Work not directly implemented is contracted out, in part or in totality. With some exceptions, almost all ministries in Myanmar are involved in construction.

According to one stakeholder interviewed, on government-funded projects, the entire budget is generally earmarked for actual construction. There is generally no budget for OSH, project management and quality control. As a result, Myanmar conglomerates, foreign-owned companies and JVs have less interest in this type of work and focus instead on project opportunities that follow international procurement, contract management and budgeting standards (such is the case for the Japan International Cooperation Agency, JICA, for example).

In Myanmar, government agencies (especially MoC) have a unique nature. Planning, design and delivery by a single government agency is particularly problematic from an OSH perspective as the client and the construction developer involved are the same entity and can therefore play the role of regulator, operator and client as well as financial supervisor. This can create a lack of accountability on the part of the government department or SOE and/or their public or private partners.

For clarity, this report classifies MoC as a market player although its role in implementing the Myanmar Building Code is acknowledged in the section on the regulatory framework. The share of MoC in the construction market is unknown.

▶ Box 1: Ministry of Construction

MoC can be a contract administrator, a project developer, an implementer, a financial supervisor and a regulatory body. The research team's consultation with MoC indicated that its focus is currently more on construction and less on legislation.

Vision

- To enhance the social economy of all people through systematic and modern development in Myanmar's construction sector;
- To develop the roads, bridges, urban and housing sector in all states and regions;
- To reduce the barriers and transportation costs and save time through the development of roads and bridges by means of increasing gross domestic product (GDP);
- To provide adequate housing by means of uplifting the living standards for all people.

Mission

- To develop and upgrade the existing road length (42,121 km) to reach at least Association of Southeast Asian Nations (ASEAN) Class III standard (18 ft width asphalt concrete or concrete roads) in 2030;
- To upgrade all bridges to reach at least 24 ft two lanes – RC bridge or PC bridge – in 2030;
- To develop systematic urban planning in 330 cities in 2030 and develop and construct 1 million rooms in those cities with the PPP Programme in 2030;
- To annually upgrade and reach 80 percent of rural roads in all villages that can be travelled on in all seasons in 2030.

Procurement

Procurement rules of the department in charge of the project, including negotiation of terms and conditions of works contracts between the government/investors and the construction company, are important determinants of the provision and implementation of OSH systems on construction sites in Myanmar. Yet control and enforcement depend on the capacity, incentives, skills, experience and budget of the contracting authority/investors. This is particularly challenging in a context where the OSHL and OSH construction regulations have not been enacted.

For public infrastructure and building, procurement and contracting are generally carried out by the government department in charge of the project centrally, or at the state/region level for city projects (e.g. Mandalay City Development Committee, MCDC). Procurement rules appear to vary according to the entity in charge of procurement and the origin of funding, typically the government's own budget or international organizations (e.g. grants and loans) as defined by the client/contracting authority.

Formal public tendering processes for infrastructure projects are still in their infancy in Myanmar. However, a trend towards public tendering for infrastructure procurement is noted. Projects such as telecoms licences, airport expansion and other new construction projects have been procured through public tender. Often, these companies will be involved in a wide range of businesses, having a stake in banks, airlines, hotels, mining businesses and others. However, each company will have a particularly strong presence in a specific industry.

DFI-financed project are generally procured through international tenders, although the project value is often a key determinant in the procurement process. Large construction projects follow the procurement rules of line ministries or DFIs. Project opportunities for work and services in the construction sector can be advertised on DFI websites, Devex.com or government websites. Procurement of DFI-financed project is generally carried out through lines ministries.

DFI procurement rules and contracts have a provision for OSH – on both technical and financial elements – whereas the government may not. According to some respondents, works contracts designed and procured by the government that do not involve a DFI grant, loan or technical assistance focus exclusively on the actual construction (e.g. concrete, steel and manpower). This is also the case when a contract involves the delivery of material (e.g. for road construction). This means there is generally no budget for a contract management company or OSH. This has a number of implications for OSH but also for quality of construction.

Project tenders issued through grants, loans or technical assistance budget for OSH, making it attractive for Myanmar-owned conglomerates to bid, as this enables them to improve their OSH standards and thus become more competitive. A budget for OSH also enables foreign companies to bid for these projects while keeping to their internal OSH systems and standards. DFI-financed contracts are also generally more lucrative for companies, according to respondents from Myanmar-owned conglomerates. Foreign-owned companies can also cover the costs of international experts working through DFI-supported projects.

The lack of provision for OSH and other value-added services deters international companies from bidding on these projects. This, in turn, limits opportunities for OSH systems and knowledge transfer to Myanmar workers and supervisors. Interviews with MoC also indicated that OSH was not generally budgeted for in project designs, budgets and tenders for works contracts.

There are many different procurement rules for works and services contracts that can be used by the government(s), investors and project developers. Different criteria can be established and used, including OSH, based on the type of construction. There are also different possible weighting options between technical and financial scores (e.g. 70/30 percent). We did not explore the difference in procurement rules used in the construction market in detail as this would require an extensive and detailed assessment of procurement terms and contracts for different types of government agencies and corporations and for different types of projects.

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Companies that took part in the consultation pointed out that the government was increasingly using international procurement rules and guidelines; however, it lacks the capacity to enforce all contract terms and conditions. ILO Convention C167 on Safety and Health in Construction Convention 1988 (No. 167) was never mentioned during the consultations. Opportunities exist to stimulate the adoption of realistic and incremental OSH practices; however, enforcement is likely to remain a challenge in a context where site inspection capacity is limited.

The conclusion is that there is no incentive to budget for OSH because it is not part of the selection criteria and it would increase the project budget in a system where the actual construction outputs (in metres for roads, in units for housing, etc.) that can be delivered for the budget is an important criterion. This has a detrimental effect on the quality and safety of work during construction as it incentivizes companies to cut cost and quality, and to expedite project delivery. This can create additional risk for workers working long hours to tight deadlines.[21]

A detailed review of OSH requirements in procurement methods used by the government and private companies/conglomerates could be conducted to assess how OSH is taken into account and scored (technically and financially) and make recommendations on improving OSH through tender processes. This could be particularly useful to benchmark best practices by government departments and organizations and create alignment.

The Swiss Challenge Method[22] involves a spontaneous proposal from a private player submitted to the government, keeping intellectual rights with the submitter. The government can either take it and buy the rights and open a bid for its development, or invite others to submit proposals and allow the original submitter to match those that seem superior, finally awarding the contract to the best bidder. The importance of OSH in the Swiss challenge method should be assessed as this procurement method tends to be used for mega projects that will involve a large number of workers and subcontractors.

Other line ministries

Other line ministries than MoC that are significant market players in the infrastructure and building markets are the Ministry of Transport and Telecommunication, the Ministry of Electricity and Energy, the Ministry of Natural Resources and Environmental Conservation, the Ministry of Agriculture, Livestock and Irrigation and the Ministry of Education.

[21] Several respondents indicated that working to tight deadlines, or on task-based contracts, could increase the risk of injuries as workers tend to skip preventative and protective measures to deliver the task on time.

[22] Eden IAS (2020) "Public Private Partnership Models (PPP Models)". GS Articles, December. https://edenias.com/blog/gs-articles/public-private-partnership-models-(ppp-models)-gs-articles

City development councils

YCDC, the administrative body of Yangon,[23] aims to maintain and develop the city within its territory and has a number of duties and responsibilities. Relevant responsibilities in the construction sector include drawing up and implementing land policies and administration; developing and enforcing planning controls, protection of heritage buildings and regulation of construction sites; construction and maintenance of parks, gardens, playgrounds and recreation centres; construction, maintenance, upgrading and administration of markets; and water supply and sanitation.

YCDC and the city development committees of Mandalay (MCDC) and (NPTDC) have similar structures and functions; however, the functions and authority of other city development committees in the states and regions are not like these three[24]. The main differences are that these three raise their own revenues through tax collection, fees, licences and property development and have specific local legislation. Construction laws, regulations and procedures pertaining to YCDC and MCDC include the Yangon City Development Affairs Law 2013, the YCDC Election Bylaw 2014, the Mandalay City Development Affairs Law 2014, the MCDC Election Bylaw 2015, the Myanmar YCDC Law 2018, the Building Rules and Regulations, the Manual of Procedure, the Procedure Mapping and the Building Department Bylaws 2014[25]. On the other hand, NPTDC also has unique provisions, based on the 2008 Constitution (Article 284)[26].

Both YCDC and MCDC have an employer, contractor, contract administrator, planner and legislator role. Both committees are also responsible for issuing building permits in the respective city. In April 2020, YCDC launched a new online system for requesting building permits[27].

2.4.1.2 Project developers

A project developer is defined as a person, company or organization taking care of matters such as the establishment of infrastructure or a building that can be an industrial zone, a SEZ, a plant, real estate, a complex, a hotel, etc. Project developers can also be involved in the operation and maintenance of the infrastructure or building.

Myanmar's largest developers are in Yangon and often operate in multiple sectors. Research conducted by Asia Property HQ on the top nine property developers in Myanmar shows that most large property developers are Myanmar-owned conglomerates belonging to international corporations and operating in multiple sectors. For example, Marga Group operates in real estate and telecommunications and Shwe Taung Group works across infrastructure and building. Some companies, like Keppel Land, have developments in more than one country. Most of these companies operate in Yangon, and some, like Myanmar Seilone Group, work in . Their number of employees ranges from fewer than 100 (Green Vision) to over 7,000 (Shwe Taung Development Co. Ltd and Capital Development Limited).

Beyond these large developers, Yangon also has a mix of small and medium-sized developers. However, the combined capacity of these private sector developers is not very significant. The bigger and more

[23] Myanmar National Portal (n.d.) "Yangon City Development Committee". https://myanmar.gov.mm/en/yangon-city-development-council

[24] Arnold, M., Ye Thu Aung, Kempel, S. and Kyi Pyar Chit Saw (2015) "Municipal Governance in Myanmar: An Overview of Development Affairs Organizations". Discussion Paper 7. MDRI, CESD, The Asia Foundation.

[25] MLR Legal & Tax (n.d.) "Resources: Yangon City Development Committee (YCDC)".

[26] Myanmar Legal Information System (2008) *Constitution of the Republic of the Union of Myanmar.* May.

[27] YCDC (n.d.) "Yangon Building Permit System (YBPS)". https://ybps.ycdc.gov.mm/index.php

affluent developers have JV arrangements with international developers, and they are able to mobilize dollar-denominated funding for their upmarket and premium projects.[28]

Table 5: Key project developers in the building industry

Company name	Description	Example of projects
Marga Landmark Development Co. Ltd	Real estate wing of Marga Group, one of the largest conglomerates in Myanmar. Marga Group is an international corporation that owns several subsidiaries, working in real estate and the telecommunications sector in Myanmar. Marga Landmark Development focuses on mixed-use and high-end property developments.	Marga Landmark Development is known for its flagship mega project, The Central, which is a mixed-use project in Yangon. The project consists of several residential towers, a commercial office space and a shopping mall.
Shwe Taung Development Co. Ltd	Shwe Taung Development Co. Ltd is owned by Shwe Taung Group, a big conglomerate in Myanmar, with several subsidiaries working in real estate, engineering, distribution, building materials, lifestyle, construction and infrastructure investments such as hydro power projects as well as highways and bridges. The company has more than 400 engineers and around 7,000 workers.	Junction City, which is a mixed-use project with several residential complexes, six shopping centres and other commercial buildings. Union Business Centre and Union Financial Centre in Yangon.
IME Property Co. Ltd	Owned by IME Holdings Co. Ltd. A private-owned group of companies working in several sectors, including real estate. The head office is based in Bahan township, Yangon. The company has more than 140 workers.	The Leaf Residence in Yangon. A 4-star resort hotel in Shan state.
Yoma Strategic Holdings Ltd	A large conglomerate that owns several companies and subsidiaries working in different sectors. In addition to real estate, the group owns subsidiaries working with financial services, consumer services, automotive and heavy equipment, and investments. It focuses on large-scale real estate developments.	FMI City, StarCity and Pun Hlaing Estate "Landmark Development", Yoma Central and The Peninsula Yangon, Dialan Shopping Centre and Dulwich College, Yangon.
Keppel Land	Real estate arm of Keppel Group, one of the biggest and best-known international developers, based in Singapore and operating in Myanmar. Projects in China, Indonesia, Vietnam, Philippines, the UK and Myanmar.	Junction City Tower, Junction City Office Tower.
Capital Development Limited	Real estate arm of the Capital Diamond Star Group, a leading real estate developer in Myanmar. One of the oldest companies in the country.	Shwe Nagar Mixed Use Development, Capital Hypermarket Extension, Pansodan and Capital City.
Myanmar First Global Holdings	Real estate investment and development company based in Yangon. The company also has an international presence with offices in Singapore and Hong Kong.	Myanmar Plaza (Yangon), Pathein Plaza (Pathein), Ivy Terraces Parkview. In addition, hotels and resorts are being developed in different locations throughout Myanmar.

[28] ADB (2019) "Financing Affordable Housing in Yangon". Report.

Green Vision Group of Companies	Property development and management company best known for its high-grade and multi-purpose residential development projects. Also develops serviced apartments, office buildings, hotels, villas and eco-resorts. The company has 51–200 workers, Founded in 2011.	By 2018, Green Vision had completed seven projects.[29]
Myanmar Seilone Group	Famous for its high-end hotels and resorts. Develops high-end condominiums, serviced apartments and villas. Focused on providing a luxury lifestyle.	Residence@26, Residence @Khay Mar, Myat Migalar Residence 313, Emerald Palace Hotel.

Source: Asia PropertyHQ (2018) "Top 9 Property Developers in Myanmar: A Complete Guide". 30 July. https://www.asiapropertyhq.com/myanmar-property-developers/

In addition to the projects in Yangon, important infrastructure and building projects are ongoing outside Yangon. Important highway developments include the Yangon–Mandalay Highway, the Sagaing–Monywa Highway and the Ohtaw–Shwe Bo Highway, providing intra-city connectivity. In Pathein city, which is the capital city of Ayeyarwaddy region, Pathein Plaza has been developed by Myanmar First Global Holdings, one of the top nine property developers mentioned above. In Mandalay, New Mandalay Resort City Project is in progress, with the feasibility study carried out by Surbana Jurong, Singapore's largest engineering firm and one of the largest Asia-based global urban, industrial and infrastructure consulting firms. The project was developed by three local groups – Khin Myanmar Development, Central Irrawaddy Development and Shwe Taung Development – under the supervision of the Department of Urban and Housing Development (DUHD) of MoC.[30] In and Mandalay, a public rental housing project is being implemented to provide employment opportunities and housing for low-income people under the COVID-19 economic recovery programme. A total of 704 units in Dekkhinathiri township, , and 3,008 units in Patheingyi township, Mandalay, were under construction at the time of writing. The project was developed by the Myanmar Licensed Contractors Association, the Myanmar Construction Entrepreneurs Federation and the Myanmar Developer Association.

These large companies employ OSH managers regularly and value overseas experience. According to interviews with the companies, project developers employ OSH managers both from the region (e.g. the Philippines and Vietnam) and from Myanmar. The latter have generally worked in OSH overseas and in Myanmar. OSH managers who have worked overseas tend to get higher salaries and are in high demand in the job market. According to the CCI France Myanmar surveys in 2019 and 2020, 43 percent of construction companies surveyed employ repatriates and the average difference in salary they pay for a repat over a local for the same position is 5-40 percent.[31,32] This is consistent with the answer provided by contractors that OSH officers and managers who have worked overseas, for example in Malaysia or Thailand, are paid more than their peers who have worked only in Myanmar. This is because they are found to have better practical and theoretical knowledge of OSH management.

Type of project, location, working conditions, activity and position of the employer in the supply chain (e.g. contactor, subcontractor tier 1, 2, 3 and 4) are also key determinants of the employability of OSH staff and managers. For example, some contractors operating in oil and gas are considered to have higher OSH standards.

[29] The Green Vision website could not be accessed at the time of this assessment.

[30] Myanmar Water Portal (2019) "Four Mega Urban Projects under Implementation in Yangon and Mandalay". https://www.myanmarwaterportal.com/news/1304-four-mega-urban-projects-under-implementation-in-yangon-and-mandalay.html

[31] CCI France Myanmar (2019) *Myanmar Salary Survey.* CCI France Myanmar.

[32] CCI France Myanmar (2020) *Myanmar Salary Survey.* CCI France Myanmar.

Myanmar conglomerates

Myanmar conglomerates are categorized under project developers. Myanmar conglomerates, also referred to as Myanmar-owned conglomerates and conglomerates hereafter, are generally family-owned groups of companies involving a combination of multiple business entities, vertically integrated or operating in different sectors under one corporate group, usually involving a parent company and many subsidiaries. These conglomerates are typically large multinationals. They can also be more focused but remain highly vertically integrated to facilitate cross-sales and minimize the leakage of revenues outside of subsidiaries. Myanmar-owned conglomerates can operate alone, or in JV, depending on the type and size of project. For example, Shwe Taung, one of the leading corporations in Myanmar, operates in six core sectors: building materials, distribution, engineering and construction, infrastructure investments, lifestyle and real estate. Shwe Taung operates in JV on specialized infrastructure projects. Conglomerates operating in the construction sector are generally active in the infrastructure and building industries.

Conglomerates have a competitive advantage in the market over international companies and medium-sized Myanmar companies as a result of their understanding of the business environment, their international and domestic networks, their reach and their connections, as well as their financial reserves. The latter are often a necessary condition to develop, invest or pre-finance construction projects and contracts in a context where the banking sector remains undeveloped. In 2020, Myanmar ranked 181st out of 190 countries on the "getting a credit" indicator of the World Bank's Doing Business.[33]

In the case of Myanmar-owned conglomerates, they generally have some kind of OSH management, as evidenced by the review of the OSH policies some of them shared with the research team, but also during the consultation and worksite observations. OSH management varies according to the project, client requirements and the budget allocated by the client to OSH. It is operational and regularly reviewed. Conglomerates generally employ at least one OSH manager and several OSH officers per project site. OSH managers can be Myanmar nationals or expatriates. OSH managers employed by conglomerates have generally worked overseas and are qualified in OSH (e.g. HSE certification level 3). Conglomerates also use the services of OSH advisors and consultancy companies (e.g. Workplace Safety and Health (WSH) Myanmar).

According to an interview with the responsible person from one conglomerate, reviews and improvements to OSH management are generally led by the OSH manager in coordination with the OSH officers, OSH site managers and, where they exist, OSH committees. The interview noted a serious need for guidelines for OSH committee formation and work, as well as for training and accreditation of trainers and OSH officers. A case mentioned was of Singapore, where safety officers, whose functions and duties are clearly defined in OSH regulations and guidelines, need to register with the Ministry of Manpower.

Myanmar-owned conglomerates' OSH management applies to their staff but not systematically to their contractors and subcontractors. Conglomerates interviewed made it clear that contractors and subcontractors were responsible for the OSH and social security of their own workers and subcontractors. Companies that are not liable for OSH of all workers and staff on site have no incentives to include contractors and subcontractors in their OSH management systems.

One of the Myanmar-owned conglomerates interviewed acknowledged that fatal casualties and injuries happened at its worksites. The fatal accidents mentioned included material falling from scaffolding on workers, workers falling from a height, wire shots and workers getting hit by rebars. Fatal accidents are reported to the chief executive officer of the company through the management chain of command. Minor accidents are also reported. The conglomerate takes care of injuries even if the worker is not registered with the Social Security Board. However, according to the interviewee, all of the workers are registered. Incidents do not seem to systematically trigger a particular review process of what went wrong, how the situation could have been avoided and what needs to be improved to avoid similar situations. This points at a need to make OSH management effective even at these large conglomerates.

[33] World Bank (2020) Doing Business 2020. Washington, DC: World Bank.

Table 6: Key Myanmar conglomerates for selected markets in the infrastructure industry

Market	Company name	Example of projects
Port[34]	Asia World Co.	Large conglomerate in Myanmar, owns Asia World Port Terminal (AWPT), which handles 40 percent of the containers that go through Yangon. AWPT currently has three wharves, the first of which began operations in 1998, constructed via BOT programmes with concessions from 25 to 30 years at a project cost of approximately US$50 million. Asia World Co. also has subcontractors together with China Harbour for the construction of Hteedan Port Terminal in Yangon, which mainly handles rice and rice products.
	Hutchison Port Holding Co.	Hong Kong-based and owns the Myanmar International Terminal Thilawa,[35] which is located near Thilawa area and began operations in 1997. The investment in this port was US$101 million under a 25-year BOT arrangement.
	Union of Myanmar Economic Holding (UMEH)	A large conglomerate owned by the state, UMEH bought the Bo Aung Kyaw Container Wharf from the government in 2011 for US$42 million.
	Essar Project	This engineering firm from India is constructing Sittwe Port, which involves dredging activities to facilitate 6,000-ton ships. This is for the Kaladan Multi-Modal Transit Transport Project, which will shorten the route between Kolkata and the landlocked Mizoram region in India. The project cost is estimated at US$68 million and will be fully borne by the Indian government.
Airport	Asia World Co.	A key player in the airport sector in Myanmar, Asia World Co. has been involved in the construction of two of Myanmar's three international airports: Nay Pyi Taw Airport, Yangon International Airport and Mandalay International Airport. Responsible for the runway extension and renovation of Heho Airport.
	Htoo Group	One of the two major contractors for Nay Pyi Taw Airport (the other being Asia World Co). Htoo was also involved in the construction of the cargo terminal for Yangon International Airport. Htoo Group has also built a domestic airport near Ngwe Saung, to promote tourism in the area.
	CPG Consultants	An infrastructure advisory firm from Singapore that designed the master plan for Changi Airport in Singapore. CPG designed both Nay Pyi Taw and the annex to Yangon International Airport.
	The Shwe Than Lwin Co.	Construction of a domestic airport near Ngwe Saung, to promote tourism in the area.

[34] Before 1998, all ports were operated by Myanmar Port Authority. in 1998, Myanmar Port Authority changed its policy and opened its services to the private sector. In 2013, approximately 75 percent of the total quay length was owned by the private sector, with the remaining 25 percent owned by the public sector.

[35] MPA (n.d.) "Myanmar International Terminal Thilawa (MITT)". http://www.mpa.gov.mm/facts-figures/myanmar-international-terminal-thilawa-mitt

Road	Max Myanmar	Implementing a total of 820 km of toll roads under BOT agreements in Yangon, Bago and Magway divisions. Among these are the Yangon–Mandalay Road and the Dagon Bridge Thilawa Road that connects Dagon Myothit Seikkan township and Thanlyin township near Thilawa area.
	Shwe Taung Development Co. Ltd	Was responsible for construction of Upper Yeywa Bridge located in Kyaukme district, which connects Shan state and Kayar state. Also responsible for the construction of Shwe Li (3) Bridge situated in Moe Mate township, Kyaukme district, Northern Shan state. The division has completed a total of 115 km of road construction under the Nay Pyi Taw Highway Project since 2006.
	Asia World Co.	Involved in a number of key road projects, for example the construction of the Mandalay–Lashio–Muse Road, which is 658 km in length and connects Mandalay to Muse, which is a border town between Myanmar and Yunnan in China. The project also involved six other road operators (Max Myanmar, Shwe Taung, Shwe Than Lwin, Kan Baw Za, Yu Za Na and Taw Thar Win).
Power plants[36]	Sinohydro Corporation	A China state-owned hydropower engineering and construction company, involved in the construction of four dams: Shweli Dams (completed in 2008), Yeywa Dam (began operations in 2010), Hatgyi Dam (temporarily suspended) and Hutgyi Dam.
	China Power Investment Corporation (CPIC)	Main investor in Myitstone Dam, with an estimated cost of US$3.6 billion –suspended in 2011.[37] The majority of this will be financed by CPIC. Myitstone Dam is a JV venture between CPIC and local Myanmar companies Asia World Co., Suntac Technologies and the Myanmar Electrical Power Enterprise.
	China International Trust & Investment Co	One of the two main contractors in the construction of Yeywa Dam (the second was Sinohydro Corporation).
	Datang Corporation	Involved in the construction of Ywathit Dam and Dapeyin Dam. 90 percent of the electricity will be sold to China.
	Asia World Co.	Involved in the land clearing and construction of basic logistics structures for Upper Thanlwin Dam and the Shweli Dams.
	IGE Co.	Part of the investment consortium and also carried out the field survey for its feasibility study for Hatgyi Dam.

Note: * Companies such as Asia World Group, Eden Group, First Myanmar Group of Companies, Htoo Group, IBTC, IGE Group, Kanbawza Group (KBZ Group), Loi Hein, Max Myanmar, Shwe Taung and Shwe Than Lwin Group were included in a due diligence report by the UN Human Rights Council.[38] However, Shwe Tuang Group responded that it was a private sector enterprise, and it did not have direct or indirect links with or share-holders from any previous government or its related persons/entities.[39]

Source: JICA and PricewaterhouseCoopers Co. (2013) "Data Collection Survey on Investment Climate for Infrastructure Development".

[36] Other foreign companies that have been involved in hydropower projects in Myanmar include financiers China EXIM Bank and engineering firms from China such as Gezhouba Group Co., China National Electric Equipment Co., Hunan Savoo Overseas Water & Electric Engineering Co. and China National Heavy Machinery Co.

[37] Zhang, R. (n.d.) "Chinese Investment in Myanmar: Beyond Myitsone Dam". https://thediplomat.com/2020/07/chinese-investment-in-myanmar-beyond-myitsone-dam/

[38] Office of the United Nations High Commissioner for Human Rights (2019) The Economic Interests of the Myanmar Military: The Independent International Fact-Finding Mission on Myanmar.

[39] Shwe Taung Development Co. Ltd. (2020) "Economic Interests of the Myanmar Military: Response from Shwe Taung Development Co. Ltd". 4 February. https://www.ohchr.org/Documents/HRBodies/HRCouncil/FFM-Myanmar/LetterfromShweTaungGroupfeb2020.pdf

Myanmar companies

Small and medium-sized construction companies focus on smaller construction projects through direct private or government/public procurement and investment. Competition between these companies is stiff and costs are important factors of competitiveness. These companies, their workers and the subcontractors they employ have limited awareness of and access to OSH resources (e.g. information, training, staff, system, working capital).

Incentives for these companies, their workers and their subcontractors to adopt OSH practices is driven mostly by client demand and corporate culture on OSH, as well as working and investment capital. According to an ILO knowledge, attitude and behaviour assessment, staying safe and healthy at work is not a key priority for young workers in the construction sector.[40] Most young workers stated that being safe and healthy at work was important because they could not afford to get sick or injured. A third of young workers reported that they had never thought about OSH, and a fifth said they did not care about safety and health at work at all. Lack of OSH culture and of a budget for OSH in government and private contacts, as well as difficulties in accessing working capital (e.g. bank guarantees), means that Myanmar companies tend not to invest in developing OSH management for the benefits of their workers.

Corporate culture depends on leadership. Working with a group of construction company leaders (or champions) who have had exposure to OSH overseas would provide a good entry point to OSH improvement for Myanmar companies. Myanmar companies that have sufficient working capital to invest in staff training should be another criterion. There is an opportunity here to raise Myanmar companies' awareness on low-cost OSH practices and innovations that could be implemented to create incentives for behaviour changes. Examples include housekeeping by creating and disseminating good practices and demonstrating the benefits of simple and low-cost OSH practices on waste management.

2.4.1.3 Investors

In this report, an investor is defined as a person, company or organization investing in infrastructure or a building according to the terms and conditions specified by the project developer.

The investor market channels include direct investment and FDI.[41] According to the Myanmar Investment Law, some investments/projects are on the negative list of investment and can be implemented only by the government or JVs. It is also important to note that, while some investments may be led by and financed by private investors, they may involve the government as well in the case it owns and/or manages the land. This is also the case for BOT projects.

Foreign investors invest mostly in ports, hydropower, mining and oil and gas. In 2013, Myanmar started to invite foreign companies to participate in the award of new telecoms licences[42] and in the construction of Hanthawaddy International Airport and the upgrading of the existing Mandalay International Airport. These are two sectors that had not seen the involvement of foreign investors before 2013.

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[40] ILO (2017) "The Right Environment for a Safe and Healthy Working Life: Knowledge Attitudes and Behaviour of Young Workers in the Agricultural Sector of Magway and Ayeyarwady Divisions and the Construction Sector in Yangon Division". Report.

[41] The Myanmar Investment Law defines an investor as a Myanmar citizen investor or foreign investor investing in accordance with the law within the union. A Myanmar citizen investor is a citizen who invests within the union. This includes Myanmar companies, branch offices and other enterprises established and registered in accordance with the Myanmar Companies Act. A foreign investor is a person who invests within the union and is not a citizen. This includes foreign companies, branch offices and other enterprises established in accordance with the Myanmar Companies Act and enterprises formed in accordance with the laws of any other country. DICA (2016) "Myanmar Investment Law, Unofficial Translation (Draft)". https://www.dica.gov.mm/sites/dica.gov.mm/files/document-files/unofficial_translation_mil_20161019-e.pdf

[42] Telecom licences are linked to infrastructure through the construction of telco towers.

Foreign investors are active in SEZs in the construction and production of plants and factories for the manufacturing of goods, food and beverages and the post-harvest processing of agricultural products. They are attracted by the strategic locations of SEZs, investment conditions, Myanmar's consumer market and low wages.

Foreign investors include a number of foreign SOEs. To name a few, these include China National Petroleum Company, Sinohydro and CPIC, working in several hydropower projects. Hydropower projects are dominated by SOEs from China and Thailand. Often, the electricity generated is exported from Myanmar to these countries.

Foreign companies are also increasingly involved in the construction of renewable energy projects. This is the case, for example, for Myanmar's 1.06 GW solar power tender. In this, Chinese companies were involved in all but one of the winning bids for the 30 sites. Two Chinese companies, Sungrow Power Supply Co. Ltd and China Mechanical Engineering Corporation, were the most successful Chinese companies, while Shwe Taung Group and Khaing Lon Gems, both working with Chinese partners, were the most successful Myanmar firms[43].

2.4.1.4 Foreign contractors

Foreign contractors, also referred to as foreign-owned and foreign companies, focus on multi-million dollar infrastructure and building tenders and projects. They work in JVs with Myanmar conglomerates for large projects or on their own for smaller projects. According to a June 2019 report from Fitch Solutions cited in Oxford Business Group. 2020. "Infrastructure development supports construction growth in Myanmar." "The Report: Myanmar 2020_ Construction and Real Estate Chapter", foreign contractors continue to dominate the Myanmar market, with a more than 80 percent share in key infrastructure projects.

While the majority of the contractors are from Asia, no one particular country dominates.[44] For instance, Thailand's Vintage Engineering, LNG Plus International and Rojana Industrial Park Public are working on the 220 MW Minbu Solar Plant in Magwe and the Dawei Maritime Hub, which includes a deep-water port. South Korea's large Hyundai Engineering and smaller Chinese companies like Yunnan Construction Engineering Group are also active in the Myanmar market. Given the small pool of available local expertise and the complexity of the projects, foreign players are expected to continue leading in the years to come.[45] However, the 1 February coup is likely to reverse this situation.

2.4.1.5 Joint ventures

JVs can take several forms. The five common forms identified during this assessment are JVs between (i) the Myanmar government, through SOEs or directly, and a Myanmar conglomerate; (ii) the Myanmar government, through SOEs or directly, and a foreign-owned company; (iii) one or several Myanmar companies and one or several foreign-owned companies; (iv) government agencies (e.g. SEZs); and (v) conglomerates and foreign companies.

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[43] Kyaw Ye Lynn and Kean, T. (2020) "Chinese Companies Dominate Myanmar Solar Tender". China Dialogue, 22 September. https://chinadialogue.net/en/energy/chinese-companies-dominate-myanmar-solar-tender/

[44] Oxford Business Group (2020) "Infrastructure Development Supports Construction Growth in Myanmar." The Report: Myanmar 2020. Vol. Construction and Real Estate Chapter. https://oxfordbusinessgroup.com/overview/concrete-foundation-mega-projects-and-infrastructure-development-support-growth

[45] Ibid.

An example of a JV is the large industrial park of Mingaladon in Yangon, between the Department of Human Settlement and Housing Development and a foreign consortium consisting of Mitsui Group (Japan), Hong Leong Group (Singapore) and Keppel Group (Singapore). Another example is BYMA, a design and build contractor, between Dragages Singapore (a subsidiary of Bouygues Construction) and Serge Pun & Associates Project Management (a subsidiary of Yoma Strategic Holding). BYMA brings together the local expertise and knowledge of SPA Project Management and the large-scale international construction experience of Dragages Singapore.

Foreign participation is the norm in certain projects. All hydropower projects are executed with a local Myanmar counterparty, often in the form of a consortium. These projects tend to involve a number of engineering firms with a range of technical expertise.

2.4.1.6 Subcontractors

Subcontractors are used by all the contractors mentioned above. Their work can be formal or informal, and tasks are time-bound and specific. Contractors often rely on subcontractors in lower tiers of the supply chain and independent/daily workers. Subcontractors have limited bandwidth to hire permanent staff and invest in OSH awareness and training since they do not have long-term contracts that can provide financial stability and working capital.

The construction market, given the multiplicity of projects and tasks at different stages, besides the main activities like planning, excavation, purling, foundations, etc., often sees contracting-out to subcontractors. Contractors interviewed suggested that this was less the case for conglomerates that are vertically integrated and foreign companies that have access to international finance and financial instruments to pre-finance the work, including staff on the payroll. One of the conglomerates interviewed suggested less than 10 percent of the work was subcontracted. Subcontracting seems to be used more often on small buildings and for specific tasks that cannot be done in-house by contractors and outside urban centres.

Contractual arrangements and enforcement between contractors, subcontractors, self-employed workers, suppliers and service providers was found to be a driver of OSH risk. Flow-down of OSH clauses (in the case of FDI), from the head contract to second and third tier suppliers, leads to a dilution of risk and responsibilities to companies that are less equipped to deal with these requirements. When contracts are not in place, there is not even a formal obligation for subcontractors to follow OSH requirements, or for contractors to monitor their implementation. This can lead to poor OSH practices. In practice, subcontractors are unlikely to use contracts with their contractors and subcontractors, as this adds an additional layer of administrative complexity and cost where selection is often cost-based, and delays tight deadlines. There is no culture of paperwork and no paper trail, and even less in terms of electronic records, in the private sector in Myanmar.

The OSHL may bring about an opportunity to address the issue of subcontractors from a legal perspective. Under this, subcontractors are considered to be employers, and thus will be required to abide by it when it is signed. The upcoming Regulation on Construction that will accompany the OSHL can reinforce such requirements as long as it aligns with (and hopefully promotes the ratification of) ILO Convention 167 – the Safety and Health in Construction Convention 1988 (No. 167).[46] Enforcement of such a requirement will need several instances of cooperation between government and the private sector (e.g. promotion and prevention approaches, due diligence on project implementation schemes when awarding, financing and monitoring contracts by regulators), in addition to inspection.

[46] ILO (n.d.) "C167 - Safety and Health in Construction Convention, 1988 (No. 167)".

2.4.2 Supporting functions in the value chain

2.4.2.1 Suppliers of material and equipment

There is a large number of suppliers of materials, power tools, equipment and machinery that can contribute to raising awareness on storage, handling and safe utilization of their products. Their business function is to purchase locally or import, store and wholesale and/or retail material, equipment, tools and PPE. Suppliers trade aluminium, cement and concrete, glass, plastics, steel, wood, paint, electrical and other construction inputs. Suppliers can be national and international wholesalers, retailers and/or manufacturers. Lead suppliers can have extensive distribution networks or sales agents across the country.

Lead suppliers of materials, power tools, equipment and machinery have an interest in improving OSH and extending the benefits of their innovations to clients. However, their involvement in the prevention and protection of hazards associated with the utilization of their products is limited.

One of the interviewed market leaders in the supply of ready-mix concrete (High Tech Concrete) indicated being active on OSH and had developed a safety interaction and observation programme to follow up with clients. Observations and interactions are carried out by managers who observe and exchange with workers on ways to make their work safer. Two safety interactions and thirty observations are carried out each month. This programme started in January 2020 and the company is planning to roll it out with its clients.

2.4.2.2 Service providers of OSH services and training

Most private companies investing in OSH send their engineers to private training centres for specific OSH training. They also provide in-house training for workers. Companies like United Engineering and WSH also provide consulting services. There are a number of other OSH training providers in Myanmar.

Private OSH training providers have similar training courses made available according to the market demand in the sector (construction, manufacturing and telecommunications). Safety supervision, risk management, working at height, tower climbing safety and occupational first aid are highly demanded courses, according to the director of WSH Myanmar. The exact number of private training and support service providers in the OSH sector in Myanmar could not be defined during this assessment through the desk study and interviews. Several respondents pointed out the need to map OSH private training institutes in Myanmar, to make it possible to better understand the private sector training landscape, including curricula, prices, venues, qualification of trainers and capacity. Certification of these training institutes by the government was also mentioned several times as necessary to help businesses choose a service provider and should be part of the legal framework after enactment of the OSHL.

International private support service providers are also present in the market. These are deployed on specific projects by Myanmar and international companies or JVs to provide OSH trainings and consulting services. This is more likely to be the case for projects funded by grants or loans or for project involving specialized services.

The OSHL is not yet clear about a training and accreditation framework for Myanmar; it is expected that the accompanying regulation will clarify roles and functions of the system. In addition, the Law is not specific in mentioning the need for on-site experience on issuance of an OSH training certificate. Our consultations suggested that employers need a focus on on-the-job training and certifying safety courses such as in scaffolding, crane operation, hot work, working at height and other hazardous processes. There is also a need for not only accreditation frameworks but also a system of building and utilizing OSH guidelines in the sector.

2.4.2.3 Specialized service providers

Specialized service providers (e.g. Razel-Bec) provide specialized expertise and/or equipment for infrastructure or buildings requiring specific skills and expertise (e.g. suspended bridges, offshore oil and gas platforms). These services are provided by foreign-owned companies that have technical experts and established supply chains to deliver specific projects. Their supply chains are typically international. They import the material necessary for the completion of their task on a project and generally bring foreign experts to supervise and/or do the work. Their OSH systems are internationally recognized and practised and their OSH managers may come from Singapore, the Philippines or Vietnam. The main challenge they face with OSH capacity in Myanmar relates to the difficulty local OSH safety personnel have in adapting to new situations. These companies invest significantly in OSH training for local staff.

Contractors interviewed perceived oil and gas companies to have the highest OSH standards. These companies attract thus qualified safety personnel because their professional qualifications and experience will grow alongside their employability in a market where demand appears to be higher than supply. All things being equal, OSH officers and managers who have worked for these companies can claim a higher salary than their peers. The risks for workers in the oil and gas sector, and the consequences, particularly in offshore work, can be devastating, hence oil and gas exploration, construction and extraction companies tend to have high occupational risks and hazards – because the relationship between loss of human life and loss of profit is so strong. In addition, because rigs are moved internationally from jurisdiction to jurisdiction, they have been known to, from a business perspective, keep their safety standards in line with most strict provisions to avoid red tape in the movement process.

2.4.2.4 Commercial banks and financial institutions

International banks operate in the country through JV agreements with local banks or assist foreign-invested companies. Laws prohibit them from engaging in retail banking and direct lending in the local currency. In addition, these banks are restricted to just one branch per bank and are required to invest a minimum paid-up capital of US$75 million.

Commercial banks can lend money to foreign companies and joint venture operations in Myanmar, opening up the possibility for businesses to obtain loans for construction projects. Bank lending can also be done through Special Project Vehicles in the British Virgin Islands or other countries/regions providing special tax status, incentives, benefits and other benefits to corporations.

In 2014, Myanmar launched the Construction and Housing Development Bank (trading under CHID)[47], which provides long-term personal loans for buying houses, apartments and condo flats. Loans are also available for local construction firms and landowners who do not have enough fund to build their own houses. The bank is directly supervised by MoC and was licensed by the central bank in July 2013 according to financial rules and regulations in Myanmar. It was launched with an initial capital of 100 billion kyat, or US$103 million.

2.4.2.5 Development finance institutions

DFIs are, according to conglomerates, foreign companies and JVs, one of the main OSH drivers in the construction market. Projects funded by bilateral and multilateral agencies generally involve a pre-feasibility study, a feasibility study, including budget preparation and an economic and social impact assessment (ESIA), procurement, contracting, monitoring and commissioning.

Where construction projects are funded through a loan or grant or with technical assistance, a construction management consultant (CMC) is generally required to monitor OSH as well as environmental and social

[47] CHID (n.d.) “Construction, Housing and Infrastructure Development Bank”. https://chid.com.mm/

performance. The CMC is appointed by the main contractor to control the OSH performance of the contractor and subcontractors on behalf of the contactor. This means the CMC is both contracted by and controlling the performance of the main contractor, which creates a lack of accountability with regard to OSH.

According to the companies that took part in our consultations, construction companies that have contracts with DFIs are contractually obliged to have OSH management in place for these projects but may not use the same standards for projects not funded by DFIs. Hence, the source of financing can be a driver of good OSH practice during project implementation, and it will be important to understand how the incentives in DFI contracts work and how to replicate them in contract awarding elsewhere in the sector. It will also be important to ensure DFI OSH practices are aligned with International Labour Standards and Codes of Practice. OSH management practices used by companies working on DFI-funded projects[48] can be not only consistently used by contractors but also applied and monitored for lower tiers of suppliers and independent workers.

2.4.2.6 Workers organizations

Confederation of Trade Unions of Myanmar (CTUM): CTUM is the country's largest trade union, with approximately 60,000 members,[49] of which 3,600 members are construction workers. CTUM is affiliated with the International Trade Union Confederation; it has eight federations, including BWFM. According to the interviewed representative of BWFM, before 1 February, the workers organization was in negotiations with MOILP's Social Security Board (SSB) for the enrolment of workers in the informal sector in the social security scheme. In addition, CTUM trained 14 of its members on OSH committees.

It is important to note that there is a memorandum of understanding (MoU) in place between BWFM, CTUM and MCEF on implementing the OSHL in the construction sector, signed on 3 December 2019. Vision Zero Fund Myanmar is supporting this MoU as an important bipartite commitment that could make OSH interventions a reality in construction workplaces. CTUM has been cooperating with Vision Zero Fund Myanmar since the beginning on OSH and social security awareness-raising and training.

Myanmar Industries, Crafts and Services Trade Union Federation (MICS): MICS covers the following sectors: commodity goods; lead, steel and iron; food and beverages; services (hotels and restaurants); construction; loading; garment, textiles and leather; oil and gas; mining; and cement. As of December 2017, MICS had 96 affiliated unions, and it has been cooperating with Vision Zero Fund Myanmar since the beginning on OSH and social security awareness-raising.

2.4.2.6 Employers organizations

The Union of Myanmar Federation of Chambers of Commerce and Industry (UMFCCI): UMFCCI is "a national level Non-Governmental Organization (NGO) representing and safeguarding the interests of the private sector."[50] Another important function it has is to act as a bridge between the government and the private sector and also as its representative voice. UMFCCI has a vast network of chambers and

[48] The term "DFI-funded project" is used to describe DFI-funded projects loans, grants and/or technical assistance provided by multi lateral and bilateral organizations. However, technically, loans are financial instruments, grants are funding mechanisms and technical assistance is a cooperation mechanism.

[49] Scanteam (2020) "End Term Evaluation of the Strategic Partnership (SP) for Garment Supply Chain Transformation (2016 - 2020)". 11 November. https://www.government.nl/documents/reports/2020/11/30/end-term-evaluation-of-the-strategic-partnership-sp-for-garment-supply-chain-transformation-2016-2020

[50] UMFFCI (n.d.) "UMFCCI – Union of Myanmar Federation of Chambers of Commerce and Industry". https://www.umfcci.com.mm/index.php

94 affiliated organizations. UMFCCI has been cooperating with Vision Zero Fund Myanmar since the beginning of the project on OSH and social security discussions and trainings.

Myanmar Construction Entrepreneurs Federation (MCEF): MCEF's mission is to be the collective voice for the Myanmar construction industry. Its mandate is to expand business opportunities for all members, through promotion of the construction sector. Activities to fulfil this mandate include lobbying, being a member of housing oversight committees and facilitating any related work and training programmes. MCEF was founded in 1996 with 150 members and now has a membership base of over 2,000 members.[51]

Myanmar Engineering Council (MEC): MEC was formed under the Myanmar Engineering Council Law 2012, and involves bodies in civil, mechanical and electrical engineering, etc. The Patron Body is composed of 60 Council members. MEC has a number of duties, functions and powers, including but not limited to registration of engineers; determining ethics; observing and upgrading the qualifications and standards of engineers, graduate technicians and technicians; scrutinizing and issuing register certificates; and tendering advice. MEC has about 300 company members, which, upon registration, are assessed and graded by the Companies and Organizations Committee (COC).[52,53] A COC grade is determined by the company's financial and work capability with respect to quality assurance, quality control and human resource development planning in terms of quality, health, safety and environmental performance. Company members are assessed based on policy, procedures and guidelines established in the Company Assessment Manual and given a grade from A to F, based on a number of criteria, including health, safety and environmental management. Regarding the OSH criteria, the company must present its health and safety manual, which establishes appropriate rules and procedures concerning workplace safety, including rules related to the reporting of health and safety problems, injuries and unsafe conditions; risk assessment and mitigations whenever necessary; and first aid and emergency response.

Federation of Myanmar Engineering Society (Fed. MES): Fed. MES has 10 chapters across the country, as well as a women's chapter. The 10 objectives of the Fed. MES can be found on the website.[54] As of 31 August 2020, Fed. MES had 66,331 members and 342 corporate members, which makes it an important stakeholder to consider for potential interventions.

Myanmar Industrial Association (MIA): MIA works towards the development of SEZs and industrial zones, among other things. Its main activities involve cooperating with law experts on SME development law, industrial policy and investment law; and organizing and arranging business-matching and networking between local and foreign enterprises. Its members include several construction companies and material suppliers (steel, pipelines, etc.). MIA could be an entry point to OSH improvements in SEZs and industrial zones and to promoting the safe use of material and equipment by workers through their member base of suppliers of equipment and material.

[51] MCEF (n.d.) "Myanmar Construction Entrepreneurs Federation (MCEF)". http://mcef.org.mm/en/

[52] The COC is a "Built Assessment Body" established by MEC to promote a regulatory and developmental framework in engineering. It is responsible for the assessment and certification of engineering companies and organizations. The COC is dedicated to providing best practice assessment and benchmarking services for engineering and construction companies to drive measurable performance improvement. The COC develops, maintains, administers and promotes a high-quality assessment programme for companies with new insights into how to implement specific best practices considering long-term benefits for the public and society.

[53] MEC (2019) "Company Assessment Manual, Consolidated Policy, Procedures and Guidelines". May.

[54] MES (n.d.) "Objectives of Federation of Myanmar Engineering Society". https://www.mes.org.mm/objective-fedmes

2.4.3 Legal framework of the value chain in Myanmar

The following authorities set up the legal framework of the construction value chain in Myanmar.

2.4.3.1 Ministry of Labour, Immigration and Population

Before 1 February, MoLIP was the main body responsible for labour, OSH and social security affairs in Myanmar. The two most relevant bodies regarding OSH are the Factories and General Labour Laws Inspection Department (FGLLID), in charge of prevention and inspection, and the Social Security Board (SSB), in charge of compensation.[55]

OSH-related laws and the Factories and General Labour Laws Inspection Department

▶ **The Occupational Safety and Health Law 2019:** Pyidaungsu Hluttaw passed the OSHL on 15 March 2019 but enactment requires the president's signature. The OSHL provides a framework for coordinated action across the different ministries and sectors. Anyone who currently carries out or wishes to establish a business in any industries provided for under the OHSL will need to register with FGLLID for the purpose of safety and health. The law will apply to government agencies, institutions, cooperatives, both domestic and foreign companies and JVs. This includes the hospitality, transport, construction, retail, services, agriculture and manufacturing industries.[56]

Several elements of the OSHL are increasing expectations about the potential for OSH compliance in Myanmar. One of the key highlights of the OHSL relates to the inclusion of sectors previously excluded from the labour and OSH inspection system, such as agriculture and construction. The second highlight is the establishment of a new tripartite National OSH Council, which is expected to be made up of workers and employers' representatives and the government, and that will be in charge of OSH policy development and monitoring. Third, the OSHL will require employers to set up OSH committees at workplace level to help prevent occupational accidents and diseases and to count on OSH personnel (e.g. OSH officers) with specific functions. These elements are expected to strengthen national and enterprise-level social dialogue as a key element of OSH compliance.

▶ **The Factories Act 1951 and the Shops and Establishments Act 1951:** With the new OSHL not yet enacted, the OSH legislative framework in Myanmar is primarily embodied in the Factories Act 1951, as last amended in January 2016, and the Shops and Establishments Act 1951, amended in 2016. The provisions of the Factories Act apply to all manufacturing companies with (i) five workers with the use of power or (ii) 10 workers without the use of power. In the construction sector, the Factories Act is relevant to some types of construction. One of the companies interviewed confirmed that one of its power generation construction projects was subject to the Factories Act. The Act has detailed provisions regarding workplace safety covering building and machinery; machines and industrial processes; lifts and hoists; and hazardous substances, among others. The health provisions include adequate ventilation and lighting; removal of dust and fumes harmful to health; avoiding overcrowding; provision of safe drinking water; provision of an adequate number of latrines for workers; proper waste disposal; among others. The welfare provisions include first aid facilities; washing facilities; a clean place for meals; etc. The Act further provides that factories should offer health and safety training for their supervising staff. It also establishes provisions on labour inspection. A breach on any of the provisions by the owner or manager of the factory creates a liability to the owner in the form of a fine, and, depending on the

[55] ILO (2019) "Myanmar National Occupational Safety and Health Profile - 2018." Report.

[56] SCM Legal (2019) "Occupational Safety and Health Law (Unofficial Translation)". 15 March. https://www.ilo.org/dyn/natlex/docs/ELECTRONIC/108180/133583/F-114180113/MMR108180%20Eng.pdf

offence, to imprisonment for a term up to six months. The Shops and Establishments Act contains regulations on working hours, payment of wages and workplace safety and health. The law applies to:

- Shops (premises used wholly or in part for the wholesale or retail sale of commodities or articles);
- Commercial establishments (establishments carrying out advertising, commission, freight forwarding or commercial representative business);
- Public entertainment establishments;
- Industrial establishments not covered by the Factories Act;
- Other establishments as stipulated by the Ministry.

Based on the above definitions, the Shops and Establishments Act does not cover construction companies. However, suppliers of construction material and equipment (traders, wholesalers and retailers) appear to be covered. The Act contains some – albeit rather vague – regulations concerning OSH. Pursuant to Section 24, the employer shall:[57]

- Implement proper measures for cleanliness, freedom from odours and sanitary condition;
- Implement measures to ensure good ventilation and lighting;
- Implement measures to prevent noise in excess of the level prescribed;
- Implement measures to prevent excessively high temperatures and for fire prevention; and
- Provide sufficient first aid kits and medicaments for employees.

▶ FGLLID

FGLLID is responsible for enforcing OSH rules mainly through factory inspections and training. The activities of FGLLID are guided by two laws: the Factories Act and the Shops and Establishments Act. It is also the department responsible for the preparation and enforcement of the upcoming OSHL Law. FGLLID is in charge of monitoring workplace hazards and enforcing compliance with legislation related to the prevention of workplace hazards and the protection of workers' health. Its main function is the enforcement of labour laws and provisions on OSH, and the conduct of OSH training and advisory services. Its main objective is to enhance the productivity of labour by ensuring workers enjoy their legal rights, as established under the existing labour legal framework.[58]

FGLLID is composed of three units: Factories Inspection (safety, health and welfare), Administration and General Labour Law Inspection. Factories Inspection deals with issues related to safety, health and welfare. General Labour Laws Inspection deals with overtime, wages, working hours and leave.

The remit of FGLLID was factories and manufacturing until 2019, when the OSHL was passed. FGLLID thus has little experience in the construction sector, which is one of the focus sectors of the new regulations accompanying the enactment of the new OSHL, and in the inspection of construction sites. There is currently no inspection on construction sites, as FGLLID has no mandate to carry these out. FGLLID indicated during an interview in 2020 that it did not have in-house civil engineers and its current staff had a limited understanding of the construction sector. It also pointed out the diversity of activities on construction projects and the specificity of the terminology used. Vision Zero Fund Myanmar provided support to the drafting process of the construction and other regulations in 2020 and January 2021. During

[57] Myanmar Legal Information System (2016) "The Shops and Establishments Law, 2016".

[58] ILO (2019) "Myanmar National Occupational Safety and Health Profile - 2018." Report.

the consultation in 2020, FGLLID requested further technical assistance to develop regulations and to build inspection skills and capacity to inspect construction sites, as this is a new sector for it. The importance of rules and regulations, and having a consultation process, was a key point brought up in most of the interviews with market actors and stakeholders.

Interviews with market actors and stakeholders indicated that the OSHL was not detailed enough and that regulations would be key to understanding how the OSHL would be implemented. Market actors and stakeholders also requested the establishment of a code of conduct relevant to the OSHL and regulations. There is an opportunity here to mainstream principles of OSH management systems in these activities.[59]

FGLLID has not yet set any standards for training centres, trainers and course frameworks and has no formal collaboration with other education and accreditation bodies. FGLLID explained that this topic would be discussed and negotiated between the line ministries and departments in due course. There is currently no regulation related to trainers and training centres but FGLLID was drafting one alongside all other regulations for the OSHL at the time of writing.

▶ The Social Security Law and the Social Security Board

SSB is in charge of implementing the Social Security Law (SSL), administering the social security system, which includes branches of employment injury protection. SSB headquarters has seven divisions to administer the schemes with a network of 78 township offices.

Social Security Law 2012: The SSL[60] establishes the compulsory registration to SSB schemes for establishments with five workers or more, excluding government organizations, international organizations, non-profit organizations, seasonal farming and fisheries and domestic work. Registered construction companies have to comply with the SSL.

The SSL provides for a health and social care insurance system to protect workers in case of sickness, maternity, death or work injury. Additionally, it provides for other benefits – namely, unemployment and pension benefits – which are still inactive. All companies with five workers or more employees must register with the Social Security Township Office within 30 days of the start of business, and must pay regular contributions calculated at 5 percent of the employee's monthly salary up to a prescribed ceiling (currently 300,000 kyat per month). Employers shoulder 3 percent of the contribution, 2 percent going to the Health and Social Care Fund (HSCF) and 1 percent to the Employment Injury Fund. Workers contribute the remaining 2 percent for the HSCF.

Informal workers can join the SSB and be entitled to medical treatment in the government's Social Security Clinic, if he/she is sick, by contributing 4 percent of their income to the SSB. However, they cannot contribute and therefore be entitled to employment injury insurance (EII). Workers whose employers are not required to register with the Social Security Township Office can register on a voluntary basis.[61]

The insured worker is entitled to medical care, sickness cash benefits, maternity cash benefits, paternity cash benefits, maternity expenses, miscarriage cash benefits, adoption of a child under one benefits, a funeral grant, family benefits and medical care after retirement under the HSCF. The following benefit packages are on offer:[62]

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[59] ILO (2001) *Guidelines on Occupational Safety and Health Management Systems ILO-OSH 2001.* Geneva: ILO.

[60] Myanmar Legal Information System (2012) "The Social Security Law, 2012" and Myanmar Legal Information System (2014) "The Social Security Rule, 2014"- Employment Injury Benefit Insurance System

[61] ILO (2017) "ILO Guide to Myanmar Labour Law". Yangon: ILO.

[62] Tessier, L. (2015) "Social Protection within the Framework of Labour Legislation Reform in Myanmar". Background Research Summary. Yangon: ILO.

- Medical care: Free medical treatment and delivery (outpatient, inpatient, medicine, laboratory costs, transportation in case of referral outside urban areas) for a maximum of 26 weeks in all SSB facilities except for retired workers. Retired workers have a co-payment of 50 percent of the cost of treatment. Reimbursement is on the basis of fixed rates in case of referral in other public facilities. In case of maternity, the new born is covered for one year;
- Funeral grant: Lump sum. The funeral allowance benefit = average wages or income in the past 4 months x (number of contributed months/18)+1;
- Sickness cash benefit: Periodical benefit at 60 percent of the average salary of the past 4 months in weekly instalments up to 26 weeks;
- Maternity cash benefit: 70 percent of the average salary of the past 6 months in weekly instalments or a lump sum up to 14 weeks. Bonus: 50, 75 or 100 percent of the average wage at the time of delivery depending on the number of babies;
- Paternity cash benefit: 70 percent of the average salary of the past 6 months for up to 15 days. Bonus: half of the provisions of maternity benefit for the uninsured wife.

The insured worker is entitled to the following benefit packages under the Employment Injury Fund, according to the SSL:

- Temporary disability benefit: 70 percent of the average wage received over the past 4 months, in weekly or monthly instalments, up to 12 months;
- Permanent disability benefit: Benefit amount depending on loss of working capacity, 70 percent of the average wage received over the past 4 months, granted for the long term, in monthly instalments or a lump sum;
- Survivor benefit: Between 30 and 80 times the average monthly wage of the diseased over the past 4 months depending on the contribution period (from under 60 months to over 240 months), in monthly instalments or a lump sum.

However, the distinction between formal and informal workers is an important one in terms of social security coverage, and one that actors in the construction sector are aware of. According to respondents interviewed, direct employees of conglomerates, foreign companies and JVs operating in the construction sector are enrolled into and benefit from social security coverage. This is part of the standard human resource package for employees, whose enrolment is integrated into the on-boarding process. The absolute and relative number of formal workers and informal workers in the construction sector in Myanmar is unknown, and the crises have profoundly changed the composition of employment, at least in the short term, but, according to the data on numbers of workers employed by large companies, several thousands of workers in the construction sector could benefit from the SSB programme. However, these companies also recognized that workers of contractors and subcontractors, as well as independent workers, might not generally benefit from SSB.

Stakeholders are exploring several options to increase social security coverage among construction workers. BWFM mentioned in interview (in November 2020) that it was in the process of helping workers get covered by SSB (a series of negotiations with employers needs to be put in place). The liberalization of the insurance market is still at an early stage in Myanmar, but companies that can afford it can now purchase insurance for their staff and increase the compensation benefits of their workers already covered by SSB.[63] Companies providing corporate group insurance for employees and workers can get a 2 percent

[63] This is a group personal insurance, called "professional indemnity insurance," as required by contract. The contractor can buy it together with construction all risk insurance (including third party liability) at Myanmar Insurance or another private bank. As per the contract, the contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the contractor or any other of the contractor's personnel.

rebate off the 5 percent commercial tax. One CEO interviewed explained that this was a great incentive for the industry.

▶ The Workmen's Compensation Act and the Department of Labour

Workmen's Compensation Act 1923: This Act, last amended in 2005, establishes the foundations for the provision of financial protection (cash compensation) to workers and their dependants in case of occupational disease or work injury resulting in the disability or death of the worker. The compensation is paid by the employer, meaning this is an employer liability scheme. Annex II of the Act lists the occupational diseases covered. Employer liability under the Act applies to all workers not covered by the SSL 2012, including those in the construction sector. Compensation benefits include:

- Temporary disability: 50 percent of the last monthly salary on the 16th day from the date of disablement, in the following months, 33 percent of the last month salary;
- Permanent disability: Lump sum equal to 36–40 times the worker's salary, between 200,000 and 600,000 kyat;
- Death: Lump sum equal to 36–40 times the worker's salary, between 150,000 and 450,000 kyat paid to the dependants of the deceased.

The scheme is cumbersome in practice as workers have to navigate the legal system in addition to providing inadequate coverage for the contingencies included.[64]

The **Department of Labour,** which administers the scheme, was planning to amend the Act in 2018. Employer liability schemes are not aligned with International Labour Standards, including the Social Security (Minimum Standards) Convention 1952 (No. 102).

2.4.3.2 Ministry of constructions

Myanmar National Building Code 2020: As per MoC's Notification 19/20, the MNBC 2020 is the legal instrument has applied in building matters since 1 November 2020. Part 7 of the MNBC covers Constructional Practices, Safety and Building Maintenance and is relevant to OSH. It includes a number of technical details pertaining to safety and hazards, on (i) storage, stacking and handling of materials; (ii) safety in the construction of elements of a building; (iii) maintenance, management, repairs, retrofitting and strengthening of buildings; and (iv) safety in demolition of buildings. Part 7 also covers inspection and rectification of hazardous defects in buildings, general requirements and common hazards during excavation in buildings. However, it has no provision for penalty or fine in case a company breaches the Code. At the time of this assessment, there was no clarity on how Part 7 could be enforced and if it was suitable to all sizes of construction company, in the whole country, and how it would be enforced. The Department of Buildings is drafting the Construction Industry Development Law. After this has been approved and enacted, the MNBC will be mandatory.

2.4.3.3 Ministry of Health and Sports

The Occupational and Environmental Health Division (OEHD) of MoHS is the main body responsible for preventing work-related disease, injuries and health problems and promoting workers' health. The

[64] Vision Zero Fund organized a tripartite EII Workshop in 2018 that discussed all these issues and potential solutions.

objectives of OEHD are (i) promotion of occupational health; (ii) prevention of occupational hazard; (iii) assessment of poisoning caused by industrial waste and workplace conditions; and (iv) assessment of environmental health problems caused by water and soil pollution.[65] OEHD monitors and analyses data on workplace injuries and deaths reported by public hospitals. It also focuses on workplace hazards in sectors such as agriculture and monitors data reported by the Public Health Department through the Demographic Information System. MoHS has also indicated that dealing with hazardous substance is its main priority when it comes to health and safety of formal and informal workers. This is important in that observations on small, medium and some large construction sites found that hazardous substances were not properly stored and labelled, and could not be locked up at the end of the work day.

OEHD also explained, during consultation, that it had established Guidelines for Prevention and Control of COVID-19 in Factories, Workshops and Establishments (Version 5.0, Updated as of 9 October 2020). These also apply to construction worksites and have to be implemented by companies wanting to resume work in Yangon as of October 2020, when the lockdown measures associated with COVID-19 were relaxed. The guidelines include a number of preventative measures to be applied by factories, such as body temperature checking, hand-washing protocols, use of PPE including masks, frequent disinfection of frequent contact areas and protocols for the pick-up/drop-off ferry for staff.

2.4.3.4 Ministry of Natural Resources and Environmental Conservation

The Environmental Impact Assessment Procedure 2015, administered by MoNREC, defines adverse impacts of projects in a way that explicitly includes OSH.[66] It establishes the requirements and procedures for environmental impact assessment and the review, approval and monitoring of projects under the Environmental Conservation Law 2012. It sets out specific requirements for project screening, including ESIAs,[67] which include the category of potential adverse impacts, including OSH.

The National Environmental Quality (Emission) Guidelines (29 December 2015) were issued to provide performance parameters for the regulation and control of air emissions, noise, vibration and liquid discharges from various sources in order to prevent pollution and thereby protect human and the ecosystem's health. These were based primarily on the World Bank's Environmental Health and Safety General Guidelines 2007, which provide technical guidance on good international industry pollution prevention practice for application in developing countries. Other related laws and regulations include the Environmental Conservation Rules 2014, the Myanmar National Water Policy 2015 and the Conservation of Water Resources and River Law 2006.[68]

Chapter VII of the Environmental Conservation Law 2012 stipulates that MoNREC shall, under the guidance of the Environmental Conservation Committee, maintain a comprehensive monitoring system and implement by itself or in coordination with relevant government departments and organizations the transport, storage, use, treatment and disposal of pollutants and hazardous substances in industries, including activities such as carrying out waste disposal and sanitation works; and carrying out development and constructions.[69]

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[65] DOPH (n.d.) "Occupational and Environmental Health Division". http://doph.gov.mm/Main/content/post/occupation-and-environmnetal-health

[66] Myanmar Centre for Responsible Business (2016) "Environmental Impact Assessment Procedures". https://www.myanmar-responsiblebusiness.org/resources/environmental-impact-assessment-procedures.html

[67] IFC (2019) Environmental and Social Impact Assessment Guidelines for Hydropower Projects in Myanmar. Washington, DC: IFC.

[68] Ibid.

[69] DICA (2012) "The Environmental Conservation Law". https://www.dica.gov.mm/en/roles-and-responsibilities

▶ Box 2: Definition of "hazardous substance" as per the Environmental Conservation Law

"Hazardous substance" means a substance or object that may affect health, including an explosive substance, a substance that may be created and used as a biological weapon, a substance that may be used as a nuclear weapon, an inflammable substance, an oxidizing and peroxidizing substance, a toxic substance, a pathogenic substance, a radioactive substance, a genetic transforming substance, a corrosive substance or irritating objects, whether chemical or not, that can be harmful to human beings, animals, plants, property or the environment.

Source: Environmental Conservation Law 2012.

At the same time, the Myanmar Investment Law requires investors to submit an ESIA for investments that are likely to have a large impact on the environment and local communities. ESIAs are submitted to the Myanmar Investment Commission (MIC) for approval. Interviews with foreign companies indicated that ESIAs were directly linked to OSH management because they include hazard and risk assessment of the environment and communities. Companies use them to develop context-specific environmental and safety management strategies – including, for some companies, an OSH management system. The quality of the ESIA is therefore an important factor for those companies using it to develop an OSH management strategy. ESIA approval can take a year or more between original submission and final approval by the Environmental Conservation Department (ECD), according to these sources.

An ESIA is conducted by an ESIA consulting organization that must be approved by MoNREC under the Consultant Registration Scheme. Once registered, the organization can prepare its initial Environmental Examination, ESIA and Environmental Management and Monitoring Plan reports on behalf of project developers in Myanmar.

ESIA companies can be Myanmar (e.g. E-Guard) or international (e.g. Artelia, Nippon Koei, SAFEGE). One of the main challenges these companies highlighted was the time needed for companies to get comments and/or approval of the ESIA. According to them, it can take more than a year to get an ESIA approved and this can be a deterrent for investors.

Interviews with foreign and Myanmar-owned ESIA-registered companies confirmed that ESIAs focused on environmental factors but also considered project's implications for workers and community health and safety, as required in the Environmental Impact Assessment Procedure 2015. They indicated that an assessment of hazards for workers and communities was generally included in the Hazard Impact Assessment (HIA). According to the Environmental Regulation, an HIA is a means of systematically assessing the health impacts of projects, businesses, services or activities in diverse economic sectors using quantitative, qualitative and participatory techniques. An HIA aims to support decision-making to prevent disease/injury and actively promote health.[70]

It was unclear, in interviews, and in review of laws, regulations and procedures, whether HIAs were systematically implemented, and what requirements exist for registered companies to conduct an HIA or for ECD to request one. More research is needed to understand their potential as a driver for OSH.

[70] DICA (n.d.) "Environmental Regulation". March. https://www.dica.gov.mm/en/environmental-regulation

2.4.3.5 Other legal instruments

Myanmar Investment Commission

Myanmar's latest Investment Law was approved in October 2016 and came into force on 1 April 2017.[71] The Myanmar investment Law introduces two categories of investment approval procedure: an MIC permit and an investment endorsement. The checklist of documents to be provided in the MIC Permit Dossier Packages varies, according to the Investment Division of MIC, but most include social security for employees, a social welfare plan and corporate social responsibility programme.[72]

A review of the checklist of documents to be provided by investors required for an MIC permit and investment endorsement shows that the list of document includes a requirement for the investor to protect and compensate their employees but not necessarily contractors. The checklist does not explicitly require investors to produce an OSH management plan at the workplace. OSH safeguards and obligations may not exist when the project developer is the investor, designer, engineer and contractor.

Opportunities for OSH improvement can arise as a result of the MIC requirements. In theory, feedback can be asked by the Directorate of Investment and Company Administration (DICA) from FGLLID on company OSH performance. DICA can demand that project developers and investors produce an OSH management plan as part of their investment proposal. Such plans can be approved by FGLLID. According to the Investment Law, where performance is not in line with the approved plans, the investor can be asked to account for the variance and to address it. Operations are subject to visits by DICA inspectors and potentially to fines or other penalties, so coordination with FGLLID would be needed.

FDI is also subject to further laws and regulation by a number of other laws and agencies over and above the Myanmar Investment Law. The main relevant laws and regulations affecting FDI in the construction sector are the State-Owned Economic Enterprise Law 1989 and the Special Economic Zone Law. The three SEZs are subject to a separate law and administrative approval process. Other industrial zones specify industrial activity locations but do not offer any incentives or OSH specifications over and above what is in the Myanmar Investment Law.

Foreign legal frameworks applicable for companies operating in Myanmar

Interviews with foreign-owned companies indicated that OSH management was generally carried out in line with standards applied from the country of origin of the company, which are often based on the country of origin's national legislation. Standards may also be based on the most demanding country legislation of the countries where the company operates. According to respondents, some foreign companies (e.g. French companies) should keep OSH standards on their sites in line with French (and not Myanmar) regulations. In theory, this would provide incentives to favour JVs with companies from countries with stricter OSH standards. In practice, more research is needed to clarify the means of verification and the difference this makes for workers; based on evidence collected so far and worker interviews, there seems to indeed be a positive difference for workers.

Once the crises have been managed, European and US companies could be a driver for change in OSH in the construction sector in Myanmar, as they generally require their subcontractors to implement their OSH rules and systems, and they will benefit from better OSH practices by their subcontractors as this will reduce their transaction costs and risks. These companies are generally part of the Myanmar-based

[71] Koty, A.C. (2016) "Analyzing Myanmar's New Foreign Investment Law". ASEAN Briefing, 4 November.

[72] DICA (2018) "Cost of Doing Business in Myanmar – Survey Report 2018". July.

Chambers of Commerce and Industry (e.g. EuroCham), which represent good entry points for engagement on the role they can play in promoting OSH and OSH networks as well as training.

Standards for project bidding and procurement set by some countries aim to provide incentives for companies to minimize work-related sickness, disease and injury, and can offer lessons for Myanmar's own standard-setting. In some cases, as explained by one respondent, like in Singapore, companies that have a poor track record of OSH can be temporarily banned from bidding for certain types of public work. Myanmar could set a similar system whereby OSH can be included as a criterion for project bidding.

▶ 3. Step 3: analysis of OSH drivers and constraints

3.1 Market size and growth, heavily affected by Myanmar's political and health crises

In 2018, the Myanmar construction sector had a value of more than US$9.5 billion, representing a share of around 16.5 percent of the country's gross domestic product (GDP).[73] Prior to the third and deadliest COVID-19 outbreak in mid-2021 and the change of 1 February 2021, Myanmar's construction industry was expected to grow by 9.1 percent in 2020.[74] However, the health and political crises have shattered any expectations of GDP growth, with the expected contraction hitting sectors like construction particularly hard. The World Bank Economic Monitor for July 2021 predicts a contraction equivalent to 18 percent of GDP in FY2021[75] as a result of contractions in every major economic sector (agriculture, industry and services).[76]

The construction sector in Myanmar has been one of the most affected by the dual crises. Suspension of projects, declining investment and increased operating risks, including cash shortages that make it difficult to pay wages and materials, have all contributed to reversing the recovery registered by December 2020 after the first waves of COVID-19.[77] According to MCEF and also reported in the World Bank Economic Monitor July 2021, prices of key inputs such as cement have increased substantially, reducing the profitability of ongoing projects.

The drop in the number of construction permits issued by YCDC clearly illustrates plummeting investment since 1 February (see Figure 8). Projects suspended or delayed include several JV projects for commercial buildings, hotels and even infrastructure.[78] Government projects have also been suspended, and, as this report discusses later, these account for a significant portion of projects and employment.

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[73] Wong, S. (2019) "Myanmar Report: Construction Market Update". Rider Levett Bucknall. June. https://www.rlb.com/asia/insight/rlb-myanmar-construction-market-update-june-2019/

[74] Market Research.com. (2020) "Construction in Myanmar – Key Trends and Opportunities to 2024". November. https://www.marketresearch.com/GlobalData-v3648/Construction-Myanmar-Key-Trends-Opportunities-13854988/

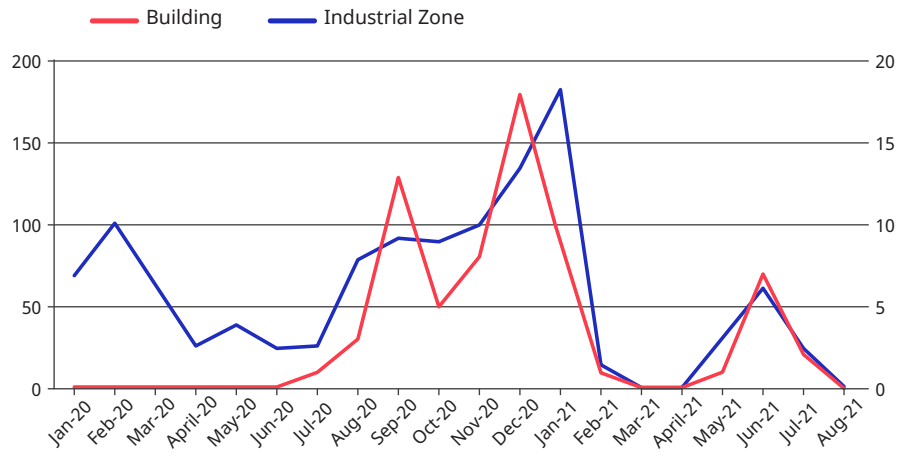
[75] The Myanmar government has changed the country's fiscal year calendar from the previous system, which ran from 1 April to 31 March, to a new system, which runs from 1 October to 30 September.

[76] Lwin, S.S. and Edwards, K.A. (2021) Myanmar Economic Monitor JULY 2021: Progress Threatened; Resilience Tested. Washington, DC: World Bank.

[77] Ibid.

[78] Kawase, K. (2021) "Peninsula Hotels Suspends $130m Yangon Project for a Year (NIKKEI Asia)". 21 May. https://asia.nikkei.com/Spotlight/Myanmar-Crisis/Peninsula-Hotels-suspends-130m-Yangon-project-for-a-year; Tobita, R. (2021) "Japan Ready to Freeze All Myanmar Development Aid: Motegi- Leading ODA Provider Seeks Leverage for Dialogue with Military (NIKKEI Asia)". 21 May. https://asia.nikkei.com/Editor-s-Picks/Interview/Japan-ready-to-freeze-all-Myanmar-development-aid-Motegi. The Japanese decision to freeze support to developments will have a significant impact on infrastructure development in the country since Japanese financial support includes a rail link between Yangon and Mandalay, the country's two largest cities. The World Bank Economic Monitor of July 2021 also describes the postponement of construction of a shopping mall in Myanmar. The project, worth US$180 million, was approved last year and is a JV, with the Japanese company AEON owning 70 percent

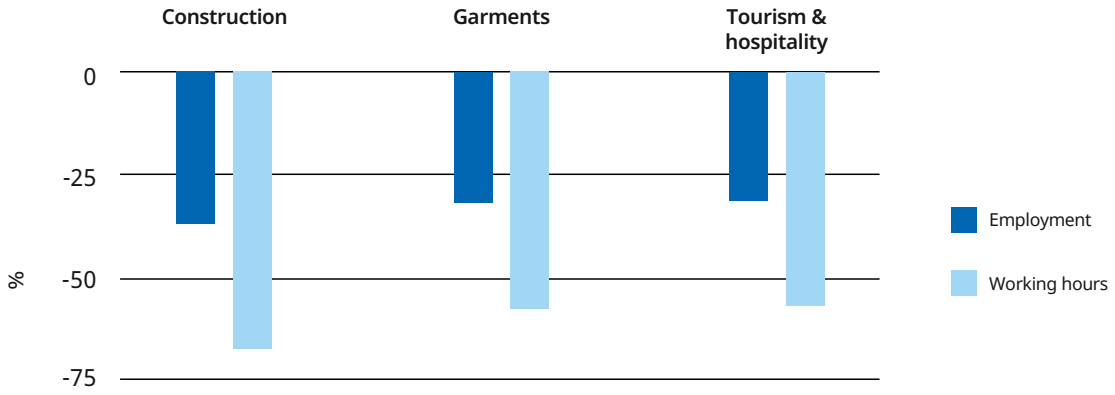
Figure 8: Number of construction permits issued, January 2020–August 2021



Source: YCDC (n.d.) "Yangon Building Permit System (YBPS)". **https://ybps.ycdc.gov.mm/index.php**

Economic contraction is already having profound effects on employment, particularly in labour-intensive sectors like construction. More than 1.2 million workers were no longer employed in Myanmar by June 2021, with construction reporting a decrease of 39 percent between December 2020 and June 2021.[79] This decrease accounts for approximately 400,000 fewer jobs and 70 percent less in terms of working hours. Construction workers are often poorer informal daily wage workers, which makes the impact of these job losses even more concerning from a humanitarian and equity perspective.

Figure 9: Decrease in employment and working hours in highly impacted sectors, Q2-2021 (percentage change from Q4-2020)



Source: ILO (2021) *Employment in Myanmar since the Military Takeover.*

Within this macro-economic context, the main factors affecting the size and growth of the Myanmar construction sector are (i) inflows of FDI, including Chinese investment; (ii) the government budget; (iii) political tensions that are having an impact on the growth of new foreign investments; and (iv) restrictions

[79] ILO (2021) *Employment in Myanmar since the Military Takeover.*

as a result of government measures to curb the spread of COVID-19. Of all these factors, except Chinese economic growth and investment in Myanmar, show negative signs that put in question the recovery of the construction sector. There is a chance that projects like the Chinese Belt and Road Initiative (BRI) could continue to stimulate economic recovery in construction in Myanmar once political stability is in sight. It is important, however, to understand the landscape of FDI and the government's role in the sector in identifying signs of economic recovery and potential opportunities.

3.1.1 Foreign direct investment

Since Myanmar started opening up in the early 2000s, the government has been looking at options to involve the private sector as well as foreign investors in financing infrastructure and buildings. Construction of social infrastructure (hospitals, schools and prisons), however, remains the responsibility of the government. Private sector and foreign investors are encouraged to participate in developing economic infrastructure such as telecoms, roads, ports, airports and power plants.[80] Foreign investors are also involved in the development of residential and commercial buildings such as condominiums, towers, housing (including low-cost housing and public housing), wholesale markets, factories, offices, retail premises, serviced apartments and hospitality projects.

Table 7: Top foreign investment source countries, cumulative 1988/89-2014/15

	Country	Permitted (approved)				Existing (realised)				Existing % of permitted	
		No of Project	%	Value ($m)	%	No of Project	%	Value ($m)	%	No of Project	Value
1	China	115	11.1	15,418	26.1	90	11.9	15,274	31.3	78.3	99.1
2	Singapore	189	18.3	11,818	20.0	153	20.2	11,480	23.5	81.0	97.1
3	Hong Kong	117	11.3	7,272	12.3	99	13.0	7,176	14.7	84.6	98.7
4	UK*	82	7.9	4,059	6.9	48	6.3	3,407	7.0	58.5	83.9
5	South Korea	122	11.8	3,396	5.7	108	14.2	3,324	6.8	88.5	97.9
6	Thailand	90	8.7	10,352	17.5	51	6.7	3,217	6.6	56.7	31.1
7	Malaysia	52	5.0	1,663	2.8	25	3.3	1,065	2.2	48.1	64.0
8	Netherlands	13	1.3	982	1.7	10	1.3	747	1.5	76.9	76.1
9	India	22	2.1	731	1.2	21	2.8	726	1.5	95.5	99.3
10	Viet Nam	10	1.0	691	1.2	10	1.3	692	1.4	100	100
11	Japan	83	8.0	609	1.0	72	9.5	506	1.0	86.7	83.1
12	France	4	0.4	542	0.9	3	0.4	538	1.1	75.0	99.3
13	Total Top 12	899	87.0	57,533	97.3	690	90.9	48,152	98.5	76.8	83.7
14	Total Overall	1,033	100	59,153	100	759	100	48,863	100	73.5	82.6

Note: UK includes British Virgin Islands and Cayman Islands.
Source: Gelb, S., Calabrese, L. and Tang, X. (2017) Foreign Direct Investment and Economic Transformation in Myanmar.

[80] JICA (Japan International Cooperation Agency), PricewaterhouseCoopers Co., Ltd. 2013. *Data Collection Survey on Investment Climate for Infrastructure Development.* 2013.

Table 7 shows the source country distribution for approved and realized investments since 1989, with countries ranked by value of realized investment. The table shows that China provides the largest share of the value of realized investment, with 31.3 percent, and, together with the Hong Kong Special Administrative Region, accounts for 46 percent of the total value. Hong Kong is known to be the source of finance for some large Chinese investments in Myanmar. The approved realized gap is not significant for China or most other source countries, though it is large for Thailand and Malaysia. The UK is the fifth-largest home country for approved investment since 1989, and the only non-Asian country in the top seven on the list, but the UK data includes the British Virgin Islands and the Cayman Islands. Like Hong Kong, these are significant destinations for Chinese outward FDI.[81] An unknown proportion of Chinese investment is thought to move on to third countries, so the UK data in Table 5 may in fact include some investment that is ultimately Chinese.[82]

Sanctions and investment restrictions have been imposed on Myanmar since 1 February by a number of Western and Asian countries but not by China. Countries imposing some kind of investment restriction include the US, the UK, the EU, Japan and South Korea. This has had direct impacts on flows and even halted existing projects, as described above. Outcomes of Myanmar's political crisis are directly related to the likelihood of FDI flowing back to the construction sector but China's flows seem likely to be affected less by political elements than by security concerns.[83] China-led infrastructure projects appear to have continued since the regime change, as the international financial institutions (IFIs) and Japan have put their engagement and investments on hold. Weeks after the coup, a 135 MW gas-fired power plant in Kyauk Phyu in Rakhine state, financed by PowerChina, started construction.[84]

3.1.2 China

Before the political and health crises, entry of Chinese investors in Myanmar's construction sector was mostly in domestic infrastructure and real estate projects. Interviews before the crises showed that these investors were satisfied with their performance in Myanmar, although they had concerns shared by non-Chinese firms on energy and transport infrastructure in Myanmar, skills of local candidates for managerial jobs and the limitations of the financial system and regulatory framework. These concerns are likely to have increased since the crises.

An Overseas Development Institute (ODI) report on "Foreign Direct Investment and Economic Transformation in Myanmar" differentiates Chinese presence into formal large-scale FDI undertaking large infrastructure projects as well as major residential and commercial projects, on the one hand, and, on the other, medium-size but often informal firms owned and/or run by Chinese migrants or members of the Chinese diaspora, carrying out smaller commercial or residential projects. Chinese firms have dominated hydropower construction since 2000: one listing of 24 operating hydropower stations in Myanmar identified

[81] In 2014, 58 percent by value of Chinese outward direct investment flows for the year went to Hong Kong, and 7.1 percent (US$8.76 billion) to the British Virgin Islands and Cayman Islands. Much of these funds may have flowed back into China, a process known as "round tripping" (MOFCOM (2014) "Regular Press Conference of Ministry of Commerce on 17 June 2014".
http://english.mofcom.gov.cn/article/newsrelease/press/201406/20140600632846.shtml

[82] Gelb, S., Calabrese, L. and Tang, X. (2017) Foreign Direct Investment and Economic Transformation in Myanmar. London: ODI.

[83] The Chinese Embassy in Yangon issued a statement after Chinese-owned garment factories were set on fire in March 2020, in a rare intervention about the crises after 1 February events.

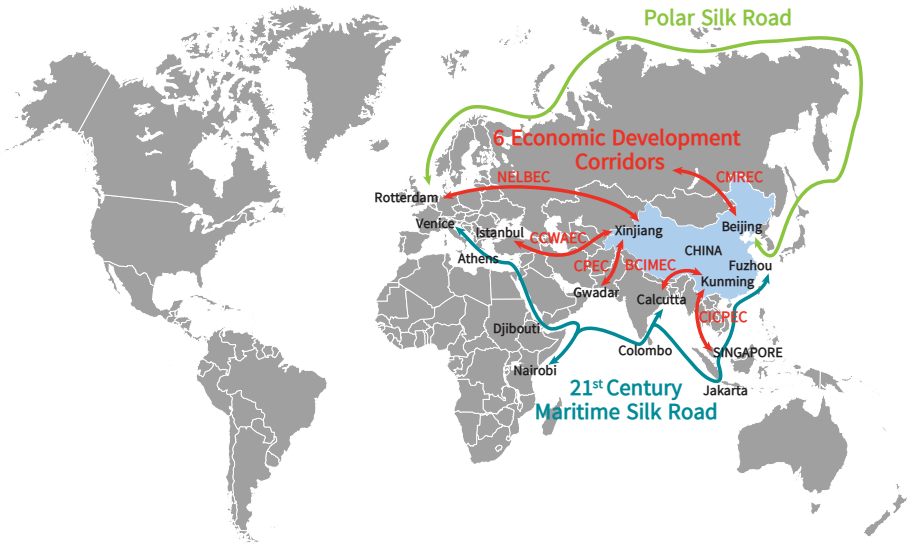
[84] Wallace, R. and Robinson, G. (2021) "Silent Chinese Companies Weigh Costs of Myanmar's Growing Chaos: Targeted Violence Intensifies as Top Investors Consider Future of Business Operations".
https://asia.nikkei.com/Spotlight/Myanmar-Crisis/Silent-Chinese-companies-weigh-costs-of-Myanmar-s-growing-chaos

only four as being operated by Chinese firms (the majority are operated by the Ministry of Electricity and Energy, MEE), but each of the 21 commissioned since 2000 has had Chinese suppliers for transmission and generation equipment and/or for engineering, procurement and construction services.[85] Chinese firms are also involved in energy projects other than hydropower, for example in supplying electricity to some townships in Yangon and the Thilawa SEZ.[86] Chinese firms are also heavily involved in transport infrastructure development. The China National Petroleum Corporation (CNPC)-led oil and gas pipeline between Kyauk Phyu in Myanmar and Kunming in Yunnan province is an example of such projects.

All these projects require local investors,[87] which means that foreign firms enter JVs inevitably with the large family-owned diversified conglomerates that dominate the construction sector.[88]

According to the Asian Development Bank (ADB), Asia faces an infrastructure funding gap of an estimated US$26 trillion through 2030, and the BRI aims to play a key role in filling this gap.[89] "The BRI is a transcontinental long-term policy and investment program which aims at infrastructure development and acceleration of the economic integration of countries along the route of the historic Silk Road.[90] The official BRI outline promotes the joint formulation of development plans and measures for advancing cross-national or regional cooperation between countries involved in the initiative.

Figure 10: Map of the Belt and Road Initiative



Source: BRI (n.d.) "Belt and Road Initiative". **https://www.beltroad-initiative.com/belt-and-road/**

[85] In 2014, 58 percent by value of Chinese outward direct investment flows for the year went to Hong Kong, and 7.1 percent (US$8.76 billion) to the British Virgin Islands and Cayman Islands. Much of these funds may have flowed back into China, a process known as "round tripping" (MOFCOM (2014) "Regular Press Conference of Ministry of Commerce on 17 June 2014".
http://english.mofcom.gov.cn/article/newsrelease/press/201406/20140600632846.shtml

[86] Formed by a merger of two Yunnan companies in 2009, the Union Resources and Engineering Company itself reports its involvement in 22 hydropower projects in Myanmar, including the Panglaung and Shweli projects, the latter being the first Chinese BOT contract in Myanmar, with a 40-year contract (www.urec.com.cn).

[87] Construction of the Kyauk Phyu SEZ is an exception, as SEZs are regulated by the SEZ Law.

[88] Oxford Business Group (2014) "The Report: Myanmar 2014"

[89] BRI (n.d.) "Belt and Road Initiative". https://www.beltroad-initiative.com/belt-and-road/

[90] Ibid.

The second priority objective of the BRI aimed at improving infrastructure construction will directly influence the construction sector in Myanmar, which is part of the Bangladesh-China-India-Myanmar Economic Corridor (BCIMEC). The presence of Chinese companies, or JVs, in the market, could have positive or negative implications for OSH in construction depending on the project nature and size of as well as the corporate and governance structure of the market actors involved, and their culture and practices, accountability, transparency and compliance with existing laws, rules and regulations.

The backward linkages that these companies, or JVs, are willing to create with Myanmar subcontractors could also influence OSH in the construction sector if there are specific mechanisms to ensure the transfer of OSH knowledge, a clear accountability framework on OSH and specific monitoring and capacity-building strategies, as part of their agreements.

3.1.3 Other investors

Singapore, South Korea and Hong Kong FDI rank second, third and fourth in terms of number of projects approved, and, as indicated on several occasions by the companies interviewed as part of this assessment, these projects generally employ local workers and contractors and have better OSH management compared with small and medium Myanmar construction companies. Multinational corporations and large family-owned diversified conglomerates also indicated that OSH managers and officers they employed had generally worked in Singapore and/or Malaysia. One of the foreign-owned companies interviewed was relying mostly on fly-in fly-out OSH managers and officers from its office in Vietnam to oversee OSH and train local staff. Travel restrictions associated with COVID-19 have halted this practice, thus increasing reliance on local managers and staff for OSH on site.

3.1.4 Government budget

The government typically plans and executes public building activities directly and through private companies. The most prominent example of large-scale construction driven by the government was the construction of Nay Pyi Taw from a green field from 2002, before it was proclaimed the capital of Myanmar in 2006. Government buildings, hotels, apartments and an international airport were built, primarily for civil servants. According to a foreign market actor interviewed, the government is still directly implementing a number of construction projects, although there is a growing tendency to outsource construction work to the private sector. Projects are currently being impacted by cash shortages and other consequences of the twin crises described in the previous section.

The 2020 Public Expenditure and Financial Accountability (PEFA) Assessment Report[91] produced by the World Bank and the government indicates that, for the year 2017/18, the budget under the construction administrative or functional head was 493,784 million kyat (approximately US$345.5 million) or 5.38 percent of the budget, down from the 500,753 million kyat (approximately $465.6 million) or 14.9 percent in 2016/17 and 665,323 (approximately $500.7 million) or 37.1 percent in 2016/15. This gives an indication that the budget of MoC has been reduced over this period, and it is likely to shrink further as a result of the crises.

It is unlikely that all construction projects are accounted for under this MoC administrative head. For example, the PEFA Assessment Report clearly mentions that construction spending is also accounted for under the Ministry of Education, and this is also likely to have been negatively affected by the crises. It can

[91] World Bank (2020) *Public Expenditure and Financial Accountability (PEFA) Assessment Report 2020, Myanmar.* Washington, DC: World Bank.

also be noted that the 2017.18 government budget for construction (US$345.5 million) represents around 20 percent of the annual average value of realized FDI brought by the top 12 investors in Myanmar from 1988 to 2014, estimated at $1,809 million based on DICA data (Table 7).

The 2020 PEFA Assessment Report also provides a breakdown of large-value procurement contracts, showing that MoC, the Ministry of Transport and Communication (MoTC) and MoEE are among the top eight line ministries in terms of volume of procurement. The value of contracts implemented by these ministries is around US$9.7 million, $35 million and $115 million, respectively.

According to this data, in 2020, MoC advertised 23 large contracts, implemented four and awarded 14.

Out of the 642 large-value contracts with a value of over 100 million kyat (approximately US$70,000) procured by the eight ministries that conduct the highest volume of procurement out of the 25 line ministries, 565 (88 percent) tenders were conducted through an open competitive method. For contracts of less than 100 million kyat, more than 80 percent were contracted through a request for quotation method, also a competitive method.

Table 8: Large-value procurement contracts

Large value (> K 100 million) contracts implemented				
Ministry (departments/agencies/ministry)	Amount (Kyat Million)	Number of Contracts implemented	Number of Contracts advertised	Number of Contracts awarded
Ministry of Education (10)	100,272.72	163	57	161
Ministry of Health and Sports (10)	79,716.48	94	85	73
Ministry of Planning, Finance and Industry (18)	14,389.37	21	12	8
Ministry of Construction (5)	13,939.47	4	23	14
Ministry of Agriculture, Livestock and Irrigation (15)	33,604.45	42	35	23
Ministry of Transport and Communication (18)	50,018.90	69	106	81
Ministry of Electricity and Energy (9)	164,920.84	134	132	65
Ministry of Industry (1)	50,915.53	115	115	-
Total for 85 Departments/Agencies and 1 Ministry	507,777.76	642	565	425

Note: This values include procurement contracts beyond the scope of analysis of this report, such as specification of the civil construction, design, manufacture, procurment and installation of systems (telecommunications, signalling). However, they are indicative of government spending on construction, which is the purpose of the table. It is also worth noting that the imported plants and materials intended for the works under this procurement contract arrangement are tax-free. Contractors can submit the necessary documents for import items through the line ministry to the local revenue department for the issuance of tax exemption certificates.

Source: World Bank (2020) Public Expenditure and Financial Accountability (PEFA) Assessment Report 2020, Myanmar. Washington, DC: World Bank.

3.2 Market opportunities

According to a 2019 report on the construction sector in Myanmar,[92] the main opportunities driving the infrastructure industry before the crises were (i) SEZS being developed in Thilawa, Kyauk Phyu and Dawei; (ii) industrial parks in Yangon; (iii) highways, railways, harbours and airports to improve the country's logistics capacity and tourism sector; and (iv) telecoms infrastructure to improve Myanmar's global connectivity by upgrading from a mobile to a fibre network. The report does not mention mixed commercial development or power and energy among the main drivers of growth for the construction industry although this might be because of the classification used to define construction.

According to the same report, the main opportunities driving the market in the building industry are middle-class residential housing in the major economic centres of the country, Yangon and Mandalay. The demand for middle-class housing is driven mostly by growth in the urban population as a result of shifting demographics and urbanization (this is further developed in the Buildings section below, in Section 3.4).

The political and health crises have heavily affected all opportunities, except those related to Chinese investment and the BRI. In addition to investment halts in construction, investment in telecommunications is uncertain, while urbanization seems to have gone in reverse, with urban populations going back to their rural hometowns to flee violence in urban centres, arriving in 11 states/regions since the beginning of February. An estimated 88 percent of the displaced population across the country originates from Yangon and approximately 90 percent of displacement movements are interstate.[93] The latter may start reversing soon, if it has not already, but it is unlikely that demand for residential units will recover quickly if economic contraction and uncertain recovery continue.

The largest construction projects are generally capital-intensive and not focused on enterprise development through backward linkages in their own supply chains. But their key impact is in their forward linkages – that is, through provision of higher-quality and lower-cost infrastructure services to a wider network. In this sense, they reflect a policy dilemma in that they often incur social costs and contribute to environmental damage and political instability, but at the same time enable other enterprises and producers to raise their productivity, thus contributing to job creation and poverty reduction – though these benefits are not inevitable.[94]

This is the case, for example, for the Myanmar–China crude oil and gas pipelines running from Madè Island and Ramree Island on the western coast of Myanmar, respectively, to Ruili in China's Yunnan province. Both pipelines run through Rakhine state, Magwe region, Mandalay region and Shan state;[95] however, end users are located in China. The gas pipeline was constructed by CNPC with Indian and Korean companies but the oil pipe was, perhaps significantly, built by CNPC alone.

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[92] Wong, Serene. 2019. "Myanmar Report : Construction Market Update." *Rider Levett Bucknall.* June. https://www.rlb.com/asia/insight/rlb-myanmar-construction-market-update-june-2019/.

[93] IOM (2021) "Myanmar Mobility Monitoring Assessment". Internal publication.

[94] Gelb, S., Calabrese, L. and Tang, X. (2017) Foreign Direct Investment and Economic Transformation in Myanmar. London: ODI.

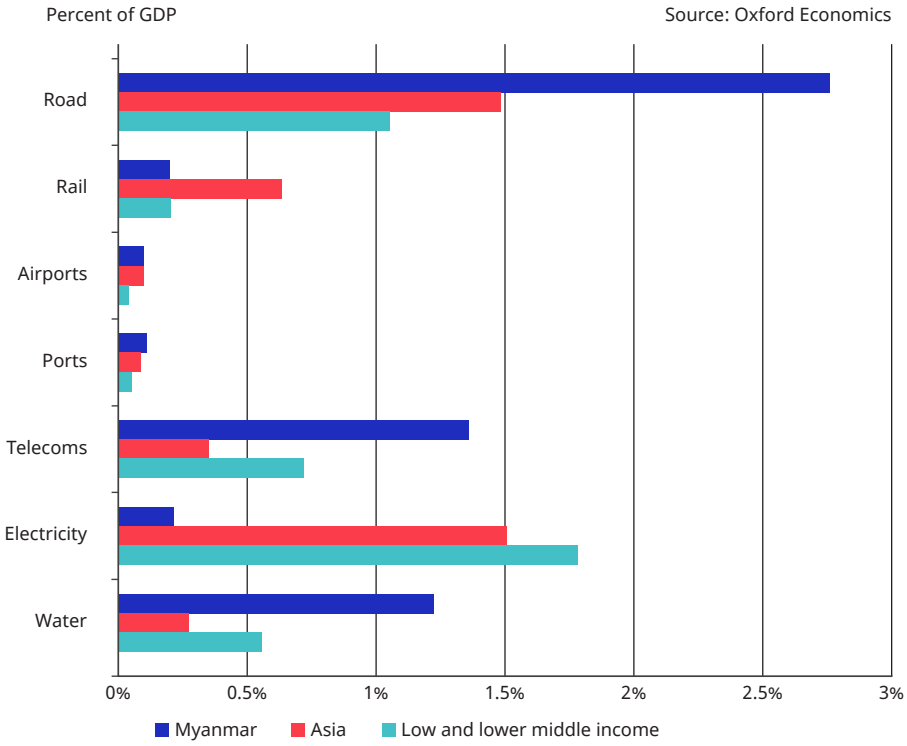
[95] CNPC (n.d.) "Overview of the Myanmar-China Oil & Gas Pipelines". https://www.cnpc.com.cn/en/myanmarcsr/201407/f115a1cc6cdb4700b55def91a0d11d03/files/dec09c5452ec4d2ba36ee33a8efd4314.pdf

3.3 Infrastructure

3.3.1 Infrastructure investment need

Figure 11 shows Myanmar's infrastructure investment need in comparison with Asia and lower-middle-income countries as a percentage of GDP for the period 2016–2040.

Figure 11: Myanmar's infrastructure investment need for 2016–2040 (% of GDP)

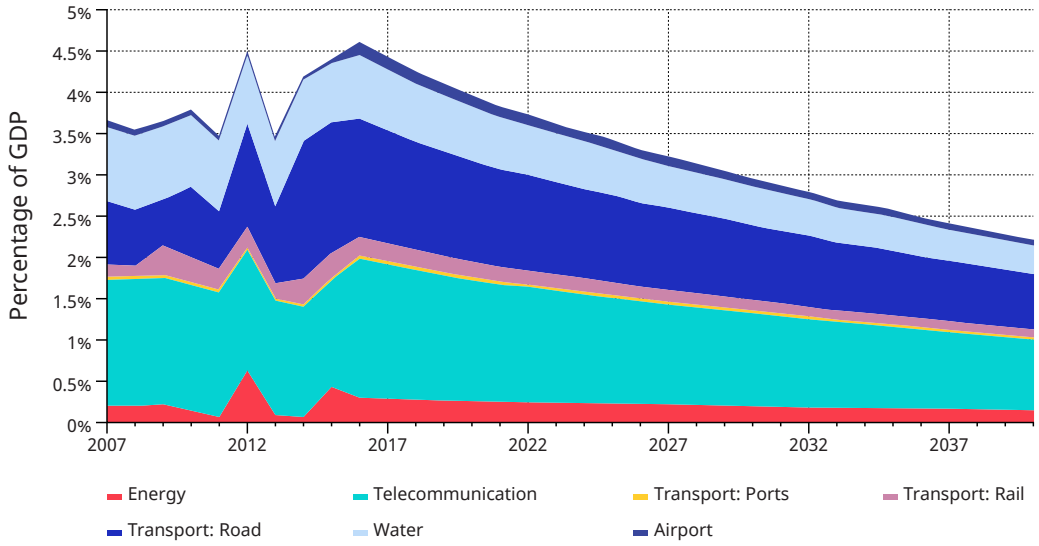


Source: Oxford Economics (2015) "Global Infrastructure Outlook: Country Profile Myanmar". **https://cdn.gihub.org/outlook/live/countrypages/GIH_Outlook+Flyer_Myanmar.pdf.**

According to the infrastructure outlook forecast simulator of Global Infrastructure Outlook, Myanmar's investment current trends in energy, telecommunications, transport (airport, ports, rail, roads) and water is estimated at US$59 billion for the period 2016–2040. The investment needs for the same period are estimated at $116 billion, leaving a gap of $57 billion.[96] Figure 12 shows Myanmar's infrastructure investment trends as a percentage of GDP for the period 2016–2040.

[96] Oxford Economics (2015) "Global Infrastructure Outlook: Country Profile Myanmar". https://cdn.gihub.org/outlook/live/countrypages/GIH_Outlook+Flyer_Myanmar.pdf customized data with an estimated average annual GDP growth rate of 2.95 percent corresponding to a 50 percent reduction of the standard projection, which is the maximum reduction that can be applied in the model online.

Figure 12: Myanmar's infrastructure investment trends by sector for 2016–2040 (% of GDP)



Source: Oxford Economics (n.d.) "Global Infrastructure Outlook – Myanmar Country Profile".

The Myanmar government has insufficient financial reserves to finance this infrastructure overhaul, so most of this development will initially need to be financed through loans from foreign countries, including the IFIs, such as the World Bank and ADB, and foreign companies on the BOT basis.

3.3.2 Official development assistance

Given the current political crises, the World Bank, ADB and JICA have suspended loans, grants and other support to Myanmar's government.[97] It is important, however, to understand the role of official development assistance (ODA) in Myanmar's infrastructure development, both to realize the impact of these suspensions in the short and medium term on employment and OSH management, and to understand the potential for when Myanmar is once again eligible for this type of ODA support.

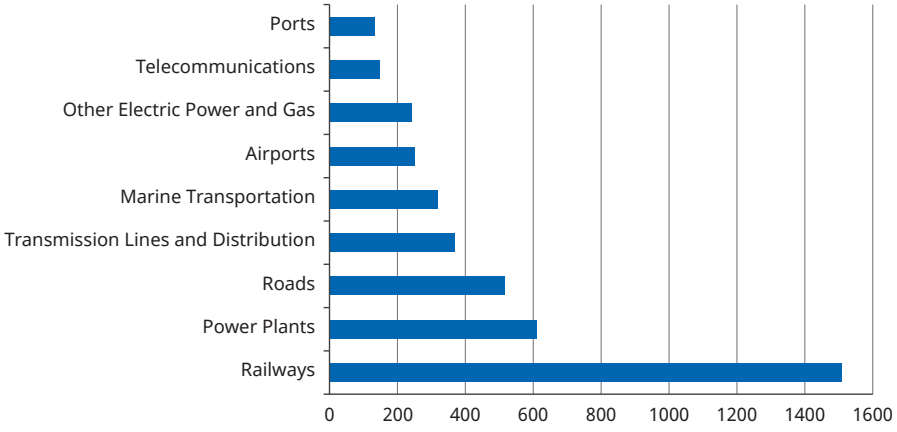
From 1982 to 2020, JICA approved around US$5,000 million in ODA loans for transportation, electric power and gas, and telecommunication projects in Myanmar. Following figure 13 shows the distribution of JICA loans by sub-sector. This represents an average of around $132 million per year over the 38-year period considered. Comparatively, average annual FDI was $1,809 million over the period 1988–2015.

The highest commitments, valued at around US$2,600 million, have been in railways, power plants and roads. Interviews with market actors confirmed that attracting FDI in Myanmar would require better road infrastructure and more reliable power, in addition to an improvement in the business enabling environment. Research by the Oxford Business Group confirms these findings.[98] Given the current crises, this aspiration may be hard to meet in the medium term, further discouraging FDI.

[97] The Jakata Post (2021) "ADB Suspends Funding for Projects in Myanmar after Military Coup". 11 March. www.thejakartapost.com/seasia/2021/03/11/adb-suspends-funding-for-projects-in-myanmar-after-military-coup.html

[98] Oxford Business Group (2017) "Myanmar Rolls out Large-Scale Infrastructure Projects". https://oxfordbusinessgroup.com/overview/taking-big-steps-large-scale-projects-aim-address-infrastructure-gap

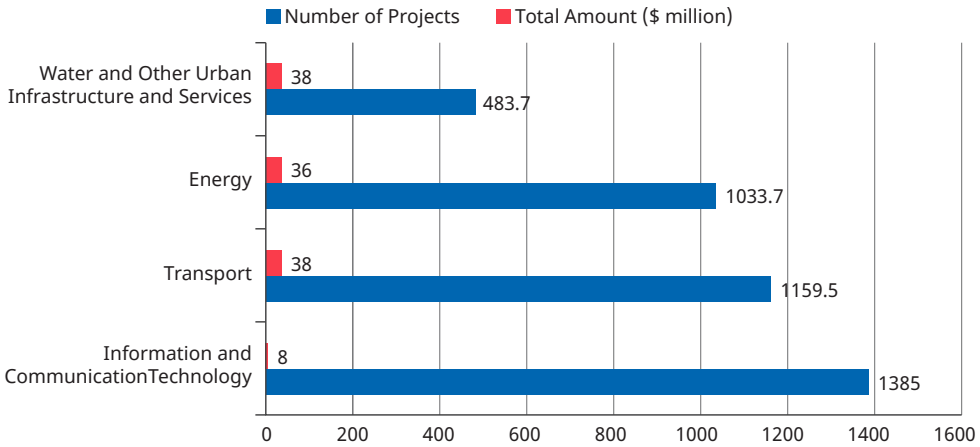
Figure 13: Amount of JICA ODA approval (US$ millions)



Source: JICA (n.d.) "ODA Loan Project Data".

As of 31 December 2020, ADB loans, grants and technical assistance committed to Myanmar for investments in transport, energy, water and other urban infrastructure projects, as well as other information and communication technology investments, amounted to over US$4 billion. This data excludes multisector data that could include investment in infrastructure and institutional buildings (e.g. schools and markets).

Figure 14: Total amount of ADB investment in Myanmar, December 2020



Source: ADB Data Library (2018) "Cumulative Lending, Grant, and Technical Assistance Commitments". December.

According to relevant contractors interviewed, ODA is a potential driver of OSH improvement in the construction sector since, according to market actors, JICA, ADB and the World Bank demand that the contractors of infrastructure development projects comply with their respective OSH requirements. Although the contractual requirements were not reviewed as part of this assessment, site observations showed that on ODA-funded projects better risk management or elements of OSH management were

generally in place. The contractors of ODA client projects have the most elaborated OSH risk management of all sites visited, including dedicated OSH managers and officers, OSH policies, housekeeping systems, and inception and training of staff.

According to the consultations, key to OSH management practices by these contractors is the fact that ODA clients include OSH personnel and functions as part of their administrative and financial planning. However, site visits on ODA-funded and privately funded projects also revealed that these OSH practices were limited to ODA projects and were seldom, or never, implemented on other sites visited. Given the limitations described earlier in the report, site observations were limited to Yangon, which included one ODA-funded construction site and the Korea–Myanmar Friendship Bridge construction site funded by South Korea's Economic Development Cooperation Fund.

The investment value of ODA is limited compared with FDI, making FDI a greater driver of OSH improvement, since it can reach more workers. However, understanding better OSH requirements in ODA-financed projects could be a good entry point to help build the right incentives for contractors to implement good OSH management in construction sites financed through FDI.

Infrastructure and building projects financed through loans from foreign countries, including development agencies and IFIs such as JICA, the World Bank and ADB, as well as foreign companies, have to follow international rules on environmental and social practices. These include risk assessments for workers and communities located in and around the project area. This is also in line with the rules set by the Myanmar government. This could also be a driver for OSH improvement and is further developed in Chapter 5.

3.3.3 Special Economic Zones

One objective of the government's reforms is to bring about structural change that enables Myanmar to be more reliant on the manufacturing sector. Efforts to advance this objective centre on the creation of SEZs – designated enclaves that facilitate imports, exports and FDI.[99]

As SEZs and industrial zones concentrate the majority of FDI and local investment, they are in theory more likely to attract foreign companies. This could provide an opportunity for OSH promotion, as well as transfer of technology and know-how. However, given the current crises and the halt in most investment and construction in SEZs, there is no certainty that these opportunities will be realized in the near future.[100]

Investors located in the SEZs are covered under the Myanmar SEZ Law; the Foreign Investment Law is not applicable to investments in SEZs. Investors must also comply with other national laws and regulations such as the MNBC 2020 and national laws and regulations related to employment and labour. The ultimate powers of determination, monitoring and enforcement for labour matters in SEZs are held by MoLIP's FGLLID.

The SEZ Law was enacted in 2014 and applies to the three SEZs that exist in Myanmar: Kyauk Phyu in Rakhine state, Dawei in Thanintharyi region and Thilawa in Yangon region. Implementation of the SEZ Law is carried out by a three-tier institutional structure set up specifically for that purpose and comprising

[99] Khandelwal, A. and Teachout, M. (2016) Special Economic Zones for Myanmar. IGC Report.

[100] Nikkei Asia (2021) "Myanmar Coup Forces 13% of Companies to Halt Business: Poll: Two Months of Political Upheaval Dealt a Heavier Blow than a Year of Pandemic". 7 May. https://asia.nikkei.com/Spotlight/Myanmar-Crisis/Myanmar-coup-forces-13-of-companies-to-halt-business-poll

a Central Body, a Central Working Body and Management Committees in the SEZs.[101] The Central Body is a multi-ministerial peak body that authorizes the development of SEZs and supervises implementation by lower bodies. The Central Working Body develops and provides policy advice to the Central Body. Each SEZ Management Committee manages and supervises the development and implementation of its respective SEZ. One key aspect of the legal framework for SEZs is that the SEZ Management Committee must ensure workers' rights and entitlements are not lower in SEZs.[102]

The SEZ Law directs each Management Committee to establish a One Stop Service Centre. This hosts representatives of various government departments so as to provide investors with all services in one place. The SEZ Law does not permit deviations from procedures and powers established in other laws applicable in SEZs, such as for company registration or environmental permits.[103]

Cumulatively, the three SEZs represent an investment of US$11.3 billion, equivalent to 119 percent of the estimated annual market value of the entire construction sector ($9.5 billion); however, the halting of investments and projects is casting a shadow on the medium-term potential for SEZ Management Committees to become hosts of OSH functions.

3.3.4 Industrial Zones

According to a mapping by the Myanmar Information Management Unit (MIMU), Myanmar has a total of 132 industrial zones. Yangon has 45, Mandalay seven and other states and regions 38.[104]

Industrial zones keep being developed in Myanmar. For example, Myanmar's Urban and Housing Development Department in August 2019 signed a JV with Korea Land and Housing Corporation to develop the Korea–Myanmar Industrial Complex in Hlegu, 10 km north of Yangon. The 225 ha project is expected to leverage expressway access to Yangon's international airport and port facilities to attract investment from an expected 200 export-oriented South Korean firms. Loans from the Export-Import Bank of Korea are being secured to build a dedicated 100 MW substation and transmission line, and a new water channel from Kalihtaw Dam, with an eye to fully completing the project by 2023.

Market-based opportunities for OSH promotion exist in industrial zones through engagement with industrial zone developers, management committees and private companies investing in the zones. Similarly to in SEZs, area-based models, where information, training and enforcement of labour laws can be a shared initiative by public and private actors, can help build OSH awareness and replicate good practices.

[101] DICA (n.d.) "Special Economic Zones". https://www.dica.gov.mm/en/special-economic-zones

[102] ICJ (2017) "Special Economic Zones in Myanmar and the State Duty to Protect Human Rights". Report.

[103] Ibid.

[104] MIMU (2019) "Industrial and Special Economic Zones". October. https://themimu.info/sites/themimu.info/files/documents/Sector_Map_Industrial_and_Special_Economic_Zones_MIMU1676v01_01Oct2019_A4.pdf

Figure 15: Industrial zones in Yangon



Source: MIMU (2019) "Industrial and Special Economic Zones". October. https://themimu.info/sites/themimu.info/files/documents/Sector_Map_Industrial_and_Special_Economic_Zones_MIMU1676v01_01Oct2019_A4.pdf

3.4 Buildings

This section covers major trends in population and urban settlement, and in the demand, supply and cost of residential, commercial and institutional buildings. Residential buildings include low-cost and affordable housing while commercial buildings include commercial space, offices, retail, serviced apartments, residential space and hospitality projects as well as individual home construction.

3.4.1 Population and urbanization

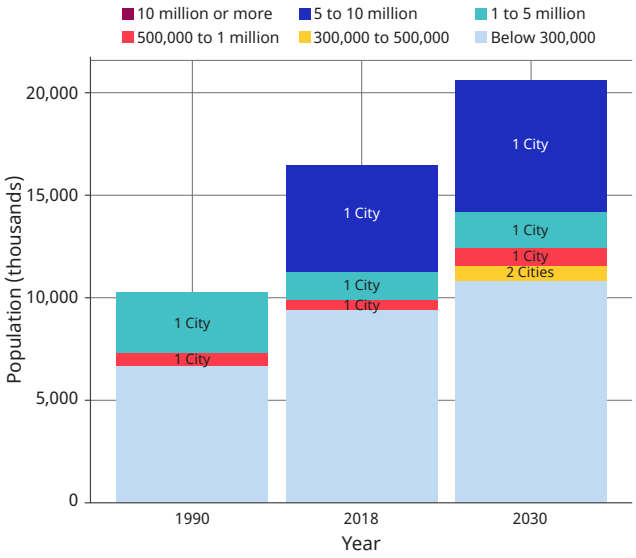
In 2014, Myanmar had a population of 51,486,253 million inhabitants. The urban population has increased gradually, from 24.7 percent in 1987 to 30.3 percent in 2017.[105]

The UN projects that the number of people living in rural and urban areas will continue to grow in Myanmar in absolute terms until around 2030. The relative number of people living in rural and urban area should converge around 2050. Urban migration trends, if continued, will increase the demand for housing and infrastructure.

[105] Ministry of Labour, Immigration and Population, Department of Population (2017) "Overview of the Results of 2014 Population and Housing Census, Myanmar". December. www.dop.gov.mm/sites/dop.gov.mm/files/publication_docs/overview_and_results_of_the_2014_census.pdf

Yangon, Myanmar's largest city and economic capital, has a population of 7.3 million, 14.3 percent of the total population.[106] Myanmar's urban population is to reach over 20 million habitants in 2030, with the main city hosting 5–10 million people, four cities hosting between 500,00 and 1 million people and the rest of the cities hosting up to 500,000 people.

Figure 16: Urban population by size class and urban settlement



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Source: ICJ (2018) Population Dynamics – Country Profiles: Myanmar. **https://population.un.org/wup/Country-Profiles/**

According to the World Bank, Myanmar has a relatively low level of urbanization, at 30 percent.[107] Approximately 15 million people now live in urban areas, with Yangon and Mandalay accounting for 20 percent of the total urban population. This level is expected to grow to 30 million by 2030. In total, 81 percent of the urban population growth between 2009 and 2014 was attributed to internal migration. The majority of migrants move to cities for employment.

Even the reversal of the urbanization trend after 1 February, with over 114,000 people leaving Yangon to return to their rural hometowns, could be temporary. However, according to an assessment by the International Organization for Migration (IOM), the majority of those who left wish to return to urban centres where there are job opportunities available for them.[108]

[106] Ministry of Labour, Immigration and Population, Department of Population (2017) "Overview of the Results of 2014 Population and Housing Census, Myanmar". December. www.dop.gov.mm/sites/dop.gov.mm/files/publication_docs/overview_and_results_of_the_2014_census.pdf

[107] World Bank (2019) Myanmar's Urbanization: Creating Opportunities for All. Washington, DC: World Bank.

[108] IOM (2021) "Myanmar Mobility Monitoring Assessment". Internal publication.

3.4.2 Housing needs

Forty-three percent of internal migrants in 2009–2014 ended up in Yangon and another 12.5 percent in Mandalay.[109] Before 1 February, both of the major economic centres of the country, Yangon and Mandalay, had strong demand for middle-class condominiums. Previous governments had been planning to execute the One Million Housing Project since 2011, expected to be accomplished by 2030.[110] According to an analysis of the Oxford Business Group,[111] DUHD, in MoC, estimates that around 1.8 million people are in need of low-cost housing and acknowledges that the government has been unable to meet the growing demand for affordable homes. The same analysis indicates that at least 330,000 people move to Yangon every year from Myanmar's rural heartlands or its townships in the hope of finding work. It is unclear if the One Million Housing Project will be able to continue, not only because of the political climate but also because of the practical constraints brought up by the crises.

According to the World Bank, the governance and financing of urban development is challenging in Myanmar.[112] While urban service delivery functions have been devolved to subnational governments, in practice local governance is often hampered by limited implementation of policies/frameworks, financial resources and technical capacities. Lack of transparency and fair decision-making as well as insufficient resources to successfully implement programmes and policies on the ground may lead to unequitable urban development and intra-city disparities, which may further lead to social tensions, crime and violence.

Several residential buildings projects have been halted. According to the desktop study, there were 259 residential projects under construction over the period from 2013 to 2020.[113] Among them, 86 percent (223) were high-rise building projects.[114] Major high-profile private projects in residential or mixed development in Yangon region include the Landmark Project by Yoma, Yangon Central Mixed Development by Tokyo Tatemono Asia/Fujita Corporation, Emerald Bay by Country Garden and The Central by Marga Global. The New Yangon City Project on 20,000 acres (8,094 ha) of land and with estimated costs of US$1.5 billion will create accommodation for 3 million and jobs for 2 million.[115] All of these high-profile projects have been suspended as a result of the crises. Following 1 February, many ongoing projects, including government-funded projects, have stopped. According to MCEF, only vital projects are continuing; the rest have halted because of a gap between the tender price and current price and cash constraints.[116]

The Foreign Investment Law 2016 has led the sector to attempt to open up more to foreign investment. The Condominium Law 2016 provides incentives to attract private investment and to maximize long-term profitability of the sector. According to this, international companies can become co-developers in condominium projects only through setting up JVs, with a maximum foreign share of 35 percent with full

[109] Ibid. (Footnote 106)

[110] Nwal, S.S. and Panuwatwanich, K. (2018) "Social Housing in Myanmar: Issues and Way Forward".

[111] Oxford Business Group (2016) "Housing Demand Driven up by Myanmar's Growing Population". The Report: Myanmar 2016.
https://oxfordbusinessgroup.com/analysis/affordable-housing-yangon%E2%80%99s-rapidly-growing-population-driving-demand-low-cost-housing

[112] World Bank (2019) Myanmar's Urbanization: Creating Opportunities for All.

[113] The Myanmar Builders Guide (n.d.) "Developer Updates, Project Showcase, Tender".
https://www.buildersguide.com.mm/article/projects

[114] CQHP (n.d.) "Project List: Committee for Quality Control of High-Rise Building Constructon Projects".
www.cqhp.org/project-list/page/2/. This information does not take into account the semi-formal and informal sector.

[115] Wong, Serene. 2019. "Myanmar Report : Construction Market Update." Rider Levett Bucknall. June.
https://www.rlb.com/asia/insight/rlb-myanmar-construction-market-update-june-2019/.

[116] The Irrawaddy (2021) "Myanmar Coup Leaves more than 500,000 Construction Workers Redundant". 2 June.
www.irrawaddy.com/news/burma/myanmar-coup-leaves-more-than-500000-construction-workers-redundant.html

rights under the law. The land where the project is developed must be registered as collectively owned land, where the owner of the units directly owns a share of the land.[117]

Expansion in the sector will depend on political, economic and financial stability to provide local investors with confidence; political stability may be needed to reassure foreign investors. Once these macro-economic and political hurdles can be passed, the drafting of a national housing development law to incentivize private sector involvement in affordable housing would be a next step towards achieving scale in housing development, which the ADB suggests is in excess of 100,000 units a year.[118]

3.4.3 Yangon housing stock

It is estimated that about 25 percent of the households in Yangon live in permanent, formal housing units such as condominiums, apartments and brick houses. The remaining semi-permanent or temporary structures, with 75 percent of households, require frequent upgrades and retrofitting.

According to ADB, the aggregate housing need (or shortage) in the Yangon region is estimated at 1.3 million units by the year 2030.[119] To meet this demand and that of today's households in need of affordable housing, 100,000 housing units per year should be developed over the next 12 years.

Table 9: Aggregate housing demand for the Yangon region

	Demand	Source
Quality of housing stock, tenure, and ownership	520,000	2014 Census
Demographic trends, urbanization, and migration (until 2030)	593,000	UN World Urbanization Prospects (2014)
Expansion of informal settlements (current population of 475,000)	155,000	DUHD
Homelessness (currently estimated at 21.6% of Yangon population)	34,000	2014 Census
Yangon Region total housing demand for 2018-2030	1,302,000	Estimate

Source: ADB (2019) Financing Affordable Housing in Yangon.

YCDC is focusing its attention on the development of new satellite towns, which will include affordable homes both for purchase and rent. Two of the new townships are being developed in partnership with Singapore's Surbana, which is leveraging its experience in working on Singapore's public housing.

According to ADB's Financing Affordable Housing in Yangon report, citing DUHD, the cost of infrastructure amounts to approximately 30 percent of the sales price of low-cost housing units, and this is offered as an implicit subsidy to low-income purchasers. Therefore, the supply of low-cost housing cannot be easily taken up by private sector developers as, unlike DUHD, they rarely have ownership of large land parcels with a low historical cost, and they are unable to subsidize the infrastructure cost and operate without

[117] Oxford Business Group. 2017. "Myanmar rolls out large-scale infrastructure projects." https://oxfordbusinessgroup.com/overview/taking-big-steps-large-scale-projects-aim-address-infrastructure-gap.

[118] ADB (2019) Financing Affordable Housing in Yangon. Report.

[119] ibid

making a profit. Therefore, supply of low-cost and affordable housing units is almost entirely dependent on DUHD's capacity. All the low-cost and affordable housing units developed by DUHD have to obtain building permits from YCDC.

Table 10 indicates that, by 2018, DUHD had developed less than 60,000 units across Myanmar. The construction cost per unit varies between 14 million kyat, or US$9,800, and 36 million kyat, or $25,200. However, this could be on account of unit sizes, varying building design, density (i.e. low-rise versus high-rise) and specifications relating to the type of building material used.

Table 10: Low-cost housing projects completed by DUHD, 2010–2018

Period	Yangon Region		Other Towns		Construction Cost	
	Buildings	Family Units	Buildings	Family Units	Total Cost	Cost per Unit
2010-2011	27	336	6	46	6,075	16
2011-2012	266	1,233	12	130	30,245	22
2013-2014	231	1,204	--	--	43,282	36
2015-2016	186	2,380	77	738	69,972	22
2016-2017	218	5,678	64	1,248	131,442	19
2017-2018	249	6,993	69	2,220	131,336	14
2016-2017	121	3,138	--	--	48,289	15
2017-2018	132	3,594	--	--	40,286	11

Source: Central Statistical Organization (2018) Myanmar Statistical Yearbook.

Family-owned, diversified conglomerates dominate the low-cost and affordable housing market.[120] Tender regulations appear to favour large firms and therefore the conglomerates: bidders have to put up the money in advance, and are paid tardily by government (with the current cash shortages, some report very long delays in payments and complicated processes and arrangements to complete), so that working capital demands are very high. Meanwhile, "secondary trade"[121] in construction permits is common, raising costs and lowering the quality of the final product. There have been repeated promises since mid-2016 from the government that it will take the apparently obvious step of allowing foreign firms to enter the low-cost and affordable housing market, from which they are currently barred.[122]

Myanmar's residential building market structure involves multiple operators from the public and private sector with various degrees of knowledge and capacity in OSH. The formal, informal or semi-formal nature of the market is also likely to continue to drive OSH practices in the residential building sector. This was observed during the visits to small, medium and large construction sites, which showed that OSH practices were mostly inexistent on smaller sites.[123]

[120] Gelb, S., Calabrese, L. and Tang, X. (2017) Foreign Direct Investment and Economic Transformation in Myanmar. London: ODI.

[121] Secondary trade in permits can include illegal activities whereby a licensed contractor secures a permit for the work to be performed by an unlicensed contractor. However, it also refers to legal activities of multi-layer subcontracting in which one main contractor subcontracts some tasks to specialized contractors, seeking a reduction in costs. The main contractor then shifts the supply and management of labour and the risks involved onto subcontractors.

[122] Thiha (Consult-Myanmar) (2016) "Analysts Say 2016 Is the Worst Year for Rangoon Construction Sector". 9 December. https://www.consult-myanmar.com/2016/12/09/analysts-say-2016-is-the-worst-year-for-rangoon-construction-sector/

[123] Informal construction sites were not visited.

3.4.4 Institutional buildings

Demand for institutional buildings is driven by the Myanmar government, foreign governments and the private sector. Such buildings include schools, hospitals, social housing, prisons and government offices as well as ongoing mega public projects. Examples include the Mandalay Convention Centre, the Myanmar Engineering Council, the Yangon Aquarium, the New American Centre, the Mandalay–Tada Metrological Camp and the Community Office District. Mega urban projects include the New Mandalay Resort City (9,893 acres/4,000 ha), the Smart District Project in Dagon Seikken township development (1,100 acres/445 ha), the Korea–Myanmar Industrial Complex Project and the Eco Green City, a US$2 billion project with a 10–15 year township development period.[124]

3.4.5 Commercial buildings

Until Myanmar started to open up in 2011, the construction of commercial buildings was limited to projects deemed to be of national importance. For example, the government established hotel zones in the coastal areas of Rakhine state (i.e. Ngapali and Ngwe Saung) and in Inle Lake in Shan state, to enable the construction of large hotel complexes with a view to attracting international visitors. Data on commercial buildings in Myanmar is limited.

3.5 Employment

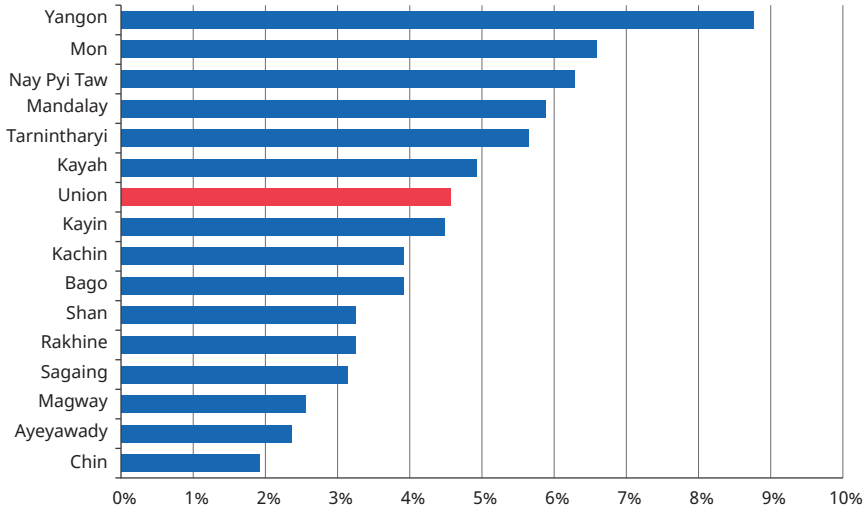
According to the Myanmar Population and Housing Census 2014, the labour force participation rate in the country is 67 percent, equivalent to 35.5 million people. This indicates the degree to which populations are economically active expressed as a percentage of the total population of working age (15–64) that is economically active, with economically active defined as people who are either working or unemployed but looking for work.

According to the Census, employment data for the age group 10 and over is 4.5 percent in the construction sector, with the main construction employment regions/states being Yangon (8.8 percent), Mon state (6.6 percent), Nay Pyi Taw (6.3 percent), Mandalay (5.6 percent) and Tanintharyi (5.6 percent). While urban centres are expected to have a larger share of construction workers, Mon state ranks second highest. According to the Census, the construction industry as a whole employed over 940,400 million people in 2014; however, as mentioned, employment in construction reported a decrease of 39 percent between December 2020 and June 2021, meaning 400,000 jobs lost and 70 percent less in terms of working hours.[125]

[124] Korea Myanmar Industrial Complex (2018) "Myanmar's Ministry of Construction has announced plans for four mega-development projects across Yangon and Mandalay". 29 May. Government announces 4 mega-development projects - KMIC Korea-Myanmar Industrial Complex (mykmic.com)

[125] ILO (2021) "Employment in Myanmar since the Military Takeover: A Rapid Impact Assessment". Geneva: ILO.

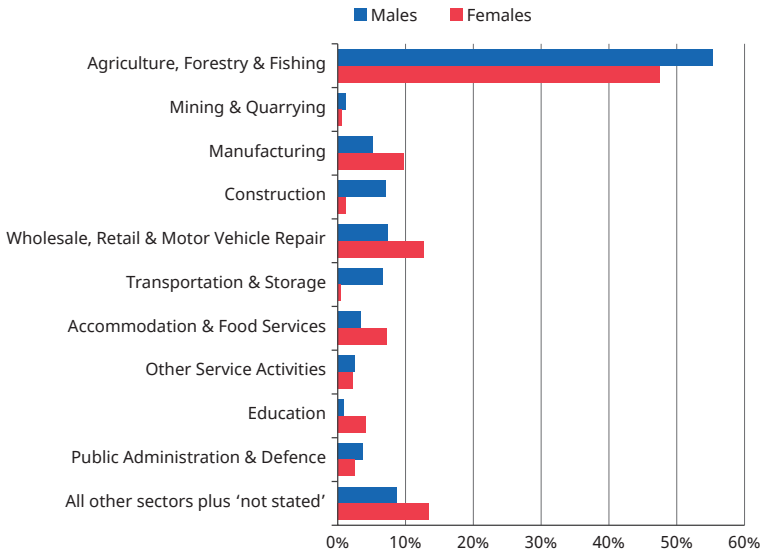
Figure 17: Distribution of the construction working population by state/region and division (2014)



Source: The 2014 Myanmar Population and Housing Census Report Volume 2-B Occupation and Industry

The 2014 Census indicates that 6.2 percent of the overall workforce in the construction sector is male. The proportion of women employed in the sector is almost 2 percent. The proportion of men to women is higher than in other top sectors except for transport and storage. From a programmatic perspective, this indicates higher entry barriers for women in the construction sector.

Figure 18: Gender-relative proportions in the top 10 sectors



Source: Ministry of Labour, Immigration and Population, Department of Population (2017) "Overview of the Results of 2014 Population and Housing Census, Myanmar". December.
www.dop.gov.mm/sites/dop.gov.mm/files/publication_docs/overview_and_results_of_the_2014_census.pdf.

3.5.1 Child labour and young workers (10–17)

According to the Census 2014,[126] an estimated 1.54 million children aged 10–17 years are working. This includes 840,000 males and 700,000 females. Among them about 43 percent, or 670,000, work for pay. The construction sector ranks fourth in terms of child labour, with 5.4 percent (74,000), after agriculture (6 percent), manufacturing (10 percent) and wholesale and retail (6.4 percent). Almost a quarter of the workforce in the construction sector is younger than 25.[127]

Myanmar has ratified the Minimum Age Convention 1973 (No. 138) although the list of hazardous occupations is under development.

3.5.2 Worker profile

Interviews with workers organizations and on-site observations indicated that a typical worker would be a young male between 16 and 30 who has migrated to Yangon to look for employment opportunities. Young workers are employed on a casual, per day work labour rate or on a longer-term basis by a construction company to perform basic construction tasks. They learn on the job. There is typically no formal contractual relationship with workers. Workers interviewed on small and medium construction sites had little awareness of OSH, employers' obligations or the labour law.

According to informal workers interviewed off site[128] in East Dagon, Yangon, workers normally execute a labour contract with their employer for six months or so depending on the job characteristics but work is generally informal. Workers are paid based on Plinth Area Estimate. General workers are paid 8,000 kyat per day, or around US$5.60, and skilled workers 12,000 kyat per day, or $8.50. Women workers are paid 7,000 kyat, or $5. Workers are paid on a weekly basis. Some workers remit a part of their salary to their family back in their community of origin. Workers get new job offers through recommendations by former employers satisfied with their work quality.

According to workers interviewed off site, workers have the right to rest breaks of about 10–15 minutes. Basic housing or temporary camps are often provided on the site; this practice was more common during the first two COVID-19 outbreaks in 2020. Workers interviewed off site were living in a warehouse on the construction site: a total of 60 workers are were living in the temporary camp inside the factory premises. No transportation is provided to workers who live on site. If the construction site is outside Yangon, the owner/employer arranges transportation for the workers.

The workers interviewed off site said that their employer was providing them with PPE, including helmets, safety shoes and vests. All workers on this particular site were wearing PPE. There was no appointed safety officer on their site. The workers obtain information on OSH during toolbox meetings, conducted every three days by the "labour-in-charge" (the overall supervisor on smaller sites). The labour-in-charge is also responsible for providing information on COVID-19.

According to one worker interviewed off site, there was no proper site organization structure. There is only one site manager and one labour-in-charge to supervise the construction work, with 40 workers assigned on a rotational basis. Work and rest periods are based on the task/activity of the worker. These

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[126] The 2014 Myanmar Population and Housing Census Report Volume 2-B Occupation and Industry

[127] ILO (2017) The Right Environment for a Safe and Healthy Working Life: Knowledge Attitudes and Behaviour of Young Workers in the Agricultural Sector of Magway and Ayeyarwady Divisions and the Construction Sector in Yangon Division. Yangon: ILO.

[128] The two workers interviewed off site were members of labour unions.

are typical characteristics of small, informal sites, while larger sites visited showed a higher degree of site organization, with specific tasks assigned to workers under supervision.

Employers organizations reported that the recruitment of migrants and unskilled workers on an informal basis by small and medium contractors and subcontractors was frequent. Usually, workers do not have access to OSH training, social security and other benefits. According to one workers organization, migrant workers come either from the Delta region, which was affected by cyclone Nargis in 2008, or from border areas.

Informal labour relations represent a breeding ground for labour disputes, in which workers remain vulnerable to abuse by employers. The research team heard cases from workers and trade union leaders of the labour law not being followed, regarding payment of wages and employment injury. In the former case, BWFM had been called in to mediate. On the latter, the employer took responsibility.

According to one of the workers organizations interviewed, workers tend to prefer to work for large foreign companies or JVs, which offer a safer working environment and higher wages. According to them, it is easier for workers who have worked for large international or Myanmar companies to find a job. They can also claim higher wages in subsequent jobs, making this a sort of career improvement. Workers working for large foreign or Myanmar companies or JVs can also benefit from private insurance.

▶ Box 3: Employer liability for an occupational injury

The research team heard the story of one informal worker who had fallen from a height as a result of an electrical shock that happened during an electrical installation. The worker thought the equipment was deenergized and touched it without using protective measures. Since the employer had not registered him with SSB, he covered all medical treatment costs for the injured worker, and provided him with 7,000 kyat/day or $5, during his hospitalization.

Formal construction workers registered with SSB have the right to employment injury insurance in cases like this. Vision Zero Fund Myanmar worked with SSB in 2018–2020 to improve awareness and access to the EII scheme in townships where garment workers were concentrated. Given the predominantly informal nature of labour relations in the construction sector, an intervention in this area would need to cover much more than awareness of the scheme.

Source: Interview with construction worker and BWFM.

▶ 4. Workplace observations

A key component of data collection involves workplace observation. These help identify workplace hazards and control measures in different work processes on the construction sites visited. They also shed light on which workers are at highest risk and where intervention models may be more effective. Workplace observations are not inspections, nor do they constitute a complete risk assessment;[129] they do, however, help identify areas of concern or good practices to replicate.

4.1 Sites visited

The site observations were conducted on 11 sites in Yangon. As mentioned, the team was not able to conduct visits to a nationally representative sample of sites, given mobility restrictions. However, these 11 sites are a good sample for Yangon and urban areas, and include different types and sizes of site. Table 11 provides a summary of the main characteristics of the sites visited based on size. The team estimated the size of the site based on the number of workers on site at the time of the visit. Large, medium and small sites had more than 50, 20–50 and fewer than 20 workers, respectively.

Table 11: Overview of construction sites visited as part of the OSH assessment

#	Type of site	Industry	Size of site			Approximate no. of workers on site at time of visit	High-rise building (12-storey and above)
			Large	Medium	Small		
1	Bridge	Infrastructure	√			200	N/A
2	Hospital (13-storey)	Building	√			180	Yes
3	Hospital (12-storey)	Building	√			180	Yes
4	Railway	Infrastructure	√			60	N/A
5	Private residential (5-storey)	Building		√		30	No
6	Mini-condominium (12.5-storey)	Building		√		20	Yes
7	Residential building (6-storey)	Building			√	10	No
8	Residential building (6-storey)	Building			√	10	No
9	Residential building (6-storey)	Building			√	8	No
10	Hostel (2-storey)	Building			√	6	No
11	Residential building (2-storey)	Building			√	6	No

Source: Authors (2021).

[129] For a description of the risk assessment process please see ILO (2014) "A 5 Step Guide for Employers, Workers and Their Representatives on Conducting Workplace Risk Assessments".

4.2 Data collection tools

The data collection template for site observation was adapted from VSF's methodology (see Table 1 above) using the ILO guide for labour inspectors on construction as a reference for additions particular to construction.[130] The site observation template was designed with the research team in mind to facilitate observations and allow space to record findings and document them with photos if possible .The template organizes the information around 12 topics: site boundaries, welfare and safety facilities, housekeeping, PPE, administrative requirements, work at height, working with vehicles, groundwork, moving materials and goods safely, electricity, slips and trips, health hazards and associated health risks, and other observations. These categories or topics were chosen to prompt focusing on identifying hazards in key work processes and locations (e.g. groundwork, site boundaries), potentially hazardous operations (work at height, moving materials) and potential control measures (administrative requirements and PPE).

4.3 Identification of hazards, risks and control measures

4.3.1 Site boundaries

The absence of clearly demarcated and spacious site boundaries means that pedestrians and motorists can get too close to the construction site, or even inside. There is a risk of objects falling from scaffolding placed close to boundaries on pedestrians and motorists.

Figure 19: Clear site boundaries on large construction sites



There were clear differences on this topic between large, and small and medium construction sites. The team observed that medium construction sites were not systematically fenced and the public was not systematically warned of the dangers. On small construction sites (low-rise building), nets on scaffolding to prevent dislodged items from striking workers and pedestrians were not always properly secured. Collective control measures[131] (e.g. soft (e.g. tape) and hard barriers and warning signage) for site boundaries were limited or non-existent on small sites. On one large site and some medium sites,

[130] ILO (2017) Conducting Labour Inspections on Construction: A Guide for Labour Inspectors. Geneva: ILO.

[131] Those that protect more than one person, as opposed to PPE.

construction materials were placed outside the site boundaries, representing a trip hazard for pedestrians. On the other hand, large infrastructure and building construction sites (bridges, railways and hospitals) were generally fenced. Safety posters and warning signages were observed along access ways and were properly displayed to warn workers and the public of the danger.

4.3.2 Worker profile

Well-kept welfare facilities are very important to ensure and promote workers' health, hygiene and comfort but also to prevent them from being exposed to hazards even during rest times. Dedicated rest and eating facilities ensure workers can recuperate more effectively from their exertions; tired workers are more likely to lose concentration and be accident-prone. Clean and sufficient toilets and hand-washing facilities help prevent water-borne and other diseases, including COVID-19. In addition, such areas should be away from falling objects, dust, chemical storage and other potential sources of risk for workers; absence of dedicated areas means workers will rest in inappropriate places and remain at risk as a result of working operations.

Figure 20: Eat and rest areas on large (left), medium (centre) and small (right) sites



As with site boundaries, differences exist between large, and small and medium construction sites on the provision of welfare facilities for workers. The team observed designated places for workers to rest and eat meals on large construction sites. In one case, the area had been set up for workers to be able to observe social distancing (6 feet) and comply with Myanmar COVID-19 regulations,[132] though it had no mats, furniture or tables. On small and medium sites, there was no designated place for workers to rest and eat meals; workers ate and rested on the floor inside the buildings.

[132] Ministry of Health and Sports (n.d.) Occupational Health and Environmental Guidelines for COVID-19 Preventions and Mitigations.
https://www.mohs.gov.mm/Main/content/publication/oeh-covid-19

Figure 21: Hand-washing facility (left) and water point on small site (right)



The team observed that water points for workers to wash their hands and forearms were available on all construction sites visited. Sites with toilets had washing facilities close by. On large sites, proper basins were provided along with soap and sanitizer; this was not always the case on medium and small sites. Water quality was not tested.

Figure 22: Temporary tents near the railroad for in-house workers during COVID-19



Workers are sometimes provided with sleeping quarters inside the construction site; this practice became more common during the second COVID-19 outbreak in late 2020 to prevent people from meeting outsiders who could infect them with the virus. Sleeping accommodation (huts) was observed on only one small construction site. On this site, workers rested, cooked and ate their meals in front or inside their hut. The rest/cooking area was well ventilated. Electrical cables and other materials were stored in this area. Workers could slip and trip on these, which were not stored in a tidy manner separate from the rest/cooking area. Pest control measures were not observed but some developers said that this service was outsourced.

Figure 23: Supply of drinking water on different construction sites



An adequate supply of drinking water was available on large, medium and small construction sites, but was not always kept away from sources of dust, potentially compromising water quality - though water testing was not performed. Bottles of purified drinking water were provided to workers; workers shared one cup and washed it after use, or used their own bottles. Risk of slips and trips were observed around drinking points on small and medium sites mostly because of the general untidiness of the sites.

Figure 24: Temporary toilets on large (left), medium (centre) and small (right) construction sites



In terms of toilet availability, large construction sites performed better than smaller and medium sites. Temporary toilets were observed on large sites. Temporary latrines were observed on small and medium sites and were poorly maintained; temporary toilets on large sites were no better, with workers often going to public toilets instead (e.g. at the railway station) and paying for the service.

Areas to store PPE were available only on some large construction sites. According to the manager of one large site, workers were trained on how to properly maintain PPE and advised to check the PPE expiry date regularly. Some construction companies working on large and medium sites allow workers and subcontractors to take their PPE home.

First aid kits and temperature-screening devices were available on large construction sites, although on one site the first aid kit was not fully stocked. Kits were placed where they could be retrieved quickly in the event of an emergency and workers reported knowing the location. First aid kits were not available on medium and small sites. Large sites had managers trained in first aid and some provide training to workers as well. Small and medium sites did not report training on first aid.

4.3.3 Housekeeping

An untidy site presents many hazards. Workers may slip and trip over objects left lying around, and a slip or a trip may be the precursor to a more hazardous event – for example a fall from height.[133] Untidiness compromises the safe storage of hazardous substances including chemicals and pests, and worsens sanitary conditions on sites.

4.3.3.1 Housekeeping in reception areas for construction materials

Figure 25: Reception areas on two large construction sites (bridge, left; hospital, right)



Large construction sites have better housekeeping than do small and medium ones. Large sites have reception areas or planned storage area for the delivery of materials near where the goods are required, enabling the site management to keep control of deliveries and help reduce or avoid double-handling (unnecessary movement of materials). For large sites such as hospitals, where materials are moved mechanically and workers are more prone to being struck by vehicles, the team observed controls such as designated and guarded areas at reception for pedestrians and a security guard supervising driver movements. Lifting areas were fully separated off so workers could not enter unless they were part of this work process.

Figure 26: Untidy reception area on medium and small construction sites



[133] ILO (2017) Conducting Labour Inspections on Construction: A Guide for Labour Inspectors. Geneva: ILO.

Medium construction sites had reception areas but these were generally too small for the volume of material delivered. Small sites did not have dedicated reception areas. This generates housekeeping issues, with material delivered and temporarily sorted in an untidy manner and waste dumped near the site entrance. The risk of slips and trips was perceived as high, as was the risk of cuts and punctures, given the lack of adequate footwear on site. For instance, workers handling glass were not wearing appropriate footwear, as the second picture above shows.

4.3.3.2 Housekeeping in temporary storage areas

Temporary storage areas on large construction sites were generally tidy but several hazards were still observed. On one large site visited, temporary storage for construction materials was designated on each floor of the building. Observation of one of these areas showed that paint, cement and miscellaneous items had been stored in an untidy way without being sorted. It was also observed that chemicals were stored low down, with poor ventilation, along with drinking water bottles. Dust and odours inside the storage room pointed to potential health and chemical hazards. Sharp and protruding objects that could cause physical injury (bruises, pinching, injuries, cuts) were observed on another large construction site (building).

Figure 27: Waste from tree-cutting and demolition, and refuse stocks



On one of the infrastructure projects (railway), waste generated through tree-cutting and demolition was observed along the wayside. Refuse stock rails were also observed; the management said these were the property of the owner (Myanmar Railways) and were going to be delivered to the storage yard by rail gang car. This is an example of how lack of OSH alignment and coordination by different stakeholders working or operating on the same site can create risks for workers.

4.3.3.3 Waste management

Figure 28: Drums reused and waste management on one large construction site



Based on observations, large construction sites have designated areas for waste, particularly combustible waste, which helps reduce the risk of fire, as the fuel (combustible materials) is stored in one area, as far away as possible from potential sources of ignition. On one large site, it was observed that the company aimed to reduce the amount of waste generated by applying the Reduce, Reuse and Recycle (3Rs) principle. For example, drums were reused for the storage of hand tools.

Figure 29: 3Rs (left and centre) and waste collection (right) on a large construction site



On one large construction site, the team observed that the waste produced was properly recycled and reused where possible. On this site, the team saw a small recycling yard, producing household appliance such as racks. The 3Rs method was effectively implemented on the site, with waste collected in separate bins with clear signs and colour coding (green for general waste, red for hazardous waste).

On one large construction site, construction waste was dumped at the side and rear of the building, and waste represented a risk of fire or slips and trips. The management said that the waste was collected weekly by a licensed service provider to dispose of at the YCDC construction waste disposal site. However, it was observed that the waste was not managed properly on site in between the weekly pick-ups.

Figure 30: Waste on small construction site



On small and medium construction sites, it was observed that solid and liquid (silt) waste was not dumped in designated areas and created slipping, tripping and falling hazards for workers. Combustible refuse was dumped at the side and front of buildings, posing fire hazards. Biologically hazardous waste was not properly disposed; this and physically hazardous protruding objects affected all workers on these sites.

4.3.4 Personal protective equipment

PPE is a common control measure to prevent exposure to hazards on construction sites, though the least effective as per the hierarchy of control (see Figure 3 in Section 1). The team wanted to see if relevant PPE as listed in Table 12 was provided to prevent exposure to hazards on construction sites.

Table 12: Personal protective equipment list

Area of protection	Hazards	Types of PPE for selection
Feet and legs	Wet floors and slips; cuts, bumps and punctures; falling objects; splashing of chemicals or molten metals; abrasion	Safety boots or safety shoes, water-proof boots with steel toe caps, steel soles and slip-proof characteristics 
Ears	High levels of noise leading to tinnitus; temporary deafness; permanent hearing loss; dizziness and headache	Hearing protective equipment, including ear muffs and ear plugs 
Eyes	Splashing of chemicals or metals; dust; projectiles; gas and vapour; radiation	Safety glasses; goggles; face shields 
Head	Impact from falling or flying objects; risk of head bumping in a cramped working environment	Safety helmets; bump caps 
Fall protection	Injury or death caused by falling from height	Safety harnesses (to be used with lifelines or attached to anchorage points) 
Respiratory system	Dust; fibre; hazardous gases and fumes; oxygen deficiency	Disposable cartridge respirators; full-/half-face respirators; air-supplied hoods; self-contained respirators 
Arms and hands	Abrasion; extreme temperatures; cuts and punctures; contact with chemicals; electric shock; skin infection	Rubber gloves; steel mesh gloves; leather gloves; wrist and arm protective devices 
Torso/full body	Extreme temperatures; severe weather; splashing of chemicals or molten metals; radiation; injury caused by sharp objects; hazardous dust/ fibres; dark environment or personal clothing entangled	General purpose protective clothing; disposable overalls; specialized protective clothing such as cold-resistant clothing; chemical or radiation protective clothing; high-visibility clothing; puncture-resistant aprons 

Source: ILO (2017) Conducting Labour Inspections on Construction: A Guide for Labour Inspectors. Geneva: ILO.
Note: Graphic credit: Yamashita Tsutomo, Chief Site Manager of Yangon Circular Railway Line.

Figure 31: Working with PPE on large construction site (left) and without PPE on small construction site (right)



4.3.4.1 Head protection (helmets) and eye and face protection (eye shields)

Figure 32: Workers working with cutting tools and power tools without eye and hand protection on large building site



On large construction sites, where the hazard of flying and falling objects was observed, all workers were wearing safety helmets. On one site, a safety sticker indicating the employee's name, ID number and blood type was stuck onto helmets. On small and medium sites, workers did not wear helmets or eye and face protection when working with electrical and mechanical tools (welding tools). The risk of falling objects was deemed high, as was the risk of eye and face injuries from pieces of materials that could fly during cutting, abrasion or other mechanical operations using power tools.

4.3.4.2 Respiratory protection (disposable dust mask)

On two of the large construction sites, the team observed that around 10 percent of workers were not wearing dust masks during a dust-generating operation (i.e. jack-hammering, cutting or sawing silica-containing materials). On another large site, the team observed dust in some work areas and workers wearing dust masks. When inhaled, fine crystalline silica particles contained in dust can lodge themselves deep in the lungs, which can lead to silicosis and other respiratory illnesses. Dust-generating activities were observed on the railway site too. The site management informed the team that it sprayed water to suppress dust generation but the team did not observed this.

Figure 33: Masonry and concrete work without respiratory protection on medium and small sites



Dust-generating activities were also observed on small and medium construction sites. Workers were wearing surgical masks covering the mouth and nose but the team observed these were not appropriate for dust-generating activities, and risks associated with inhalation of dust and particles were observed to be high. Exposure by workers to crystalline silica dust without appropriate PPE was observed.

4.3.4.3 Protection against noise (ear plugs, ear muffs)

Figure 34: Worker using a disc cutter without hearing protection on a large building site



Except on one large construction site, where the team observed that some workers used ear plugs and ear muffs, the team found that, overall, workers working around potential noise sources such as cutting and

power tools did not use protections against noise. The team did not measure noise levels but it seemed worth conducting additional measures to assess the need for protection against noise in all sites.

On the railway site, the management kept noise data, along with other environmental data (CO2 levels). However, it is unclear if this can be used for OSH purposes, since data on the specific duration of exposure and workers exposed was not recorded. During the visit, the site was relatively silent.

4.3.4.4 Hand protection (gloves)

On large construction sites, some workers were wearing cotton gloves instead of leather gloves when handling paints and mixing concrete. In addition, workers handling concrete materials were not wearing boots or protective clothing. At the bridge construction site, most workers were wearing cotton or leather gloves. None of the workers on small and medium construction sites were wearing hand protection when performing processes requiring this. When workers were using electrical jack-hammers and grinders, guards were not observed to be used.

4.3.4.5 Foot protection (safety shoes)

All workers on large construction sites were wearing safety shoes, except on one site, where some workers were not. The risk of foot injury from falling objects was observed. On medium and small construction sites, workers were wearing casual clothes and slippers to work (no uniform, no specific shoes, no hat). Potential hazards observed on these sites included materials and protruding objects, and the risk of objects falling on the feet of workers, causing injuries. The team did not observe any PPE on small and medium sites and discussion with workers confirmed that contractors and/or subcontractors did not provide these.

4.3.5 Work at height

Working at height often presents one of the most serious risks in the construction sector: falls can have very severe or even fatal consequences. The ILO states that falls account for a high percentage of accidents in the construction sector.[134] Working at height means working at a level where a worker may fall a distance likely to cause personal injury. Examples of this include working on a roof, working on the facade, working at ground level where the worker may fall into an excavated area and working on ladders.[135] All workers and supervisors must therefore receive information and training on perceptions of the risk and on safe working practices with regard to work at height.

On three of the four large construction sites, there were instances where the risk was controlled and others where it was not. Work at height was not observed on the railway project.

On the bridge construction site, key engineering controls for fall arrest during pile foundation work were observed. The management informed the team that scaffolding erection and inspection were carried out regularly by a third party service provider but records of this were not provided. In addition, a personal fall arrest system, including harnesses and a lanyard system, was used when working at elevated levels over 1.8 m, when the work platform was not "green tagged" as per the scaffolding tag system. The management said that it had modified the ladder during scaffolding assembly after conducting a risk assessment. It was also observed that the correct type of couplers were used on all vertical and horizontal connections. Scaffolding boards were in good condition. The scaffolding was adequately tied to the permanent structure and fitted with suitable guard rails and toe boards at each working-level platform.

[134] ILO (2017) *Conducting Labour Inspections on Construction: A Guide for Labour Inspectors*. Geneva: ILO.

[135] ibid

Figure 35: Working at height risk in tower scaffolding on the bridge construction site



However, the team also observed on the bridge site an unprotected area on the uppermost level of scaffolding (see Figure 35) where workers were working outside the catchment area of the safety net. The team was unable to access and verify whether the scaffolder working without guardrail protection was wearing a full body harness with lanyards and remained clipped on to a suitable anchor point.

On most large sites, safety nets were properly installed, with sufficient clearance to provide adequate fall protection. However, installing the safety net on the bridge site was difficult given the lifting operations happening on the site. The combination of a horizontal lifeline, a body harness and a lanyard would serve as a better fall protection measure, limiting the worker's ability to move close enough to fall over an unprotected edge in this particular case. The management said that the net met accepted performance standards as certified by the manufacturer and was inspected by third party inspectors. This certification and quality control refers to the net in question but the team learned that the certification did not refer to the net as a control measure to ensure the safety of workers (and poor installation could leave workers unprotected, as shown in Figure 35). This certificated equipment is often purchased by large sites; small and medium sites may not be able to purchase high-quality products, likely adding to the risk by using substandard equipment.

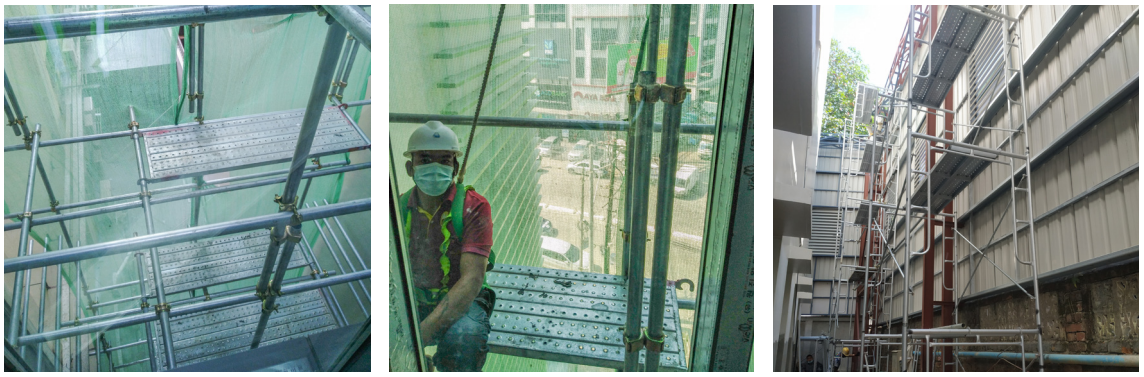
Figure 36: Working at height with full body harness at the bridge site



On the bridge site, a "personal fall protection system" poster was observed. The team also observed that workers working at height were wearing full body harnesses with shock absorbing lanyards secured to

an appropriate anchor point. Workers were trained on how to use the full body harness and posters were displayed on site on the dos and don'ts of working at height.

Figure 37: Potentially hazardous scaffolding at a hospital site



On one of the high-rise building sites (a hospital), it was observed that the scaffolding was not properly set up. Although it was installed on a stable surface, there was no base plate or proper footing to support the structure. Guardrails and toe boards were not properly fitted.

On small and medium sites, the team observed that bamboo scaffolds were not properly secured. External nets to prevent the fall of construction materials were observed but were not always properly secured or looked to be in poor condition. On metal scaffolding, toe boards were severely damaged, representing a hazard to workers, who could fall from a height. Risks of slips and trips and from the likelihood of injuries to those working at height and not wearing safety shoes were deemed high.

Figure 38: Hazardous scaffolding installation on small construction sites



On small construction sites where working at height was observed, the team noted that the correct scaffolding method was not applied; rope was used for connections instead of the correct type of couplers; working platforms were not fully boarded and completed with a suitable edge protection (no guardrails); and sole plates and base plates were missing. No personal fall arrest system was in place for workers working at height. Figure 38 shows the high risk of falling from height identified on one of these sites.

Figure 39: Unsafe work at height (left) and with ladder (medium and right) on medium construction sites



On one of the two medium construction sites, workers were observed working 10 feet above the ground without any PPE and with no personal fall arrest system (belt, harness, lanyard, etc.). On another medium site, step ladders without a lock and unsecured wood ladders were observed, and the risk of falls from height was identified. Makeshift ladder extensions were observed; these are very dangerous for workers as they compromise stability.

4.3.6 Working with vehicles

Moving vehicles often cause injuries to workers on construction sites. Vehicle movements consist of, among other things, goods vehicles involved in deliveries, dumper trucks transporting soil, excavators used in groundwork and vehicles transporting workers. The injuries are sustained as a result of workers being struck (particularly during reversing operations), workers falling off or being struck by loads falling off the vehicle or vehicles overturning.

4.3.6.1 Pedestrian and vehicle routes

Separate pedestrian and vehicle routes were observed on large construction sites. Temporary diversions were also observed for traffic movement from site areas to existing roads on and off site. A warning sign was found at the junction of the public road and the site access on the site located in the downtown area where the bridge was being built.

Figure 40: Pedestrian and vehicle routes at the bridge site



On one of the high-rise building construction sites and on the bridge site located in the downtown traffic area, the team observed that the safety margin between the pedestrian and vehicle routes was narrow. Passing pedestrians and vehicles might collide with the fencing/barrier and be injured. The fence might also be damaged by vehicles on the road and cause injury to pedestrians off site or workers on the other side of the fence.

On one of the large construction sites, the traffic route was obstructed by trucks and vehicles and the safety margin regarding personnel, vehicles and equipment was very narrow during loading/unloading of materials, which presented a risk for workers.

On small and medium construction sites, the team did not observe much vehicle movement and work with vehicles. The team also observed that some construction materials were temporarily piled up outside of the site area used by pedestrians, representing a risk of tripping.

4.3.6.2 Reception area for delivery truck

It was observed that reception areas for delivery trucks at large construction sites were properly designated but were too close to the heavy-duty traffic road, where trucks and heavy machinery represented a hazard as a result of the space constraint. Openings for vehicle entrance/exit were also very narrow.

On small and medium sites, the team observed that site access and reception areas were often blocked by delivery trucks because there was limited space for the reception of construction materials.

4.3.6.3 Traffic control and speed limit

On 75 percent of large infrastructure sites, key engineering control measures such as temporary pavements, fence, barricades and traffic control equipment, as well as administrative controls like warning signages and signals, had been put in place along the access routes.

On large sites, traffic management plans had been developed, with training attached to these, although the team was not able to verify whether vehicle safety training or other related training had taken place.

Speed limit signs were properly posted on two of the four large construction sites. On the third large construction site, a “drive slowly” sign was posted but no speed limit was displayed. On the fourth, the team did not observe traffic control signage for drivers to follow. On the railway site, no speed limit for the train was displayed, as there should be in accordance with the Railways General Rule.

No control measures for traffic control and speed limits were observed on small and medium construction sites.

Figure 41: Traffic control for wayside construction work (right), temporary diversion for level crossing on railway site (left), traffic control on bridge site (bottom)



4.3.6.4 Safe drivers and vehicles

On large construction sites, a security guard was assigned to supervise drivers' behaviour – for example to check the vehicle's speed and load.

On the bridge site and on the two high-rise building sites, the team observed that security guards were assigned to supervise driver behaviour (i.e. vehicle speed and load security). On the railway site, temporary diversions were observed at the level crossing for traffic movement from the site area to existing roads. A temporary pavement and barricading to ensure traffic safety on wayside construction work was also observed at the railway site. The management said that the train schedule had been checked with the station master. If there was a train operating on the outer line, the inner line was properly barricaded for safe construction work. In addition, the team observed that two train watch staff were stationed on both sides of the railway and were tasked with alerting the train in/out. The team was informed that work must stop during train movement.

No safe driver and vehicle control measures were observed on small and medium sites.

4.3.7 Groundwork

The main hazards to which construction workers are exposed during excavation include contact with underground services (electrical cables, gas and water pipes); collapse of the excavation; workers and vehicles falling into the excavation; and materials falling onto workers in the excavation. Drowning and asphyxiation from the ingress of water and gases, respectively, are also hazards to workers involved in excavation work.

Figure 42: Groundwork on railway (left) and bridge construction site (centre and right)



Groundwork was observed on two of the four large construction sites visited and the team observed that hazards were identified and their risks were somewhat managed. The team observed the following groundwork potential hazards: banks collapsing; materials falling onto people working in the excavation; workers and vehicles falling into the excavation; dust; and contact with underground services. Measures of air quality should also be performed.

Excavation work for drainage diversion utilizing crawler excavator was observed. The key engineering controls observed were access and egress provided and maintained at the excavation/trenching; benching/shoring/sloping to prevent collapse of banks; monitoring of soil condition and underground utilities and nearby structures by site supervisor; and watering to prevent/reduce dust generation. During the site visits, the team observed that excavators were located near the edge of the excavation. A risk of vehicles falling into the excavation was identified.

The team also observed soil excavation carried out using a 3 ton back-hoe beside the railroad. The operator certificate and machine checklist were properly posted on the machine but the working area was not properly barricaded and no warning signage or train watch staff were seen. Given the tracks and incoming trains nearby, watch staff are needed and work must stop when trains approach.

Figure 43: Groundwork on a small construction site



The team observing groundwork on one of the small construction sites saw no procedure in place to prevent damage to underground utilities such as cables and pipes. On one of the small construction sites, a portable concrete mixer was also observed adjacent to the trench; this represented a hazard for groundwork workers, as it presented the risk of falling into the excavated trench. Slipping/tripping hazards were also present. This site was a private residential building.

4.3.8 Moving materials/goods safely

4.3.8.1 Cranes (lifting mechanisms, ropes and wheels, safe load indicators)

On one of the largest construction sites, the team observed material lifting operations using a mobile tower crane. In the process of lifting, space constraints meant that the object lifted could swing above the public traffic lane. In addition, no proper communication device (walkie-talkie) had been provided to the crane operator and the supervisor overseeing the overall site operation. Lifted objects were identified as a hazard while the communication failure between supervisors on the ground and the crane operator, to warn the latter of danger or inform him of a sudden change in weather conditions (such as wind), was identified as a missing control measure. The health, safety and environmental manager informed the team that the wind speed was monitored during crane operation and that a stop work order was issued immediately if it exceed the safe level. However, he did not explain how the stop work order was communicated to the crane operator. The team was informed by management that monthly inspections of hoisting devices (cranes) were conducted.

4.3.8.2 Hoists or winches (lifting mechanisms, ropes and wheels, safe load indicators)

Use of a 1 ton winch was observed during the visit to one of the large construction sites. This was used for the lifting of construction materials such as cement bags, wood and cables. The management informed the team that working loads, ropes and ties were always checked before lifting operations but the team did not observe this directly. The lifting area was properly separated and effective controls to prevent risks related to falling objects were observed.

On one of the small construction sites, the team observed that a winch and a basket used for lifting materials were not in good condition and falling object hazards were identified in lifting operations.

4.3.8.3 Manual handling

Figure 44: Workers carrying glass on medium site (left), manual lifting on large site (centre and right)



Manual lifting was observed on large construction sites but the loads transported manually were assessed as not extremely heavy (not exceeding 20 kg). However, workers, including women, often do this for long periods of times. Manual handling was observed on small and medium construction sites too. The workers were observed carrying glass without gloves, which may cause hand, foot and body injury (cuts, fractures, abrasions, etc.).

On one of the small construction sites, the team observed that workers were taking construction materials from the ground floor to the upper floor of the six-storey building manually, using stairs with no guardrail and walkways installed. In addition to the risk of falling from height, involving potential severe injuries, ergonomic risk factors were identified. Workers were not aware of safe manual lifting procedures, and mechanical aids were not observed.

4.3.9 Electricity

Electricity will be required on virtually all construction sites and differing control measures are necessary to ensure workers are protected from hazard. Contact with overhead electrical services presents a risk to workers, with the potential of causing injury and death. Similarly, any work on electrical power supplies and with electrically powered equipment can result in serious or fatal injury.

4.3.9.1 Contact with overhead electrical services

On three of the four large construction sites, the team observed that temporary extension power lines were installed safely at a minimum of 10 feet and properly insulated. This was not the case on one other site (a hospital), where the temporary installation might lead to workers' contact with the cables, causing electrocution and electric shocks.

On small and medium construction sites, extension cables were not properly erected to ensure a safe height (minimum 10 feet), which could increase risk of electrocution and electric shocks.

4.3.9.2 Collective control measures

On large construction sites, moulded case circuit breakers and residual current circuit breakers were observed at all distribution boards. Ground-fault circuit interrupters or double-insulated power tools and earthing systems were installed to prevent electrocution. Other administrative controls, such as a log-out-tag-out system or an inspection tag system, applied on site. Main panels and distribution boards were padlocked and the authorized person's contact number was posted for an emergency electrical service. The team also observed that engineers used the correct instruments and wore proper PPE while conducting electrical inspections on site.

Figure 45: Temporary power source – main panel board, power distribution board and generator on a large construction site



On one of the large construction sites (a hospital), the team observed that the power was received via the main feed from the sub-grid, where a 100A circuit breaker was installed, but the temporary control panel was not lockable and temporary switch boards were installed on a wooden board. The team observed the possibility of electrocution and electric shock. Safety signage to prevent workers' exposure to electrical hazards was not observed.

Figure 46: Temporary power line erection and control measures on small and medium construction sites



On small and medium construction sites, the team observed that power was received via the main feed from sub-grids. The main panels were not always padlocked and circuit breakers were not always installed to prevent electric shocks. It was also observed that circuit breakers were not always covered and represented an electrical shock risk.

Unsafe cabling is a major hazard on small sites. On one site, the team observed loose overhead power cables in the stairway, which represented a risk of electrocution and slips and trips. On some small sites, cords were directly wired to the electric circuit and not protected by ground-fault circuit interrupters and not grounded. On one site, the team observed loose power cables in the stairway and damaged wires near the water course, which represented a high risk of electrical shocks, fatal electrocution, burns caused by electrical shocks and slips and trips.

Observation revealed that electric cables and installation were hazards/risk factors for workers on small and medium sites owing to the lack of proper installation by qualified electricians.

4.3.10 Fire

Figure 47: Fire control facilities at large construction sites



Fire is considered a major hazard on construction sites where combustible materials are stored. It was noted that combustible loading was relatively moderate on the large construction sites, thanks to good housekeeping, comparing with on small sites. On one large sites, the team observed that the building under construction was protected by a fire hydrant and a hose reel system. The hose reel cabinets and water tank for firefighting purposes, were on every floor. In addition, portable fire extinguishers (dry chemical powder 3 kg, 5 kg) with inspection tags were on every floor. Management advised that firefighting training/drills were provided to workers.

Small and medium construction sites were not protected by firefighting facilities. The team observed only one fire extinguisher, without an inspection tag and a water tank. On other small and medium sites, no fire prevention tools were observed. Fire extinguishers for electrical fires were not available. Combustible loading in storage areas (unused materials and waste products) was considered high, as was the overall fire hazard.

4.3.11 Other machinery and equipment

The team collected information on machinery and equipment for several work processes that were not on the original template. On large construction sites, welding and cutting were performed unsafely: control measures such as machine guards, regular inspection of equipment and PPE were not observed or reported. The use of equipment in the absence of effective control measures could result in cuts, fractures, amputations, fire and explosions, burns, electrical shocks, noise, radiation and lead fumes and gases. The team also observed on one small site that such machines were left unguarded in the rest area when not in use.

4.3.12 Slips and trips

Slips and trips are a common cause of accidents. They can also set off other incidents, such as falling from height. The main causes are having to walk over uneven ground, particularly when carrying unwieldy objects; tripping over building materials or waste that has been left lying around; tripping over trailing cables; slipping on wet surfaces or in poor ground conditions; and tripping because of small changes in level.

On large construction sites, some stairways and footpaths were wet and muddy. Slips and trips hazards were also observed in the material reception area on one site. It was observed that workers wore safety shoes to prevent slips/trips.

Many protruding and sharp objects were observed along walkways on small and medium construction sites, representing a hazard for workers. Wet floors were also observed, representing a risk of slips and trips. On one small site, the team observed that a large portion of the area was covered with debris, and also saw clutter on the ground. Soil and gravel improperly stored, and waste inadequately disposed of, are hazards that represent a risk of tripping or injury in the case of a fall. Workers on these sites were not wearing safety shoes, thus increasing the risk.

4.3.13 Working environment

4.3.13.1 Dust and airborne particles

The team observed several operations that produced air pollutants, especially dust, such as crushing, grinding, sanding, cutting and sawing. Workers observed were not always wearing dust masks.

The team did not carry out measurements of dust concentration in the air. It was also observed, however, that on large, medium and small sites, the air contained some dust and particles, produced from cement and concrete materials, especially in basement areas, affecting breathing and potentially causing disease in the case of long and/or repetitive exposure. It is advisable that these sites measure dust concentration and take action accordingly.

On the site where underground work was observed, the team saw two exhaust fans; however, these appeared to be insufficient to extract dust and particles being released as the air was still charged. Workers working on façades were observed cleaning plaster walls using sandpaper. Potential hazards include inhalation of fine crystalline silica particles or fine particles of dry plaster contained in the dust.

Figure 48: Air emission level at one construction site

No.	Parameter	Maximum Concentration	Observed Values	Unit	Average Period	Source
1.	Nitrogen dioxide	200	150.49	µg/m³	1 hour	NEQG
2.	Particulate matter PM_{10}	50	75.58	µg/m³	24 hour	NEQG
3.	Particulate matter $PM_{2.5}$	25	40.23	µg/m³	24 hour	NEQG
4.	Sulphur dioxide	20	9.87	µg/m³	24 hour	NEQG
5.	Carbon dioxide	5000	258.2	ppm	8 hour	ACGIH
6.	Carbon monoxide	35	0.0047	ppm	1 hour	NAAQS

On one large construction site, air pollutants (CO2, CO, NO2, PM) were regularly monitored and measured as per the Environmental Management Plan in accordance with the National Environmental Emission Quality Guidelines. According to the observed values, emissions of PM10 and PM2.5 exceeded that recommended in the guidelines, especially during stock piling of ballast along the railway track.

4.3.13.2 Chemicals and other hazardous substance

Observation revealed that hazardous substances used or present on large, medium and small construction sites were not always properly stored or labelled and could not necessarily be locked away at the end of the working day. Access was not always controlled. On one medium site, fuel was not properly stored in a separate area and was kept together with a water tank adjacent to drainage.

On two of the four large construction sites visited, the team observed separate storage areas for hazardous substances, although small and medium quantities of hazardous substances – such as methylated spirit, banding agent, additives for concrete mixing, sealants – were kept together and not properly labelled. Hazardous substances were not observed on the railway construction site.

On one of the larger sites, the team observed that some workers handling lead coating and paint and working on abrasive blasting were not wearing proper PPE for respiratory and hand protection. The management told the team there was no on-site storage for flammable, combustible, corrosive or toxic substances. The diesel used for heavy machinery and bentonite were properly stored in the skid tank with proper secondary containment. A spill response tray was also available in the storage area to prevent environmental pollution. Handling of diesel by workers was not observed.

Use or storage of hazardous substances was not observed on the majority of small sites.

4.3.13.3 Noise

On large construction sites, electrical and mechanical tools produced a high level of noise but workers did not wear hearing protection. The team did not measure noise levels; it is advised that this be done to verify the need for hearing protection. It is unclear whether the employer did not provide hearing protection or whether workers just did not wear it. On one of the small sites, the team observed noisy equipment such as compactors, cutting tools, grinders and other mechanical hand tools in use but workers were not wearing hearing protection to prevent noise-induced hearing loss.

4.3.13.4 Temperature

On large construction sites, civil work required exposure to ultra-violet radiation from the sun. Long exposure can cause short- and long-term skin damage, heatstroke, hives and dehydration. It was observed that workers working under the sun were wearing helmets and sometimes long sleeves to protect themselves from the sun. Workers had regular water and toilet breaks without restrictions.

4.3.13.5 Confined spaces

The team was unable to see workers working in confined spaces, though confined spaces were identified on one of the hospital projects. The permit to work system for confined spaces was prepared and implemented but the team could not verify the actual working conditions in such spaces.

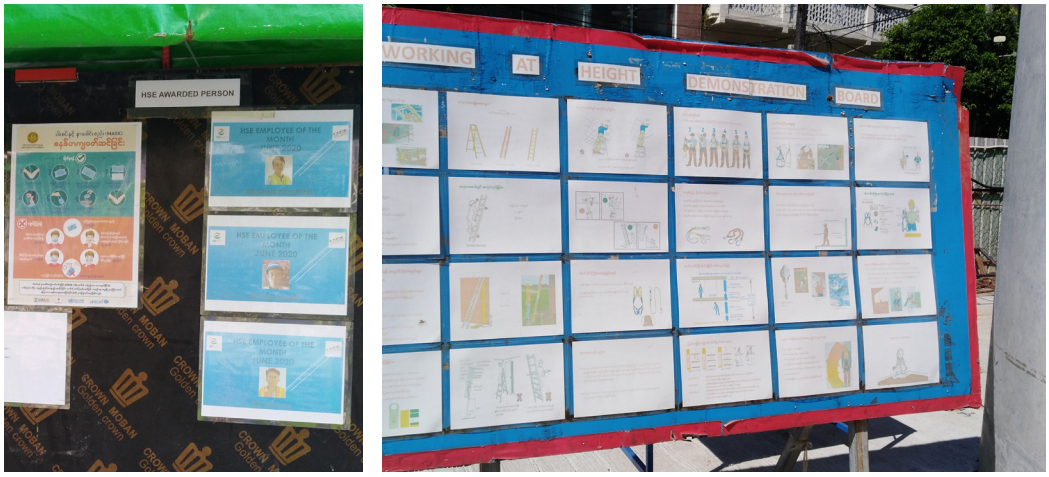
4.3.14 Administrative requirements

4.3.14.1 Project signboards

Signboards showing the principal contractor's name and telephone number (including an after-hours number) and the project period were observed in front of the large and medium construction sites. Some project signboards included a clear description of the project works and an indication of the anticipated completion date together with the enquiry hotline number and website information in front of the site office. Project signboards were not systematically displayed on small sites; on one site, the signboard showed that the construction permit had expired.

4.3.14.2 Safety education and training

Figure 49: Monthly safety award notice and safety poster on bridge construction site



On large sites, discussions with managers and observations revealed that training on safety procedures was implemented and safety information was displayed on site. Training procedures included the need for all new workers to attend safety induction prior to deployment on site. Safety toolbox meetings – 15-minute meetings led by site managers to discuss tasks and safety measures – were reportedly conducted at the beginning of every workday. An interesting incentive came from the project management of one bridge site, who implemented a monthly "safety award" system to promote workplace safety culture.

On medium and small building sites, safety education and training were not reported to be implemented for workers, and there was no evidence of safety information displayed on site.

4.3.14.3 Emergency plans

Emergency exit layout plans with assembly points, security gates, evacuation routes and contact lists were observed on all four large construction sites but there was no record of emergency drills on two of them. On another large site, signage showing emergency exit routes and fire exit signs was observed. On the railway construction site, the team observed a training manual and attendance records for safety induction training for workers.

On small and medium sites, emergency assembly points were not designated or were improperly designated, and there were no emergency procedures. Risk of injuries were presented as a result of material and protruding objects between working stations and emergency assembly points.

4.4 Risk management rating and conclusions on site observation

As per the step 3 of the methodology, Table 13 presents the results of the qualitative rating of risk management/control by topic observed on large, medium and small sites according to the different phases of construction identified during the scoping. As per the methodology, the following ranking system has been used:

- Score N/A: Not applicable to the enterprise
- Score 0: Risk neither identified nor managed ((severity and probability high)
- Score 1: Risk identified but inadequately managed (severity and probability high)
- Score 2: Risk identified and somewhat managed (severity and probability medium)
- Score 3: Risk identified and adequately controlled (severity and probability low)[136]

The research team gave scores based on the likelihood of the risk occurring and the severity of the harm (risk) and the presence of adequate control measures (risk management). For instance, falling from height in the absence of adequate control measures will have severe consequences, including death, but some large sites manage the risk better than do smaller ones. Therefore, scores for work at height on small construction sites are among the highest given.[137]

This risk rating aims to provide a preliminary analysis of the capacity of contractors and workers to identify hazards and manage risks for each of the 12 categories of observation identified in the methodology. It is not a definite assessment, since measurements of exposure (e.g. noise levels, dust concentration) were not carried out, for instance, and the sample is not representative of the entire construction sector in Myanmar. However, the analysis sheds light on areas where awareness and action on risk management are more clearly lacking. It also serves to draw conclusions from the observation exercise to identify the vulnerability profile and inform intervention models.

[136] ILO (2018) Occupational Safety and Health in Global Value Chains Starterkit – Guide for Implementers. Geneva: ILO.

[137] See more on risk scoring at ILO (2013) Training Package on Workplace Risk Assessment and Management for Small and Medium-Sized Enterprises. Geneva: ILO.

Table 13: Qualitative risk rating on large, medium and small sites in Yangon, by type of project

#	Are all of electrical	Infrastructure		Building		
	Category of hazard and risk control measures	Bridge (large)	Railway (large)	High-rise building (large)	High-rise building (medium)	Low-rise building (small)
1.	Site boundaries	3	3	2.5	1	0
2.	Welfare facilities and working conditions	3	2	2.6	0.5	0
3.	Housekeeping	3	2	2.4	0	0
4.	Personal protective equipment	3	2	2	0	0
5.	Administrative requirements	3	3	2.5	1.5	1
6.	Work at height	1	N/A	1.25	0	0
7.	Working with vehicles	1	2	2.5	1.5	2
8.	Groundwork	1	2	3	3	0
9.	Moving materials/goods safely	2	2	2.75	0	0
10.	Electricity	3	3	2	0.5	0
11.	Fire	3	3	2.5	0.5	0
12.	Slips and trips	3	2	2.5	0	0
13.	Confined space	N/A	N/A	2.5	N/A	N/A
14.	Working environment	3	2	2.4	1.5	0

Workers on small and medium building sites are at higher risk than those on infrastructure projects. A larger number of risks factors were observed on small sites, and risk management was poorer. Medium sites pose dangers for workers in a number of work processes, though better hazard identification and risk control are present compared with on smaller sites. Large infrastructure and building projects have better hazard identification and risk control, though improvements are needed when working at height, working with vehicles and performing groundwork.

Lack of housekeeping is a main source of risk for workers on small and medium building sites. The qualitative assessment shows that, based on site observations in Yangon, lack of housekeeping is a main risk factor in the site work, foundation and superstructure phases of the construction process. While overall good housekeeping was observed on large construction sites, protruding objects, slippery soil, untidiness of delivery and storage areas, and poor waste management systems were main observations on small and medium sites. Workers on small and medium sites were not wearing PPE, which made the risks even higher, even if PPE is not a priority in terms of control measures.

Work at height is a risk factor for construction workers on all sites observed, and potentially fatal. Risk of falling from height exists across the five construction phases on sites where work at height was observed, including large sites. This risk was present on all sites but its severity was higher on high-rise buildings and on the bridge site. Most safety nets observed would catch objects but not workers. Workers without the necessary PPE were observed on large, medium and small sites. On some sites, workers were

working at more than 10 feet above ground level on unsecured scaffolding without safety nets and with no PPE. Workers were also seen on unproperly erected bamboo scaffolding. Using bamboo is not an issue per se, and can represent an inexpensive solution for small sites; however, it must be erected and tied properly.[138] Working at height requires proper collective and personal control measures. Service providers specializing in the cabling of suspension bridges highlighted the importance of a daily safety briefing for workers working at height and strict control measures, including processes and feedback loops for stop work orders and improvements.

Groundwork is an important risk factor on infrastructure projects and small building sites. Risks involve working in excavation pits without shoring and the risk of falling objects. Heavy duty machinery is also a hazard: workers could be hit by the machine. Dust generation is also a hazard, especially on small and medium sites, where workers do not wear dust masks. The risks of workers being buried as a result of the collapse of excavation walls and of injury through contact with underground services were deemed high by the research team on small and medium sites. Excavation encompasses the risk of accidents as a result of cave-in, contact with underground utilities, the collapse of nearby structures and falling materials, vehicles or objects, as well as fumes, gases and in-rushes of water.

Use of explosives was not observed directly in Yangon but was identified as a main risk by a contractor working on a hydropower/dam project in a remote rural area. This presents the risk of workers being buried or injured as a result of work with explosives during site and earth work. The presence of various contractors (members of the JV) and subcontractors on site can make the risk higher since not all workers have the same level of awareness of the risk associated with explosives.

The risk of workers being crushed or struck by moving vehicles and equipment is present on small, medium and large construction sites. This primarily involves the risk of workers being struck by equipment, private vehicles and vertically and horizontally transported materials. Injuries are sustained as a result of workers being struck by a vehicle (particularly during reversing), by workers falling off the vehicle or being struck by a load falling off the vehicle or by the vehicle overturning. This risk was higher in the following cases:

- Reception area or storage area where vehicles have limited space to manoeuvre;
- Untidy and/or unorganized reception area or storage area;
- No designated area for waste collection;
- No separation between pedestrian and vehicle tracks;
- Site boundaries too close to public roads;
- Site boundaries not properly erected and/or secured to the ground.

Risk of slips and trips is high, particularly on small and medium sites. Numerous hazards were observed, such as protruding objects, waste, debris, rebars, nails and liquid spills, increasing the risk of slips and trips for workers during the site work, foundation, superstructure and façade phases. These phases correspond to the times when large volumes of materials and equipment (e.g. concrete) are delivered, stored and used, hence when the site needs to be tidy. It is also during these stages that the construction process generates large quantities of waste, which, if not disposed of properly and in a timely manner, can increase risks of slips and trips. The risk of slips and trips and injuries is also present during the interior construction phase. Slips and trips risks are higher on all small and medium construction sites; they were almost always controlled on large construction sites.

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[138] In Hong Kong, bamboo scaffolding is used as the primary method to build skyscrapers. Chan, Y. (2016) "What's the Deal with Bamboo Scaffolding?" 2 March. https://www.theloophk.com/hong-kong-history-culture-guide-whats-the-deal-with-bamboo-scaffolding/

Electrical hazards are concerning, according to site visits and interviews. Accidents were reported on several sites visited, as per managers interviewed, and these were confirmed in interviews with workers (not working on the same sites). Observations of loose cabling on wet floors, improper installations and unsafe extensions elevate the risk of electrocution.

Although the team was unable to verify the degree of exposure to hazardous substances and other hazards (e.g. noise and dust), it is likely that workers on medium and large construction sites, as well as infrastructure projects like railways, are exposed to a range of hazards that compromise their health. Inhalation of dust by workers working on site work and interior construction was observed on medium and large sites. Even when extractors are provided, dust is still in suspension and inhaled by interior construction workers not wearing dust masks. Health risks can be high on these sites and can include inhaling silica, as silica-containing products were observed on site, though precise monitoring and analysis of working environment and degree of exposure are needed. This could be particularly concerning for workers carrying out dust-generating work in enclosed spaces. Dust control measures were observed but the air was still seen to be loaded with dust, which indicates that extraction measures are not sufficient.

▶ Box 4: The risk of silicosis for construction workers

Silicosis is an incurable and irreversible lung disease that results from the inhalation of silica dust, which inflames and scars the lungs causing shortness of breath and coughing. Over time, it can be a potentially fatal condition resulting in death. Cement dust or silica symptoms may come on soon after exposure or even years later. It all depends on the type of silica, the amount and the duration of exposure.

Concrete and masonry products contain silica. Since these products are primary materials in construction, construction workers are at risk of exposure to respirable crystalline silica. Efforts to prevent silicosis may be inadequate if any of the following conditions exist:

- Lack of awareness of the sources of silica exposure and the causes and nature of silicosis;
- Failure to substitute abrasive blasting materials that are less toxic than those containing silica;
- Inadequate engineering controls and work practices;
- Inadequate respiratory protection programmes for workers;
- Failure to conduct adequate surveillance, including exposure and medical monitoring.

Source: NIOSH (n.d.) "Preventing Silicosis and Deaths in Construction Workers". www.cdc.gov/niosh/docs/96-112/

Chemicals and hazardous substances (e.g. bentonite, diesel, methanol) observed on medium construction sites were not properly labelled and stored and represented a hazard for workers, who had no visual means to identify the substance stored and to understand its toxicity. Workers could resort to opening the container and smelling the substance to identify it, which could lead to the inhalation of toxic substances.

4.5 Vulnerability profiles

Identifying vulnerability profiles can support the process of setting priority interventions and better tailoring them to the needs of workers who will benefit from them. They are defined as the presenting the characteristics of specific groups of workers in relation to exposure to occupational hazards and risks factors, and to potentially low capacity to cope with the consequences of such exposure, which makes them vulnerable to adverse consequences.[139] Vulnerability can be exacerbated by the type and sector of the enterprise, type of work process, employment status, and access to services and systems (e.g. inspection, health and social security systems).

The construction process includes a vast number of task/functions depending on various factors such as the type, size and phase of the process considered as well as the materials, tools and equipment used by workers (e.g. above or underground). These tasks/functions also depend on the environment, the season and the location in which the construction takes place. The location of workers on the site is also an important factor in determining the level of risk. For example, the risk for workers involved in building a 20 m beam bridge over a quasi-dry river during summer is very different from the risk of workers fixing cables on a 300 m cable-stayed bridge over a major river during the monsoon.

It would be impossible to list all the tasks/functions executed by workers for each phase of the construction process for all of types of infrastructure and building considered in this assessment; however, it is possible to identify the main tasks/functions, and to assess the main risk, likelihood, severity and level of risk for workers involved in each of the five phases of construction considered.

Risk levels by construction task/function provided in Table 14 represent a general estimation of the risk, severity and level of risk based on site observations, consultations and desk research. Risks are project-, location- and time-specific and must be assessed for each construction site by trained assessors on a regular basis. However, the table does provide an idea of the tasks for which workers may be more at risk in the sites visited, where tailored interventions on awareness-raising and support to developers in assessing risk and identifying management strategies could be more effective.

With very few exceptions (e.g. skin diseases), most risks for the tasks assessed are rated medium and high, which shows why construction is considered a highly hazardous sector but also evidences the different tailored interventions needed, potentially in a single workplace. Interventions that raise awareness about several hazards and risks are necessary, but so are specific interventions aimed at ensuring engineering, administrative and PPE controls are in place when working at height, for instance. On large construction sites, these can be tailored to specific groups of workers; on small and medium sites, where workers often work on all phases of the construction processes, interventions need to be thought at workplace- rather than task-based level.

In addition to risks associated with work processes, workers in the construction sector in Myanmar have less access to OSH services and an enforcement framework. The construction sector is already less scrutinized on OSH given the lack of mandate for FGLLID in the sector (the OSHL being yet to be enacted). And even though FGLLID has limited OSH advisory services, being completely outside of the labour inspection system means employers have little incentive to invest in and improve OSH management. Even when the OSHL is enacted, it will take time for the inspection system to become a sufficient force for change in the sector (and the example of manufacturing, particularly of garments, where external actors like brands often demand their own OSH standards from suppliers, speaks to how long this process can take).

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[139] ILO (2018) "Drivers and Constraints for Occupational Safety and Health Improvement in the Ginger Global Value Chain from Myanmar".

Table 14: Estimation of level of risk by tasks/function in sites visited

Phase	Task/function	Possible safety and health outcomes	Likelihood	Severity of harm	Level of risk
Site work	Earth work	Workers crushed or struck by moving vehicle and equipment	Likely	Extreme	High
		Workers buried or injured by explosives	Likely	Extreme	High
	Excavation	Workers buried from collapse of excavation walls	Likely	Extreme	High
		Workers injured by contact with underground services	Likely	Major/ Extreme	High
		Injuries from falling from height into exaction pit	Likely	Moderate/ Major	Medium
	Backfill	Workers crushed or struck by moving vehicle and equipment	Likely	Extreme	High
	Paving	Lung diseases	Likely	Major	Medium
		Skin diseases	Very likely	Moderate	Medium
	Landscaping	Workers crushed or struck by moving vehicle and equipment	Likely	Extreme	High
	On-site utility connections	Injuries from electric shock/ electrocution	Likely	Extreme	Medium
	Tree work	Injuries from falling from height	Likely	Extreme	High
Foundations	Pilling	Workers crushed or struck by heavy-duty equipment	Likely	Extreme	High
	Concrete work	Lung diseases	Likely	Major	High
		Skin diseases	Very likely	Moderate	Medium

Super-structure	Slabs, columns and beams	Lung diseases	Likely	Moderate	High
		Skin diseases	Very likely	Moderate	Medium
		Injuries from falling from height	Likely	Extreme	High
		Injuries from falling objects	Likely	Major	Medium
	Formwork/ temporary propping structures	Injuries from collapse of concrete slab	Unlikely	Extreme	Medium
	Roofing slab	Lung diseases	Likely	Major	Medium
		Skin diseases	Very likely	Moderate	Medium
		Injuries from falling from height	Likely	Extreme	High
	Waterproof coating	Damage to respiratory system	Unlikely	Minor	Low
Façade	Masonry, stucco	Injuries from falling from height	Very likely	Extreme	High
		Injuries from falling objects	Likely	Major	Medium
		Lung diseases	Likely	Major	Medium
		Skin diseases	Very Likely	Moderate	Medium
	Painting	Damage to respiratory system	Very likely	Moderate	Medium
		Eye diseases and vision problems	Likely	Moderate	Medium
		Skin diseases	Likely	Minor	Low
		Poisoning (non-lead)	Unlikely	Moderate	Medium
		Lead poisoning	Likely	Extreme	High

Interior construction	Electrical/ lighting	Injuries from electric shock/ electrocution	Likely	Extreme	High
	Plastering	Injuries from falling from height/ collapse of scaffold	Likely	Major/ Extreme	High
		Injuries from slips and trips	Very likely	Moderate	Medium
		Lung diseases	Likely	Major	Medium
		Skin diseases	Very likely	Moderate	Medium
		Injuries from handling manual equipment	Very likely	Moderate	Medium
		Respiratory complications from inhaling dry plaster	Very likely	Moderate	Medium
		Eye diseases from contact with hazardous substance	Likely	Moderate	Medium
		Skin diseases from contact with hazardous substance	Likely	Minor	Low
	Plumbing	Burns from naked flames, solder, hot pipes	Likely	Moderate/ Major	Medium
		Burns from ignition of debris and/or building materials	Unlikely	Major	Medium
		Respiratory complications from fumes from solder and brazing work	Likely	Moderate/ Major	Medium
		Injuries from slips and trips from untidy work areas, training pipes and cables	Very likely	Moderate	Medium
		Cuts from pipe-cutting or un-guarded tools/blade or unsharp-ened tools	Very likely	Moderate	Medium
		Injuries from electric shock from poorly maintained power tools, defective supply	Very likely	Moderate	Medium
	Painting	Injuries from falling from height	Very likely	Major	High
		Injuries from manual handling	Very likely	Moderate	Medium
		Injuries from o slips and tips	Very likely	Moderate	Medium
		Damage to respiratory system	Very likely	Moderate	Medium
		Eye diseases and vision problems	Likely	Moderate	Medium
		Skin diseases	Likely	Minor	Low
		Poisoning (non-lead)	Unlikely	Moderate	Medium
		Lead poisoning	Likely	Extreme	High

Type of employment relationship is another major source of vulnerability for workers in the construction sector in Myanmar. Informal construction workers, who anecdotally are believed to account for the majority of workers in the sector, have additional vulnerabilities. These arise from not being covered by SSB and therefore not being able to access preventative and curative health services and also not being entitled to the EII scheme. In case of accident and injury, having to navigate the legal system to access workers' compensation as per the Workmen's Compensation Act 1923 leaves them and their families vulnerable to negative consequences from long-term health impairment and income loss.

Workers working for subcontractors are more at risk than those working for large developers. These workers do not benefit from an OSH management system, including OSH services provided by safety officers, such as those commonly available in larger companies. Access to OSH training and high-quality equipment and PPE is less likely to be available for workers in small subcontracting firms. Shorter work relationships and lack of written contracts add to the vulnerability of workers in the event of accidents, injuries or illnesses, as employers may feel less compelled to support them and, as mentioned above, informal work relations mean workers are most likely not enrolled with SSB.

Stress caused by high workloads and excessive working hours to meet tight deadlines is less recognized than hazards that are more visible and for which construction employers and workers are initiating control measures to reduce the risk of occupational accidents. This may be because of the lack of visibility of stress, or in some cases a lack of knowledge on the hazard and its associated risks.[140]

[140] ILO (2017) Conducting Labour Inspections on Construction: A Guide for Labour Inspectors. Geneva: ILO.

5. Preliminary interventions to improve OSH in construction

The analysis in previous sections has evidenced several constraints to OSH in the construction value chain in Myanmar that tailored interventions could help address. These are summarized in Table 15.

Given the current political and health crises in Myanmar, it was not possible to conduct the consultation workshop that would help flesh out, mobilize support for and prioritize interventions. Therefore, Table 15 identifies interventions that the Vision Zero Fund Myanmar team had previously discussed with stakeholders and that, after thorough analysis, remained valid. It also includes interventions that Vision Zero Fund Myanmar has successfully conducted in the past in other value chains and that could be adapted to address constraints identified in construction. Consideration for immediate action is given not only to those with higher impact and potential engagement but also those that have been discussed or agreed with partners and remain feasible in the current constrained context.

Table 15: Possible interventions to help address constraints to OSH in Myanmar's construction value chain

Value chain production stage and type of actor	Expected impact on vulnerability pattern	Possible intervention	Stakeholders involved	Type of engagement
Regulatory functions: OSH Law	Decrease fragmentation in the legal and institutional framework	Provide technical assistance to tripartite structures (e.g. National OSH Council) in enactment and implementation of OSH Law in construction	Government, workers and employers organizations	Long term (given crisis constraints)
Regulatory framework: ESIAs	Address lack of incentives and budget for OSH in infrastructure development	Assess type and effectiveness of OSH requirements in tenders and procurement processes of projects financed through ODA, and suggest strategies to mainstream these in financing of other construction projects	Development partners, large construction companies. Not yet consulted	To consider medium term (exclusive of enforcement)
All phases of construction: small and medium sites	Improve OSH awareness on small and medium construction sites	Provide OSH awareness-raising sessions and support identification of low-cost risk control measures	OSH trainers and advisors, MCEF, UMFCCI, CTUM, MICS, BWFM, MEAA, (consulted and willing though crisis may pose challenges), workers and employers on small and medium sites	Immediate action and medium-term engagement

All phases of construction: OSH officers	Increase capacity of local OSH officers and strengthen OSH management in large and medium companies	Strengthen the capacity of local OSH officers by promoting knowledge exchange between foreigner and local experts	OSH officers and managers in large and medium construction companies. Not yet consulted	To consider as medium term
Supporting functions: suppliers of material and equipment	Decrease workers' exposure to hazardous substances and equipment	Strengthen capacity of suppliers of materials and equipment to provide advice on appropriate use of their products	Suppliers of inputs and materials. Only one material supplier was consulted	To consider as immediate action
Supporting functions: OSH training and service providers	Improve awareness on OSH hazards across all tasks and project types. Increase capacity of employers and workers to decrease exposure to OSH through developing functioning OSH management systems	Strengthen capacity of training providers and other actors to create awareness about OSH in construction and build good OSH management practices on large and medium construction sites, through training and provision of advisory services	OSH trainers and advisors, workers and employers on large and medium construction sites. Willingness is high among OSH trainers and advisors, as well as among some large companies	Immediate action
Supporting functions: workers and employers organizations	Increase awareness on OSH hazards across all tasks and project types and support the formation of OSH committees	Strengthen the ability of workers and employers organizations to deliver and monitor OSH services, including training of OSH committee members	MCEF, UMFCCI, BWFM, CTUM, MICS, MEAA, Fed. MES, MIA (consulted and willing though crises may pose challenges)	Medium term (despite constraints, willingness of stakeholders is high)
Supporting functions: workers and employers organizations	Increase formalization of construction workers	Provide technical assistance to workers and employers organizations to implement awareness-raising and facilitate access to social security	MCEF, UMFCCI, BWFM, CTUM, MICS (consulted and willing though crises may pose challenges)	Medium term

5.1 Immediate action interventions

1. Provide OSH awareness-raising sessions and support the identification of low-cost risk control measures on small and medium construction sites

Construction sites of all sizes and project types (infrastructure, building) can benefit from OSH awareness-raising and training; however, certain strategies should be tailored to the construction site and type of project. Housekeeping issues seem more pronounced on smaller sites. Any intervention here should target all workers and managers in small and medium-small enterprises where specialized tasks are rare and the responsibility for good housekeeping is shared. It should include trainings, awareness-raising and information materials, among others.

Work at height must be a key topic in awareness-raising campaigns on all construction sites. Engineering controls must be prioritized over PPE, therefore the participation and inclusion of management is

needed to ensure that context- (and budget-) appropriate solutions to safe working at height are found and implemented. Further technical advice on finding effective and efficient control measures should be considered, including the inclusion/promotion of engineering controls such as safe scaffolding and guardrails. If budget is cited as a constraint to safe work at height, Vision Zero Fund Myanmar has experience in the promotion of low-cost prototypes to address ergonomic hazards and improve productivity in ginger trading houses in Shan state; a similar approach could be taken to address the risk of falling from height in small construction sites where available funds may be less. Prototypes can also be considered for the safe handling/transportation of goods and materials.

The 3R and 5S systems provide low-cost opportunities for better housekeeping. Hazardous debris and waste were particularly visible and present on small/medium sites; this may cause slips and trips but also congest some areas of the worksites. Some large companies have adopted the 3Rs (reduce, reuse, recycle) and the 5Ss (sort, set in order, shine, standardize, sustain). These methods can be adapted and translated to facilitate adoption on worksites through awareness-raising, training and dissemination. The 5Ss can be particularly relevant for housekeeping in material reception areas, in temporary storage areas and overall. Vision Zero Fund Myanmar has experience in the promotion of the 5Ss and good housekeeping to address the risk of slips and trips and to improve productivity in ginger trading houses in Shan state; a similar approach could be taken on small construction sites.

Several partners can benefit from Vision Zero Fund's technical support on these activities. The Myanmar Environmental Assessment Association, which has 160 members, including 14 corporate members could deliver OSH training. Trainings and awareness-raising could also be carried out through engineering associations and federations like MCEF, UMFCCI, Fed. MES, BWFM and CTUM and also through private training and service providers. Local partners on low-cost prototypes should also be identified after specific needs are discussed during trainings.

2. Strengthen the capacity of suppliers of materials and equipment to provide advice on the appropriate use of their products

A large number of suppliers of materials, power tools, equipment and machinery in urban centres and rural areas should contribute to raising awareness on the safe handling and use of materials and equipment used in construction, as per the Occupational Safety and Health Convention 1981 (No. 155). Similarly to Vision Zero Fund Myanmar interventions in agriculture, where awareness-raising activities targeted input (e.g. pesticide) suppliers to promote the safe handling of agrochemicals and knowledge transfer and advice to farmers, suppliers of materials and equipment can be targeted to deliver accurate and helpful messages on safe utilization of these inputs. Feedback to suppliers on the safety of materials and equipment could promote better designs, labels and information in the long run.

Several strategies can be pursued depending on the type of supplier. Suppliers of materials containing silica (e.g. cement/bricks) can contribute to informing workers, contractors and subcontractors on the risks and control measures regarding the prevention of silicosis. Input suppliers should use labels and signage for chemicals in a language workers can easily understand. They should also provide information and instructions on hazards and risks to workers handling and using hazardous substances, as well as risk control measures, including on safe storage. Supporting employers with trainings on the safe use of equipment such as jack-hammers and grinders can also be explored.

Some suppliers interviewed have good practices that could be replicated, such as the safety interaction and observation programme of a ready-mix concrete company, where managers observe and get feedback from users about ways to make their work safer.

3. Strengthen the capacity of training providers and other actors to create awareness about OSH in construction and build good OSH management practices on large construction sites, through training and advisory services

Discussions with large conglomerates revealed that, although limited elements of OSH management systems, such as safety officers, training, recording systems and, in some cases, OSH committees, are present, major elements are missing, such as workplace OSH policy, communication, risk assessment and OSH plans. Interviews revealed that accidents and near-misses did not seem to systematically trigger a review process on what went wrong, how the situation could have been avoided and what needed to be improved to avoid similar situations. Observations revealed that improvement was possible in areas such as working at height, dust and noise exposure, and even some housekeeping.

OSH practices remain a project function rather than a corporate policy across projects/staff. The presence of subcontractors on large construction sites means there is a lack of alignment on OSH management across different actors within the same site. Conversely, projects implemented by the same contractor can differ as a result of different budget/client demand. Subcontractors' workers report to and comply with their employer rather than the site manager of the construction company.

Building alignment on OSH management within a site while working with specific contractors and subcontractors to build the capacity of their own teams on OSH could help improve OSH in the sector; OSH trainers and advisers can play a key role. Working with large conglomerates and project management teams, external OSH advisers and trainers can assess the OSH needs of the project as a whole while identifying the roles and responsibilities of different actors. Designing project-based OSH management systems while simultaneously working on developing the capacity of contractors' and subcontractors' teams could benefit workers on the project and potentially on subsequent projects.

Champions can provide an example, be they individual companies with good practices or projects that manage to articulate contractors under a coherent OSH management system. Considering the prevalence of Chinese developers, investors and construction companies in the construction sector, it seems sensible to engage with such companies on OSH improvement. In addition, foreign companies investing in SEZs have better OSH practices than do average Myanmar companies and can contribute to the transfer of knowledge and technologies. Economic recovery in the future may see the return of Western companies that can become good OSH champions.

In the absence of a clear legal framework for OSH in the sector, the adoption and implementation of a consistent and effective set of OSH practices across the construction project portfolio of key medium and large contractors can be a medium-term goal. Lack of availability of practical OSH guidelines and codes of practice in local languages and suitable to the Myanmar context is hampering awareness-raising and consistent practices.

Vision Zero Fund Myanmar can work with OSH advisers and trainers to:

- Adapt tools such as ILO's code of practice for construction[141] and other locally available materials to provide practical guidelines for OSH management in the typology of projects described in previous sections and the risks associated with specific tasks (see Table 14).
- Develop a training package for OSH advisers and trainers that they can use to train and advise project managers on OSH management systems.
- Support OSH trainers and advisers to find projects with interested partners where advisory services on OSH can be piloted.

[141] ILO (1992) Safety and Health in Construction: An ILO Code of Practice. Geneva: ILO.

- If feasible, promote collaboration with social partners on the establishment and provision of training for (even if temporary, given the nature of projects) OSH committees or other structures and vehicles for workers' participation.
- Assess the pilot and adapt further material for contractors and subcontractors according to the needs found.

Exposure to hazards that may cause occupational diseases was observed on the sites visited. The development of a methodological approach to occupational health risk assessments, building on the health background and capacity of some of the OSH advisers mentioned above, can be added to the activities in this intervention. This can include the development of practical tools (e.g. checklists) to be used on construction sites. This would benefit from the technical expertise of projects like Safety and Health for All in Myanmar.

In the medium and long term, building a culture of prevention in universities and technical and vocational education and training institutes should be pursued by development partners working on related interventions. This can ensure that graduates of engineering and other technical professions and courses related to construction work processes can have OSH mainstreamed in the way they approach their work.

5.2 Medium-term interventions

1. Assess the type and effectiveness of OSH requirements in tenders and procurement processes of infrastructure projects financed through ODA, and suggest strategies to mainstream these requirements in the financing of other construction projects

Interviews with stakeholders revealed that ESIAs for projects financed through ODA included OSH aspects and promoted the budgeting and implementation of OSH management activities in these projects. The specific requirements and degree to which OSH management is mainstreamed in project development across contractors, and the effectiveness with regard to preventing accidents and illnesses, are unknown and may vary by type of funder and project.

More needs to be understood about current practices, not only in Myanmar but also globally, in terms of the inclusion of OSH in tendering and procurement requirements. More international examples and a clear understanding of current practices in Myanmar can facilitate the design of better OSH incentives in tenders for these projects, effectively building a business case for OSH. For instance, Singapore has incorporated a points system for bidders in government contracts, banning bidders that lose points through poor OSH management from bidding for a certain period of time.[142]

If designed well, rules for tender processes and ESIAs can help address the lack of alignment and consistency between OSH management of contractors and subcontractors by including accountability arrangements and monitoring as part of project planning and budgeting, effectively turning good OSH management into a competitive advantage in biddings. Lessons from an assessment and potentially a pilot could provide feedback to practices in the MIC and the Myanmar Investment Law. It will also be important to ensure OSH practices in these projects are aligned with International Labour Standards and Codes of Practice. OSH management practices used by companies working on DFI-funded projects can be not only consistently used by contractors but also applied and monitored at lower tiers of suppliers and independent workers.

[142] OSH Stakeholder Event 2019.

A detailed review of OSH requirements in procurement methods used by the government and private companies/conglomerates could be conducted to assess how OSH is taken into account and scored (technically and financially), and make recommendations on improving OSH through tender processes. This could be particularly useful to benchmark best practices by government departments and organizations and to create alignment.

2. Strengthen the capacity of local OSH officers by promoting knowledge exchange between foreigner and local experts

Limited availability of qualified OSH staff and managers in Myanmar to implement the OSH standards expected by DFIs and some FDI has prompted many firms to bring OSH expertise from abroad. Little knowledge has trickled down from international safety officers to local ones, though stakeholders interviewed recognized experience working with international experts as positive for professional development. A more effective system to allow local OSH professionals to grow and benefit from exposure to international experts should be designed to make it possible to build a safety culture in the sector through a network of local expertise. It is therefore important to promote knowledge and skills transfer to OSH personnel in Myanmar rather than to continue to rely on foreigner expertise once travel restrictions are lifted.

Several activities can be pursued under this intervention:

- Identify "champion companies" where good OSH practices can be shared with others. OSH personnel can share their experiences in workshops, site visits and knowledge exchange activities with others in the industry. Corporate culture depends on leadership. Working with a group of construction company leaders (or champions) who have had exposure to OSH overseas would provide a good entry point for OSH improvement for Myanmar companies.
- Explore apprenticeship opportunities, to pair foreign OSH personnel with local OSH officers when in Myanmar in certain companies/projects. In addition, foreign learning experiences like apprenticeships abroad can be pursued with multinational enterprises.
- In the absence of a regulation on training to set the legal framework, take tools and materials from the activity with OSH advisers to disseminate through local trainers and training institutes to support a more robust and coherent approach to OSH training in construction.
- Identify and support overseas opportunities for training, though these will benefit fewer local OSH officers, given the costs involved.[143,144,145]
- Build a network of OSH officers anchored in employers organizations for the exchange of the latest information on the labour law/regulations, job and training opportunities, innovations and other relevant topics.

3. Strengthen the ability of workers and employers organizations to deliver and monitor OSH services, including training of OSH committee members

Workers and employers organizations consulted have a very clear commitment to contribute and participate in the creation of an OSH culture in the construction sector in Myanmar. The MoU between MCEF, BWFM and CTUM is a clear example of this, and Vision Zero Fund Myanmar is committed to

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[143] NEBOSH (n.d.) "Safety Simplified". https://www.nebosh.org.uk/qualifications/safety-simplified/

[144] NBOSH (n.d.) "International General Certificate in Occupational Health and Safety". https://www.nebosh.org.uk/qualifications/international-general-certificate/

[145] IOSH (n.d.) "IOSH Training Courses". https://iosh.com/training-and-skills/iosh-training-courses/ shows some examples of the options available.

supporting its implementation. This and other initiatives from social partners should aim not only to help their members but also to strengthen the capacity of these organizations to deliver OSH services, monitor progress and influence evidence-based OSH policy-making in the upcoming National OSH Council.

Workers and employers organizations demand more specific OSH awareness-raising and training in construction so they can deliver it to their members, especially to those in or that will be in OSH committees. Vision Zero Fund Myanmar is committed to supporting training of trainers to employers and workers organizations to deliver training in the National OSH Training Centre and elsewhere; therefore this is a clear activity for the future. Awareness-raising campaigns should also be supported through the provision of relevant material adapted to the Myanmar context and languages.

Monitoring and evaluation of OSH activities should be strengthened in employers and workers organizations. Training OSH committee members should also involve supporting their formation, monitoring their progress and achievements, and gathering feedback on further technical and operational needs to help improve OSH at the workplace. The nature of construction projects and subcontracting practices may pose difficulties to the effectiveness of OSH committees; it is important to ensure the presence of effective vehicles for workers' participation in the sector.

4. Provide technical assistance to workers and employers organizations to implement awareness-raising campaigns and help facilitate access to social security

As with OSH, awareness of and access to social security, in particular to EII, represents a very important function of workers and employers organizations. The crises have halted Vision Zero Fund Myanmar's support to the enhancement of the EII scheme and its scale-up;[146] however, the role played by social partners was critical to ensuring better and more effective coverage of workers. Promotion of social security coverage and access should continue to be a priority activity once conditions allow.

5.3 Long-term interventions

The following interventions are considered low priority not because they lack importance but because the current political and health crises in Myanmar make their implementation challenging in the short term.[147]

1. Provide technical assistance to tripartite structures (e.g. the National OSH Council) in the enactment and implementation of the OSHL in construction

An eventual enactment of the OSHL and the drafting and implementation of a construction regulation can bring several opportunities for the articulation of government and private sector roles in of the construction sector:

- Government departments and agencies play the role of implementer, contract administrator and legislator, which creates a lack of transparency, which directly impacts accountability for OSH outcomes. OSH enforcement roles should therefore be clearly mapped to MoLIP, while promotional functions can remain with and should be strengthened for all actors, including MoC, YCDC, employers organizations, private and public trainers, and state and region entities, in addition to MoLIP. The National OSH Council can help further in shaping these roles.

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[146] ILO (2019) "ILO Supports Social Security Board in Strengthening the Employment Injury Insurance Scheme in Myanmar". 19 June. www.ilo.org/global/topics/safety-and-health-at-work/home/WCMS_711121/lang--en/index.htm

[147] At the time of writing, tripartite discussions have been halted, social partners' ability to deliver their functions is lower than in non-crisis times and priorities on COVID-19 control and prevention are compromising the feasibility of conducting consultations and securing tripartite action on these topics.

- Government should set an example: departments and agencies not planning or budgeting for OSH management in their own projects is a clear disincentive to Myanmar companies, conglomerates and foreign companies, not only with regard to their own investments in OSH but also in terms of the reputational risk of partnering with the government. Therefore, OSH requirements, inspections and other duties set in the construction regulation should clearly cover government.
- Chapter 7 of the MNBC refers to OSH to be applied in the construction sector but it is not sufficiently covered. Further alignment and complementarity between the OSHL and the MNBC should be pursued; the National OSH Council can be the venue for such alignment.
- Market actors and stakeholders have requested the establishment of a code of conduct relevant to the OSHL and the construction regulation.
- Strategic Compliance Planning[148] is a tool that can be used for gathering tripartite support for compliance strategies in the sector and can provide a good starting point for implementing the OSHL. Initial discussion in 2020 generated ideas from MoC and FGLLID to be discussed with social partners.

[148] ILO (2020) "Vision Zero Fund Project Supports Workshop on Strategic Compliance Planning for Government Inspectors to Improve Safety and Health in Myanmar". 13 February. https://www.ilo.org/yangon/press/WCMS_736437/lang--en/index.htm

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