LCQ2: Improving weather forecast operation

Following is a question by the Hon Chan Chun-ying and a reply by the Secretary for Environment and Ecology, Mr Tse Chin-wan, in the Legislative Council today (November 8):

Question:

It has been reported that the Hong Kong Observatory (HKO) plans to introduce new measures to enhance the accuracy of weather forecasts, including the development of new weather radars and the introduction of artificial intelligence (AI) in weather forecasting. In this connection, will the Government inform this Council:

(1) as the HKO has pointed out that it attained a weather forecast accuracy of 92 per cent last year, but a public opinion survey conducted last year indicated that the percentage of the HKO's weather forecasts considered accurate by the public was 77 per cent, whether the HKO has examined the reasons for the discrepancy between these two figures; if so, of the details; if not, the reasons for that;

(2) of the progress of introducing AI in weather forecasting, and whether it has studied how AI enhances the accuracy of weather forecasts; if so, of the details; if not, the reasons for that; and

(3) as some members of the public are of the view that, in respect of the issuance of weather warnings linked to the arrangements for the suspension of work and classes (e.g. Black Rainstorm Warning Signal and Tropical Cyclone Warning Signal No. 8 or higher), the advance notice given by the HKO is too short, and they are dissatisfied with the timing of issuing such signals, whether the HKO has studied the room for using technology for further improving the issuance of weather warnings; if so, of the details; if not, the reasons for that?

Reply:

President,

(1) As a scientific department dedicated to serving the public, the Hong Kong Observatory (HKO) has always adhered to rigorous and objective scientific methods in developing weather forecast products and regularly evaluates its service quality.

To assess the accuracy of weather forecasts, the HKO calculates the "percentage of accurate weather forecasts" using an objective verification method. This objective method takes into account the differences between the Local Weather Forecast and actual observations for each day of the year,

including weather elements such as temperature, wind speed, cloud cover, visibility and rainfall, etc, to objectively calculate the accuracy of weather forecasts. In 2022, the "percentage of accurate weather forecasts" was 92 per cent, with the average percentage for the past 10 years (2013 to 2022) exceeding 90 per cent.

To collect feedback from users and to understand their needs regarding weather services, the HKO has been commissioning independent survey companies to conduct annual opinion surveys. Survey results show that, over the past five years (2018 to 2022), the average percentage of forecasts perceived as accurate by the public was 78 per cent, which is a slight increase compared to the average of 76 per cent in the previous five-year period (2013 to 2017). In addition, the HKO also conducts opinion surveys among frequent users of its forecast services, such as airlines and ship captains. The results show that the accuracy of weather forecasts as perceived by these users was over 95 per cent, which is even higher than the "percentage of accurate weather forecasts" calculated from the HKO's objective verification method.

We note that the accuracy of the HKO's forecast services as perceived by frequent users was over 95 per cent. On the other hand, the results of public opinion surveys also reflect to a certain extent public concern about changes in weather conditions. Furthermore, as weather information becomes more widely available, the expectations of the public about weather forecast services continue to rise. The HKO will strive to enhance service levels and develop new services with reference to public opinion. Such efforts include the continuous introduction of new instruments and technologies, such as the deployment of a new and more advanced radar system at Tai Mo Shan next year, and active participation in the World Meteorological Organization (WMO) of the United Nations to enhance knowledge exchange with members with advanced forecasting technology to keep the overall service quality up to date.

(2) As regards the provision of rainfall nowcast, the HKO has started to apply artificial intelligence in recent years to optimise its rainfall nowcasting system. This system can generally provide alerts at ten to several tens of minutes before the rainfall amount reaches the rainstorm warning criteria. However, the development of rainstorms is highly random and can change drastically within a short period of time, making the prediction of rainstorms a major challenge for the global scientific community. The HKO, with its internationally recognised technical capabilities, has been designated by the WMO as one of the three Regional Specialised Meteorological Centres for nowcasting. Nevertheless, we will continue to strive to identify ways to improve the effectiveness of rainfall nowcasting.

As for tropical cyclone warnings, global numerical weather prediction models are important forecasting tools. As regards the application of artificial intelligence, the HKO has been conducting trials of an artificial intelligence weather prediction model since the middle of this year to provide forecasts for wind direction, wind speed, temperature and sea-level pressure to provide references for compiling the 9-Day Weather Forecast and

the forecast track of tropical cyclones. In October this year, the HKO also launched the weather forecast charts of the "Pangu Computer Model" on its website to provide users with more information about future weather changes. However, the application of artificial intelligence in this area is still in the preliminary stage, and further accumulation of data is necessary before we can ascertain its effectiveness in improving forecast accuracy.

(3) Tropical cyclones and rainstorms are two different weather systems. Tropical cyclones generally have a larger geographical coverage compared to that of rainstorms. The HKO closely monitors each tropical cyclone when it is relatively far away from Hong Kong and issues the Tropical Cyclone Warning Signals No.1, No.3, and No.8, etc, as appropriate. The HKO typically issues an advance notice two hours before the issuance of the Tropical Cyclone Warning Signal No.8 to allow the public to make preparations.

However, it is important for the public to understand that, when a tropical cyclone edges closer to Hong Kong, even slight changes in its position and intensity can result in different wind conditions from the previous forecast. If these changes lead to a rapid increase in local wind strength, it may be necessary to upgrade the warning signal from No.8 to No.9 or higher within a short period of time. The HKO will make every effort to provide advance notices to the public whenever feasible.

In recent years, the HKO has actively employed more reliable computer forecast models to predict tropical cyclones. However, there are still limitations in the world-leading computer forecast models in predicting the subtle changes of tropical cyclones as they approach Hong Kong, including insufficient spatial resolution, etc. When a tropical cyclone gets close to the territory, it is often necessary to continuously assess the latest storm situation based on actual observations and the latest forecasts to issue warnings.

Compared to tropical cyclones, the geographical coverage of rainstorms is usually smaller. The average lead time for issuing rainstorm warnings has increased in the past few years. However, the development of rainstorms is highly random, and significant changes can occur within a short period of time. There are still technological limitations that prevent further extension of the lead time for issuing rainstorm warnings. The HKO will continue to utilise the latest technologies and actively collaborate with meteorological agencies, including those within the Greater Bay Area, to enhance forecasting capacities. In addition, the HKO will actively follow up the measures proposed in this year's Policy Address to develop a risk-based decision support system. By utilising artificial intelligence and big data technology to analyse historical and real-time rainfall and flooding data, a flood risk alert system will be established to assist relevant departments in taking prompt response actions.

Thank you, President.

LCQ21: Tree management

Following is a question by the Hon Chan Han-pan and a written reply by the Acting Secretary for Development, Mr David Lam, in the Legislative Council today (November 8):

Question:

Regarding the Government's tree management work, will the Government inform this Council:

(1) of the number of trees that collapsed or were severely broken due to inclement weather, including typhoons and rainstorms, in each of the past five years, with a tabulated breakdown by species;

(2) as it is learnt that some tree species are undesirable (e.g. Leucaena leucocephala, which will grow rampantly in the suburb and impede the natural succession of native species), whether the Government has drawn up guidelines to exclude such species from its greening plans; if so, of the details and the timetable; if not, the reasons for that;

(3) whether it has considered removing the currently undesirable tree species; if so, of the details and the timetable; if not, the measures in place to ensure that these trees will not pose a danger to the public; and

(4) as it is learnt that the roots of many roadside trees are currently enclosed by concrete, resulting in poor root growth, and that the disproportionate growth of the roots and the tree crown increases risks of failure, whether the authorities have compiled statistics on the current number of such trees in Hong Kong, and whether inspection and maintenance work will be stepped up; if so, of the details and the timetable; if not, the reasons for that?

Reply:

President,

The Government is committed to the proper management of trees to ensure healthy tree growth while emphasising the need to safeguard public safety. Regular and proper tree maintenance and systematic tree risk assessment are effective ways to reduce the risk of tree failure. The Tree Management Office of the Development Bureau (DEVB) co-ordinates tree management departments before the onset of wet season every year in conducting tree risk assessment in areas with high pedestrian and vehicular flow according to the "Guidelines for Tree Risk Assessment and Management Arrangement" issued by the DEVB and in taking appropriate mitigation measures, including crown pruning and removal of dead branches. If trees with risks of failure are identified, the departments will remove them as soon as possible.

During typhoons and extreme weather, government departments will urgently remove fallen trees when feasible for public safety and restore normal community operations as soon as possible. When the Hong Kong Observatory changes the Gale or Storm Signal No. 8 or above to the Strong Wind Signal No. 3, or when the Black Rainstorm Warning Signal is cancelled, the tree management departments will immediately start inspections in various districts and take timely mitigation measures which include removing fallen trees and those that have not fallen but have become unstable due to heavy wind and rain, removing hanging broken branches, stabilising leaning trees back to an upright position and supporting them with cables and supports, and cordoning off trees yet to be handled, to ensure the safety of citizens.

The reply to several parts of the question raised is as follows:

(1) The species and number of trees fallen or severely broken due to inclement weather, including typhoons and rainstorms, involved in the past five years are set out below:

Year	2019		2020		2021		2022		2023 (as end of October)	
Number of trees fallen or severely broken (Note 1)	850		1 040		2 070		1 320		4 790	
Major tree species (Note 2)	Juniperus chinensis 'Kaizuca'	68	Bauhinia x blakeana	72	Leucaena leucocephala	214	Acacia confusa	111	Bauhinia x blakeana	485
	Acacia confusa	46	Acacia confusa	58	Acacia confusa	116	Bauhinia x blakeana	76	Acacia confusa	421
	Bauhinia x blakeana	44	Spathodea campanulata	48	Bauhinia variegata	94	Hibiscus tiliaceus	61	Hibiscus tiliaceus	316
	Hibiscus tiliaceus	38	Bauhinia variegata	48	Plumeria rubra	76	Spathodea campanulata	57	Albizia julibrissin	284
	Spathodea campanulata	36	Leucaena leucocephala	43	Bauhinia x blakeana	69	Casuarina equisetifolia	48	Leucaena leucocephala	269
	Bauhinia variegata	32	Hibiscus tiliaceus	29	Spathodea campanulata	62	Bauhinia purpurea	41	Lagerstroemia speciosa	181
	Leucaena leucocephala	26	Bauhinia purpurea	26	Tabebuia chrysantha	60	Leucaena leucocephala	38	Tabebuia chrysantha	180
	Bauhinia purpurea	19	Callistemon viminalis	26	Ficus benjamina	58	Bauhinia variegata	32	Bauhinia variegata	180
	Lagerstroemia speciosa	19	Elaeocarpus hainanensis	22	Bauhinia purpurea	53	Macaranga tanarius var. tomentosa	29	Macaranga tanarius var. tomentosa	151
	Casuarina equisetifolia	18	Juniperus chinensis 'Kaizuca'	20	Hibiscus tiliaceus	53	Delonix regia	25	Bauhinia spp.	110

(2) and (3) In the selection of tree species, the DEVB promotes the "Right Tree, Right Place" principle, which means the tree species selected for

planting should suit the environment while being able to deliver the designed functions and grow healthily in a sustainable manner. On this, the DEVB has formulated the "Street Tree Selection Guide" (Selection Guide) and released guidelines to promote the use of native plant species for departments' reference, with a view to selecting suitable tree species and encouraging the diversity of urban tree species. Leucaena leucocephala mentioned in the question is not included in the Selection Guide. It is an invasive alien species that grows mainly in wasteland or at the edge of sparse woodlands. It is hardy and can hinder the natural succession of native species. Its branches are brittle and can easily break or collapse in strong winds, posing hazard. Government departments remove Leucaena leucocephala during regular vegetation management work to avoid any impact on ecology or public safety.

(4) In September 2022, the DEVB established a task force to review the existing tree management guidelines and related implementation work. Ten improvement measures were proposed in early 2023 which are currently being implemented progressively as scheduled.

Among the aforementioned measures, the coverage of "Individual Tree Risk Assessment" under the "Tree Basis Assessment" is expanded to conduct risk assessments for more relatively large trees along existing roads, and take timely risk mitigation measures to protect public safety. The DEVB has updated the "Guidelines for Tree Risk Assessment and Management Arrangement" accordingly and has implemented the above measures in the 2023 tree risk assessment and management work cycle.

However, some trees have become unsuitable for the existing locations due to changes and development in the surrounding environment. These trees do not exhibit imminent risk but may have potential risk in the long run. Hence, the abovementioned measures included a holistic review on the criteria and scoring system for determining suitability and sustainability of existing roadside trees, identifying large roadside trees that may have potential risk in the long run systematically, and devising appropriate measures for different scenarios that may include treatments or removal plan in phases. The relevant study is in progress and it is expected that preliminary recommendations on the scoring system and criteria will be available in 2024, and the overall study would be completed in 2025.

Note 1ï¼šNumbers rounded to the nearest 10.
Note 2ï¼šThe ten species with the highest number of collapse or severe breakage and their numbers.

LCQ5: Purchase of premises for

provision of welfare facilities

Following is a question by the Hon Jimmy Ng and a reply by the Secretary for Labour and Welfare, Mr Chris Sun, in the Legislative Council today (November 8):

Question:

In the 2019-2020 Budget, the Government announced that $20 billion would be allocated for the purchase of 60 properties for accommodating more than 130 welfare facilities. The relevant funding was approved by the Finance Committee of this Council in June 2020. However, it has been reported that notwithstanding the plummeting prices of industrial and commercial properties during the epidemic, the Government had only made sporadic purchases. In this connection, will the Government inform this Council:

(1) of the details of the premises purchased by the Government under the aforesaid initiative in the past three years, including the location and purchase price of the premises, as well as the welfare facilities to be accommodated;

(2) whether the authorities have encountered any difficulties in the process of extending an open invitation under the aforesaid initiative for the submission of sale proposals by owners with potentially suitable premises; and

(3) whether it will set key performance indicators for implementing the aforesaid initiative; if so, of the details and timetable; if not, the reasons for that?

Reply:

President,

The Government has all along been adopting a multi-pronged approach with long, medium and short-term strategies to identify suitable sites or premises for the provision of welfare services to meet their acute demand.

As a long-term strategy, we have reinstated the population-based planning ratios in the Hong Kong Planning Standards and Guidelines (HKPSG) in respect of subvented elderly facilities, with a view to reserving necessary sites and space for these facilities early in the planning process of new and redeveloped areas. Similarly, we have incorporated the population-based planning ratio for the provision of subvented child care centre places into the HKPSG to facilitate the planning and reservation of suitable premises for the provision of child care facilities. We have also incorporated population-based planning ratio for the rehabilitation facilities, including pre-school rehabilitation, day rehabilitation, residential care and community support services, with a view to reserving suitable premises for setting up relevant rehabilitation facilities.

As regards the medium-term strategy, the Social Welfare Department (SWD) has been maintaining close contact with relevant departments to identify suitable sites in the development or redevelopment of public housing estates and urban renewal projects for providing welfare facilities. The Government also endeavours to increase the provision of welfare facilities as appropriate through the Land Sale Programmes and the Special Scheme on Privately Owned Sites for Welfare Uses. In addition, we will make the best use of available government accommodation including vacant school premises and explore whether they are suitable for conversion into welfare facilities.

In parallel, the SWD also takes forward the short-term initiative of purchasing premises in the private property market.

My reply to various parts of the question raised by the Hon Jimmy Ng is as follows:

(1) With the assistance of the Government Property Agency (GPA), the SWD has been striving to identify suitable premises for purchase through different channels for the provision of welfare facilities. To oversee the premises purchase exercise and make decisions on the purchase of premises, the Government has set up a Steering Committee, with the Director of Social Welfare as the Chairman and the Government Property Administrator as a member, with a view to ensuring that premises are purchased at a reasonable price, and that public funds are used prudently.

As at March 31, 2023, the SWD has incurred approximately $150 million in actual expenditure on "purchase of welfare premises" under the Capital Works Reserve Fund, covering the payment for four premises, which are located in Sham Shui Po District, Central and Western District, Eastern District and Kwun Tong District respectively, for operating a Parents/Relatives Resource Centre and a Support Centre for Persons with Autism, as well as providing on-site pre-school rehabilitation services.

(2) and (3) The GPA is responsible for assisting the SWD in publicly inviting owners in 18 districts across the territory who may have potentially suitable premises available for sale to submit their sale proposals for consideration. The GPA will forward the received sale proposals to the SWD for assessing the suitability of the premises.

The progress of the purchase of premises will be subject to the availability of suitable properties in the market and various external factors, including the availability of suitable fire safety and barrier-free access facilities in the premises, whether their size and location meet the operational requirements, the compatibility of the surrounding land uses with welfare uses, and whether the prices offered by owners are within the acceptable price ranges determined by the GPA with reference to market value. In this regard, we consider it not appropriate to set a performance indicator for the purchase exercise.

The SWD and the GPA are at present continuing to identify suitable premises for purchase, and have already earmarked a provision of $789 million for the relevant work in 2023-24.

LCQ16: Arrangements for operation of the securities market under inclement weather

Following is a question by the Hon Robert Lee and a written reply by the Secretary for Financial Services and the Treasury, Mr Christopher Hui, in the Legislative Council today (November 8):

Question:

It has been reported that the Hong Kong Exchanges and Clearing Limited (HKEX) is examining with the Government and regulatory bodies the arrangements for maintaining the operation of the market under inclement weather. Some members of the industry have relayed that before implementing the relevant arrangements, HKEX must adequately consult the industry and stakeholders, and ensure the work safety of the employees concerned as well as the smooth functioning of cross-bank fund transfers and the clearing and settlement systems. In this connection, will the Government inform this Council:

(1) how it co-ordinates the efforts of various stakeholders to support securities brokers in physical cheque clearing and settlement under inclement weather, so as to ensure the smooth functioning of cross-bank fund flows and transfers, as well as provides clear guidelines on raising the limit for electronic fund transfers and introduces standardised procedures for fund withdrawals and deposits, so as to facilitate large-value fund transfers;

(2) as some securities brokers are worried that the technical upgrade of the trading and settlement systems carried out to tie in with maintaining the operation of the market under inclement weather will increase their operating costs, and banks will also charge them the relevant additional fees, whether the authorities have put in place measures to reduce the relevant operating costs of the industry; if so, of the details; if not, the reasons for that; and

(3) whether it will draw reference from the experience of maintaining the operation of the markets in other international financial centres under inclement weather, and consider providing the industry with flexible implementation plans, such as allowing securities brokers to defer clearing and settlement, or permitting some of them to choose not to carry out transactions under inclement weather?

Reply:

President,

In consultation with the Hong Kong Exchanges and Clearing Limited (HKEX), the Securities and Futures Commission and the Hong Kong Monetary Authority, a consolidated reply to the three parts of the question is as follows.

As an international financial centre, Hong Kong's securities market is deeply integrated with markets and investors around the globe. In recent years, mutual access with the financial markets of the Mainland has also expanded continuously with gradually increasing trading days and market turnover. The Government and relevant regulators have been working with the HKEX in taking forward enhancements to the trading mechanism, with a view to strengthening the overall competitiveness of the Hong Kong market.

Among the major stock markets around the world, trading is maintained under severe weather in the Shanghai and Shenzhen stock exchanges in the Mainland, the US and European markets such as New York, London, Paris and Amsterdam, as well as Asian markets such as Japan and Singapore. For enhancing the competitiveness of the Hong Kong stock market, developing a more diversified product suite, and promoting our securities market to overseas markets and capital sources, the demand and importance for facilitating market participants to trade as usual during typhoons or rainstorms will continue to grow.

As mentioned by the Financial Secretary in the 2023-24 Budget, the HKEX is exploring arrangements for maintaining market operation under severe weather, so as to facilitate investors' transactions and meet market development needs. The initiative is also supported by the Task Force on Enhancing Stock Market Liquidity as one of the short term measures to enhance the competitiveness of the securities market.

The main purpose of the initiative is to facilitate global investors to continue trading Hong Kong stocks and derivatives as well as Mainland A-shares through Northbound trading of Stock Connect, and to adjust their investment and risk management (Note 1) strategies in response to changing market and company-specific fundamentals, without being affected by the adverse local weather conditions in Hong Kong. The arrangements will further consolidate Hong Kong's role as the two-way gateway and bridge for international and Mainland investors and capital, hence enhancing the attractiveness of Hong Kong's market to domestic and foreign investors. It will also allow the prices of Hong Kong stocks, especially those with dual primary listing in overseas securities markets or secondary listing in Hong Kong, to adjust continuously based on different factors and in tandem with other markets.

In light of market development needs and increasing prevalence of electronic transactions and remote working with technological advancements, the HKEX is, with the Government's support, working with financial regulators to examine a feasible implementation plan for maintaining trading under severe weather. We believe that promoting the operation of the securities and futures markets during severe weather could address global investors'

aspirations, and accord greater convenience and price certainty for investors, hence enhancing Hong Kong's competitiveness. At the same time, the initiative could foster continuous modernisation of local financial market infrastructure and upgrade the operations of local financial services sector, respond to the ongoing trend of developing a paperless and digitalised securities market in Hong Kong, and align with global market practices, thereby further consolidating Hong Kong's status as one of the leading international fundraising and trading platforms.

The Government understands that implementing trading arrangements under severe weather would require not only resolving various technical issues and providing related support, but also collaboration among different stakeholders including securities brokers, the banking community, index compilers, etc. To this end, the HKEX and financial regulators have discussed with industry representatives different specific issues regarding the operational model under severe weather, so as to fully comprehend the practical circumstances faced by relevant sectors and co-ordinate different operational needs.

The HKEX will commence a public consultation within November this year on the proposed model and relevant arrangements for operating the stock market under severe weather. The consultation document will set out the details covering trading and settlement, share registration, banking services, payment and other necessary support, and solicit views of the public.

Note 1: Such as trading futures and options based on local and international market indices.

Appeal for information on missing man in Hung Hom (with photo)

Police today (November 8) appealed to the public for information on a man who went missing in Hung Hom.

Lee Kai-yin, aged 27, went missing after he left a caring centre on San Lau Street in the small hours on October 30. The staff of the caring centre made a report to Police on the same day.

He is about 1.7 metres tall, 48 kilograms in weight and of thin build. He has a round face with yellow complexion and short black hair. He was last seen wearing a white short-sleeved T-shirt, black trousers and sport shoes.

Anyone who knows the whereabouts of the missing man or may have seen him is urged to contact the Regional Missing Persons Unit of Kowloon West on 3661

8038 or 9020 6542 or email to rmpu-kw@police.gov.hk, or contact any police station.