

**Views from the Hong Kong Institution of Engineers
to the Chief Executive for Formulation of 2018 Policy Address**

The Hong Kong Institution of Engineers (HKIE) welcomes the Administration in setting out policies to address the needs of the public and lead Hong Kong to progress, in order to sustain our competitiveness and set a pathway towards prosperity for our next generations.

2. The HKIE opines submissions by other stakeholders must be of reasons not only pertaining to their own interests but would be also worthy and beneficial to the community at large in respect to ensuring Hong Kong staying ahead. The Institution is confident that the Administration would be weighting up each and all propositions for a balanced policy skeleton.

3. In essence, for a sound policy implementation, not only for the engineering sector but for all, the HKIE believes there are two main limbs that we need to address, viz., the Infrastructure and the Operation.

4. The Infrastructure limb covers the base and facilities that the community needs to perform on and from. This includes not only the building up of ports, transport, energy and services, but also the cyberspace dais. The Institution is pleased to note 5G communication network would be introduced soon in a timely order.

5. The Operation limb is to ensure continual performance of all assets in a safe and efficient manner. And more, with proper attentions and enhancements, assets could evolve and emerge into a better status, or what the practice Asset Betterment envisages. The concept of Smart City is only but one of the illustrative applications.

6. Within these two intertwining limbs of hardware and software detachments, arisen are other social and humanitarian deployments: education & schooling, economy & innovation advancement, medical & welfare cares, ecology & livelihood furtherance.

7. The HKIE would like to put forth our views to the Administration for consideration in formulating the forthcoming Policy Address.

8. First and foremost, the HKIE would commence with the subjects of Land & Housing. Ascertained and adequate accomplishments of both are not only topical but critical towards and beyond 2030+.

LAND

9. It is noted that Hong Kong's land shortage is estimated to reach 815 hectares by 2026 and worsen to 1,200 hectares by 2046. To create new land for better living condition to our citizens and sustaining long-term economic and social development, we are pleased to see the Administration's initiative of setting up the Task Force on Land Supply to identify solutions to tackle future land and housing challenges.

10. Among all the land supply options shortlisted by the Task Force, we consider that reclamation is the most efficient method to generate few large pieces of new land. Compared to the other options, reclamation can minimise the impacts on existing land use, and the modern engineering technologies for reclamation can better manage and minimise the environmental impacts. The design of eco-shorelines should also be considered and adopted in reclamation contracts to enhance ecological functions and facilitate the growth of the general marine water habitat.

11. The previous experiences have demonstrated that reclamation has played an important role in new town development. Among the nine existing new towns in Hong Kong, six of them, namely Tsuen Wan, Shatin, Tuen Mun, Tai Po, Tseung Kwan O and Tung Chung, have been built to different extents on reclaimed land and are now home to almost half of the population. It is noted that several potential nearshore reclamation sites (e.g. Lung Kwu Tan, Siu Ho Wan, Ma Liu Shui, and Sunny Bay) have been identified for different land use purposes, and the Central Waters between Lantau and Hong Kong Island are also considered suitable for developing artificial islands for the East Lantau Metropolis. To boost new land supply in a timely manner, we support the Administration to proceed to the detailed planning and engineering studies for reclamation on those identified suitable sites and to continue exploring other potential reclamation sites (e.g. Fat Tong Chau in Tseung Kwan O).

12. Hong Kong has been taking endeavours in rock cavern and underground space development as a source of land supply for underground transportation and public facilities for years. We note that the Administration has launched a number of strategic studies and pilot projects to explore the potential of systematic utilisation of rock caverns and underground space since 2010, for example the Long-term Strategy for Cavern Development and the Territory-wide Study on Underground Space Development in the Urban Areas of Hong Kong. The Administration is urged to adopt the findings of those studies and formulate a holistic and long-term plan for wider application of rock caverns and underground space in Hong Kong.

13. A visionary urban planning and design is also essential to release valuable and scarce land resources in our congested urban setting. The HKIE supports developing brownfield sites to enhance the developmental values of existing land by re-designing the land use and the built environment. For the existing industrial and logistics businesses already located in those sites, the Administration should take out planning to relocate and/or integrate them to industrial or logistics parks to continue the operation and bring mutual benefits to the involving parties. The land released can then be re-planned along with the on-going New Development Area projects.

14. The HKIE also ventures to suggest a thorough zone planning for all brownfields be carried out denoting the sections that no further developments would be allowed to save for GIC (Government, Institution or Community) usage. All exiting sites under these sections must be restored to its previous and original conditions of land leases and grants.

15. The other portion covered those lots that build up developments are permissible. Proposals of developments of commercial, industrial and other facilities from developers and land owners are welcome, subject to tender process and market land costs. The initiating party should be allowed a concession of the right of first refusal

to a tendered bid. Any resumption of abutted properties will be left to provisions of current ordinances carried out by the proposers. The Administration will provide the necessary services infrastructure. At market land rates and through a tender process, the HKIE considers this is a form of public-private partnership arrangement that the public would welcome.

16. This will not only free up the wasted resources of land, and more importantly, to solve a decade long uncertainty and environmental discomfiture. The Town Planning Board would be left with the final decision and an orderly progression of works. Necessary legislative provisions may be needed.

17. Urban regeneration is a constructive measure for land supply. The Administration is suggested to map out a schedule on redeveloping old public housing estates in order to yield more public housing units for rental, sale and elderly housing in the long term. We also support for more pilot projects of pre-fabricated modular housing on idle sites for building transitional housing. For aged industrial buildings, the Institution suggests the Administration to consider relaxing the restrictions and allowing industrial sites with high vacancy rates to be converted into other uses, such as venues for start-up companies, with proper measures addressing safety issues. In particular, the HKIE supports the Administration to study on the possibility of facilitating the conversion of lower floors of industrial buildings for non-industrial purposes.

HOUSING

18. The crucial factor of the affordability of getting a first mortgage is the land costs. Various methods of concessions in land prices were introduced in the past years for some kinds of home ownership but failed.

19. The HKIE considers the following factors contribute to its failure:

- (a) The unit price of land price is the most valuable asset to the Government and community alike. The stability of which could not be upset limiting a widespread of land-cost concession for lower income families;
- (b) Only a few able to purchase flats at a concessionary rate coupled with limited supplies causing more people feel prejudiced as only a handful lucky ones are successful in the lotteries;
- (c) For subsidised purchase, the scheme can only be carried out by the Government, and market participations are not possible;
- (d) The purchase of a flat as conceived by many in Hong Kong is considered as a theme of investment for capital gains, and all those restrictions and limitations of resale actually freeze the supply, capitals and distort the market; and
- (e) With the Hong Kong Housing Authority being the principal supplier and trapped under the mistakes of providing too many 'features' in considered

unjustifiable and perhaps in competition with the market, all flats are blandly designed and with minimum provisions.

20. Some ten years ago the Engineering Forum, the subsidiary covering communal engagements of the HKIE, proposed delinking the land price and construction costs from the mortgage for the first and an only one-off opportunity purchase for Hong Kong permanent residents, and the HKIE believes this is still a viable solution:

- (a) Land is auctioned in the usual manner with the bidder return a land cost which will be borne by future buyer;
- (b) A permanent Hong Kong resident purchasing flat under this theme will pay the Government a flat interest rate (commensurate to the rate of return of reserve investment) for the sum of land costs for, say, the next 30 years;
- (c) The full costs will be realised at the lapse of contract or when a resale is made;
- (d) The purchasers will have to pay a premium of insurance covering default and the large pool, that the HKIE expects the premium rate is minimal;
- (e) The developers have to provide security that the development and subsequent sales and purchase must be completed within a certain time frame with escalating penalty;
- (f) The developers are free to offer any mode of buildings and related provisions reflecting their market speculations; and
- (g) The purchasers only need to secure financial mortgage on the cost of construction, effectively around 30% of the current market rates and will be responsible for gains and losses of their selection on future sales.

21. The HKIE believes this would introduce smaller developers in the land auctions and bring varieties of housing flat in the market at a more steady and attractive fashion. It would be up to the Administration whether there is a need to refine the roles of other public housing providers.

EDUCATION & RESEARCH

22. Talent is the most important asset for Hong Kong's continued development, and education is the key to nurturing talent. The HKIE urges the Administration to reinforce STEM (Science, Technology, Engineering & Mathematics) education in the curriculum and extra-curricular activities of primary and secondary schools. According to a recent study on "STEM Education in Secondary Schools: Improving Resource Utilisation"¹, there are five major obstacles faced by interviewed schools

¹ Youth Research Centre of the Hong Kong Federation of Youth Groups (2018), *STEM Education in Secondary Schools: Improving Resource Utilisation*, Retrieved from <https://yrc.hkfyg.org.hk/2018/01/14/%E6%94%B9%E5%96%84%E4%B8%AD%E5%AD%B8stem%E6%95%99%E8%82%B2%E7%9A%84%E8%B3%87%E6%BA%90%E9%81%8B%E7%94%A8/>

when implementing STEM education, namely insufficient STEM lesson time, difficulty of developing cross-subject STEM education, inadequate reference, insufficient teacher training, and unclear teaching guidelines. Apart from regularising funding on STEM education to subsidise teacher training and curriculum development, the Administration is suggested to foster collaboration among stakeholders, including relevant industries, professional bodies and local universities, to provide support and materials on STEM education.

23. To level up Hong Kong's workforce to meet the global dynamic development, it is imperative to facilitate our citizens to continuously pursue lifelong development. The Institution suggests the Administration to increase subsidy and tax allowance for professionals in pursuing continuing professional development. The Administration should consider expanding the range of courses covered under the Continuing Education Fund to include courses relating to engineering and construction industry, and also strengthening quality assurance for the registered courses.

ECONOMY & INNOVATION

24. Hong Kong has a significant role to assist for the development and success of the Belt and Road Initiative and the Greater Bay Area development plan. The HKIE considers that infrastructural construction and development could be the core for the regional cooperation. In this respect, Hong Kong has much to offer in professional service areas such as consultancy, planning, design, construction, project development, operation management and capacity building, etc. The HKIE hopes that the Administration would strive for facilitating Hong Kong professionals to practise in the Mainland to enhance future collaboration in potential infrastructural projects in the regions.

25. To support economic activities to take place in Hong Kong, infrastructural, transportation and communication connectivity between Hong Kong, the Mainland and the overseas should be enhanced. The Administration should provide sufficient and top-grade supporting facilities and services, and drive for an open business environment to attract companies from global arena, especially those emerging and innovative ones, to set up their businesses in Hong Kong.

26. With the objective of formulating a balanced transport strategy to facilitate the mobility of people and goods of Hong Kong in an environmentally sustainable manner up to 2016, the Third Comprehensive Transport Study was commissioned in 1997, and in the recent decade a number of major projects proposed under the Study have been/ are going to be completed, such as South Island Line, Shatin to Central Link, and Hong Kong-Zhuhai-Macao Bridge. To move on to the future decades, the Administration is suggested to carry out another comprehensive study to update and refine Hong Kong's transport infrastructural policy framework for integration with the Greater Bay Area development. Smart measures for better coordination of multi-modal public transport services are also suggested to be devised.

27. The Institution always supports the Administration to develop innovation and technology as a pillar and core driver for economic growth. To strive for sustainable technology development, the Administration is suggested to progressively increase funding on research and technology with mid- and long-term targets set.

University-industry partnership should be encouraged in developing downstream research and development, while public-private partnership should also be promoted in instilling new technology and collaboration for applied engineering or technology researches and application.

28. To strengthen the competitiveness of the construction industry, the Administration is suggested to promote the adoption of Building Information Modelling (BIM) technology in private projects. Noting that the BIM asset management standards and guidelines for buildings maintenance are being under development, the Administration should make full use of such resources and promote to both public and private sectors. The Administration is suggested to promote the use of Internet of Things to upgrade the overall performance on construction project management on one hand, and to consider extending the scope of Technology Voucher Programme to cover emerging technologies for the industry on the other hand.

29. With high population density and numbers of high-rise buildings in Hong Kong, good fire safety management is very important to the community. Noting that the extant prescriptive codes for fire engineering design may not cope with innovative design of buildings and infrastructures under rapid development, we urge the Administration to review the current situation and adopt the latest solutions which can suit flexibly complex and mega developments and enhance the emergency preparedness of critical infrastructures. The Institution recommends the Administration to establish a comprehensive fire engineering design database pertinent to local conditions such as heat release rates of local building elements and materials, and make it available for the use of the industry. The Administration should also drive for collaboration with education institutions, laboratories and learned societies to promote fire science and related engineering research to facilitate innovative design of housing and infrastructure development.

QUALITY CITY

30. In addition to increasing the supply of land and housing as well as enhancing hardware support and transport network, sustainable environment, inclusive society, and good social order, etc. are all the indispensable building blocks that make up a quality city. Hong Kong is well endowed with countryside and blue water resources which are considered as invaluable and multi-functional components for sustainable city development. Collaborative efforts should continue in conservation of the natural environment, afforestation in the countryside and slopes, creation of public parks, public spaces and amenity areas, and planting of trees in the city streets for enriching green spaces. To create and maintain a vibrant harbourfront, we need to pursue vigorously the harbourfront enhancement initiatives, and where appropriate, to engage various community partners in management in the long run.

31. The development of renewable energy is one of the most important keys to tackle climate change and improve our quality of living. Compared with other developed areas, the electricity output of Hong Kong generated from renewable energy (RE) is still relatively low. Under the global trend of replacing fossil fuel by RE, the Administration is suggested to extend the scope of trial of floating photovoltaic (FPV) systems to coastal area without marine traffic to enable research on the performance of FPV system on the sea. It is also recommended to review and

increase the set target of RE potential for Year 2030 with wider adoption of RE facilities and advancement of RE technology.

32. To improve roadside air quality, we welcome the Administration to push for the popularity of electric vehicles (EVs) through further increasing tax concessions on the first registration for electric private car owners, and suggest extending the provision of the “One-for-One Replacement” Scheme to cover different types of vehicles. The Administration should proactively increase the number of charging stations to meet the growing demand of EV charging service. The Administration may also consider reviewing the policy to regulate the property developers to install EV charging facilities in new private premises’ car parks.

33. Wide and wise use of big data is also essential to develop a smart, liveable and quality city. Hong Kong should develop an information infrastructure with high speed, wide coverage and high reliability to integrate both public and social data resources for advanced study. According to the Smart City Blueprint, Common Spatial Data Infrastructure (CSDI) is targeted to be available by 2023. We recommend the Administration to develop a set of data exchange standards, rules and regulations to ensure efficient implementation of the CSDI.

34. Addressing the concern of security and protection of personal privacy, technical patents and digital copyrights relating to the use of big data have also been long discussed. The HKIE hopes to see a comprehensive policy on this to be in place soon. Apart from education and promotion efforts, the Administration should regularly review regulations and legislation on big data usage in response to the data-driven revolution and to realise greater efficiency in sharing resources.

HEALTH & WELFARE

35. Technological and engineering advancements in healthcare have contributed to efficiency of healthcare services and management. The HKIE welcomes the adoption of a smart hospital approach for piloting in new hospital projects by 2020 and suggests the Administration to take lead in developing more information technology-based solutions, such as telecare, telemedicine and telemonitoring in the delivery of public healthcare. We also suggest the Administration to explore wider application of smart health technologies for public healthcare when formulating the second 10-year hospital development plan.

36. The HKIE supports the new initiative of setting up a Big Data Analytics Platform in opening up data of the Hospital Authority for healthcare-related analytics or research, with a view to facilitating healthcare policies formulation and clinical enhancement. Taking the opportunity of commission of the Stage Two Electronic Health Record Sharing System, the Administration is recommended to drive for platform integration and data sharing of different e-initiatives among professionals in private practice and public hospitals to integrate raw data and digital health records in order to improve the healthcare system in Hong Kong as a whole.

ELDERLY CARE & YOUNG PEOPLE

37. The elderly population in Hong Kong is expected to continuously increase to 2.37 million (or about 31% of total population) in 2036, and further increase to 2.59 million (or about 37% of total population) in 2066². In face of the challenges of the ageing population and a longer average life expectancy, the Administration should continue to devise supporting measures for enhancing the quality of life of elderly persons and improving the health management system. In the meantime, the Administration should devise measures to prepare our society with sustainable supply of a quality workforce to support the overall development.

38. We support the Administration to consider regularising the newly introduced fund under the Innovation and Technology Fund for Application in Elderly and Rehabilitation Care to subsidise elderly and rehabilitation service units to procure and adopt up-to-date technologies to provide better support and services to the elderly and caregivers. The Administration is also suggested to encourage development and adoption of remote care technologies for home cares to support the initiative of ageing in place.

39. According to the Census and Statistics Department, Hong Kong's overall labour force participation rate is projected to decline noticeably from 59.2% to 49.6% during the period of 2016 to 2066³. In anticipation of an imminent shrinkage of labour force amidst the ageing trend, the Administration is recommended to review the population and manpower policy in a more proactive and targeted approach. Different measures should also be introduced to attract talents and professionals outside Hong Kong to come and stay here.

40. We support the Administration to set up a high-level entity for the planning of human resources to formulate, examine and co-ordinate strategies and measures to help foster a competitive workforce and unleash the potential of local labour force. More support should be given to nurture local young talents by offering additional subsidised higher education places within or outside Hong Kong as well as promoting vocational education and skills-based professions as alternative career pathways. It is noted that the first Talent List has been introduced to enhance our competitive advantages in attracting international talents, and we support the Administration to extend the List to include experts in other professional fields upon reviewing the long-term demand of various skill sets that Hong Kong may lack. We also suggest the Administration to promote participation of experienced persons in the job market by offering subsidy to employers, supporting government-sponsored organisations to arrange flexible and short-term jobs, and providing training programmes for vocational transition.

² Press Release of the Census and Statistics Department of the HKSAR Government (2017), *Hong Kong population projections for 2017-2066 released*, Retrieved from https://www.censtatd.gov.hk/press_release/pressReleaseDetail.jsp?pressRID=4200&charsetID=1

³ The Census and Statistics Department of the HKSAR Government (2017), *Hong Kong Labour Force Projections for 2017 to 2066*, Retrieved from <https://www.censtatd.gov.hk/hkstat/sub/sp200.jsp?productCode=FA100042>