CONSTRUCTION INDUSTRY COUNCIL
建造業議會

FEASIBILITY AND IMPLEMENTATION STRATEGY OF "NO-SATURDAY-SITE-WORK" IN THE HONG KONG CONSTRUCTION INDUSTRY

RESEARCH SUMMARY

Authors

Prof. Y. H. CHIANG
Prof. Francis K. W. WONG
Dr Tao LI
Ms. Corrine WU
The Hong Kong Polytechnic University

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Enquiries

Enquiries on this research may be made to the CIC Secretariat at:

CIC Headquarters
38/F, COS Centre, 56 Tsun Yip Street, Kwun Tong, Kowloon

Tel.: (852) 2100 9000

Fax: (852) 2100 9090

Email: enquiry@cic.hk

Website: www.cic.hk

FOREWORD

The Construction Industry Council (CIC) Research Fund was established in September 2012 to enhance efficiency and competitiveness of the local construction industry. The CIC Research Fund encourages research and development activities as well as applications of innovative techniques that directly meet the needs of the industry. Moreover, it also promotes establishment of standards and good practices for the construction industry now and into the future.

To attract more young blood into the industry and to improve the work-life balance of construction workers, the idea of “No-Saturday-Site-Work” was suggested by industry stakeholders. However, in-depth investigations and thorough industry-wide discussions are needed to explore the necessity and feasibility of this initiative. This study provides a comprehensive review and analysis of “No-Saturday-Site-Work” to be implemented in the Hong Kong construction industry.

This initiative aligns with CIC’s strategic direction on improving workers’ welfare. With reference to overseas practices, and the views of local industry stakeholders, while no consensus is reached to implement “No-Saturday-Site-Work” in the immediate and medium term, the initiative may be feasible in the long run under the certain conditions as recommended in the report. The CIC will continue to attract and retain workforce in the construction industry by various means.

I would like to express my sincere appreciation to the research team at the HKPolyU, and all individuals who contributed in this research.

Ir Albert CHENG
Executive Director of Construction Industry Council

PREFACE

Since we sowed our seeds in 1937, the Department of Building and Real Estate has become internationally recognized as a leader in providing professional education for the building and real estate industry in the region and beyond. With our dedication to excellence, we have a multi-disciplinary team of faculty members who possess expertise in the respective fields of surveying, engineering, construction health and safety, town planning, building technology, real estate, finance, law and economics.

The tireless devotion to a variety of high-quality research projects and consultancies is part of our commitment. We are well-known for our research strengths in construction and building technology. For knowledge transfer and networking, we actively maintain strong bonds with the industry and our alumni, many of whom are senior staffs in government departments, leading consultancy practices and private enterprises.

Like many other places around the globe, Hong Kong is experiencing an acute labor shortage. The initiative of “No-Saturday-Site-Work” was proposed to address the acute labour shortage and aging problems. This consultancy project explored the views of the various stakeholders of the industry on the feasibility and implementation of this initiative. Opinions of various key stakeholders of the industry were sought through interviews and forums. Questionnaire surveys were conducted to identify how construction workers, trainees, and high school students would view this initiative, and to explore the different generations’ perceptions of freedom-related work values in the construction sector in Hong Kong. It was found that the younger generation emphasized more on having Saturday off than on money. They wanted to see the initiative implemented. On the other hand, the older construction workers tended to have more concerns over income, and worried that this initiative would bring a reduction of their pay. For high school students, the pool of potential workers, whether they would have the Saturday off was considered a very important factor on whether they would join the industry. This study examined the concerns of the industry, investigated the constraints and difficulties of implementing the initiative, and identified what the younger generations want, so that effective recruitment strategies and policies can be devised, thus providing the industry with some insights into addressing the labour aging and shortage problem. The Department is grateful to the CIC for funding this study.

Ir Prof. Albert P. C. CHAN
Head of Department of Building and Real Estate
The Hong Kong Polytechnic University

RESEARCH HIGHLIGHTS

The construction industry has been known for its cyclical nature of work, and keen market competition. Contractors are often required to complete construction works within a tight schedule, or whatever time is left of an already delayed design process. Consequently, construction works are routinely carried out over long hours to complete on time. Construction firms generally do not have much bargaining power over their clients. It is not an exaggeration to say that they are often "bullied" into accepting an unrealistic work schedule.

During a construction boom in 2014, contractors found it difficult to recruit workers, now that we have an acute labour shortage and ageing problem. This problem has become more serious when the young generation is more unwilling to work on sites than those before them. They are the so called "Generation Y": being generally more educated and thus aspiring for getting more job satisfaction from their work. They find the long and unsocial hours of working in a construction site very unappealing.

Given the nature of construction industry and the current labour shortage and ageing problem, contractors may not welcome the compressed work week in the short run. They would rather maximize the utility of their workforce in order to complete the construction work on time. However, the long working hours and working at non-standard times (e.g., in the evening, at night or during weekends) may cause problems.

It is a dilemma that the labour shortage and ageing problem, as well as the nature of construction industry, make contractors prefer 6 days' work week, with long hours each day, in order to complete the construction on time. On the other hand, the long hours of construction work make the labour shortage and ageing problem even more serious. It is more difficult to attract new recruits, especially the young generation. While the initiative of "No-Saturday-Site-Work" was proposed by the Hong Kong Construction Association (HKCA) to attract more young blood into the industry and to improve the work-life balance of construction workers, possible concerns such as productivity and potential reduction in income for workers who are remunerated on daily wages or on piece-rated system, have to be addressed.

Desirability, Need and Scale of Implementing "No-Saturday-Site-Work"

In Hong Kong, among the thirteen interviewees, seven of them regarded the implementation to be infeasible. Five of them held neutral attitudes. Only one interviewee, who was a part-time construction trainee, considered the implementation feasible. Among the focus group participants, only the representatives from the HKCA expressed that the "No-Saturday-Site-Work" was feasible, and the representatives from HKIS believed that the initiative would be feasible in the long run.

Interestingly, we found that more than half of the questionnaire respondents hoped to implement this initiative. Almost two thirds of the consultation forum participants considered this initiative to be feasible. The differences among the survey findings on attitudes towards "No-Saturday-Site-Work"

can be partly attributed to the composition of respondents in the survey. For instance, more than half of the construction workers in the questionnaire survey were salaried ones. Almost all of the forum participants were professionals staffs or administrative staffs. Specifically, salaried staffs, workers in certain trades, workers who planned to stay in the construction industry, and those who were less satisfied with the overall reward and payment inclined to have this initiative implemented. Construction trainees studying certain courses, those who considered the working time too long, and those who would like to work compressed hours were most likely to agree to implement this initiative.

Based on the combined findings from the interviews, focus group meetings, questionnaire survey and consultation forum, it can be concluded, to some extent, that "No-Saturday-Site-Work" is desirable to construction workers, the young generation and the society for achieving work-life balance and sustainable development of the construction industry. However, the feasibility of implementing it at the current stage and the scale of implementation needs further discussion. Certain conditions should be satisfied. Concerns of various stakeholders must be addressed to their satisfaction before implementation.

Feasibility and Implications of Implementing "No-Saturday-Site-Work"

In general, findings from this study reflected that the initiative of "No-Saturday-Site-Work" may be feasible in the long run, though no consensus was reached to implement it in the immediate and medium term. Generally, sub-contractors had the most concerns on income and operational issues. Contractors, probably being initiator of this initiative, seemed not to have as many concerns as sub-contractors. Other than operational concerns, both professional institutions and developers had indicated their concerns on potential of less housing supply due to the implementation of this initiative. In the long run, it might be feasible to implement this initiative for the benefits of site safety, new recruits, productivity, noise reduction on Saturdays, work-life balance, and sustainable development of the construction industry.

Recommendations on Implementing "No-Saturday-Site-Work" in the Industry

Given the long-term potential benefits of the "No-Saturday-Site-Work", initially it can be implemented on a voluntary basis. Government is generally suggested to implement the initiative through pilot projects. Complementary measures can be implemented in those pilot projects including: 1) Cooperation among various stakeholders, such as contractors, sub-contractors and workers; 2) More direct labour employment; 3) Adjusted project schedule and working hours; and 4) Alternate Saturday-off or half-day-off on Saturdays.

In the medium term, "No-Saturday-Site-Work" can be implemented only during off-season and as a reward for good performing employees. Alternative project delivery arrangements, which emphasize the collaborative nature of project alliances, should be encouraged for implementing the "No-Saturday-Site-Work" initiative. It will be less difficult to promote the implementation of this initiative if all project

participants (both clients and contractors) agree to share the risks and rewards of the project. Moreover, alternative remuneration mechanisms should be explored to eliminate concerns arising from casual workers (including daily-rated, piece-rated and hourly-rated ones) on maintaining the current level of their “take home pay”. It was commented that, when measuring the remuneration, emphases should be put on production and productivity, rather than time spent on site.

In the long term, if the benefits of the “No-Saturday-Site-Work” can be realized, this initiative may be put forward through collective agreement or legislation. However, several prerequisites need to be met before taking this step, including no severe labour shortage problem, consensus being reached among project stakeholders on compressed working week, and the implications of workers’ wages and project duration having been taken into account. Furthermore, the working conditions, job security, career path and overall welfare of construction workers should be improved. Innovative technologies (e.g. prefabrication and mechanization) should be employed to improve the productivity of this industry and to reduce the dependence on labour-intensive methods.

Suggestions on Attracting New Blood to the Industry

While implementing “No-Saturday-Site-Work” might help attract and retain workforce in the construction industry, respondents of this study also mention additional measures, and these include: 1) Enhancing the image of the construction industry; 2) Improving safety, site conditions, and site facilities; 3) Elevating income and welfare; 4) Prosper career path and promising job security; 5) Adopting innovative and advanced technologies; 6) Higher degree of working flexibility such as the choice to work on specific days of the week and length of work hours; and 7) Wider adoption of skills recognition system among construction workers. With the above measures, it is anticipated that young people will be more willing to join the construction industry in future.

Better work-life balance and project objectives pertaining to time and cost can be achieved simultaneously in the construction industry according to the literature. The respective attitudes and concerns of various stakeholders (i.e., construction workers, young generation who will potentially join the construction industry, contractors, sub-contractors. developers, government, professional institutions, and statutory bodies) were looked into through various research methods. No consensus has been reached on implementing “No-Saturday- Site-Work” in the local construction industry in the immediate term. In a longer term, when consensus can be reached among project stakeholders, the “No-Saturday-Site-Work” initiative might be feasible to bring multiple benefits at the project level as well as to promote the sustainable development of the industry.

CONTENTS

1 INTRODUCTION

1.1 Background

During a construction boom in 2014, contractors found it difficult to recruit workers due to the labour shortage and ageing workforce problem. This problem has become more serious when the young generation is even more unwilling to work on construction sites than those before them. The initiative of “No-Saturday-Site-Work” was proposed by the Hong Kong Construction Association (HKCA) to attract more young blood into the industry and to improve the work-life balance of construction workers. Prior to the implementation, possible concerns such as productivity and potential reduction in income for workers who are remunerated on daily wages or on piece-rated system, have to be addressed. In-depth investigations and thorough industry-wide discussions are necessary.

1.2 Aims and Objectives

There are four objectives with this research, including 1) reviewing overseas practices and implications of adopting No-Saturday or compressed working week arrangements in the construction industry; 2) seeking views of various stakeholders regarding the desirability, need and scale of implementing this initiative; 3) evaluating the implications and feasibility of adopting this initiative; and 4) formulating strategies (in short, medium and long terms) to address the challenges and concerns as identified from the findings.

1.3 Scope

At Stage 1, relevant literature and case studies were reviewed to identify the benefits and hurdles of implementing the compressed working week arrangements in the construction industry. At Stage 2, thirteen in-depth interviews were conducted from August to September 2014 to initially explore the desirability, need, implications and feasibility of the “No-Saturday-Site-Work” arrangement. The interviewees included representatives from the government, statutory bodies, property developers, professional institutions, trade associations, contractors, sub-contractors, and the young generation. Four focus group meetings were subsequently held from November to December 2014 to facilitate further discussion among various stakeholders. Based on the findings from literature review, in-depth interviews, and focus group meetings, three sets of questionnaires were designed respectively for construction workers, construction trainees, and high-school students to examine their attitudes, concerns and suggestions regarding the “No-Saturday-Site-Work” initiative. The questionnaire survey was conducted from January to February 2015. At Stage 3, a consultation forum involving various industry stakeholders was conducted on 26 March 2015 to verify the above findings. In addition, Cross Tabulation Analysis was used to examine the attitudes of questionnaire respondents and forum participants toward the implementation of this initiative.

2 RESEARCH METHODOLOGY

This research project was undertaken in three stages, namely, 1) review of overseas practices and implications, 2) evaluation of the desirability and feasibility of implementing "No-Saturday-Site-Work" in the local construction industry, and 3) proposing strategies to address the challenges and concerns.

Stage 1: Review of overseas practices & implications

In this stage, a comprehensive literature review was conducted on overseas practices and implications of adopting No-Saturday or compressed working week arrangements in the construction industry. The benefits and constraints of implementing the No-Saturday or compressed working week arrangements were analyzed, to achieve Objective 1.

Stage 2: Evaluation of the desirability and feasibility of implementing "No-Saturday-Site-Work"

To achieve Objective 2 and 3, literature review, in-depth interviews, focus group meetings, questionnaire survey and case studies were employed in the five tasks in this stage, namely:

1. Investigating the current working hours and practices of construction workers in Hong Kong;
2. Seeking views of the various stakeholders in the local construction industry regarding the desirability, need and scale of implementing this initiative, and identifying their concerns and suggestions;
3. Exploring the potential impacts on workers' income;
4. Exploring the potential influences on project delivery in the various sub-sectors of the local construction industry, e.g., private and public sectors, building, infrastructure, and RMAA (i.e. repair, maintenance, minor alteration, and addition) sectors; and
5. Assessing the social impacts due to the potential deferred delivery.

Stage 3: Proposing strategies to address the challenges and concerns

Based on the findings derived in Stages 1 and 2, both qualitative and quantitative analyses were conducted. Strategies (in short, medium and long terms) to address the challenges and concerns for implementing the “No-Saturday-Site-Work” initiative were proposed.

A consultation forum was conducted to review the above proposed strategies. A feedback form was designed to collect the views of the participants concerning the initiative of “No-Saturday-Site-Work” and suggestions to soothe the problem of labour shortage in the local construction industry.

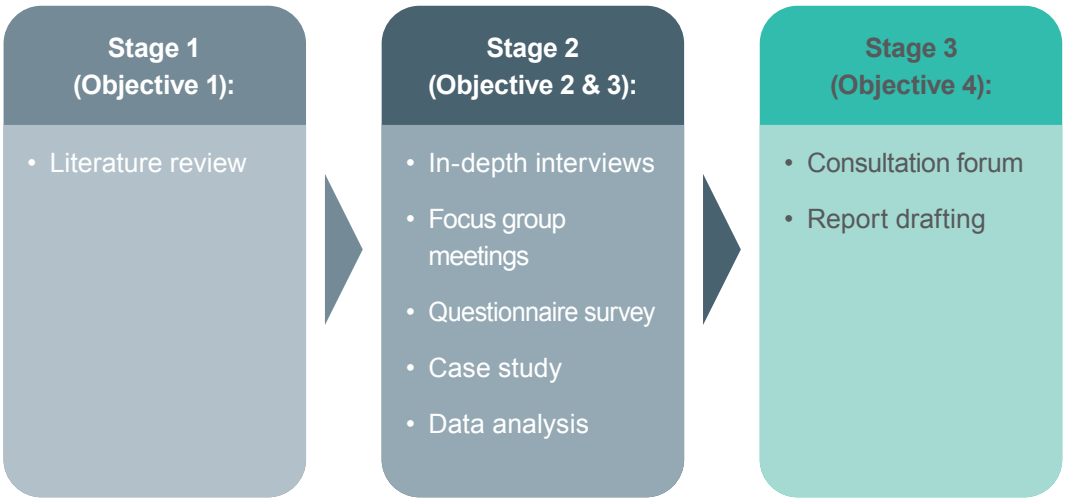

Fig. 1. Research design

2.1 Data collection

In-depth interviews

As a pilot study, thirteen in-depth interviews were conducted from August to September 2014. The questions were composed of two parts, namely, general questions and specific questions. Specific questions were designed for various stakeholders. General questions were common to all stakeholders, and used for comparisons between them. The aim of the interviews was to seek interviewees' understanding of this industry and the workers (e.g., working time, labour recruitment, payment, image of the industry, and peculiarities of this industry), and to initially evaluate the desirability and feasibility (e.g., general attitudes of various stakeholders, concerns and suggestions) of implementing the initiative of "No-Saturday-Site-Work" in the local construction industry.

The interviewees include representatives from the government (i.e., Development Bureau), statutory bodies (i.e., Construction Industry Council, and MTR Corporation), property developers (i.e., Real Estate Developers Association), professional institutions (i.e., the Hong Kong Institute of Architects, and the Hong Kong Institution of Engineers), trade associations (i.e., Hong Kong Construction Industry Employees General Union, and Federation of Hong Kong Electrical & Mechanical Industries Trade Unions), contractors (i.e., Hong Kong Federation of Electrical & Mechanical Industries Trade Unions), sub-contractors (i.e., Hong Kong Construction Sub-Contractors Association), and the young generation (i.e., one part-time student and one full-time student from the CIC Training Center).

Focus group meetings

Four focus group meetings were held from November to December 2014. The aim was to facilitate further discussion among representatives of different stakeholders, to verify the preliminary findings from the literature review and the in-depth interviews, and to explore the specific concerns of different trades on implementing this initiative. The four focus group meetings were conducted in Chinese. Each lasted for 60 to 90 minutes. The facilitator (s) introduced the background of this project and presented the preliminary findings first, and then invited the participants to give comments and supplements accordingly.

The participants include construction sub-contractors (i.e., representatives from the Hong Kong Construction Sub-Contractors Association), contractors (i.e., representatives from the Hong Kong Construction Association), construction workers (i.e., representatives from a trade union), the government (i.e., representatives from the Development Bureau of HKSAR), professional institutions (i.e., representatives from HKIE, HKIS and CIOB), and property developer (i.e., representatives from REDA).

Questionnaire survey

Based on the literature review and results of the preliminary survey (i.e., in-depth interview and focus group meetings), three sets of questionnaires were designed respectively for construction workers (i.e. Questionnaire I), construction trainees (i.e. Questionnaire II), and high-school students (i.e. Questionnaire III) who may potentially join the local construction industry in future. The aim was to obtain the socio-demographic profile of the respondents, and to investigate their employment status, working time, working satisfaction and career development plan. Most importantly, their attitudes, concerns and suggestions regarding the implementation of this initiative could be obtained. Comparisons were made accordingly.

The questionnaire survey was conducted from January to February 2015. Questionnaire I was distributed randomly to 400 construction workers of different trades with 165 questionnaires received. Questionnaire II was distributed randomly to 400 construction trainees majoring in different courses in the CIC Training Center with 363 questionnaires received. Questionnaire III was distributed randomly to 400 high-school students in five high schools with 255 questionnaires received.

Consultation forum

A consultation forum was conducted on 26 March 2015 in The Hong Kong Polytechnic University campus to verify the findings from the in-depth interviews and focus group meetings. There were 81 participants in the forum. Altogether 77 sets of feedback forms were received with 40% of the respondents from construction companies, 29% from consultancy companies, 16% from development companies, 12% from the public sector, and the remaining 3% from other institutions (e.g. university). Regarding their job levels, 35% of them were AES[1], followed by managers[2] (21%), administrative staff (16%), site supervisors (13%), assistant AES (13%), and senior managers (2%) (Fig. 2). The majority, 70%, of them were male. On average, they were 35 years old (Median: 30) with 12 years' relevant working experience (Median: 6) (Fig. 3 and Fig. 4).

1 AES refer to Architects, Engineers and Surveyors.

2 Managers: Assistant Mangers, Deputy Managers, and Managers were included into this category.

2.2 Data analysis

To test the eight hypotheses concerning whether respondents with various demographic characteristics, different working plans and working conditions hold different attitudes toward implementing the initiative of “No-Saturday-Site-Work”, Cross Tabulation Analysis was used to test the interdependence among the nominal/categorical variables such as the type of workers (salaried v.s. casual), the type of trade, and whether to join or stay in this industry, etc.

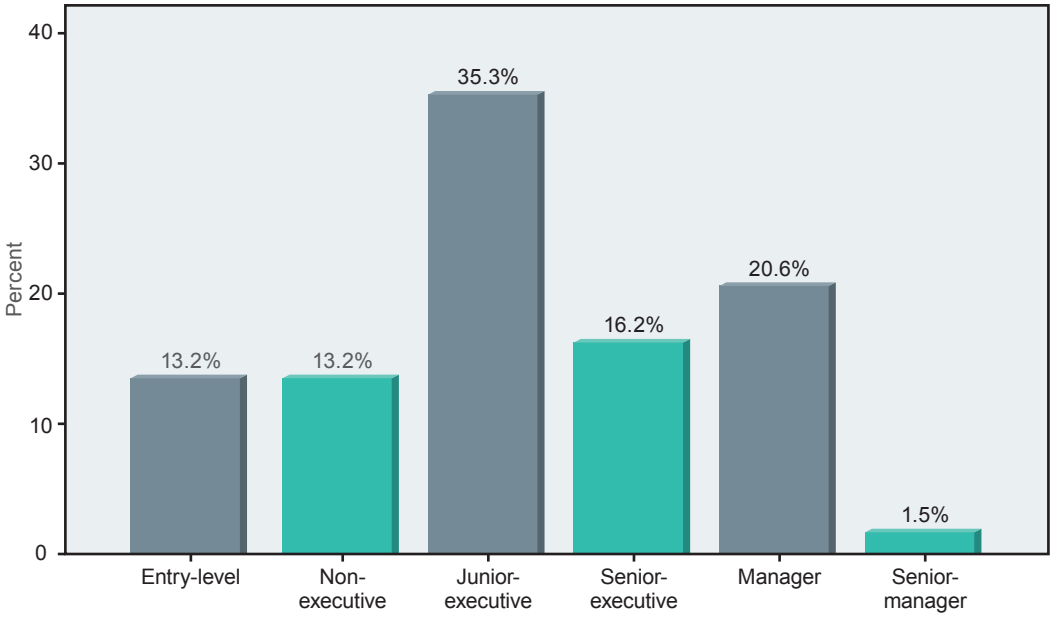

Fig. 2. Position of the forum participants

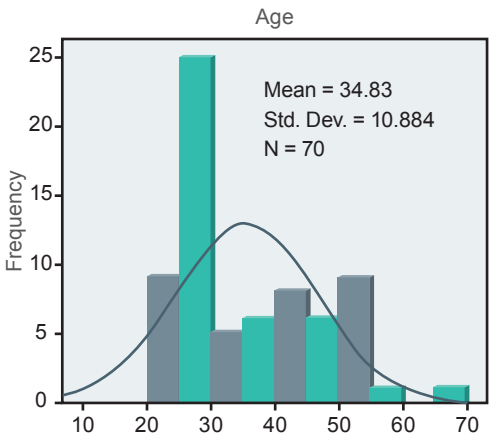

Fig. 3. Age of the forum participants

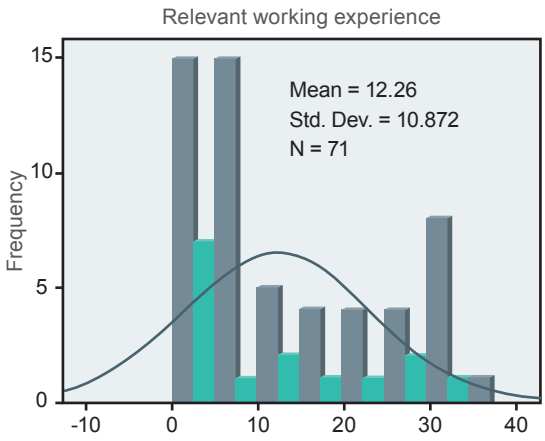

Fig. 4. Working experience of the forum participants (Unit: years)

3 RESEARCH FINDINGS AND DISCUSSION

3.1 The feasibility of implementing this initiative

3.1.1 Attitudes towards "No-Saturday-Site-Work"

The attitudes of different stakeholders toward implementing "No-Saturday-Site-Work" vary. According to the in-depth interviews and focus group meetings (Table 1), developers, sub-contractors, trade union and professional institutions generally either oppose to implement this initiative or have big concerns, while HKCA regards the implementation to be feasible. Government and statutory bodies generally hold neutral positions.

Table 1. Comparison of the attitudes towards "No-Saturday-Site-Work" (Interviews & focus group meetings)

Stakeholders	Attitudes	Top reasons
1. Government	Neutral	Depend on project duration and public welfare.
2. Statutory bodies	Neutral	Depend on the volume of construction projects.
3. Property developers	No	1) Exacerbate manpower shortage. 2) Lead to cycle convergence problem, project delay, and inadequate housing supply. 3) The society may not want to bear the cost.
4. Professional institutions	No	1) Concern with working flexibility, work cycle, income reduction, project delay and increasing costs. 2) "Saturday-Site-Work" is required by certain trades. 3) The society may not want to bear the cost.
5. Trade union	No	1) Not a good timing (labour shortage, ageing problem and decreasing productivity). 2) Income reduction and working flexibility issues. 3) Certain trades need to work during weekends.
6. HKCA	Yes	1) Progress of the society. 2) The income of construction workers is market-driven and will not be affected. 3) The construction industry plays an important role in Hong Kong.
7. Sub-contractors	No	1) Concern with working flexibility, work cycle and income reduction. 2) Not a good timing in terms of time, cost and profession. 3) The society may not want to bear the cost.
8. Young generation	Yes	1) Increase working efficiency. 2) Reduce noise on Saturdays. 3) Better work-life balance.
	No	1) Income reduction. 2) Reduce the flexibility of current working scheme. 3) Project delay.

3.1.2 Concerns on the feasibility of implementing "No-Saturday-Site-Work"

Those who opposed to implement this initiative were mainly concerned with the timing. It was not a good timing to implement it in the short term. They pointed out that the construction industry was at the peak in 2014. It has already been hard to meet the deadline of current projects with "Saturday-Site-Work". "No-Saturday-Site-Work" can only lead to further project delay. The supply of housing units, including public housing, will slow down. It will be even harder to meet the already huge demand for housing. Moreover, project delay may prolong the disturbance to the residents nearby. Whether the public will accept the prolonged disturbance is very much doubtful.

To say the least, even if more young people would be attracted due to this initiative, the productivity would remain low for quite a while because young people need to undergo training for certain years. They insist that it is the productivity that matters at the current stage, rather than the number of workers. Meanwhile, the construction costs (e.g. labour costs, time related costs, etc.) will increase, which will be ultimately borne by end-users and the society at-large. In addition, the stakeholders have not reached any consensus yet. More consultations are needed before implementation.

They also concerned that "No-Saturday-Site-Work" is not feasible from the perspective of the nature of construction work itself. They contended that working during weekends is required by certain trades, e.g., utilities maintenance. Moreover, the cycle of building construction is four to five days which cannot be reduced for safety reasons. If "No-Saturday-Site-Work" was implemented, the follow-up work would have to be postponed to the following Monday, which may be undesirable from the perspective of work planning. The working cycle would be disrupted. Further, Site workers may not have sufficient work to do every week to make a living because they work according to project cycles. The income of casual workers, who are paid on a daily or piecemeal basis, would be reduced. Their flexibility (e.g., on choosing which site and how many days to work) would be reduced as well. This might in turn further exacerbate the problem of labour shortage.

The above concerns (especially income reduction, less working flexibility, different characteristics of various trades, project delay, and higher construction costs) were confirmed by both the questionnaire survey and forum participants. Specifically, construction workers and trainees are more concerned with the reduction of their original income and working flexibility. They want to earn more during boom season. Besides working flexibility and income issues, high-school students also have concern with the specific characteristics of different trades.

The government, statutory body and professional institution respondents who hold neutral positions about the implementation mainly are concerned with whether this initiative could enhance public welfare, whether the volume of construction projects could be managed, whether the public could accept it, and whether the various stakeholders could reach consensus.

3.1.3 Reasons for hoping to implement "No-Saturday-Site-Work"

Those respondents who hope to implement this initiative believe that "No-Saturday-Site-Work" could sustain the development of this industry in various aspects. From the aspect of employers, it would be easier for them to recruit site workers, especially young workers. The young generation values leisure time since they have less financial burden and a lifestyle different from the older generation. Secondly, more labour-saving technologies and innovations would be introduced to make up for the lost work hours due to "No-Saturday- Site-Work". With more capital investment on machinery and technology, the labour productivity would eventually increase. Thirdly, site safety could be improved. From the employees' point of view, they will have a better work-life balance, e.g., more time with family and friends, more rest time during weekends, and more leisure time. From the aspect of the society as a whole, this initiative could largely reduce site noise on Saturdays. In addition, the focus group participants from the HKCA pointed out that the income of construction workers would be market driven anyway. Workers need not worry about income reduction.

3.1.4 Findings from the questionnaire survey and the consultation forum

Different from most of the interviewees and focus group participants who overwhelmingly opposed the implementation of "No-Saturday-Site-Work", more than half of the questionnaire respondents (69% of the construction workers and 77% of the construction trainees) hoped to implement this initiative for a better work-life balance. The proportion of high-school student respondents who planned to join the construction industry increased from 29% to 52% if this initiative would be implemented for the same reason of better work-life balance. As to the consultation forum, 47 out of the 69 participants considered this initiative to be feasible for better work-life balance, attractiveness to young people, and conducing labour-saving construction technologies and innovations.

The differences in the perceptions of different stakeholders can be partly attributed to the composition of respondents in the survey. For instance, 53% of the construction workers in the questionnaire survey were salaried ones. We hypothesize that salaried workers are more willing to implement "No-Saturday-Site-Work", because their payments are fixed and paid on monthly basis. Unlike their casual counterparts, salaried workers do not have to worry about the take-home pay due to working time reduction. The majority of the construction trainees in the questionnaire survey were full-time ones who used to work in other industries or had no working experience. They may be not fully aware of the implications of "No-Saturday-Site-Work", such as the potential loss of work flexibility and project delay. In addition, almost all of the forum participants were professionals or administrative staff. Compared to others, they may be more inclined to accept the implementation of "No Saturday Site Work" from the perspective of the society as a whole in the long run. It is reflected by their suggestions on how to implement this initiative.

The remaining questionnaire respondents (i.e., 31% of the construction workers and 23% of the construction trainees) and 22 forum participants regarded this initiative to be infeasible due to potential income reduction, less flexibility on choosing when to work, project delays, and increasing construction costs. These concerns echo those of the interviewees and focus group participants.

3.2 Factors affecting the attitudes towards "No-Saturday-Site-Work"

3.2.1 Construction workers

Cross Tabulation Analysis was conducted to test whether construction workers with different demographic characteristics, work plans and working conditions had different attitudes toward implementing this initiative. It was found that the effects of salaried or casual staffs, type of trade, respondents' inclination to stay in this industry, respondents' opinions on compressed working hours, respondents' satisfaction with their working hours, respondents' degree of satisfaction with the overall rewards, and respondents' satisfaction with the payment were significant. Other variables (e.g., gender, age, job position, income, whether working during weekends) did not have any significant[3] effects on the attitudes.

Specifically, the proportion of salaried staffs (83%) who inclined to have this initiative implemented was much higher than that of the casual staffs (59%). The workers who were engaged in concreting and brick-laying were generally less willing to implement this initiative. At the focus group meeting, concreting and brick-laying workers explained that they had already been underemployed. They only worked for 20 to 22 days per month, sometimes also due to bad weather. If "No-Saturday-Site-Work" were implemented, their income would be further reduced and their flexibility on when to work further compromised. Those who planned to stay in the construction industry were more likely to agree with this initiative than those who planned to leave. The construction workers who considered their current working time too long would like to have compressed working hours implemented, for want of better work-life balance, especially for those who planned to stay in the industry in the long run. Those who were satisfied with the overall reward and payment generally did not want to have this initiative implemented. This can be largely due to their concerns with the potential reduction of their incomes.

3.2.2 Construction trainees

Cross Tabulation Analysis was also conducted to analyze the attitudes of construction trainees. It was found that the type of trade under training, respondents' satisfaction with current working hour, and whether respondents want to have compressed working hour implemented were significant[4]. The other variables (e.g., gender, age, whether working in the construction industry now, whether planning to join the construction industry) were not significant.

3 Salaried or casual staff: χ^2 (1, N = 163) = 11.10, $p < 0.01$; Type of trade: χ^2 (19, N = 163) = 32.75, $p < 0.05$; Inclination to stay in this industry: χ^2 (2, N = 163) = 7.15, $p < 0.05$; Opinions on compressed working hours: χ^2 (1, N = 163) = 37.32, $p < 0.001$; Satisfaction with their working hour: χ^2 (2, N = 163) = 14.96, $p < 0.05$; Satisfaction with the overall rewards: χ^2 (4, N = 163) = 17.31, $p < 0.05$; Satisfaction with the payment: χ^2 (4, N = 163) = 17.21, $p < 0.05$.

4 Type of trade under training: χ^2 (20, N = 361) = 47.16, $p < 0.05$; satisfaction with current working hour: χ^2 (2, N = 101) = 16.12, $p < 0.001$; whether respondents want to have compressed working hour implemented: χ^2 (1, N = 97) = 28.17, $p < 0.001$.

Specifically, the construction trainees who were studying the courses of marble laying, plumbing & pipe-fitting, surveying, leveling, and quantity measurement were most likely to agree to the implementation of this initiative, followed by those studying civil engineering supervision, safety officer, etc. The trainees who considered their current working time too long, and would like to work compressed hours generally also wanted to implement this initiative. The finding is somewhat different from our expectation that workers may be concerned with the loss of flexibility in scheduling their own work days and the potential income reduction. As introduced in Part IV, the construction trainee respondents were composed of 252 full-time trainees (72%), 71 construction workers (20%), and 25 workers of other industries. The respondents who were working in other industries may not be fully aware of the peculiarities of the construction industry and the possible consequences of implementing "No Saturday Site Work". For the respondents who were currently working in the construction industry, they might prefer better work-life balance even if their income and working flexibility may decrease.

3.2.3 High-school students

Regarding high-school students, it was found that the plan to join the construction industry and gender were significant[5] in affecting their willingness to join the industry if "No-Saturday-Site-Work" was implemented. The other variables were insignificant.

Specifically, the high-school students who were originally not sure about joining the construction industry would be more interested to join if this initiative was implemented compared with those who did not have the plan at the beginning. Male students were more interested in joining the construction industry than female students.

3.2.4 Forum participants

Cross Tabulation Analysis was also conducted to the forum participants. Surprisingly, it was found that neither the demographic characteristics (e.g., age and gender) nor working conditions (e.g., job nature, position, and relevant working experience) was significant in affecting their attitudes toward implementing the initiative of "No-Saturday-Site-Work".

5 Plan to join the construction industry: χ^2 (2, N = 255) = 78.06, $p < 0.001$; gender: χ^2 (1, N = 255) = 8.55, $p < 0.05$.

3.3 Suggestions on implementing this initiative

Although the implementation of "No-Saturday-Site-Work" was supported by some respondents, considerable concerns were raised in the survey, e.g., inappropriate timing, project delay, increase in construction costs, and decrease in income of casual workers, etc. Accordingly, respondents were asked to give suggestions on how to implement this initiative. Generally speaking, it was suggested that this initiative should be implemented in several stages, for instance, implementing it in public projects first and gradually expanding the scale. They indicated that the good timing to implement this initiative was when there was balanced construction supply and demand. This initiative may be feasible in five to ten years when the old generation shall have retired, and the young generation would have higher expectation for work-life balance.

Complementary measures were suggested to be taken. Exceptions should be provided to particular trades (e.g. maintenance) which could conduct work only during weekends. Cooperation among various stakeholders, e.g., contractors, workers' union and developers, would be needed. Efforts should be made to promote the positive image of the construction industry, and the site facilities, safety, and working conditions of construction workers should be improved. Besides, the career path and overall welfare of construction workers should be enhanced. Their job security and income stability should be guaranteed as well. To guarantee the income and job stability of construction workers, it was suggested (by respondents of trade union, professional institutions, and statutory bodies) that more direct/contract labour according to the length of respective contracts should be employed, and the subcontracting system improved. However, this suggestion was opposed by respondents of sub-contractors, contractors and developers. They contended that subcontracting was a worldwide practice which benefited efficiency. Employment of indirect labour was partly necessitated by the uncertain workloads. Sub-contracting provided a buffer against the fluctuating workloads.

This initiative was suggested to be implemented on a voluntary basis at the first stage. Alternate Saturday-off or half-day-off on Saturdays could be adopted first. "No-Saturday-Site-Work" could be implemented only during off-season and regarded as a bonus for individuals' performance. To successfully implement "No-Saturday-Site-Work" without jeopardizing the existing level of productivity, restrictions on project delivery time and scheduling

should be relieved. For instance, it could be specified in contract as client requirement. Alternatively, labour could be imported for short-term projects, and local workers trained for long-term ones, to make up for the lost productivity and meet the tight deadlines of current projects. However, the trade union participants strongly opposed to importing construction workers. Another solution was to improve the existing productivity, and reduce the dependence on labour-intensive methods. Innovative technologies such as prefabrication could be promoted through client-driven methods and incentives such as granting of more gross floor area (GFA). The construction industry should be reformed. The construction process should be innovated by learning the experience of other countries or regions (e.g., refineries in Scotland, and construction companies in mainland China).

3.4 Benefits of "No Saturday Site Work"

"No-Saturday-Site-Work" will largely benefit construction workers with work-life balance, and sustain the development of the construction industry. This has been confirmed by both of the case studies in Australia and some respondents in our survey. In light of the importance of recreation and social activities, construction workers will have more time with family and friends, more leisure time, learning time and rest time during weekends if this initiative is implemented. The injuries due to long working hours will become less. Construction sites can be made safer. Further, one-day reduction of working time may trigger more labour-saving technologies and innovations to be adopted in the industry to compensate for the reduced labour hours. The total factor productivity of construction workers may increase at the end. This initiative is also an attraction to the young generation who aspires for quality life and prefers the lifestyle of having more "social hours". Lastly, construction noise can be eliminated or reduced on Saturdays. In this way, the image of the construction industry will be improved and the industry development can be more sustained.

3.5 Concerns on implementing "No-Saturday-Site-Work"

However, concerns were raised on the negative impacts of implementing this initiative, e.g., decreased productivity, project delay, increased construction costs, decreased "take home pay", and prolonged disturbance to residents nearby due to project delay. Another concern was that it will be even more difficult to recruit labours to the construction industry due to the decreased income and less working flexibility. Moreover, it was pointed out that the stakeholders have not achieved any consensus yet. The feasibility of implementing compressed working week is still in doubt.

3.5.1 Concerns on the timing of implementing "No-Saturday-Site-Work"

The construction industry has gone through low ebb for ten years since 1997. Many construction workers went to other industries. Meanwhile, insufficient fresh blood entered into this industry. During a construction boom in 2014, a large amount of infrastructure and private projects were under construction and planning in Hong Kong. Construction workers were consequently highly demanded. Consequently, it was difficult to recruit adequate trained younger people to take over the vacancies left by the retired construction workers.

Given that it has already been hard to meet the deadline of current projects with "Saturday-Site-Work", "No-Saturday-Site-Work" will lead to further project delay. The supply of housing units, including public housing, will slow down. The situation that housing supply can hardly meet the housing demand may prolong for a longer time, and the housing price will remain at a high level. Another concern is that the productivity will remain at a low level because young people need to undergo training for certain years. Faced with the large amount of construction projects, productivity may matter more than the number of workers at the current stage. Meanwhile, the increase in construction costs (e.g. labour costs, time related costs, etc.) will be ultimately borne by end-users and the society at-large. The stakeholders have not reached any consensus on implementing this initiative yet. More consultations are needed. Hence, some respondents suggested implementing this initiative in the future instead of the present.

3.5.2 Concerns on the opposition by casual workers

The concern that salaried workers and casual workers may have different attitudes toward implementing the initiative of "No-Saturday-Site-Work" is confirmed by the analysis. The differences are significant. The most important reason is that both income and working flexibility of casual workers may decrease due to "No-Saturday-Site-Work". According to the telephone survey that was conducted by the CIC from October 2014 to January 2015, 82% of the construction workers in Hong Kong were daily paid. The implementation of "No-Saturday-Site-Work" will have a broad impact on the income and working flexibility of construction workers in Hong Kong.

3.5.3 Concerns on implementing compressed working week

The literature review shows that compressed work week can improve the work-life balance of shift workers, and is positively related to job satisfaction and satisfaction with the work schedule. However, concerns on implementing compressed working week in the construction industry, such as physical constraints, environmental constraints, environmental legislation, and specific working procedure of different trades, were raised by the interviewees and focus group participants. Interestingly, the Cross Tabulation Analysis shows that the willingness to implement compressed working week is highly correlated with the willingness to implement "No-Saturday-Site-Work". Given the concerns, any attempts to adopt compressed working week to make up for the lost productivity that is caused by "No Saturday Site Work" should be considered very carefully before practice.

3.5.4 Concerns on the requirements of certain trades

Not only do different trades have different situations of income and labour recruitment, but also they have different requirements for working cycles (e.g., working time and sequences) as well as manual operation (e.g., brick-laying). If "No Saturday Site Work" is implemented, the working cycle of some trades may be disrupted. The trades (e.g., maintenance) which need to work on Saturdays may have difficulty in undertaking the necessary work. In addition, the works of some trades are considerably affected by the weather. Stripping Saturday off will further decrease the number of working days for construction workers, and reduce the flexibility of both contractors and workers to plan the work. Hence, it makes sense that the particular types of trade significantly affect workers' attitudes toward implementing the initiative of "No-Saturday-Site-Work".

3.6. Suggestions on how to attract young people to the construction industry

3.6.1 Willingness of "Generation Y" to join the industry

The so called "Generation Y" is generally more educated and thus aspiring for getting more job satisfaction from their work. They find the long and unsocial hours of working in a construction site very unappealing. Specifically, the foremost important reasons for high-school students' respondents not willing to join this industry include: 1) being not interested, 2) work hardship, 3) poor image of the industry, 4) disapproval by parents, and 5) unsatisfying career development. It is worth mentioning that one of the most important reasons for them being not sure about joining this industry is having no idea about the construction industry.

In addition, the young generation does not have the pressure to support the family as the elders did, and have more choices, including going to community colleges to get an associate degree. On the other hand, vocational education is not a popular choice in Hong Kong. It was reported that 69% of the 341,636 registered construction workers in Hong Kong were above 40 years old by the end of 2014 according to the statistics from the Construction Workers Registration Board. This problem has become more serious when the new generation is more unwilling to work on sites than those before them.

Not only are young people unwilling, but also are their parents not wanting their children to join the construction industry due to social and cultural discrimination against the industry. The image of the construction industry is poor in terms of safety, working conditions, long working hours, welfare and career development. Almost half of the construction workers' respondents do not want their family members to join this industry because of work hardship, uncertain prospect, working on Saturdays, long working time, and dangerous work, etc. Half of the construction workers' respondents indicated that the working time is too long. They are generally unsatisfied with the welfare and career development.

Given the above considerations, it is in doubt whether "No-Saturday-Site-Work" alone can positively influence the interest of young people to join the construction industry. According to our questionnaire survey, the proportion of the high- school students who indicated their interest to join the construction industry increased from 29% to 52% if this initiative was implemented.

3.6.2 Measures to attract young people

Based on the characteristics of “Generation Y”, many other measures can be adopted to attract young people to the construction industry besides implementing the initiative. They are summarized as follows:

1. Vocational education should be further developed in Hong Kong, and be regarded as important as higher education. Students will be provided with more choices besides pursuing college education. They will know more about this industry. The social status of construction workers can be improved to some degree.

2. The image of the construction industry should be improved in terms of safety, site conditions, site facilities (e.g., neat uniforms for workers, lifts for workers, more bathrooms, and clean mobile toilets). It will also showcase the caring image of this industry. Efforts should be made by both contractors and developers. The relevant costs can be included in the tenders so that no particular contractor would be disadvantaged.

3. The income and welfare can be increased. High income is one of the most important reasons for construction workers, trainees and students to stay or join the construction industry. According to the questionnaire survey, 20% of the construction workers felt dissatisfied with the payment, whilst 37% of them felt dissatisfied with the welfare.

4. Good career path should be shown to both current workers and potential ones. It should be paid with special attention that 36% of the construction workers were not satisfied with the current career path according to the questionnaire survey.

5. Another measure is to decrease the working time in the construction industry through adopting innovative technologies. About half (50%) of the construction workers’ respondents indicated that their working time was too long. On the other hand, adopting innovative technologies will decrease the dependence on labour-intensive methods. Less labour will be required, which may largely soothe the problem of labour shortage in the construction industry.

6. The program of works should be scheduled evenly over time so that the cyclical nature of the industry can be smoothed out for job stability and security. In addition, more contract labour can be employed if the amount of construction works are stable every year. Job stability can be further guaranteed in this way.

7. The working flexibility for construction workers should be guaranteed, especially for casual workers.

8. The skills recognition system should be widely adopted in the construction industry. On the other hand, developing multiple skills should be encouraged among construction workers.

Discrimination against construction workers can be gradually eliminated through the above measures. Young people may be more willing to join the construction industry.

4 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

Desirability of implementing "No Saturday Site Work"

The desirability of various stakeholders toward implementing "No-Saturday-Site-Work" varies. According to the in-depth interviews and focus group meetings, developers, sub-contractors and trade union generally oppose to implement this initiative. Professional institutions have concerns on the implementation. Government and statutory bodies generally hold neutral positions. Only HKCA, who originally proposed this initiative, regards the implementation to be feasible.

To investigate the attitudes of both construction workers and the young generation who will potentially join the construction industry (including construction trainees and high-school students) on the implementation of this initiative in more detail, and to verify the findings of other surveys, we conducted three rounds of questionnaire survey and a consultation forum. Interestingly, we found that more than half of the questionnaire respondents hoped to implement this initiative. Almost two thirds of the consultation forum participants considered this initiative to be feasible. According to the Cross Tabulation Analysis, salaried staff, workers in certain trades (e.g., reinforcement fixing, painting, electrical and mechanical services, etc.), workers who plan to stay in the construction industry, and those who are less satisfied with the overall reward and payment are inclined to have this initiative implemented. Construction trainees studying certain courses (e.g., marble laying, plumbing & pipe-fitting, surveying, leveling, and quantity measurement), those who consider the working time too long, and those who would like to work compressed hours are most likely to agree to implement this initiative.

Combining the findings above, we come to some extent conclude that "No-Saturday-Site-Work" is desirable to construction workers, the young generation and the society. It is desirable in the aspects of work-life balance and sustainable development of the construction industry. However, the feasibility of implementing it at the current stage and the scale of implementation should be further discussed. Certain conditions must be fulfilled before implementation. Concerns of various stakeholders must also be addressed before the implementation.

Feasibility of adopting "No Saturday Site Work"

Many respondents pointed out that this initiative is feasible only in the long run. Their concerns implementing the initiative at this point mainly include decreased productivity, project delay, increased construction costs, decreased "take home pay", prolonged disturbance to residents nearby due to project delay, disrupted working cycle, and prolonged housing supply and demand imbalance due to slow supply of housing units (including public housing). Concerns also exist in stakeholders not achieving any consensus.

The importance of working flexibility is greatly emphasized, which not only construction workers like to have but also benefit certain trades. Stripping the Saturday off will also strip off contractors' flexibility to plan their work smoothly given the restrictions of bad weather, working cycle, material shortage, environmental permit yet to obtain, and the unavailability of workers. Further, construction workers engaged in different trades work for different number of working days. The pattern of working time depends on specific trades. Workers in certain trades work more overtime than others. It is determined by the nature of work and is usually included in employment contracts. Further, it was also pointed out that the practice of "flexible hours" or "compressed working hours" is not applicable to construction works because of physical constraints, environmental constraints, environmental legislation, and specific working procedure of different trades.

4.2 Recommendations

Although reservations and concerns exist among various stakeholders, "win-win" solutions can be worked out. For employers in the construction industry, they are mainly concerned with the tight deadline, maintaining or even improving the productivity, and reducing the costs. For employees (especially for those casual ones), "take-home pay" is the most important consideration, which in many cases overrides balance between work and non-work life. In addition, working flexibility and different characteristics of various trades are highly emphasized. In light of this, implementation strategies for "No-Saturday- Site-Work" in short, medium and long terms are put forward as follows.

Short-term strategies

Given the long-term potential benefits of the "No-Saturday-Site-Work", initially it can be implemented on a voluntary basis. Government is generally suggested to implement the initiative through pilot projects, the lessons of which can be learnt subsequently by the private sector. Employers may feel reluctant to implement new or seemingly radical shift systems (i.e., "No-Saturday-Site-Work") if there are no tried and tested models. With no such experience, the learning costs for them can be high. They may hold a conservative attitude and extend the use of overtime working system, which is familiar to them. In this case, the government and social partners (e.g., CIC and contractor association) can take the role of facilitating the exchange and dissemination of information among individual firms on experiences with new working time systems, to reduce their learning costs and to spread the use of "No-Saturday-Site-Work".

Complementary measures can be implemented in those pilot projects including: 1) Cooperation among various stakeholders, such as contractors, sub-contractors and workers; 2) More direct labour employment; 3) Adjusted project schedule and working hours; and 4) Alternate Saturday-off or half-day-off on Saturdays. The implementation of "No-Saturday-Site-Work" needs the cooperation among various stakeholders. Support from the work environment (e.g., supervisors, managers and peers) is essential. Employers can be offered the incentives to adopt "No-Saturday-Site-Work" by the government. Exceptions should be given to particular trades that can conduct work only during weekends. In light of the concerns regarding implementing the compressed work week, a range of roster proposals can be implemented, including: 1) work 30 minutes earlier every morning, and one Saturday per month, with a rostered day off on the previous or following Monday; 2) work one additional hour per working day; 3) six working days per week is made not mandatory, and it would be up to employees' decisions to work on Saturdays or not; and 4) flexibility to arrange for short lengths of time away from work to deal with non-work commitments, i.e., do not have to work all day on Saturdays.

Medium-term strategies

In the medium term, "No-Saturday-Site-Work" can be implemented only during off-season and as a reward for good performing employees. Alternative project delivery arrangements, which emphasize the collaborative nature of project alliances, should be encouraged for implementing the "No-Saturday-Site-Work" initiative. Since the risks (e.g., time overrun) associated with implementing "No-Saturday-Site-Work" are entirely borne by construction contractors under the traditional project delivery arrangement, they would be reluctant to employ this innovative initiative. It will be less difficult to promote the implementation of this initiative if all project participants (both clients and contractors) agree to share the risks and rewards of the project. Moreover, alternative remuneration mechanisms should be explored to eliminate concerns arising from casual workers (including daily-rated, piece- rated and hourly-rated ones) on maintaining the current level of their "take home pay". When measuring the remuneration, emphases should be put on production and productivity, rather than time spent on site.

Long-term strategies

In the long term, if the benefits of “No-Saturday-Site-Work” can be realized, this initiative may be put forward through collective agreement or legislation. However, several prerequisites need to be met before taking this step, including no severe labour shortage problem, consensus being reached along the project supply chain on compressed working week, and the implications of workers’ wages and project duration having been taken into account. Furthermore, the working conditions, job security, career path and overall welfare of construction workers should be improved.

Innovative technologies (e.g. prefabrication and mechanization) should be employed to improve the productivity of this industry and to reduce the dependence on labour-intensive methods. Client-driven methods and incentives such as granting gross floor areas can be promoted by the government to encourage the wider use of innovative technologies in the industry. More training courses should be provided. More training courses can provide more skilled workers to the industry, which will soothe the problem of labour shortage to some degree. The number of working days can be reduced accordingly. Moreover, the construction industry can be reformed and construction process can be innovated by learning the experience of other countries or regions.

While implementing “No-Saturday-Site-Work” might help attract and retain workforce in the construction industry, additional measures can be adopted, including: 1) More training opportunities for construction workers and potential entrants; 2) Enhancing the image of the construction industry; 3) Improving safety, site conditions, and site facilities; 4) Elevating income and welfare; 5) Bright career path and promising job security; 6) Adopting innovative and advanced technologies; 7) Higher degree of working flexibility; and 8) Wider adoption of skills recognition system among construction workers. With the above measures, it is anticipated that young people will be more willing to join the construction industry in the future.

Members of CIC Task Force on Research

Mr. Jimmy TSE
Prof. Christopher LEUNG
Ir Joseph MAK
Prof. James PONG
Prof. Sze-chun WONG
Ir Chi-chiu CHAN
Ir Tommy NG
Mr. Shu-jie PAN

建造業議會
Construction Industry Council

Address 地址：38/F, COS Centre, 56 Tsun Yip Street, Kwun Tong, Kowloon
九龍觀塘駿業街56號中海日升中心38樓

Tel 電話： (852) 2100 9000

Fax 傳真： (852) 2100 9090

Email 電郵： enquiry@cic.hk

Website 網址： www.cic.hk

cic_hk

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