Sweden

Overseas Delegation 2024

Mind-mapping Sustainable Cities

THE HONG KONG INSTITUTION OF ENGINEERS
香港工程師學會

Young Members Committee
青年會員事務委員會

Slussen, Stockholm

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Messages

Ir Dr Barry C H LEE

President, the HKIE

Congratulations to the delegation organized by the Young Member Committee (YMC) of the Hong Kong Institution of Engineers (HKIE) on their successful visit to Stockholm, Gothenburg and Malmo in Sweden! The theme of "Mind-mapping sustainable city" is of utmost importance in today's world, and it's inspiring to see young engineers taking the lead in exploring and learning from sustainable city development projects. I am delighted to have joined the delegation and witnessed the success of it.

The visits to the Royal Seaport Redevelopment project and the Nya Slussen project provided valuable insights into how cities can be transformed into environmentally sustainable and livable spaces. These projects exemplify the integration of green spaces, renewable energy sources, and efficient transportation systems, setting a high standard for sustainable city development. By studying and understanding these projects, you have gained invaluable knowledge that can be applied to future urban planning and development initiatives.

The visit to the ABB factory in Västerås showcased the implementation of Industry 4.0 principles in manufacturing. The advanced automation, data analytics, and connectivity systems demonstrated at the factory are driving enhanced efficiency and quality in production processes. This experience will undoubtedly inspire innovative thinking and the adoption of advanced technologies in engineering practices back in Hong Kong.

I would like to commend the 16 young engineers who participated in the delegation, as well as other advisors of the delegation. Your dedication to professional development and your commitment to exploring sustainable city solutions are truly commendable. Your efforts in seeking knowledge and experiences from around the world will undoubtedly contribute to the advancement of engineering practices in Hong Kong.

I encourage you to share the valuable insights gained from this delegation with your fellow engineers, colleagues, and the wider community within and outside HKIE. By disseminating knowledge and raising awareness about sustainable city development and Industry 4.0 principles, you can inspire others to embrace innovative approaches and contribute to the sustainable growth of Hong Kong.

Once again, congratulations to the delegation on a successful and enriching visit. Your commitment to sustainable city development and your passion for engineering excellence are truly commendable. I wish you all the best in your future endeavors, and I look forward to seeing you all again at other HKIE activities in near future.

Ir Eric S C MA

Senior Vice President, the HKIE

Having set foot in the beautiful country known for its innovation and engineering prowess and embarking on this incredible engineering delegation tour in Sweden as a team representing respective fields of expertise, much to our delight our mission was accomplished and with great satisfaction.

As we explored the engineering marvels of Sweden, we learnt greatly from its collaborative and holistic approach to sustainable design and development, particularly on Good Health and Well-being, Affordable and Clean Energy, and Sustainable Cities and Communities where the focus of our tour lied. We apprehend that engineers in Sweden work closely with different disciplines and stakeholders ensuring that projects are well-rounded, and multiple perspectives have been identified and considered. This has given us food for thought to fuel our ambitions to realise Hong Kong's potential as a sustainable city through driving broader and stronger collaboration among the Government, private sectors and industries, academia, and the public to foster vibrant sustainability consciousness.

I am honoured to be one of the Advisors, it is however the enthusiasm, commitment, and concerted effort of all that made this overseas delegation a success. My warmest congratulations to the Young Members Committee, and my deep appreciation to Delegation Manager, Ms Keiko KAM for making our continued professional growth possible.

Ir Alice K T CHOW

Vice President, the HKIE

As we continue our mission towards a sustainable future, I would like to congratulate our young engineers for accomplishing another successful journey in Sweden as professional engineers. I am sure all our YMC would have been inspired by how the country demonstrated a significant step forward achievements to the many Sustainable Development Goals in particular goals to increase life expectancy, reducing road traffic accidents, exploring cleaner energy and making cities more resilient and sustainable.

The chosen themes for this year overseas delegation brings a strong message to our engineering profession that we as engineers can definitely help shape a more sustainable Hong Kong and contribute to our wider global community, such that sustainable changes will not come at the expenses of our next generation future. It is also this good practice that I hope our young engineers have mastered as part of their career development that can help towards benefitting wider practices in Hong Kong and the upcoming generation of professional engineers.

A sincere gratitude towards YMC Chairman, Ir CHEUNG Tin King and Delegation Manager, Ms Keiko KAM, and members of the committee team for their dedication and support to the delegation program in nurturing our Hong Kong young professionals towards a more sustainable future.

Ir Prof Frank F CHAN

Vice President, the HKIE

"Unless we act now, the 2030 Agenda will become an epitaph for a world that might have been." – Antonio Guterres, Secretary-General, United Nations. The Sustainable Development Goals Report 2023: Special Edition calls for action by the global community, highlighting the existing gaps and urging the world to redouble its efforts.

With a clear vision on Sustainable Development, the delegation went through all the 17 Sustainable Development Goals of the United Nations, and decided to focus on Goal 3 - Good Health and Well-Being, Goal 7 - Affordable and Clean Energy, and Goal 11 – Sustainable Cities and Communities, with the mission to learn firsthand and benchmark with the forerunners in respect of their strategies and best practices, as well as to explore the potential of their application in Hong Kong.

The delegation arrived at Stockholm on Good Friday, with the understanding that "Sweden is a secular country, so the Easter holiday is more about celebrating the first long, holiday weekend of spring, rather than any religious traditions. Many Stockholmers simply enjoy the extra days off from work and use them to spend time with their friends and families." The delegation made the best use of the Easter break for team building, savouring the Swedish culture and heritage, and appreciating the cityscape and the green transport. Right after the break, the delegation was overwhelmed by packed visits and exchanges.

I noted with delight the attentiveness of the delegates and their eagerness to learn. Their responses to questions reflect their command and understanding of the subjects concerned. The inclusiveness and mutual support between delegates, and proactive participation of everyone are praiseworthy. It speaks for itself how much time and effort the delegation had put in, given that everyone knew so well the next step when the delegation was on the move. It is amazing teamwork with esprit de corps. The delegation has made its mark together as a team.

You should be proud of yourselves, and I am proud of you.

Ir Edmund K H LEUNG

Past President, the HKIE

Once again, I feel honoured and privileged to be invited as an Advisor of the HKIE-YMC Overseas Delegation for 2024.

Sweden is a technologically leading country in North Europe and there are a lot of innovative engineering solutions applied to solve various challenges. There may be a lot of differences in geography, climate and cultural characteristics between Sweden and Hong Kong, but seeing them in actual operation should broaden our understanding of how other leaders in technology can deal with those issues effectively.

Our young engineers already possess the necessary technical knowledge background, but they would benefit from observing other systems to compare and learn. Hopefully, our delegates can bring back the most up-to-date knowledge and case studies to share with others in our Institution members and their peers.

Seeing is believing, and I trust they may also see certain successful applications in Sweden that cannot be used in Hong Kong, and it will help them to avoid trying them out, wasting their efforts.

I also hope that, in their visit, they were able to act as ambassadors of Hong Kong and promote our image positively to their hosts, to disseminate the correct facts to those who have never visited our city. So much fake or biased information had been flowing in the foreign media due to miscaption, such that we must take every opportunity to explain to the world what a fabulous and thriving city we live in.

For future delegations, I call on those delegates to continue to seek out new locations to expand their learning process to seek out success stories and weak areas.

I take this opportunity to congratulate the members of this delegation for their excellent planning before the visit, the close attention they have paid during the visit and the efforts spent to produce this valuable report, which I am sure will serve as a good reference to those who are interested in the latest development in the Scandinavian countries.

Heartiest congratulations again!

Ir Dr Otto L T POON, BBS, OBE

Past President, the HKIE

We all recognize the HKIE-YMC Overseas Delegation is a programme to learn from experiences in overseas countries to elevate the potential and leadership of the young engineers. This year's visit to Sweden is admirably live up to this excellent tradition and more.

The visit to Sweden had three major areas on Good Health and Well-being, Affordable and Clean Energy, and Sustainable Cities and Communities meeting the important guidelines of United Nations Sustainable Development Goals (UNSDGs) which were ably achieved through the exchanges with Swedish institutions and organizations.

HKIE-YMC also plays an ambassadorial role to tell a Hong Kong Story to foreign countries which has increasing importance during this time of geopolitical tension. The friendship established by the Delegation with its counterpart in Scandinavian country is another achievement of the Delegation.

I congratulate Keiko KAM for leading and the Delegation Members for taking part in this successful trip.

Ir Peter C K CHAK

Chairman, CPDC, the HKIE

I am incredibly proud of your enormous achievement and success in the Overseas Delegation 2024 to Sweden. Your core commitment, unwavering perseverance and relentless hard work have truly paid off. "Nothing compares with the journey on your own feet". Absolutely, the journey has made a difference to you by unleashing your talent and broadening your exposure while updating your depth and breadth of knowledge.

I highly appreciate that you begin with the end in mind and think carefully before arriving at the theme of the Delegation "Mind-mapping Sustainable City" by navigating your journey with three of the United Nations Sustainable Development Goals, namely "Good health and well-being (Goal 3)", "Affordable and Clean Energy (Goal 7)" and "Sustainable Cities and Communities (Goal 11)". As young engineers or our successors, your passion and proactiveness in striving for a "safe space for humanity" based upon environmental thresholds and societal foundations are greatly valued. Sweden is an excellent place to visit and learn with respect to the mentioned three Goals. It is believed that you have brought back their best practices for any viable application or benchmarking in Hong Kong. Besides, I admire that you have harnessed on the opportunity to serve as ambassadors in promoting Hong Kong and HKIE while developing a resourceful network. Also, members of the Delegation had further fostered their relationship in embarking on such a challenging and enjoyable journey.

Continuing Professional Development is an ongoing necessity in the ever-changing technological environment. HKIE constantly gears towards this dedication for all its members and the young member is no exception. Undoubtedly, the Overseas Delegation will not only enhance the professional competencies of our young engineers but also develop their required personal qualities. This is indispensable to their fulfilment of duties in the industry and roles in the society.

Last but not least, I would like to express my heartiest felicitations on such a fruitful Overseas Delegation, with sincere gratitude to Delegation Chairman Ir T K CHEUNG, Delegation Manager Ms Keiko KAM, and all other participants. May your journey continue to be filled with remarkable accomplishment and prosperousness, contributing to the betterment of the community.

Ir T K CHEUNG, Delegation Chairman

Chairman, YMC, the HKIE

With a spirit of boundless curiosity and an unwavering commitment to redefine the boundaries of our profession, the HKIE Young Members Committee (YMC) embarked on a transformative journey to Sweden in 2024. This voyage of "Enlightening beyond our Horizon" beckons our young engineers to embrace the unknown, cultivate innovative perspectives, and become the visionaries who will shape the future of sustainable urban development.

As the Chairman of the YMC, I am honored to lead this captivating expedition, which builds upon the valuable insights and momentum gained from our previous delegation to Germany. In 2023, our young engineers delved into the "Moment of Engineering Evolution," exploring the rapid technological advancements and social forces that are transforming our profession. Now, with our sights set on Sweden, we are taking the next step in our journey of "Enlightening beyond our Horizon." The theme of this year's delegation, "Mind-mapping Sustainable City," challenges our young engineers to expand their boundary, embrace new possibilities, and cultivate a holistic understanding of the complex, intertwined issues that shape the sustainable cities of tomorrow.

By focusing their studies on the critical Sustainable Development Goals (SDGs) of Good Health and Well-being, Affordable and Clean Energy, and Sustainable Cities and Communities, our delegates immersed themselves in Sweden's cutting-edge approaches to urban sustainability. This exploration not only deepened their technical expertise but also empowered them to become the trailblazers and visionaries who will redefine the future of our profession and our cities.

I extend my heartfelt gratitude to our dedicated sponsors, the CPDC, and our esteemed team of advisors, whose unwavering support and guidance have been instrumental in making this delegation a reality. I also express my deepest appreciation to our delegation manager, Ms Keiko KAM, and the talented deputy managers, Ir Henry CHAN and Mr Tommy CHAN, whose tireless efforts and organizational prowess have been the driving force behind the success of this endeavor.

To the delegates of the 2024 YMC Delegation to Sweden, I offer my sincere congratulations. Your passion, curiosity, and commitment to learning have truly inspired me, and I have no doubt that this transformative experience will empower you to become the trailblazers and visionaries who will shape the future of our profession and our cities.

Ms Keiko KAM, Delegation Manager

Deputy Chairman, YMC, the HKIE

As the Delegation Manager, I am immensely proud of the accomplishments achieved and the valuable relationships forged in the Overseas Delegation.

Our time in Sweden provided a remarkable opportunity to explore the intersection of engineering and the United Nations Sustainable Development Goals (UNSDGs). Sweden's commitment to sustainability and innovative engineering practices served as a powerful inspiration for our delegation.

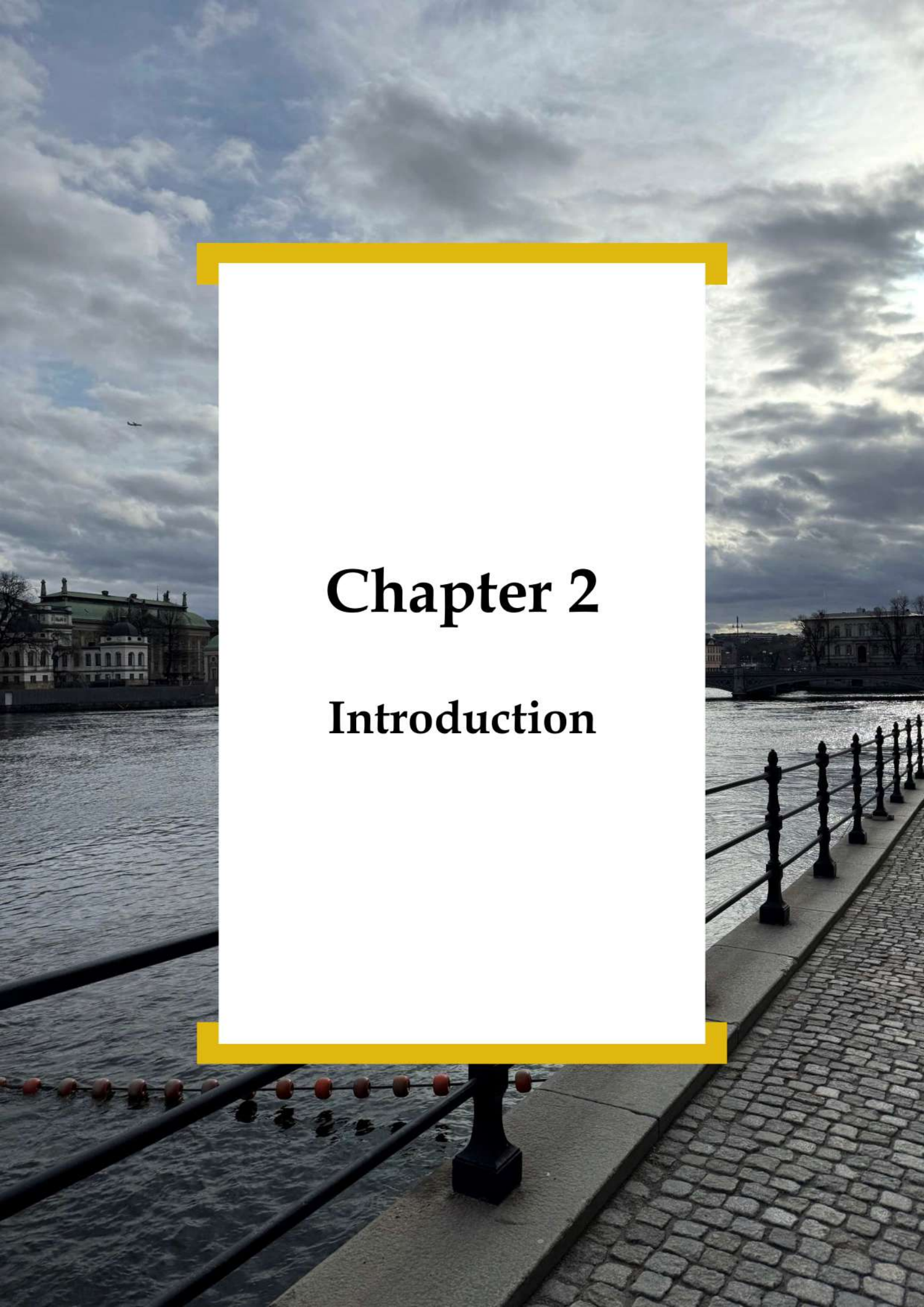
We had the privilege of witnessing groundbreaking engineering solutions that address the UNSDGs. From sustainable energy systems and urban planning initiatives to cutting-edge transportation infrastructure and circular economy models, Sweden's engineering achievements showcased the transformative potential of technology in achieving global goals.

Our engaging discussions and knowledge-sharing sessions with Swedish engineering experts allowed us to exchange ideas and best practices in implementing sustainable engineering solutions. The insights gained from these interactions will undoubtedly contribute to our efforts in aligning our engineering practices with the UNSDGs, further to our desktop study and local visits and seminars.

I extend my sincere gratitude to each member of the delegation for the active participation, insightful contributions, and dedication to exploring the nexus of engineering and the UNSDGs. Your commitment to finding sustainable solutions to global challenges is commendable and serves as an inspiration to us all.

I also express my heartfelt appreciation to our Delegation Advisors for their warm engagement, exceptional insights, and invaluable support throughout the process. Their commitment to engineering and sustainable development, as well as their willingness to share their experiences have undoubtedly contributed to our study.

As we return, let us carry forward the knowledge, inspiration, and connections we have gained from the Overseas Delegation. Let us champion sustainable engineering practices and work towards achieving the UNSDGs, for the betterment of our societies, as we are living in the same home, the Earth.



Chapter 2

Introduction

ABOUT THE DELEGATION

Since 1991, HKIE-YMC has been organizing delegations to different parts of the world with the following objectives:

- To widen the vision and horizon of young engineers;
- To appreciate latest engineering practices around the globe and assess the applicability of these practices in Hong Kong;
- To promote Hong Kong and its engineering practices; and
- To enhance the relationship between HKIE and overseas institutions.

These objectives can be achieved through the Delegation and a series of local seminars and visits held before the Delegation.

DELEGATION THEME

In the pursuit of urban development that harmonizes with the principles of sustainability, our delegation embarked on a transformative journey centered around the theme of "Mind-mapping Sustainable City." This report serves as a comprehensive account of our findings, experiences, and insights gained during our exploration of this visionary approach in Sweden. As cities around the world grapple with the challenges of rapid urbanization, it has become increasingly evident that traditional fragmented approaches to urban planning are insufficient. The theme of "Mind-mapping Sustainable City" recognizes the imperative of adopting a holistic perspective that encapsulates the intricate interdependencies and synergies between various aspects of urban life. By visualizing and connecting the dots between sustainable development goals, this theme encourages an integrated approach that considers the environmental, social, and economic dimensions of urban development.

With this report, we aim to shed light on the innovative strategies, best practices, and transformative ideas that emerged from our immersive experience, paving the way for more resilient, inclusive, and prosperous cities of the future.

DELEGATION OBJECTIVES

1 To study Sweden's initiatives in integrating healthcare services, green spaces, and community engagement to enhance public health outcomes and overall well-being.

2 To explore the measures implemented by Sweden to improve the safety of mobility.

3 To learn about Sweden's initiatives in renewable energy production, energy-efficient infrastructure, and innovative solutions for reducing carbon emissions.

4 To gather insights that can contribute to Hong Kong's efforts in achieving a greener and more sustainable energy landscape.

5 To study Sweden's urban planning approaches, transportation systems, waste management strategies, and the utilization of smart technologies to enhance the overall sustainability and resilience of urban environments.

6 To identify ways to foster sustainable urban development in Hong Kong, ensuring a harmonious coexistence between people and the environment.

3 GOOD HEALTH AND WELL-BEING

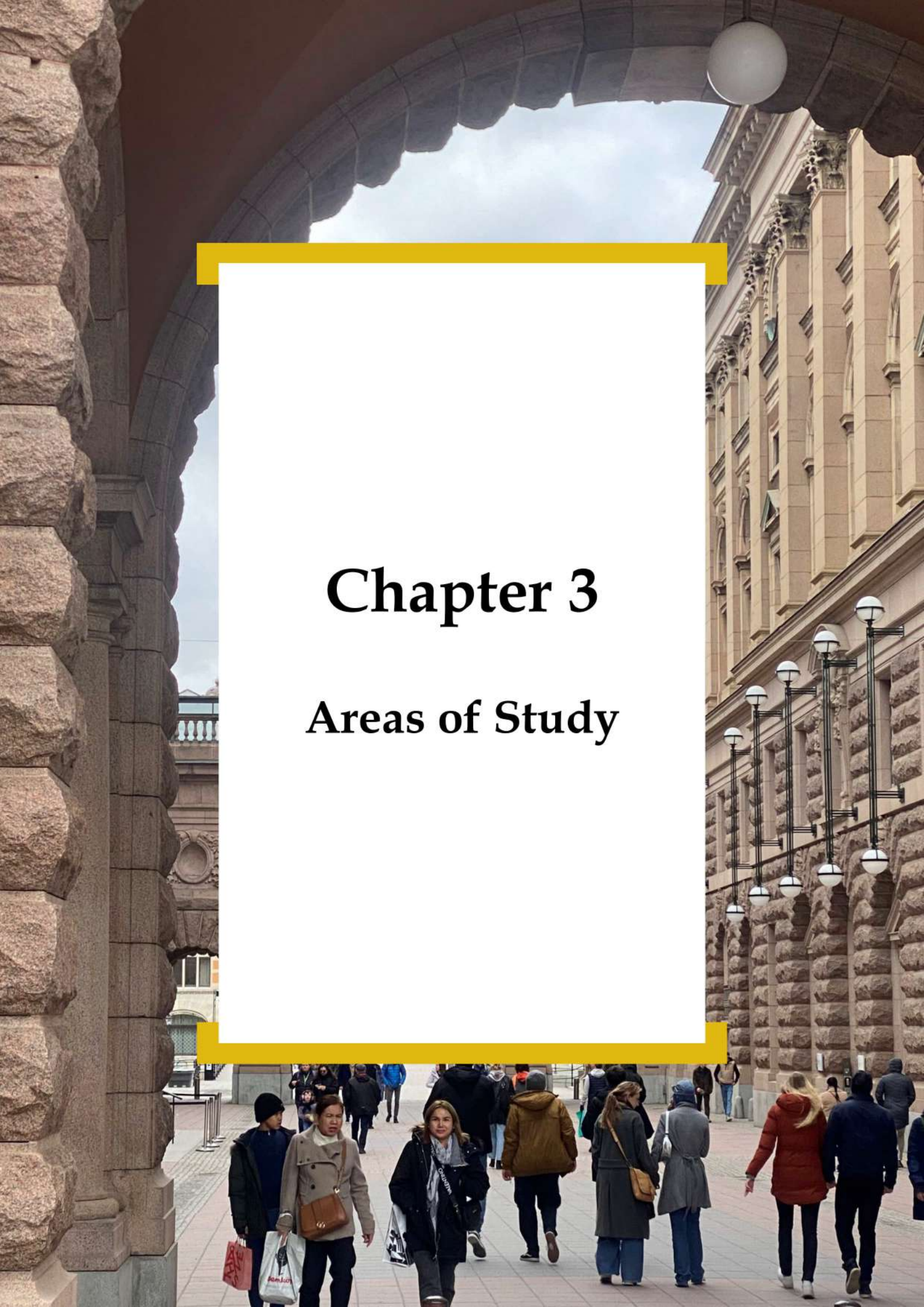
7 AFFORDABLE AND CLEAN ENERGY

11 SUSTAINABLE CITIES AND COMMUNITIES

WHY SWEDEN?

Sweden has gained a global reputation for its exemplary practices in sustainable urban development and has consistently ranked among the world's most sustainable countries. Sweden's commitment to environmental protection is deeply rooted, as evidenced by its historical involvement in the United Nations Conference on the Human Environment held in 1972. The Stockholm Declaration, resulting from this conference, stands as a significant milestone in the history of human environmental protection.

By selecting Sweden as our destination, we aim to gain valuable insights from a country that has demonstrated exceptional performance in key areas of sustainable development and has played a pivotal role in shaping global environmental policies.



Chapter 3

Areas of Study

Sustainable Development Goal 3: Good Health and Well-being

WHY ARE WE HERE?

Health is a fundamental human right and a key indicator of sustainable development, and the promotion of well-being for all ages serves a key factor to urban resilience. The SDG 3 aims to prevent any preventable diseases and premature death by focusing on key targets that boost the health of a country's overall population. It also aims for deeper and more investments in research and development, health financing and health risk reduction and management.

In the aftermath of the COVID-19 pandemic, the world has placed renewed focus on effective healthcare and the preventative measures that can be taken to reduce the risk of another global health crisis. A key part of reducing this risk involves improving the baseline health of the population through the promotion of healthier lifestyles and safer living environments to reduce the proportion of the population with underlying chronic health conditions such as heart disease, diabetes, arthritis, mental disorders, etc. This is especially important for Hong Kong which is facing the prominent issue of "double ageing" – the simultaneous rapid ageing of the population and the built environment, which has manifested in many elderly citizens living in dilapidated settings ill-suited to their reduced mobility and desired lifestyle of independent living.

To gain deeper insight, the Good Health and Well-being Group has focused our study around the three objectives below:

1. Elderly Healthcare
2. Safe Mobility
3. Recreation

WHAT IS HONG KONG DOING?

With the decrease in birth rate and the increase of the life expectancy, the ageing population has become a hot topic among society in recent years. The Census and Statistics Department has projected that the number of elderly will increase from 1.45 million in 2021 to 2.74 million in 2046, which would comprise one-third of the Hong Kong total population at that time. In a global context, the projected ageing pattern will match or even exceed that of Japan and Korea which have similar, well-documented demographic challenges. Facing such a monumental challenge, the Hong Kong government has since spared no effort in safeguarding the well-being of the elderly socially, financially, and physically with engineering technology. Particularly under the engineering regime, the Highways Department has launched the Universal Accessibility Program (UAP) to provide barrier-free access facilities along public walkways. Local universities have also engaged in collaborative research to promote the development of cutting-edge gerontechology to be applied in household settings.

To address the issue of traffic safety, the "Zero Accidents on the Road, Hong Kong's Goal" campaign was launched by the government, striving to promote and maintain a culture of safe road use. Many different initiatives are underway with this goal in mind. On the design and construction side, the Transport Department (TD) has also made Road Safety Audits mandatory for all new public road design projects, with audits carried out at feasibility, detailed design, and construction stages. Meanwhile, the Road Safety Council has been pursing such a goal by identifying existing road safety issues, initiating and implementing road safety programmes to reduce the number and severity of traffic accidents. This is complimented by the Traffic Accident Blackspot studies carried out by TD to design and implement improvements in the road network to improve safety for all road users.

For recreation, Hong Kong aims to enrich the community's quality of life through the promotion and provision of recreational and cultural facilities and activities. There is an increasing number of reaction facilities and open space in Hong Kong recently, with notable examples including the Kai Tak Sports Park, the beautification of the existing Kwun Tong sewage pumping station and revitalization of Tsui Ping River which is one of the premier blue-green infrastructure projects in Hong Kong. Such considerations have also been observed in upcoming urban plans for the Northern Metropolis and Kau Yi Chau Artificial Islands. Under the new Smart, Green and Resilient (SGR) planning initiative, such urban plans emphasize on the creation of 15-minute living circles and provision of adequate blue-green infrastructure.

WHAT IS SWEDEN DOING?

Like many other countries, Sweden is also facing an ageing population. In Swedish society, the elderly hope to live an independent life even after their retirement. Therefore, Swedish policy aims to provide space and support for the independent lives. One key focus is preventative care through encouraging physical activity and stimulation through cultural activities to combat the deterioration of physical and mental abilities of the elderly. Another important policy is the provision of accessible housing – Swedish municipalities are required to ensure that residential areas and "senior housing" meet the needs of elderly people or those with disabilities.

Sweden is well known as the creator of "Vision Zero" approach to road safety, in which no one should be at risk of being fatally or severely injured while using road transport. This approach has been codified into Swedish law through the Road Traffic Safety Bill in 1997, and has informed the road safety reform strategy ever since.

In tandem with encouraging physical activity in the elderly population, Sweden aims to promote opportunities to be outdoors in nature and to enjoy outdoor recreation to all their citizens. This emphasis is evident in their famous open-air museums, their prowess at winter sports, and the share of population that uses active transport modes such as cycling or walking.

WHAT HAVE WE DONE?

The Good Health and Well-being Group has compared and analyzed the healthcare and well-being strategies in Sweden and Hong Kong according to several study group focuses. (1) Elderly Healthcare (2) Safe Mobility (3) Recreation.

Sustainable Development Goal 7: Affordable and Clean Energy

WHY ARE WE HERE?

The topic of sustainable energy is especially relevant in Sweden, where there is a strong focus on both affordable and clean energy. Sweden's pursuit of affordable energy stems from its goal to provide universal access to energy, using its natural resources and technological innovations. This approach helps reduce energy poverty and supports economic stability by keeping energy costs low for households and businesses. Sweden has become a model for how to balance cost-efficiency with sustainable energy use.

At the same time, Sweden's commitment to clean energy is crucial. The country has long-standing environmental policies and is proactive in its fight against climate change. By investing in renewable energy sources like hydro, wind, and solar power, Sweden is working to lower its carbon footprint and set an example for a global shift to a low-carbon economy. This focus on clean energy helps address the urgent need to combat environmental degradation and supports global efforts to counter climate change. Studying Sweden's energy strategy offers insights on how a country can integrate affordability and environmental sustainability into its energy policies, providing a useful example for others.

The past journey of human energy use has transitioned from natural sources like wind and solar to the intense exploitation of greatly rely on fossil fuels. This shift catalyzed the predictability and stability needed for modern industrial production, deeply integrating into every facet of our lives. However, this reliance on fossil fuels has led to significant environmental and health issues, highlighting the need for a sustainable approach to energy.

This context led to the establishment of Sustainable Development Goal 7 (SDG7) - Affordable and Clean Energy. The goal is a response to the urgent need for an energy system that balances environmental sustainability with the economic and accessible energy required for global development. SDG7 aims to expand access to affordable, reliable, and modern energy services by 2030. It promotes a shift towards increased use of renewable energy sources and greater energy efficiency. The goal addresses the necessity of reducing our carbon footprint while ensuring that energy remains accessible to everyone, thus supporting sustainable economic growth and development. This approach seeks to revive some aspects of our historical reliance on renewable resources, now enhanced with modern technology, to create a cleaner, more sustainable energy future.

WHAT IS HONG KONG DOING?

Hong Kong, with its unique urban landscape and limited natural resources, is making strides in the transition to affordable and clean energy, focusing on increasing the use of renewables and improving energy efficiency. Policies and regulatory frameworks are key tools used by the Hong Kong government to support this transition. These include subsidies for solar installations in residential and commercial buildings and incentives for energy-efficient practices. The technical and economic challenges of shifting from a reliance on imported fossil fuels to a more diversified energy portfolio are significant. This includes upgrading the grid infrastructure to handle a higher proportion of renewable energy and implementing storage solutions to manage supply variability. Hong Kong is also investigating the potential of emerging technologies such as hydrogen for energy storage and later usage.

Despite these challenges, Hong Kong is committed to reducing its carbon footprint and has set ambitious targets for reducing greenhouse gas emissions. The government's determination is reflected in its plans to reduce carbon intensity by up to 70% by 2030 compared to 2005 levels, using 2005 as a baseline. Through these efforts, Hong Kong aims to transition towards a more sustainable energy system, aligning with global trends and environmental commitments.

WHAT IS SWEDEN DOING?

Sweden, with its rich natural resources and commitment to sustainability, is advancing its efforts in affordable and clean energy, particularly through the development of renewable energy sources and waste-to-energy technologies. The country has invested significantly in wind power, with numerous turbines dotting its landscape, and hydropower, which harnesses its abundant waterways. Additionally, Sweden is a leader in transforming waste into energy, an approach that not only reduces landfill use but also provides heating and electricity to urban areas.

Sweden's approach to energy transition is further characterized by extensive collaboration with neighbouring countries through interconnected grids, enhancing both energy security and market efficiency. This cooperative strategy is crucial for managing the intermittent nature of renewable energy and balancing supply with demand. With these concerted efforts, Sweden is on track to meet its ambitious goal of having a 100% renewable electricity generation system by 2040 and achieving carbon neutrality shortly thereafter. This commitment reflects a broader determination to lead globally in sustainable energy and climate action.

WHAT HAVE WE DONE?

The Affordable and Clean Energy Group has compared and analyzed the energy market in Sweden and Hong Kong according to several study group focuses. (1) Appreciation of the modern clean energy technology (2) Opportunities and challenges of the latest development in terms of industrial technology, energy market condition (3) Strategy for achieving carbon neutrality (4) Government support/policy on clean energy deployment.

Sustainable Development Goal 11: Sustainable Cities and Communities

WHY ARE WE HERE?

Urbanisation has been a prevailing trend. It has created a lot of opportunities and stimulated enormous economic growth. Yet, on the other hand, it is undeniable that urbanisation has created a lot of challenges. With the projection of majority of global population living in cities by 2050, the SDG 11 becomes very crucial for ensuring the high quality of life and well-being in urban areas. This could be achieved by collective efforts from the government, the professionals and each individual. The Sustainable Cities and Communities Group focused on studying three major focuses:

1. Providing an affordable, environmentally sustainable urban transport system to enhance accessibility of citizens and curb carbon emissions.
2. Addressing issues such as air pollution, waste management and resource consumption so that climate change is mitigated, natural resources are preserved and ecosystem is protected.
3. Providing inclusive and accessible public space so ensure urban serves and opportunities are equally accessible even by vulnerable populations

WHAT IS HONG KONG DOING?

The HKSAR Government has set out a vision of "Zero-carbon Emissions, Liveable City, Sustainable Development" in the Hong Kong's Climate Action Plan 2050, with four main decarbonisation strategies – i) Net-zero electricity generation, ii) Energy saving and green buildings, iii) Green transport, and iv) Waste reduction.

In this study focus, the third and fourth aspects were selected for in-depth evaluation, together with the accessibility to public areas, with more emphasis on the policy formulation and infrastructure planning that influenced people's behaviour.

Hong Kong is one of the most densely populated cities with an extensive public transport network that is considered very affordable and accessible. Carbon monoxide is the major air pollutant that was emitted from the road transport sector, according to the Environmental Protection Department (EPD)'s Air Pollutant Emission Inventory. The HKSAR Government aims to attain zero carbon emissions for the whole transport sector by 2050, with midterm target of 50% reduction by 2035 compared to 2005. In March 2021, the Hong Kong Roadmap on Popularisation of Electric Vehicles was announced, which set out the long-term policy objectives promoting the adoption of electric vehicles (EVs) and their associated supporting facilities in Hong Kong. The population in Hong Kong was around 7.50 million in 2023, whereas the electric cars registration in the same year was around 78 thousand.

In terms of waste management, the HKSAR Government has implemented numerous policies to reduce, reduce and reuse waste, to encourage change in mindset and user behaviours as well as to provide incentives for research and development of waste treatment technologies. To further reduce the burden on the scarce landfill and protect the environment, the HKSAR Government has published the Waste Blueprint for HK2035, aiming to reduce waste by 40%-45%, increase resources circulator by 55% as well as to work toward zero landfills by establishing more waste to energy facilities.

In Hong Kong, efforts to enhance accessibility to public areas involve the implementation of "infrastructure-led" and "capacity-creating" policies. The development of new towns in recent years has emphasized mixed-use development as well. Hong Kong is also expanding its green transport network, which includes projects like the construction of the Northern Link and the establishment of well-connected cycle tracks. These initiatives aim to reduce walking distances to stations and decrease travel time to other districts, thereby improving accessibility. Furthermore, Hong Kong is exploring the development potential of land along railway lines to create more high-quality outdoor recreational spaces that can be easily accessed via railways.

WHAT IS SWEDEN DOING?

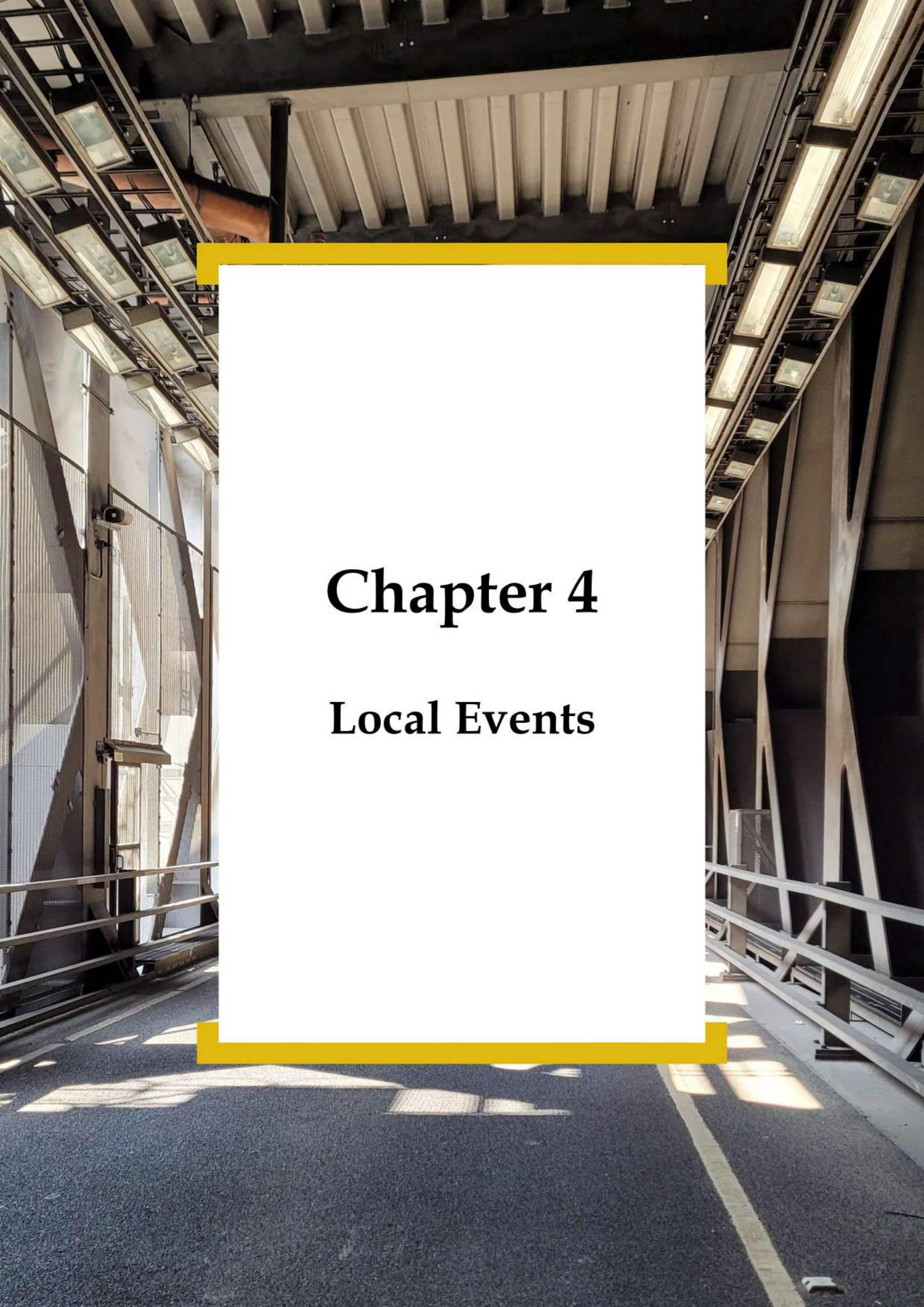
For the green transport aspect, Sweden strives to achieve fossil-fuel free by year 2030, and to reduce domestic emissions by at least 70% from 2021. The population in Sweden was around 10.55 million in 2023, whereas the electric cars registration in the same year was around 290 thousand. Comparing to the figures for Hong Kong, although Sweden has a larger population (around 1.4 times), the electric cars registration was around 3.7 times more than that in Hong Kong. The current initiatives adopted in Sweden were the reduction of annual vehicle tax and exemption of Stockholm Congestion Tax for EV owners. Free parking for EVs is offered in some municipalities. Moreover, there are tax deductions for purchasing electric company cars.

Sweden has been achieving quite outstanding globally in terms of waste management. 52% of waste was used to generate electricity while 47% was recycled. Although only less than 1% of waste is going to landfill, the Swedish Government is putting continuing efforts to further reduce the food and residential waste, with target reduction of 25%. The Swedish emphasised on circular economy and pay efforts on product design for longevity and recyclability. They also kept advancing the effective waste separation system, coupled with the development of recycling facilities. All these demonstrated the importance of strategic planning, technological advancement and public participation in maximizing resource recovery and minimizing environmental impact. On the contrary, Sweden is actively improving the accessibility of public areas through sustainable and safe measures, as well as by reducing reliance on private vehicles.

Sweden prioritizes the concept of mixed-use development within communities, which ensures easy access to public transportation, job opportunities, specialist healthcare, and other essential services within a short distance. This approach enables residents to conveniently fulfill various needs without extensive travel. Sweden is also integrating sustainable transportation options by providing bicycle parking spaces in high-demand areas such as public transit stations, thereby offering residents additional means of accessing public transport. This initiative promotes environmentally friendly modes of transportation. Additionally, Sweden has embraced the "Complete Street" concept by designing well-separated walkways, traffic lanes, and dedicated bicycle paths in urban areas. Careful planning has minimized conflicts between pedestrians and vehicles, resulting in safer access for residents.

WHAT HAVE WE DONE?

The Sustainable Cities and Communities Group has compared and analysed the green transport, waste management and accessible public area in Sweden and Hong Kong according to several study group focuses. (1) Appreciation of development of sustainable communities (2) Opportunities and challenges during the transformation (3) Strategy for reducing and revaluing waste (4) Government support/policy on transforming industrial areas into renowned sustainable district.



Chapter 4

Local Events

Technical Visit to Tsing Ma Control Area

6 January 2024

Introduction

On 6 January 2024, the overseas delegation team visited the Tsing Ma Administrative Building to learn about the monitoring, maintenance, and emergency contingencies for one of Hong Kong's most iconic pieces of infrastructure: the Tsing Ma Bridge. Opened in 1997, the Tsing Ma Bridge was the longest suspension bridge carrying both road traffic (on the top deck) and railway traffic (on the bottom deck). Before the opening of the Tuen Mun-Chek Lap Kok Link, the Tsing Ma Bridge was the only link between Lantau Island and the rest of Hong Kong, and thus it was very important to ensure the bridge was always in excellent operating condition, both in terms of structural integrity and minimizing the chance of traffic incidents.

Safety in Design, Construction and Operation

One of the key design loads to consider for any bridge is the wind load. Spanning the marine channel between Ma Wan and Tsing Yi islands, the Tsing Ma Bridge may be exposed to high winds, especially in typhoon scenarios. This is reflected in the design of the upper deck: the two carriageway decks are separated by a skylight which acts as a pressure outlet for the railway level at the lower deck. Extensive wind tunnel testing was performed to ensure the aerodynamic stability of the bridge, and tests were also conducted on the different stages of construction to identify any critical stages of the erection which should avoid typhoon season. The large seawalls at the base of each bridge tower are designed to withstand an impact from the large cargo ships which frequently transit to and from the Port of Hong Kong.

The Tsing Ma Bridge is equipped with extensive monitoring and surveillance systems for the safety of motorists, railway, and marine vessels. Data collected from the Wind and Structural Health Monitoring System (WASHMS) as well as inspection results by teams from Highways Department are routinely reviewed to ensure the bridge remains in excellent physical condition. A Supervisory Control and Data Acquisition (SCADA) system tracks the wind speed and visibility on the bridge deck which allows the operators to determine the safe operating state of the bridge. In the case of high winds, plans are in place to reduce traffic speed, divert traffic to the lower deck, or even close the bridge to all traffic if necessary as very high wind speeds threaten to blow vehicles off the bridge.

The control centre of the Tsing Ma Control Area is also directly linked to Transport Department, Highways Department, Marine Department, and Hong Kong Police Force through the Vessel Traffic Services (VTS) System. In the case of emergency such as a ship impacting the bridge, immediate notification is sent to all parties to elicit an immediate and timely response. Safety teams at the Tsing Ma Bridge routinely undergo training to sharpen their response to any emergencies that may occur, including vessel impacts, fire, traffic accidents, etc.

Conclusion

The delegates gained a thorough understanding of the importance of integrating safety throughout the lifecycle of critical infrastructure from design to construction to operation.

Technical Visit to O•PARK1

4 February 2024

Introduction

On February 4th, the overseas delegation team visited O•PARK1 for an insightful tour lasting 1.5 hours. The visit provided the team with an appreciation of modern clean energy technology and its applicability, explored the opportunities and challenges of waste handling technologies, and highlighted the government's support for clean energy deployment.

Appreciation of Modern Clean Energy Technology

O•PARK1's operations showcase a successful integration of clean energy technology in waste management. The facility's primary function is to recycle food waste, categorized into avoidable waste (leftovers, expired, and rotten food) and unavoidable waste. The delegation observed the Anaerobic Digestion (AD) system employed by O•PARK1, where anaerobic bacteria break down food waste in a 23-day process, producing biogas and compost. The biogas is then harnessed for electricity generation, demonstrating a practical application of renewable energy. This closed-loop system exemplifies a working principle of sustainable waste-to-energy conversion, applicable in urban waste management and energy production sectors.

Opportunities and Challenges

Since its opening in March 2018, O•PARK1 has achieved a maximum waste collection rate of 200 tonnes per day, with future expansions (O•PARK2 in Sha Ling) set to increase capacity by an additional 300 tonnes daily. This expansion presents opportunities for O•PARK1 to contribute more significantly to the region's renewable energy supply and waste reduction efforts.

The tour also highlighted the innovative measures employed to mitigate operational challenges, such as odour control. For instance, the 'shower' system installed on waste collection trucks effectively reduces the stink after discharging food waste. The technology showcase emphasized the facility's commitment to continuous improvement and adaptation in response to practical challenges.

Government Support and Policy on Clean Energy Deployment

The government's role in supporting clean energy initiatives was evident through the visit. The distribution of food waste filter trays to residents demonstrates the government's commitment to facilitating waste separation at the source, which is crucial for the success of facilities like O•PARK1.

Additionally, government policies encouraging the use of renewable energy sources and waste reduction have been instrumental in the establishment and operation of O•PARK1. The electricity used in O•PARK1 is provided by burning biogas collected from waste handling. Indeed, O•PARK1 has joined the feed-in tariff plan and sell electricity to power companies. The facility itself is a testament to these policies, serving as a model for sustainable waste management and clean energy utilization.

Conclusion

The O•PARK1 tour offered the delegation team an in-depth look at the importance of sustainable practices in food appreciation and waste management. It highlighted the integration of modern clean energy technology in waste-to-energy processes, the opportunities and challenges in the industry, and the crucial role of government support in advancing clean energy deployment. The visit underscored the potential for clean energy technology to transform waste management and contribute positively to energy markets and environmental sustainability.

Technical Visit to Elderly Resources Centre

24 February 2024

Introduction

The Hong Kong Elderly Resources Centre (ERC) is an organization in Hong Kong dedicated to providing services and resources for the elderly population. Since 2005, its primary goal has been to enhance the well-being and quality of life for senior citizens in Hong Kong. The ERC offers a range of services and programs to address the physical, emotional, and social needs of older adults. On 24 February 2024, the ERC provided a guided tour to HKIE-YMC to demonstrate their Age-Friendly Home samples.

Age-friendly Home

An Age-friendly Home (AFH) refers to a living environment that is designed and adapted to meet the changing needs of individuals at all ages. The aim of the AFH is to foster healthy ageing and prepare for age changes. During the tour, delegates can see two sample AFH flats.

The first sample flat is for an elderly woman in her 60s suffering from cataracts and early-phase knee joint osteoarthritis. She manages her daily routines and household tasks independently, despite reduced mobility. In this AFH model flat, ensuring the elderly home safety is a priority to reduce the risks of falls. It is provided with anti-slip floor tiles in the bathroom, handrails, and night lights throughout the AFH. Another design feature of this sample flat is to promote healthy and smart living. It incorporates gerontechnology into daily living, such as smart power plugs and digital cameras for glasses, allowing the elderly to live independently and healthily.

The second sample flat is for an elderly man in his 80s diagnosed with multiple chronic conditions. Due to frailty, he uses walking aids for ambulation. He remains independent with self-care routines. His sample flat is designed with barrier-free features, such as sufficient width for all entrances and passageways, pull-down wall cabinets, and ramp accessories, ensuring accessibility throughout his flat. Health and safety monitoring gerontechnology, such as a bedside monitoring system and remote monitoring devices, are installed to allow family members to stay informed about the safety and health conditions of the elderly.

Conclusion

During the tour, all young engineers can understand how to create an Age-friendly Home (AFH) guided by the gerontechnology engineer. These AFHs can provide safety, accessibility, and independence for older adults, allowing them to age in place and maintain a high quality of life within their own homes.


LIVING AREA
BATHROOM

Technical Visit to WEEE • Park

9 March 2024

Introduction

On 9 March 2024, the Delegation Team visited WEEE•Park which is located in EcoPark. WEEE stands for Waste Electrical and Electronic Equipment, and it contains many harmful materials such as lead, mercury and greenhouse gases which require careful and proper treatment to eliminate the harm to the public health and the environment. WEEE•Park is a treatment and recycling facility that recover resources from WEEE through processes of detoxification, dismantling and recycling.

How the Facility Works?

The facilities in WEEE•Park are grouped into 3 major zones; unloading bay to collect the WEEE; buffer storage zone to examine and store the collected WEEE; and the processing hall to treat the WEEE. There are currently 4 main processing lines in the processing hall.

Line 1 - Processing Refrigerator: Refrigerants could damage ozone layer and exacerbate global warning if released to the environment due to unproper treatment. Therefore, this line is crucial to extract the refrigerants from the refrigerators properly for safe disposal. The remaining part of the refrigerator would then be dismantled in inert atmosphere to retrieve metal and plastic components for future uses.

Line 2 - Processing Air-Conditioner: Similar to refrigerators, air-conditioners also consist of hazardous refrigerants that require careful disposal. The appliances would then be transferred to Line 3 for further separation together with other appliances.

Line 3 - Dismantling and Sorting Material: Computers, washing machines, processed air-conditioners and de-toxified TVs and monitors are shredded after manual dismantling. The fractured materials are then sorted into steel, copper, aluminium and plastics for future use.

Line 4 - Detoxifying CRT and Flat Screen: Cathode ray tube screens contain lead funnel glass and fluorescent powder while flat screens contain mercury fluorescent lamps which require to be properly disposed before transferring to Line 3 for dismantling.

Opportunities and Challenges

The opening launching of WEEE•Park signifies the Government's commitment in offering long-term solution in reducing wastes and helps eliminate the potential contamination and environmental harms resulted from improper handling of WEEE. This also echoes the Producer Responsibility Scheme on Waste Electrical and Electronic Equipment (WPRS) which came into effect 1 year after the opening of WEEE•Park to ensure WEEE are properly collected, treated and processed scientifically, and turning into valuable secondary raw materials while minimizing waste to the landfill.

In addition to treating and processing WEEE, WEEE•Park also examines the received WEEE and refurbishes some appliances which are still well-functionable conditions. These refurbished electrical appliances would then be donated to people in need through registered social workers for to re-use and to reduce the amount of waste from the root.

However, the current processing capacity of WEEE•Park is around 30,000 tonnes annually, which is insufficient to cater the 70,000 tonnes of WEEE generated and has not included all types of WEEE yet. Further investment and efforts to expand the capacity and capability of WEEE treatment facilities to turn waste into resources is crucial. Yet, this shall not be the ultimate solution. Public education can brook no delay to enhance the public awareness on the adverse impacts of WEEE to the environment and public health as well as to promote the importance of change in purchasing habits.

Technical Seminar on Electric Vehicle Charging Solutions for Sustainable Electric Mobility

12 March 2024

Introduction

The Technical Seminar on Electric Vehicle Charging Solutions for Sustainable Electric, hosted on 12 March 2024, provided valuable insights into various aspects of EV charging. The webinar focused on EV charging products and design, different charging standards and classes, as well as cutting-edge charging technology like Autocharge.

The seminar showcased ABB's range of EV charging products, highlighting their innovative designs and functionalities. Attendees were introduced to different charging standards, such as CHAdeMO, CCS, and Type 2, and learned about the compatibility of these standards with different electric vehicle models. The seminar emphasized the importance of providing versatile charging solutions to accommodate a wide range of EVs and enable seamless charging experiences.

New EV Charging Technology

One of the key highlights of the seminar was the introduction of Autocharge, a groundbreaking technology in EV charging. Autocharge revolutionizes the payment transaction process by allowing the vehicle to send a unique ID for charging authorization. This eliminates the need for users to manually initiate payment transactions or handle physical payment methods. With Autocharge, users can simply plug in their vehicles and walk away, while the charging process and payment are automatically handled by the system. This technology maximizes user-friendliness and enhances the overall charging experience.

During the seminar, the speaker also emphasized the availability of comprehensive material references on ABB's website. Attendees were encouraged to access the website for detailed information on EV charging products, technical specifications, installation guidelines, and other relevant resources. This initiative ensures easy access to essential information and supports customers in making informed decisions regarding EV charging solutions.

Conclusion

Overall, the Technical Seminar on Electric Vehicle Charging Solutions for Sustainable Electric, held on 12 March 2024, provided an informative session on EV charging products, design considerations, charging standards, and cutting-edge technologies like Autocharge. The seminar highlighted ABB's commitment to delivering user-friendly and sustainable charging solutions. By leveraging innovative technologies and providing comprehensive resources, ABB aims to drive the adoption of electric vehicles and contribute to a greener and more sustainable future.

Technical Seminar on Automated Waste Collection System

20 March 2024

Introduction

The seminar was held on 20 March, when our delegates were introduced to the Envac automated waste collection system (AWCS). AWCS is a modern waste management solution that utilizes underground vacuum technology to collect and transport waste in urban areas. It is designed to replace traditional methods of waste collection, such as trash cans and dumpsters.

How the System Works

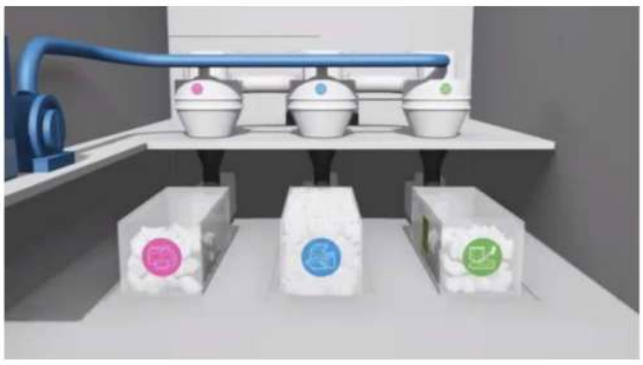
AWCS features strategically placed waste inlets throughout urban areas for convenient waste disposal. Waste is categorized into general waste, food waste, and paper. The inlets trigger the system when waste is added, minimizing human contact. Waste is transported through an underground vacuum network to a central collection station, where it undergoes sorting and processing. Recyclable materials are separated, and the remaining waste is disposed of appropriately.

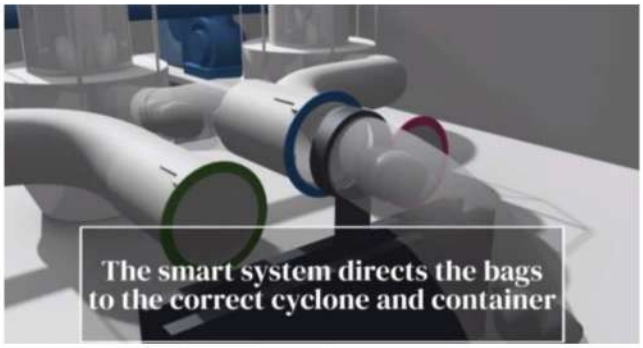
Opportunities and Challenges

The Envac system is crucial for fostering a circular economy by transforming various types of waste into valuable resources. It converts general waste into heat and energy, food waste into biogas, and recycles wastepaper to reduce the demand for virgin materials. These processes promote resource efficiency and sustainable waste management practices. Additionally, the system enhances safety and hygiene by minimizing human contact with waste, improves working conditions, and reduces truck movements, resulting in less traffic, noise, odour, and pollution. However, implementing the Envac system requires significant infrastructure investment and planning, making it impractical or economically unfeasible for all cities or regions.

Conclusion

The Envac system stands as an inspiring illustration of inventive waste management solutions, stimulating the pursuit of sustainable alternatives in waste disposal. With the testbed actively operating in Hong Kong Science Park, there is an optimistic vision of introducing the Envac AWCS to the city. By drawing upon insights from other countries, like Taiwan and Singapore, Hong Kong can explore progressive approaches that align with its specific characteristics. The exploration should aim to prioritize waste reduction, foster recycling, and establish a cleaner, more sustainable living environment for the residents.





Technical Seminar on The Future of Switchgear: Safe, Smart, and Sustainable

21 March 2024

Introduction

The Technical Seminar on The Future of Switchgear: Safe, Smart, and Sustainable, presented by ABB, focused on two significant areas. The first area discussed was the DER (Distributed Energy Resources) application in Xiamen, China, known as the ABB Xiamen Industrial Hub Mission to Zero Project. This project aimed to integrate photovoltaic (PV) systems, electric vehicle (EV) chargers, energy storage, HVAC, and lighting to form a microgrid controlled by a smart energy management system.

ABB Xiamen Industrial Hub Mission to Zero Project

The ABB Xiamen Industrial Hub Mission to Zero Project showcased an impressive setup with a peak PV capacity of 12.3MW, a battery energy storage system (BESS) capacity of 600kW/1.2MWh, EV chargers consisting of two 60kW chargers and forty 7kW chargers. The project achieved an annual power output of 13,320,000 kWh and a significant reduction of 13,000 tonnes of CO_2 emissions.

Smart High Voltage (HV) Switchgear

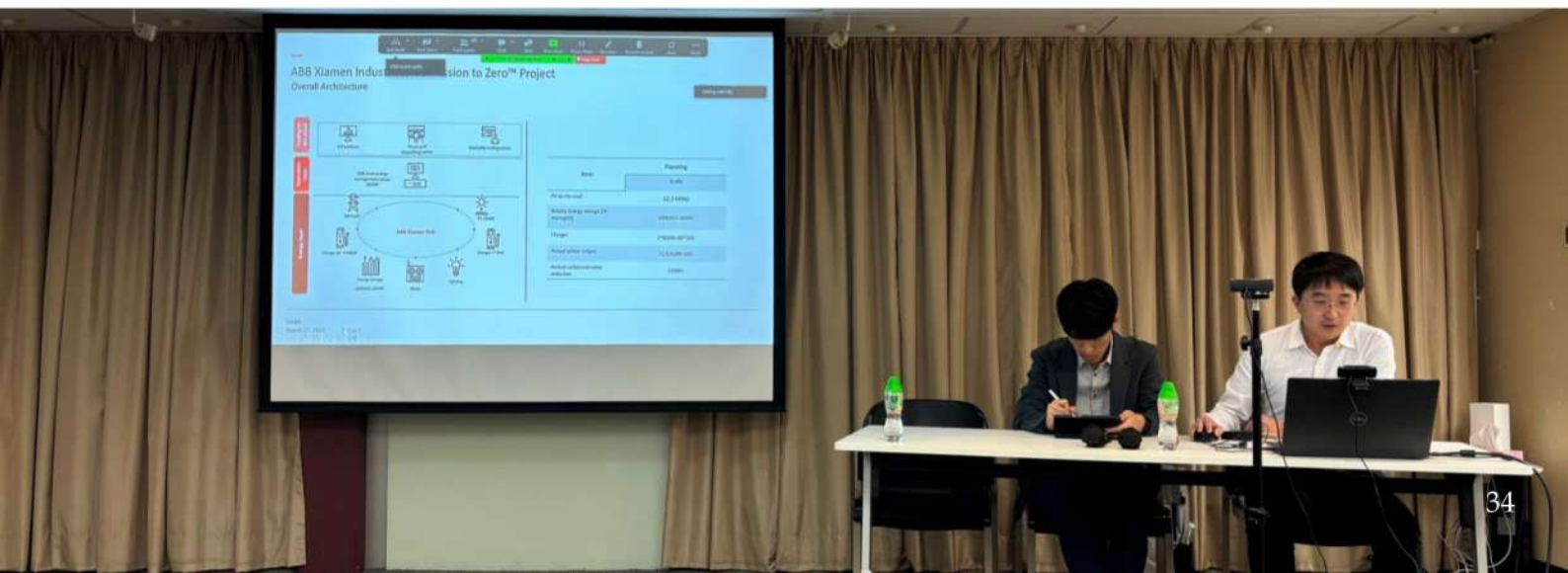
The second part of the seminar focused on smart switchgear with multiple sensors designed to detect conditions and operation status for achieving preventive maintenance. These sensors utilize a wireless IoT (Internet of Things) approach, further enhancing operational safety. By leveraging wireless sensor technology, the switchgear can continuously monitor various parameters, enabling early detection of potential issues and facilitating timely maintenance and repairs.

The innovative use of wireless sensors in the smart switchgear system presented during the seminar offers several advantages, including real-time condition monitoring, improved reliability, and enhanced safety. By adopting this IoT-based approach, operators can proactively address any potential malfunctions or operational anomalies, ensuring uninterrupted power supply and minimizing downtime.

Conclusion

Overall, the Technical Seminar on The Future of Switchgear: Safe, Smart, and Sustainable, held on 21 March 2024, provided valuable insights into the integration of renewable energy sources, energy storage, and smart grid technologies for sustainable electric transportation. The ABB Xiamen Industrial Hub Mission to Zero Project exemplified the successful implementation of a microgrid system, integrating PV, EV chargers, and energy storage to reduce carbon emissions. Additionally, the seminar highlighted the importance of wireless sensor technology in achieving preventive maintenance and ensuring operational safety in switchgear systems.

The seminar served as an excellent platform for knowledge-sharing and fostering collaboration among industry professionals, paving the way for a greener and more sustainable future in the field of switchgear technology.



Technical Visit to Low Carbon Energy Education Centre

23 March 2024

Introduction

On 23 March, the overseas delegation team visited the CLP Power Low Carbon Energy Education Centre, which serves as a platform to promote awareness and understanding of low-carbon energy solutions and sustainable practices among the general public, students, and professionals.

Opportunities and Challenges

While various energy sources may reduce carbon emissions, the tour provided a realistic assessment of advantages and disadvantages of various energy sources, with regards to their 1) reliability and safety of supply, 2) reasonability of price, and 3) environmental impacts. By studying use-cases of each energy source across the globe, the team further understood the mitigation measures to offset challenges during the implementation stage.

Wind Energy

Wind energy is an abundant and renewable energy source. However, there is a notable risk of collapse during harsh weather, installation and maintenance costs are high, and operations significantly disrupt ecology. Thus, thorough environmental impact assessments must be performed during planning stage. Turbines must also be locked under the influence of typhoons to avoid damage to machinery or overturning.

Hydropower

Hydropower is a highly efficiency, renewable and reliable energy source. However, its demanding operation requirements result in the scarcity of suitable locations, high demand for land resources, and expensive installation.

Solar Power

Solar power is very scalable and renewable. However, its reliance on solar rays implies intermittent power generation. Expensive equipment is needed for DC-to-AC conversion, while substantial land resources are required for installation. It also produces additional electronic waste due to the frequent replacement of PV cells. Thus, variants of solar panel applications like cylindrical and building-integrated panels are produced to compromise disadvantages.

Natural Gas

Natural gas is a much cleaner alternative than coal, reducing carbon emissions by 50% for the same energy output. However, its limited distribution and hence higher price may result in hesitancy. Thus, the 2030+ Climate Action Plan promulgated a gradual replacement of coal with natural gas by 2030, to achieve the carbon emission target of 3.3-3.8 tonnes CO_2 per capita.

Nuclear Power

Nuclear power enjoys the highest efficiency among all low-carbon alternatives. However, there exist formidable risks of a nuclear accident and leakage of radioactive waste. Using the Daya Bay reactor as an example, caution must be incorporated during 1) site selection and formation, 2) design against impacts and extreme weather, 3) containment/ management of fuel and wastes, 4) monitoring system of operations and termination protocols, and 3) evacuation protocols during emergencies.

Conclusion

The visit to CLP Power Low Carbon Energy Education Centre offered the delegation team insights on the opportunities and challenges of leveraging low-carbon energy sources. The tour emphasized the role of policymakers and professionals in reforming the energy sector, to perform careful engineering judgment when striking a balance between sustainability and feasibility

Technical Seminar at Kai Tak Sports Park

23 March 2024

Introduction

A hybrid seminar was held at Kai Tak Sports Park on 23 March 2024 (Saturday), where the audience were enlightened to the retractable roof system, facade rainscreen system, and digital project management tools utilised in the construction of Kai Tak Sports Park.

Recreation and Sports Development in Hong Kong

With the provision of a main stadium, a multi-purpose indoor sports centre, an outdoor sports ground, and other supporting amenities such as sports-themed retail mall, dining outlets and public spaces, Kai Tak Sports Park aspires to spearhead the implementation of the Government's Sports Policy, including promotion of sports in the community, support to elite sports, and portrait of Hong Kong as the centre for major international sports events.

The retractable roof system of the main stadium comprises 15,000 tonnes of steel trusses and 4,800 tonnes of retractable roofing on its East and West sides. Design for Manufacturing and Assembly (DfMA) approach was undertaken, which the mega-scale steel trusses were prefabricated in mainland China and delivered to Hong Kong in multiple segments for on-site lifting and assembly. For the retractable roofing, sliding panels were enabled to move freely along tracks pre-installed atop the steel trusses with the aid of motors. The retractable roof system will facilitate the change of stage positioning and seating configurations for hosting local and international sports events, as well as various cultural and entertainment events such as concerts.

Surrounding the exterior of the main stadium is the facade rainscreen system, which is composed of 27,000 triangular aluminium panels in different shades of mountain blue, metallic purple and metallic silver with self-cleaning function under the attack of rain and dusts. Building Information Modelling (BIM) was used throughout the planning, design and construction phases of the facade, which the quantity of panels was drastically reduced from 47,000 to 27,000 following the optimisation of panel dimensions and orientations. Designed with the captivating theme "Pearl of the Orient", the main stadium would rise to become the prime venue for major international sports events in the future.

Conclusion

The audience had a more thorough understanding of Hong Kong's strategy to promote recreation and sports development with the ambition of improving health and well-being of the public.

Technical Seminar on Intelligent and Sustainable Mobility

25 March 2024

Introduction

On 25 March 2024, the delegates attended a seminar on Intelligent and Sustainable Mobility held at Arup. The attendees discussed the latest developments of intelligent mobility in Hong Kong, China, and East Asia, and then explored how these new technologies could lead to a more sustainable transportation future.

Autonomous and Intelligent Mobility

The audience was introduced to autonomous vehicles (AVEH) and how they form a key part of the Hong Kong Government's Smart Mobility Roadmap and Smart City Blueprint. The level of autonomous driving is divided into a scale from 0 (no automation) to 5 (full automation). At the current moment, assisted driving technologies (Level 1 or 2) are already commonly adopted in new vehicles, but AVEH have yet to reach Level 4 or 5 where human input to driving is minimal to none. However, Level 3 conditional automation applications are already planned in Hong Kong such as the Airport City Link and Airport Tung Chung Link connecting the Hong Kong International Airport to the Hong Kong-Zhuhai-Macau Bridge and Tung Chung. Further trials are also ongoing to in different locations such as Science Park and West Kowloon Cultural District to support the adoption of AVEH in Hong Kong. One of the challenges that AVEH must face is the complex streetscape of Hong Kong which is densely packed with other vehicles, pedestrians, greenery and other street furniture. To improve the legibility of streetscapes to AVEH, V2V and V2X technologies are rapidly being developed to allow communication between the vehicles and their surroundings.

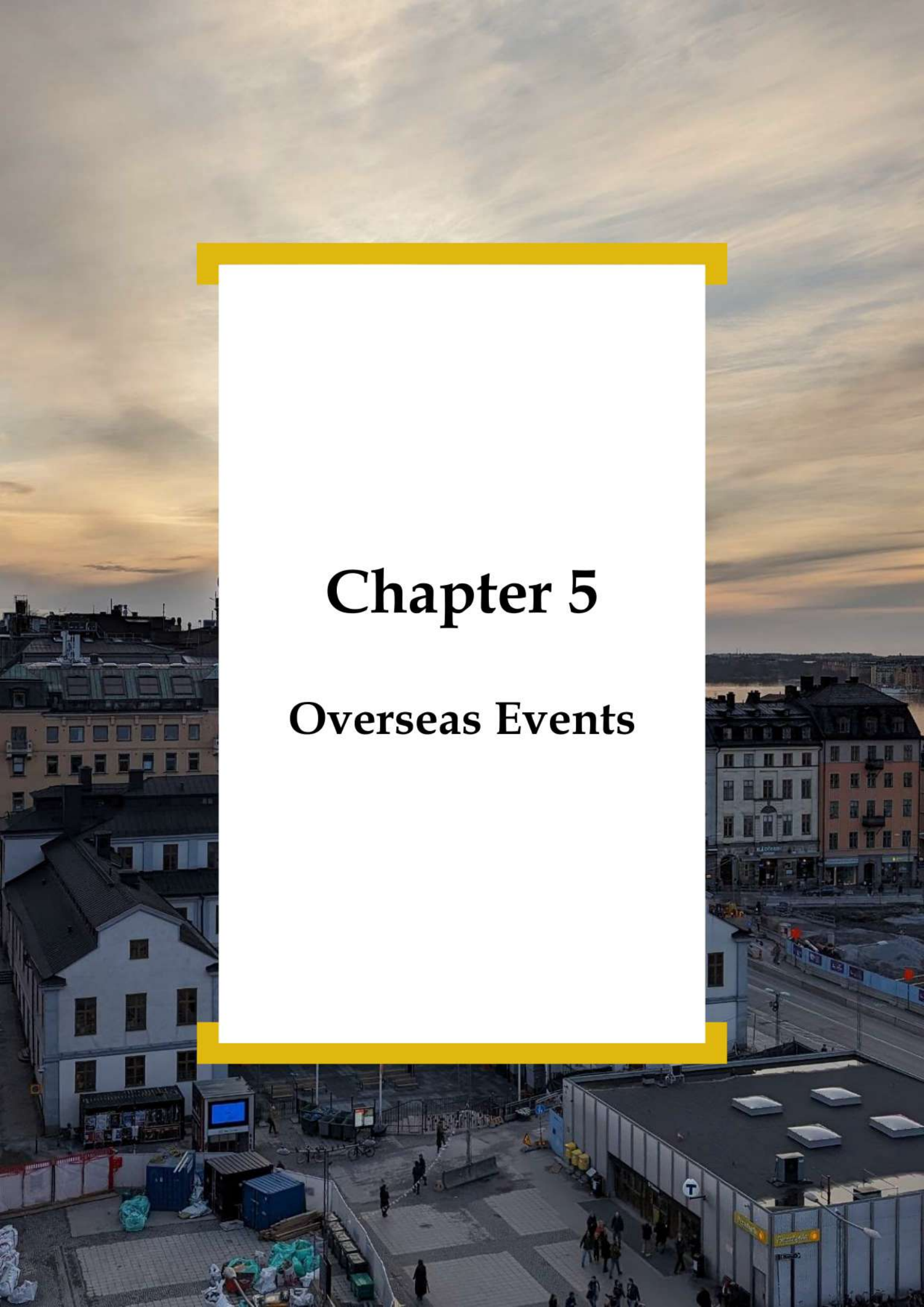
Sustainable Transport

In the second part of the seminar, the audience was introduced to the rapid development being made on electric vehicles (EV) technology and other new energies such as hydrogen-powered vehicles. When considering the entire product lifecycle, EVs produce less emissions and thus are more sustainable than current internal combustion engine vehicles. With the widespread adoption of EVs, there are also some opportunities and challenges to consider. For example, simultaneous use of many EV chargers across the city may strain or even overload the electrical grid. Cooperation with the utilities to implement smart charging systems can reduce the risk of damage to the reliability and stability of the network. Designers will also need to consider the charging habits of drivers in different scenarios in order to provide the most optimal charging type.

Meanwhile, new energy vehicles are also being trialed in Hong Kong. One highlight is the new hydrogen-powered bus by Citybus that is currently operating on Route 20 since 25 February 2024. As the only product of hydrogen combustion is water, the hydrogen-powered bus essentially produces zero emissions and will be much cleaner compared to traditional diesel buses. Furthermore, once the hydrogen production process via electrolysis is also powered by renewable energy, the entire lifecycle of hydrogen power could become carbon neutral.

Conclusion

The audience gained a deeper understanding of the current and future technologies and how they can be applied to make Hong Kong's transport system smarter and more sustainable.



Chapter 5

Overseas Events

Technical Visit to Royal Seaport, Stockholm

2 April 2024

Background

Stockholm Royal Seaport is the largest urban development area in Sweden, formerly an industrial district being transformed into a sustainable modern neighbourhood. There were 5 main aspects that collaboratively made sustainability successful in this district, which were – i) Consultation & Learning, ii) Vibrant City, iii) Accessibility and Proximity, iv) Resource Efficiency and Reduced Climate Impact, and v) Let Nature do the Work.

Consultation and Learning

The successful execution of this project from imagination to reality was as a result of global collaboration, which involved technical engagement with Vietnam and Brussels, and Norway for climate action measures.

Vibrant City

The municipality aimed to landscape the Royal Seaport into a family-friendly neighbourhood by building 12,000 new homes, 35,000 workplaces, 600,000m^2 commercial space, as well as modern port and cruise terminal, schools, parks and grocery stores.

Accessibility and Proximity

The municipality aimed to have parks and grocery stores located in just a five-minute walk within the neighbourhood. They also aimed to have at least 85% of the population using public transport or bikes, with expensive parking spaces hoping to discourage the use of private vehicles.

Resource Efficiency and Reduced Climate Impact

In 2010, oil diesel was deeply stored in the oil harbour as energy source for the district, which was later on shifted to using biogas in 2016. The district heating system was 85 km long and 65 km wide, covering the Royal Seaport and nearby regions. The goal is to establish an independent energy grid and achieve the fossil fuel free goal by 2030.

Let Nature do the Work

Significant green spaces and parks were designed to enhance the quality of life for residents, encourage outdoor activities and to promote biodiversity.

Conclusion

This urban development project has presented solutions for sustainable transportation options, renewable energy sources and green neighbourhood which would be applicable to Hong Kong's district redevelopment projects.

Technical Visit to Nya Slussen, Stockholm

2 April 2024

Background

The New Slussen in Stockholm is a transformative project aimed at renovating the old Slussen area started in 2016. Serving as a critical transportation hub in Stockholm, the Slussen has faced numerous challenges in recent years due to the old developments and structures, therefore, it is crucial for the new Slussen to cater the future changes of environment and demands of public, major highlights are discussed as below.

Climate Change Approach

The New Slussen addresses the environmental impacts due to the climate changes and ensures long-term viability. The new land designed by one meter above sea level not only protects against potential sea-level rise but also mitigates flood risks, extreme rainfall, and rising sea levels. This approach protects the area against climate change effects and enhances its resilience.

Water Management System

Water gates are constructed to allow the boat transit between Lake Mälaren and Baltic Sea while maintaining the integrity of water bodies. In addition, , the water gate helps to maintain the water quality and protects the delicate ecosystem by preventing the contamination and mixing of saltwater from the sea with freshwater from the lake.

Heritage Preservation

The Slussen places a strong emphasis on preserving historical buildings and cultural heritage. Protected historical buildings are integrated into the new Slussen, ensuring a harmonious blend of modernity and tradition. This approach boosts a sense of place and community identity while promoting sustainable urban development.

Public Area Creation

The New Slussen creates new public and green areas by enhancing the recreational spaces for residents and visitors that promote the well-being and environmental sustainability. The creation of a water plaza is the notable place that the lively public space offers a refreshing atmosphere by incorporating water and green features into the area, dedicating to pedestrians and cyclists.

Conclusion

The New Slussen emphasises a sustainable urban transformation that prioritizes environmental considerations and sustainable community and enhances the quality of life for residents and visitors. The delegation team is inspired through the learning of the sustainable strategies like creating new public and green spaces integrating historical buildings. Those strategies can be considered in the new town development of Hong Kong such as Kwu Tung Area and the proposed Kau Yi Chau Artificial Islands to achieve a sustainable and liveable urban environment.

Technical Visit to ABB Electrification Sweden AB, Västerås

2 April 2024

Introduction

On 2 April 2024, the delegates visited ABB Electrification Sweden AB to observe their impressive softstarter and contactor production line and understand how ABB's in-house environment and wide product range provide a unique advantage in manufacturing integration and testing.

Precision Manufacturing

The contactor production line showcased the heavy utilization of robotic arms. These advanced automation systems streamlined the manufacturing process, ensuring precision, efficiency, and consistent quality. The integration of robotics in the production line exemplified ABB's commitment to leveraging cutting-edge technologies for enhanced productivity. One notable aspect of the production line was the small footprint of the manufacturing floor. ABB has effectively optimized space utilization, enabling efficient operations while minimizing resource requirements. This compact layout reflects ABB's focus on lean manufacturing principles and efficient use of resources.

Applications

Contactor technology is increasingly being utilized in Distributed Energy Resources (DER) applications, particularly with silicon-based technology. The visit highlighted the significance of contactors in facilitating the integration of renewable energy sources and supporting the efficient operation of DER systems. ABB's contactor solutions were showcased as essential components in DER applications, enabling seamless control and protection of electrical systems.

In addition to the visit, ABB introduced their comprehensive product line of contactors and softstarters. These products serve as vital components in motor control and protection, enabling efficient and reliable operation of various electrical systems. For supplementary information, interested parties can refer to ABB's online materials, which provide detailed product specifications, application guidelines, and technical resources.

Conclusion

Overall, the visit to ABB Electrification Sweden AB's softstarter and contactor production line showcased the company's commitment to innovative manufacturing practices and advanced technologies. With the integration of robotics, optimization of floor space, and focus on DER applications, ABB demonstrates its dedication to providing high-quality, efficient, and sustainable solutions for a wide range of electrical applications.

Technical Visit to Stockholm Science City Foundation, Stockholm

3 April 2024

Introduction

On 3 April 2024 (Wednesday), delegates paid a visit to the office of Stockholm Science City Foundation to understand more about Sweden's life science industry, development of Hagastaden with emphasis on health and well-being, and the roles and responsibilities of the organisation.

Life Science Industry in Sweden

Established in 1990, Stockholm Science City Foundation is an organisation that aims to strengthen life science in Stockholm through bridging communication between industry, universities and healthcare sector, developing geographic areas around the universities, attracting establishments, and creating conditions for interdisciplinary collaborations between universities.

Stockholm-Uppsala cluster was identified as a functional life science cluster with 54% of Sweden's life science industry, 6 universities with active life science research, 21 hospitals and a robust Information and Communication Technology (ICT) industry encompassing gaming, financial technology, telecommunications and digital healthcare sectors. Digital healthcare is ubiquitous in Sweden that 80% of all citizens enjoy E-Health services, and 20% of all citizens attend medical appointment through video call with the doctor.

Adjacent to a world-class hospital New Karolinska Solna and a research-led medical university Karolinska Institute is Hagastaden, which will become a life science district with healthcare, commercial, residential, and academic areas. Upon the anticipated completion of Hagastaden in 2030, 50,000 workplaces and 6,000 homes will be provided in Hagastaden. Different from other districts, properties developed in Hagastaden are in compliance with WELL, an international building standard that focuses on health and well-being through seven concepts including air, water, nourishment, light, fitness, comfort, and mind.

Conclusion

Described as the "Gardener", Stockholm Science City Foundation plays a crucial role in nurturing the ecosystem for Sweden's life science industry and providing the platform for exchange of knowledge. Health and wellness are considered in the planning of Hagastaden with the objective of creating a sustainable lifestyle for the people who will work and live in the district.

Technical Visits to Volvo Cars Factory and Zenseact, Gothenburg

3 & 4 April 2024

Introduction

On 3 April afternoon, the delegates visited Volvo cars factory in Torslanda, followed by a visit on 4 April to Zenseact in Gothenburg. Volvo is famously known for their safety innovation of the three-point seatbelt, side impact protection systems, and side impact airbags. As the car manufacturer looks towards the future, they have founded Zenseact, a company that develops the software for Volvo's autonomous vehicles.

Safety by Design

Starting our visits at the Volvo car factory, the delegates learned about the history of Volvo and their absolute dedication to safety. One of the key design features is Volvo's Scalable Product Architecture (SPA), which is an in-house designed global automobile platform that serves as the common core of all their current vehicles. A common platform enables quicker implementation of new innovative safety features to all their models and also rationalizes the design and manufacturing process. To experience this first-hand, a tour was taken through the car factory, where different car models could be produced on the same production line thanks to the SPA. The heavily automated manufacturing process also reduces the chance for human errors that could affect the safety and reliability of the vehicle.

Autonomous Driving Development

The next day at Zenseact, the delegates were introduced to the development and testing process for vehicle automation. At the Zenseact Lab, the trial vehicles could be seen equipped a large array of different sensors, including radar, LiDAR, and cameras. The testing is carried out on real roads around the world to ensure that the vehicles can respond properly to different road and weather conditions. Before autonomous vehicles could be deployed to different countries, they must also be able to parse the local road signs and road markings which is another important part of the development process. This necessitates the collection of a large amount of data which requires sophisticated big data analytics to process and rationalize.

Conclusion

Through the two visits, the delegates gained deeper insight into the development of safer and more autonomous vehicles, from the design, testing, to manufacturing of the vehicles.

Technical Visit to SYSAV, Malmö

4 April 2024

Introduction

On 4 April, the overseas delegation team visited SYSAV, one of the largest and most advanced waste-to-energy plant in Europe. Situated in Malmo, its construction was entirely funded by the Swedish municipality and commenced operation right after the 1973 oil crisis, as an attempt tackle landfill saturation and energy shortage simultaneously. Currently, SYSAV has been receiving 820,000 tonnes of waste each year, while annually contributing 145,000kWh of electricity to the power grid and 65% of the district heating in Burlöv and Malmo. The infrastructure is jointly owned by 14 municipalities in Sweden, and mainly responsible for treating waste from southern province of Skåne.

Appreciation of Modern Clean Energy Technology

To cater for the growing demand of waste treatment, SYSAV contains 4 boilers, 2 of which are advanced steam boilers which generates electricity and district heating. The boilers are heated by incinerators, which accepts hazardous, textile, food and yard wastes as input into their system. The boiler generates 400°C steam at 40bar, which then drives a turbine generator at 1500 r.p.m. A condenser then collects the hot vapour, to perform secondary energy recovery and absorption of latent heat for district heating purposes. This combined heat and power (CHP) approach allows the plant to achieve high overall energy efficiency, with the majority of the energy content in the waste being converted into usable heat and power.

Opportunities and Challenges

Air pollution constitutes a major concern for the operation of waste incinerators. However, flue gases generated by SYSAV satisfy the stringent air quality requirements of Sweden by a comfortable margin. Flue gases are first passed through an electrostatic precipitator for dust removal. Scrubbers then remove heavy metals/acids, sulphur dioxide and dioxins from the gas in 3 separate stages. Finally, catalytic converters help reduce the remaining acidic gasses into nitrogen and water prior to discharge. Operational safety is enforced in SYSAV through the use of IoT technology. Dashboards exist throughout the infrastructure, which provides real-time monitoring of the 4 boilers' status (e.g. material flow, power generation), enabling operators to optimize the plant's operation or deactivate machinery during emergencies.

Strategy for Achieving Carbon Neutrality

SYSAV's waste-to-energy system attains an efficiency of converting 58% of the recycled waste into energy. Not only is the energy output sufficient in entirely supporting the infrastructure's operation, but contributes roughly towards 2% of the national electricity generation, implying a major breakthrough from reliance on fossil fuel. It's significant contribution towards the district heating system also diminishes the need to burn coal and oil for warmth. SYSAV is recently piloting a carbon-capture system to further offset carbon emissions. With CO2-absorbing yard waste comprising a notable percentage of incinerator fuel, such a proposal attempts to fully transform the waste-to-energy plant into a carbon sink in the near future.

Conclusion

The province-wide adoption and hence reliance of SYSAV's waste-to-energy technology fully demonstrates Sweden's advancement and determination of achieving clean energy production. It exemplifies that with technological breakthroughs and political promulgation, it is possible to achieve high renewability and efficiency of energy production.

Technical Visit to Green Roof Augustenborg, Malmö

5 April 2024

Introduction

On the 5th of April, the overseas delegation team visited the Green Roof Augustenborg, which is an innovative and environmentally conscious project located in the district of Augustenborg in Malmö, Sweden. It is a prime example of sustainable urban development and green infrastructure. Situated within a residential neighbourhood atop 9,500 m2 of industrial buildings, the extensive roof garden is designed as both a demonstration garden and a research garden, testing various plants, engineered soils, and water runoff.

Advantages

Covered in vegetation, the rooftops of the Green Roof Augustenborg project transform into vibrant gardens, fostering biodiversity through the creation of habitats for various bird species, insects, and diverse plant life. Furthermore, these green roofs serve as natural purifiers, absorbing pollutants and carbon dioxide, which leads to an enhancement of local air quality. The presence of vegetation also aids in mitigating the urban heat island effect, effectively lowering temperatures in the surrounding area. An added benefit is that the greenery on the rooftops even enhances the efficiency of solar panels, making them more effective in harnessing renewable energy.

Ecocity Augustenborg: Stormwater Management

In most areas of Augustenborg, the traditional combined sewer system has been replaced with an open stormwater system designed to address basement flooding issues. To effectively manage stormwater, Augustenborg has strategically implemented sustainable drainage techniques known as SuDS. These techniques include the use of swales, ponds, infiltration basins, and open drains with flow obstacles, such as the "water drop gutter." By mimicking natural processes, these SuDS systems store, filter, and slowly release stormwater, thereby mitigating the risk of flooding and enhancing water quality.

Conclusion

The Green Roof Augustenborg project exemplifies the potential of green roofs as a sustainable and community-focused urban solution. By transforming rooftops into vibrant green spaces, the project not only enhances the aesthetic appeal of the area but also contributes to environmental sustainability, community well-being, and education. It serves as an inspiring model for other cities and communities seeking to create more sustainable and liveable urban environments.

Technical Visit to Western Harbour, Malmö

5 April 2024

Background

Western Harbour is an area located within the city of Malmö, which was a heavily contaminated industrial area. Through substantial development during the last decades, the area of Western Harbour has evolved into an attractive area with renowned reputation in the aspect of sustainability.

Visit

The delegation team visited the Western Harbour on 5th April 2024. Walking through the streets and alleys in the area of Western Harbour, numerous features of green mobility, green living and waste treatment were observed at every corners. An extensive network of cycling lanes and pedestrian-friendly infrastructure were observed. Cars and parking are restricted in many areas, encouraging active mode of transportation. There are also impressive integration of green spaces, waterfront promenades and parks, enhancing the overall well-being of the community. The waste collection system in Western Harbour is comprehensive, bins are separated into various recyclables, organic waste and general waste, maximizing the retrieval of values from the waste and minimizing the amount of waste to the landfill.

Turning Torso, which is currently the tallest building in Sweden has now become in new well-known landmark in the Western Harbour. In addition to its unique architectural appearance and tallness, it is also famous for its ground-breaking food waste collection system. Households have waste disposal units in their sinks to collect food waste directly inside their house, connecting to a separate collection tank which will then be converted into biogas for energy use. The wide adoption of this system in Malmö to fuel city buses since then has proven its success.

Learning Outcome

The success of the transformation of the Western Harbour from a decaying industrial area into a national role model of sustainable urbanism is attributed to bold and long-term commitment and collaboration from investors, developers, government and the community in the aspect of urban planning, innovative green systems and supportive government policies. The delegation team is inspired by the achievement of Western Harbour and is strived to participate in the community engagement for urban renewal and brownfield redevelopment in transforming Hong Kong into another sustainable urban city.

Turning Torso, Malmö

Technical Visit to Sege Park, Malmö

5 April 2024

Introduction

Sege Park was originally known as Östra Sjukhuset in the 1930s, it gained this name due to its function as the local mental health hospital. After it was dismantled, the buildings were abandoned. Now the city is using the area as a model of sustainable living, with some buildings showcasing renewable energy production and others used for student housing or preschools.

The Sustainable Strategy: Sharing

The Sustainability Strategy of Sege Park is closely aligned with the concept of Sharing, which is implemented across five key areas: mobility, community building, cultivation, circular energy consumption, and culturally built environment. One of the key recommendations put forward by the social enterprise is the development of a unified digital platform, enabling all residents to easily access shared goods and services. As part of the future development plans for Sege Park, several sharing assets are envisioned. These include the creation of indoor and outdoor common cultural spaces, designated meeting points, and the establishment of services such as carpooling, repairing workshops, and initiatives driven by the residents themselves.

Opportunities and Challenges

In Malmö, one of the four test-bed cities in Sweden for the program, key findings emphasized the city's diverse international background. These findings underscored the importance of promoting inclusiveness and ensuring equal accessibility to shared spaces, goods, and services for all residents. Sharing was presented to foster innovative solutions for a more sustainable and affordable way of living.

Conclusion

The sharing city concept, as exemplified by Sege Park's participation in the Sharing Cities Sweden program, offers valuable insights and potential benefits for urban development. While the context of each city is unique, Hong Kong, with its dense population and urban challenges, could benefit from promoting inclusiveness, equal accessibility, and innovative sharing-based solutions to enhance its sustainability and liveability. However, it is crucial to adapt the concept to suit the specific needs and characteristics of Hong Kong, considering its cultural, social, and economic factors. A comprehensive assessment of the city's context, along with robust stakeholder engagement and policy implementation, would be essential in successfully adopting the sharing city concept in Hong Kong.

Technical Visit to Norra Sorgenfri, Malmö

5 April 2024

Introduction

Norra Sorgenfri is a new residential area with green spaces in Malmo. Originally, it was an industrial area located close to Malmo city centre. It has now transformed into a diverse and vibrant community, offering a mix of housing options, including apartment buildings and single-family homes.

Revitalization of a Community

The tour provided delegates with a vision of how Norra Sorgenfri can become a residential neighborhood where attractive and safe public spaces enhance life within the area and contribute to improving mobility between Malmö's deprived peripheries and the inner city. Delegates can see that the new buildings are choosing similar colors and materials, such as brick, which match the original industrial appearance that represents Malmo and is used in the surrounding old area.

To make the area more interesting, the designers have incorporated variations in the buildings, such as different heights, balconies with plants, and different-colored roofs. In the open spaces of Norra Sorgenfri, citizens can use them as meeting areas, cultivation areas, playgrounds, and green spaces. These functional area provisions create a better environment for the people living in the area. Some of the ground floors of the residential buildings even become the retail shop areas for residents to engage in trading.

Norra Sorgenfri is also equipped with a cycling track and widened pedestrian walkways, providing citizens with a safe environment for exercise and travel within the city. Another benefit is energy conservation through these provisions.

The Malmo government has put a lot of effort into this area, and as a result, the previous issue of prostitution no longer exists. Norra Sorgenfri has become a safe and pleasant living environment for children and the elderly.

Conclusion

Delegates can witness the sustainability in the transformation of the urban industrial area in Norra Sorgenfri. With the support of citizens and the government, a new living environment has been created for the society.

Gamla Stan, Stockholm

29 March 2024

Introduction

Shortly upon arrival at Stockholm, delegates travelled into the city's past through a guided tour of Gamla Stan, as known as Old Town, the oldest district in Stockholm. Throughout the visit, delegates had built a complete picture of the history of Stockholm and appreciated the old-fashioned architecture including cobblestone alleyways, rust-coloured buildings and ancient monuments.

Origin of Stockholm

Established in the 13th century, Gamla Stan was initially found when the leaders were escaping from Sigtuna, the previous capital of Sweden, under the onslaught of armed gangs. The leaders set afloat a hollow log with gold inside, and the log eventually flown to Gamla Stan, a place consisting of three islands. Since then, Gamla Stan was selected as the new capital of Sweden with the name Stockholm, which translates to "log island" in Swedish. The archipelagic terrain is easy to defend against the warfare, and is ideal to develop into a trading outpost for the Baltic.

Independence

Located at the heart of Gamla Stan is Stortorget, the oldest square in Stockholm dating back to the 15th century. Stortorget was a trading hub with many merchants' houses including the iconic Stockholm Stock Exchange Building, until 1520 when the Stockholm Bloodbath was taken place. The massacre of Swedish noblemen by the Danish King Christian II led to the uprising against the Kalmar Union, which was joined by the Scandinavian kingdoms. Kalmar Union was eventually disbanded, marking the rise of Sweden as a sovereign state in 1524.

Conclusion

The visit to Gamla Stan was useful for delegates to understand the Swedish history and culture. It also inspired delegates that familiarising with the local culture enables production of better design for the society.

Royal Canal Tour, Stockholm

30 March 2024

Introduction

On 30th March 2024, the delegation team rode on a journey through Stockholm's historic waterways with the Royal Canal Tour. This tour allowed the team to explore the city's heritage while basking in the scenic beauty surrounding the canal.

Visit

After the delegates boarded the canal boat, the tour guide started giving the fruitful introduction with the historical fact and stories behind the city while the boat passed through the canals.

During the tour, the boat passed by the Royal Palace, an imposing structure that has housed Swedish monarchs for centuries; the historical City Hall, a symbol of Stockholm's civic pride; and Gamla Stan, with its cobblestone streets and vibrant-coloured buildings.

The tour also circled around Djurgården, which is a well-known island in Stockholm containing lots of historical museums, an amusement park, and stunning natural landscapes.

Conclusion

Throughout the tour, the delegation team learnt about the city's fascinating past, from Viking origins to modern-day innovations, and also gained insights regarding Stockholm's cultural heritage and its influence on Swedish society. The Stockholm Royal Canal Tour left a remarkable memory to the delegation team.

Kungliga Slottet & Nobel Prize Museum, Stockholm

30 March 2024

Introduction to Kungliga Slottet

Kungliga Slottet, also known as the Royal Palace, serves as the official residence of the Swedish royal family. As one of the largest palaces in Europe, it holds great historical and cultural significance and is an iconic landmark located in Stockholm, Sweden.

Visit

The Hall of State, adorned with intricate plasterwork and ceremonial objects, is another highlight of the palace. The last time the silver throne was used was in 1974, when the ceremonial Opening of the Parliamentary Session took place. It has been the site of numerous royal weddings, state banquets, and official ceremonies throughout history. It continues to serve as a venue for hosting heads of state, diplomats, and other notable figures.

Conclusion

Surrounded by the soft, golden glow, stepping into the Hall of State is instantly transported into a realm of majestic splendour. The room's grandeur, paired with its profound historical significance allows visitors to truly grasp and admire the regal heritage of the Swedish monarchy.

Introduction to Nobel Prize Museum

The Nobel Prize Museum in Stockholm celebrates the achievements and legacy of the Nobel Prize. Located in Stockholm, the museum offers a fascinating exploration of the prestigious awards and their laureates, highlighting their remarkable contributions to various fields.

Visit & Conclusion

The Nobel Prize Museum presents the narratives and achievements of Nobel laureates across various disciplines, including science, literature, peace, and economic sciences. By means of interactive exhibits and captivating displays, visitors can explore the revolutionary breakthroughs that have garnered Nobel Prize recognition and changed their lives. The museum showcases an extensive collection of artifacts that effectively immerse visitors in the exhibition. Among the museum's standout features is the Nobel Prize Ceremony Hall, where visitors can engage in a virtual Nobel Prize ceremony, allowing them to experience the anticipation and excitement that permeate the award presentations. This unique opportunity enhances the overall exhibition experience, offering visitors a comprehensive and engaging experience.

IKEA City, Stockholm

31 March 2024

Introduction

On 31/3, the overseas delegation team visited an IKEA store in Sweden. IKEA is a renowned multinational furniture and home goods retailer known for its affordable and stylish products. The visit aimed to provide insights into IKEA's retail philosophy, its approach to sustainability, and the overall appeal of the store to customers

History

IKEA was founded in 1943 by Ingvar Kamprad in Älmhult, Sweden. Kamprad was just 17 years old at the time. The name "IKEA" is an acronym that combines the initials of Ingvar Kamprad with the first letters of Elmtaryd, the farm where he grew up, and Agunnaryd, his hometown. In the 1950s, IKEA began designing and selling its own furniture. The company adopted a flat-pack and self-assembly concept, which allowed for efficient packaging, transportation, and cost savings. In 1956, IKEA introduced its first piece of flat-pack furniture, the "Lövet" table. This marked the beginning of IKEA's iconic approach to furniture design and manufacturing. Throughout the 1960s to 1990s, IKEA expanded its operations internationally, opening its first stores in the Nordic region, before further expanding to the rest of Europe, then to America and Asia.

IKEA offers an extensive selection of home decor, kitchenware, accessories, and especially well-known for its flat-pack furniture. Many of the furniture items are designed to be easily assembled by customers themselves. This approach helps save costs for delivery and storage, while allowing customers to transport and assemble it with ease at home. In terms of IKEA's promotion of sustainability and environmental responsibility, various signs and posters highlight IKEA's commitment to using renewable materials, reducing waste, and promoting energy efficiency. One in particular advertises the "take-back program", which allow customers to return second-hand furniture and other items for recycling or resale. They also offered recycling stations for customers to responsibly dispose of packaging materials. Furthermore, facilities like EV charging stations and ample bike parking spaces are abundant throughout the store's parking lot, reflecting IKEA's infrastructural investments to support low-carbon mobility.

Conclusion

The visit to the IKEA store in Sweden was a positive and enriching experience. By observing IKEA's products, store layout and facilities, the overseas delegation team obtained insights into IKEA's retail philosophy and its commitment towards sustainability.

Vikingaliv, Stockholm

1 April 2024

Introduction to Vikingaliv

The Viking Museum in Stockholm, known as "Vikingaliv", is more than just a museum; it is a rich and fascinating portal into the world of the Vikings. With a visit to this extraordinary museum, you're not merely observing, you're stepping back in time to experience the life and culture of the Vikings. These were the seafaring people who, around a thousand years ago, made a significant and lasting impact on Scandinavian history.

Detailed Exhibits

The museum's exhibits are meticulously curated and offer a detailed, comprehensive overview of the Viking Age. The depth of the historical content gives visitors an intimate look at the Viking era. One of the highlights is the Ragnfrid's Saga ride, an immersive, virtual journey experienced alongside a Viking woman named Ragnfrid and her family. This engaging storytelling experience, complete with lifelike figures and detailed dioramas, gives visitors a firsthand perspective of the Viking lifestyle, making history come alive.

Rich Collection of Artifacts

The vast array of artifacts displayed throughout the museum is nothing short of impressive. From intricately designed jewellery that showcases the Vikings' artistic prowess, to formidable weapons that hint at their martial skills, and everyday household items that provide insights into their daily lives, each object tells a unique story about the Vikings' way of life. The museum does an exceptional job of dispelling many of the myths associated with the Vikings. Contrary to popular belief, not all Vikings were violent warriors; many were traders, farmers, and skilled craftspeople contributing significantly to their society.

Vikings' Influence on Modern Society

The Viking Museum doesn't just focus on the past; it also looks at the enduring influence of Viking culture on modern society. The impact of the Vikings can still be seen today in various aspects of Scandinavian culture, such as language, literature, and art. The museum highlights this continuing influence, making the connection between past and present palpable.

Interactive and Educational Experience

The museum is both educational and interactive, offering a wealth of information and activities designed for visitors of all ages. Children can enjoy interactive exhibits that make learning fun, while adults can delve deeper into the historical context provided by knowledgeable guides and detailed informational panels.

Conclusion

In conclusion, a visit to the Viking Museum in Stockholm is not just about viewing exhibits, it's about experiencing and understanding the Viking history and culture. The museum provides a comprehensive and captivating look at Viking history and culture, leaving visitors with a deeper understanding of the Vikings and their significant contribution to the world history.


NORDBOR
LIVET I NORDEN GENOM 500 ÅR OCH FYRA ÅRSTIDER
NORDISKA MUSEET
NORDIC LIFE
LIFE IN THE NORDICS THROUGH 500 YEARS AND FOUR SEASONS
NORDISKA MUSEET

Vasamuseet, Stockholm

1 April 2024

Introduction

On 1 April, the overseas delegation team visited the Vasamuseet. Vasamuseet, also known as the Vasa Museum, is a renowned museum located in Stockholm, Sweden. It is dedicated to preserving and showcasing the Vasa ship, a 17th-century warship that is regarded as one of Sweden's most important historical artifacts. The museum's primary focus is to provide visitors with a comprehensive understanding of the Vasa ship, its historical context, and the maritime history of Sweden. The Vasa Museum opened in 1990 and, according to the official website, is the most visited museum in Scandinavia.

History

The Vasa ship was built during the reign of King Gustavus Adolphus and was intended to be a powerful symbol of Sweden's military might. However, tragedy struck on its maiden voyage in 1628 when the ship capsized and sank in Stockholm's harbour due to design flaws. The ship remained submerged for over three centuries until it was salvaged in 1961 and meticulously restored. The Vasa Museum serves as a captivating educational institution, offering visitors a unique glimpse into the world of 17th-century naval engineering and the historical significance of the Vasa ship.

Visit

The museum provides a wealth of information through interactive exhibits, multimedia presentations, and well-preserved artifacts. Visitors can explore the ship's impressive structure, including its intricate carvings and ornate decorations, while learning about the challenges faced during its construction and the subsequent salvage operation. In addition to the ship itself, the museum also houses a wide range of artifacts recovered from the wreckage. These artifacts include personal belongings of the crew, weaponry, and even everyday items that provide glimpses into the lives of sailors and the society of the time. By closely examining these artifacts, visitors can develop a deeper connection to the past and better comprehend the challenges faced by seafarers during that period.

Learning Outcome

Our visit to Vasamuseet deepened our appreciation and understanding of Swedish history, maritime heritage, and the significance of preserving cultural artifacts. Through engaging exhibits and educational programs, we have the opportunity to delve into the historical context of the Vasa ship, gaining insights into the political, social, and technological aspects of the time period. Moreover, the museum ignited our curiosity and inspired us to explore further aspects of Swedish history and maritime heritage.

Technical Visits in Copenhagen, Denmark

6 April 2024

Introduction

The delegates had a day in Copenhagen before the flight, when Claus Klitholm, the Lead Advisor of Business Development from WSP Copenhagen, arranged and led a series of technical visits to explore innovative projects. They include Karens Minde Aksen, Carlsberg City District, and CopenHill. These visits provided valuable opportunities to observe and analyze various aspects of climate mitigation, social sustainability, and urban planning.

Karens Minde Aksen

Karens Minde Aksen is an urbanization and climate adaptation project in Copenhagen's old South Harbour district. The project aims to upgrade the Music Quarter and create a diverse and inclusive urban space. The area covers approximately 37,000 square meters and includes a 600-meter-long stretch of park, streets, and urban space.

The project integrates climate adaptation with other area needs and plans. During the visit, delegates walked through the newly established pathway through Karens Minde, aiming to improve connectivity in the South Harbour. The project emphasizes biodiversity, greenery, and stormwater management. The landscaping design preserves over 100 iconic trees and incorporates a planting strategy to enhance biodiversity and protect the environment. Water management is integrated into the landscape design, with a rice field and stormwater basin ensuring the treatment of day-to-day rainfall.

Carlsberg City District

The second visit centred around the Carlsberg City District. The Carlsberg City District represents a harmonious blend of history, culture, and modern urban planning, creating a vibrant and unique neighbourhood in Copenhagen. It is deeply rooted in the history and culture of the Carlsberg Brewery. Founded in 1847 by brewer J.C. Jacobsen, the brewery became the world's third largest and was known for its clean water and ample space. The district highlights exceptional architectural and artistic landmarks, blending historical buildings with modern residences.

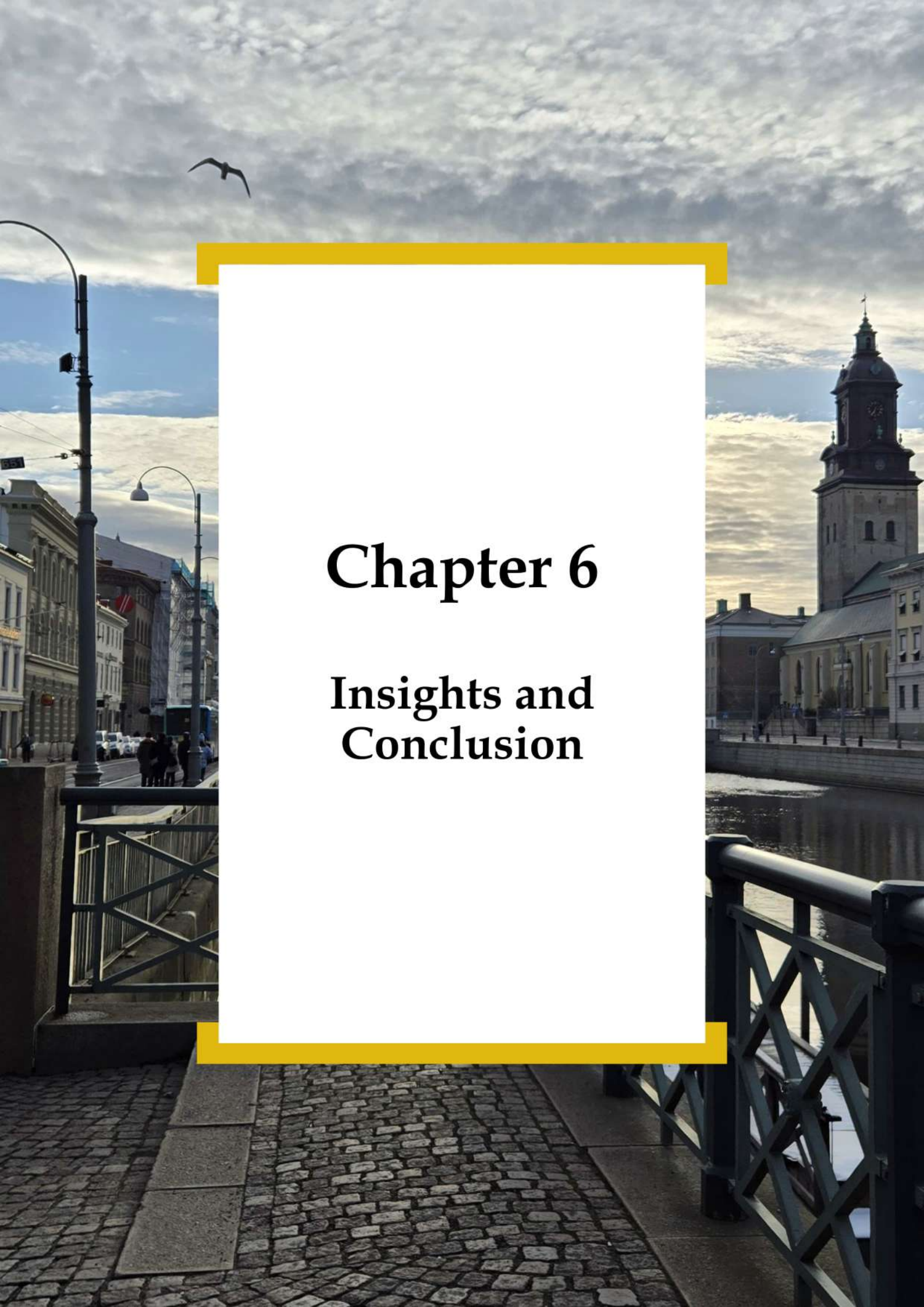
The development of the Carlsberg City District takes inspiration from Carlsberg's values of good construction, scientific curiosity, and cultural openness. The district is divided into 10 zones, each with its own distinct characteristics and identities. It features a mix of classic and modern architecture, including nine high-rise buildings. The urban strategy focuses on maintaining a human scale and creating a varied pattern of passages and spaces, where the delegates walked through while understanding the stories behind.

The Carlsberg City District offers diverse gastronomic and cultural experiences, with a curated retail and dining scene. Additionally, the Home of Carlsberg cultural attraction showcases the past, present, and future of the Carlsberg family through interactive exhibitions and guided tours.

CopenHill

The final visit was to CopenHill, a unique waste-to-energy plant that doubles as a recreational facility. The visit focused on understanding the technical aspects of waste management and energy generation. Claus Klitholm explained the state-of-the-art waste incineration process, which generates electricity and supplies district heating for the city. The delegates also had the opportunity to view the widely used recreational facilities, including a ski slope and climbing wall, built on top of the plant. They witnessed the potential for integrating waste management facilities with recreational amenities, creating multifunctional spaces that contribute to sustainable urban development.

All in all, the visits to Karens Minde Aksen, Carlsberg City District, and CopenHill showcased the successful integration of green infrastructure, renewable energy systems, and urban planning. The technical insights gained emphasized the importance of incorporating nature-based solutions, energy-efficient systems, and multifunctional spaces in urban development to create sustainable, resilient, and liveable communities.



Chapter 6

Insights and Conclusion

Insights on Good Health and Well-being

The local technical visits and overseas technical visits provided a full and clear picture on the strategies taken in both Sweden and Hong Kong. The events highlighted the opportunities and challenges arising from the different strategies taken in both Hong Kong and Sweden.

Elderly Healthcare

In view of challenges arising due to the ageing population, both Sweden and Hong Kong have exerted substantial efforts in improving the elderly's well-being.

The Elderly Resources Centre demonstrated the application of the Age Friendly Home (AFH) concept, designed to specifically cater for the limited physical mobility of the elderly. With the proportion of elderly persons aged 65 and over being projected to increase immensely by 2046, it is crucial to ensure the safety and accessibility of Hong Kong's living environment, in order to minimize the occurrence of home accidents. It is thus strongly encouraged to widely adopt the AFH design concept in housing developments in Hong Kong, both in new housing projects, and retrofitting existing apartments.

In Sweden, an abundance of synergy was observed between the academia and the healthcare industry. Since its establishment in 1990, the Stockholm Science City Foundation has endeavoured in connecting stakeholders, sharing knowledge and facilitating the access to healthcare data, propelling Sweden's healthcare industry to become one of the global leaders. With the ageing local population implying the prevalence of diseases, Hong Kong is in need for medical breakthroughs, such as precision medicine. It is thus critical for Hong Kong to continue leveraging the connection between universities and medical institutions, and ensure sufficient funding provision to drive cutting-edge research and development of healthcare innovations.

Safe Mobility

Both Hong Kong and Sweden recognizes the importance of safeguarding road safety, focusing on road safety policy, safe design of road infrastructure, and innovations in autonomous embedded safety systems of individual vehicles. Even before the official declaration of "Zero Accidents on the Road, Hong Kong's Goal", safety has always been a critical consideration in Hong Kong's road infrastructure as demonstrated by the design of the Tsing Ma Bridge Control Area. The strategic position within Hong Kong's road network underscores the importance of maintaining the bridge in excellent operating condition, both in terms of structural integrity and minimizing the risk of road and marine traffic incidents. Looking at the future, the government has also endeavoured to act on the Smart Mobility Roadmap for Hong Kong and amend legislation to allow for the emergence and embracement of autonomous vehicles as a mode of transport.

Similarly, Sweden aims for "Vision Zero": no fatalities or serious injuries through road accidents. From the visit at the Zenseact Lab, it was seen that the development of vehicular automation required vast amounts of data from extensive real-life testing. The trial vehicles were equipped with different sensors and tests carried out on real roads to ensure that the vehicles could respond properly to different road and weather conditions. This extensive testing in real-life environments is especially applicable in Hong Kong where the dense and complex urban environment often sees the confluence of private vehicles, public transport, pedestrians, and cyclists all within limited road space. The adoption of safe autonomous mobility in Hong Kong will undoubtedly be an important step in a safe and sustainable transportation future.

Recreation

To better promote the recreation and sports development, Kai Tak Sport Parks has been one of the recent mega project in Hong Kong. Meanwhile, through the series of visits in Stockholm, Gothenburg, and Malmö, it was witnessed that much emphasis is placed on the development of cultural exhibitions and accessibility to an active lifestyle.

From the local and overseas visits, it is evident both governments are willing to spend efforts on improving the well-being of the residents there. With natural heritages like the Geopark and hiking trails being accessible within one hour from the city centre, the continuous promotion of local country parks may form another direction for Hong Kong's recreational initiatives.

Insights on Affordable and Clean Energy

The Sweden delegation provided a comprehensive view into the sustainable and affordable energy sector through visits and seminars in both Hong Kong and Sweden. These engagements highlighted modern clean energy technologies, addressed operational challenges, showcased strategic innovations for carbon neutrality, and demonstrated the critical role of governmental support.

Appreciation of Modern Clean Energy Technology

The delegation's observations at O·PARK1 and SYSAV exemplified the application of advanced technologies in waste-to-energy processes. O·PARK1 utilizes anaerobic digestion to convert food waste into biogas, effectively turning organic waste into a valuable energy resource. Similarly, SYSAV employs advanced steam boilers that integrate waste management with energy production, enhancing efficiency. The visit to ABB Electrification in Sweden also highlighted automation's role in enhancing industrial productivity and sustainability. The use of robotic arms and optimized manufacturing processes at ABB underscores the potential for automation to improve the efficiency and reliability of energy-related production systems.

Both locales presented unique opportunities and challenges. O·PARK1's expansion plans promise increased waste processing capacity, while SYSAV's comprehensive waste treatment supports significant electricity and heat production. However, challenges such as odour control at O·PARK1 and air pollution at SYSAV necessitate continuous improvement and innovation in operational practices. ABB's integration of robotics in manufacturing demonstrates how automation can address the challenge of maintaining high-quality production standards in energy component manufacturing, which is essential for the reliability of energy systems.

Strategy for Achieving Carbon Neutrality

SYSAV's implementation of a carbon-capture pilot project represents a proactive approach to achieving carbon neutrality, highlighting the potential for existing plants to adapt to new environmental targets. This initiative complements the broader strategy of integrating renewable energy sources as seen in ABB's Mission to Zero project in Xiamen, which combines solar power, energy storage, and smart grid technologies to create a sustainable microgrid.

Government policies play a pivotal role in facilitating clean energy initiatives. The Hong Kong government's support through feed-in tariffs and waste management policies has been crucial for the operation and expansion of facilities like O·PARK1. In Sweden, municipal support for SYSAV and policy encouragement for renewable energy integration at ABB highlight how governmental actions can drive the adoption and implementation of sustainable practices.

The integration of IoT technology in operational monitoring, as seen at SYSAV, offers significant potential for broader application across the energy sector. Real-time data collection and analysis can lead to more responsive and efficient energy management systems. Similarly, ABB's focus on developing smart grid-compatible components can facilitate the broader adoption of distributed energy resources, enhancing the flexibility and resilience of the energy grid.

Conclusion

The insights gained from the Sweden delegation's visits illustrate the dynamic interplay between technology, policy, and market dynamics in shaping the future of the energy sector. The adoption of advanced waste-to-energy technologies, strategic use of automation in manufacturing, and proactive government policies collectively contribute to the development of sustainable and efficient energy systems. These initiatives not only address current energy and environmental challenges but also set a pathway towards a more sustainable and energy-efficient future. This comparative analysis between Hong Kong and Sweden provides valuable lessons that can inform global strategies in sustainable energy practices.

Insights on Sustainable Cities and Communities

The delegates aimed to appreciate the opportunities and challenges during the transformation from industrial areas to renowned urban sustainable districts, as well as to study the feasibility of implementing similar policies for green transport, waste management, and public area accessibility in HK, taking into account that the two places shared different patterns of activity participation, culture, modes of living, etc.

Green Transport

Our desktop study has come up with a significant finding that although the population in Sweden was higher than Hong Kong by around 1.4 times, the electric vehicles registration for Sweden was around 3.7 times higher (around 290 thousand for Sweden and around 78 thousand for Hong Kong). Nonetheless, there has been concerted effort in promoting the shifting from petrol to electric vehicles in recent years, given that the figure for electric cars registration was only 26 thousand in Hong Kong. One major reason for the high adoption of EVs in Sweden would be the financial incentives for purchases, which included taxes reduction and free parking. Throughout the delegation, effective transport infrastructure planning was also identified as a key factor which encouraged people to adopt green transport modes.

From the visit to New Slussen, which is Sweden's second largest public transport hub after Stockholm Central Station, the engineer had shared with the delegates about the traffic solution to keep up with the increasing number of public transport users, pedestrians and cyclists in pace with Stockholm's growth. Well-planned infrastructure including a new bridge accommodating public transport, bike lanes and wide sidewalks on both sides, and an additional bridge built alongside the underground railway bridge dedicated for pedestrians and cyclists, has made accessing green transport modes easier and more time effective.

Moreover, renting an electric scooter in Sweden is highly accessible and convenient, which only requires a smartphone application to scan and unlock the available scooters with a few taps. However, the implementation of electric scooters in Hong Kong will require time to formulate the licensing, regulations on vehicle usage, insurance coverage and safety standards to suit the denser built environment here.

Waste Management

From the numerical perspective, it is evident that Sweden has been performing extraordinary in terms of waste management. Only 1% of their waste went to landfill while 99% of them were being recycled or transformed into useful energy. With the scarce of lands and resources, it is pressing to have great leap forward for the waste treatment and management in Hong Kong. Through the local visit to the WEEE Park, the Technical Seminar on Automated Waste Collection System and the overseas visit to the Western Harbour, significant differences were observed between the waste management practices between Hong Kong and Sweden. There were valuable takeaways to consider.

Extensive waste management infrastructure including comprehensive sorted waste collection systems and recycling facilities were observed not only in our visit point Western Harbour, but all over Sweden. This well-established robust waste separation system enables Swedish citizens' active participation, which supports the segregation of different types of the waste from the source, making it feasible and efficient in turning waste into resources. Comparing to the situation in Hong Kong, while recycling efforts exist, the overall recycling rate is not high. The capacity and capability of recycling facilities are limited, resulting in its heavy reliance on the landfills for waste disposal. However, it is acknowledged Hong Kong, being a developed city, its unique geographical and population density pose limitation and challenges in the replication of Sweden's practices. Taking these lessons learnt back, it is essential to explore strategies for adapting the practices to suit and align with Hong Kong's specific circumstances.

It is also recognized from our visit that Sweden's success in waste management can be attributed to its strong culture of sustainability which put waste management strategy into key consideration in the development of districts. While it might be challenging to add in waste management infrastructure in densely developed area, it is easier and possible to achieve advancement in the redevelopment of old districts in Hong Kong. Relevant stakeholders shall take waste management strategy into consideration in the planning stage. It is believed that with collaborative efforts of raising public awareness, improving relevant infrastructure and implementing sustainable technologies, it is possible to bring significant improvement in waste management and contribute to a greener and more sustainable Hong Kong.

Accessibility to Public Areas

One of the delegation's foci, was on exploring the accessibility to public and green areas in various locations. Sweden's approach to improving accessibility stood out through sustainable measures and reducing reliance on private vehicles. The concept of mixed-use development within communities prioritizes easy access to public transportation, job opportunities, healthcare, and essential services. Integration of sustainable transportation options, such as bicycle parking spaces near public transit stations, promotes environmentally friendly modes of transportation. Sweden's "Complete Street" concept ensures well-separated walkways, traffic lanes, and dedicated bicycle paths, resulting in safer access for residents.

The delegation team visited several notable sites, including the New Slussen in Stockholm, the Green Roof Augustenborg in Malmö, the Western Harbour in Malmö, and Sege Park etc. The New Slussen project prioritizes climate change adaptation, water management, heritage preservation, and the creation of new public and green areas. The Green Roof Augustenborg showcases the benefits of green roofs in fostering biodiversity, improving air quality, and mitigating the urban heat island effect. The Western Harbour exemplifies sustainable urban development with its focus on green mobility, green living, waste treatment, and innovative systems. Sege Park demonstrates the concept of sharing in sustainability strategies, emphasizing mobility, community building, cultivation, circular energy consumption, and a culturally built environment.

The delegation team was inspired by Sweden's sustainable strategies, such as creating new public and green spaces, integrating historical buildings, and promoting inclusiveness through sharing-based solutions. These strategies could be considered in the development of new towns in Hong Kong, contributing to a sustainable and livable urban environment. However, implementing these practices in Hong Kong would require comprehensive planning, stakeholder involvement, and policy support. It is important to tailor these strategies to suit Hong Kong's unique context and address the specific needs and challenges of the city.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Conclusion

Our world is currently experiencing a rapid evolution propelled by the accelerated pace of technological advancements and the urgent global imperative of sustainability.

The world's population is increasingly concentrated in cities, placing enormous strain on infrastructure, resources, and ecosystems. Urban areas are grappling with issues such as overcrowding, inadequate housing, increased energy consumption, and transportation congestion. Balancing the needs of a growing urban population while minimizing the environmental impact is a complex task.

The depletion of natural resources is the result. Unsustainable production patterns and consumerism lead to the overexploitation of finite resources. This not only threatens the delicate balance of ecosystems but also jeopardizes the well-being and livelihoods of communities that rely on these resources.

Climate change presents a formidable challenge that demands immediate attention. Rising global temperatures, extreme weather events, and sea-level rise are already impacting communities worldwide. The need to mitigate greenhouse gas emissions and adapt to a changing climate is paramount.

In addition to environmental challenges, social and economic sustainability must also be addressed. Rising inequality, social exclusion, and poverty are persistent issues that undermine the well-being and stability of societies. Fostering a sense of community, cultural diversity, and social cohesion contributes to the overall resilience and vibrancy of cities.

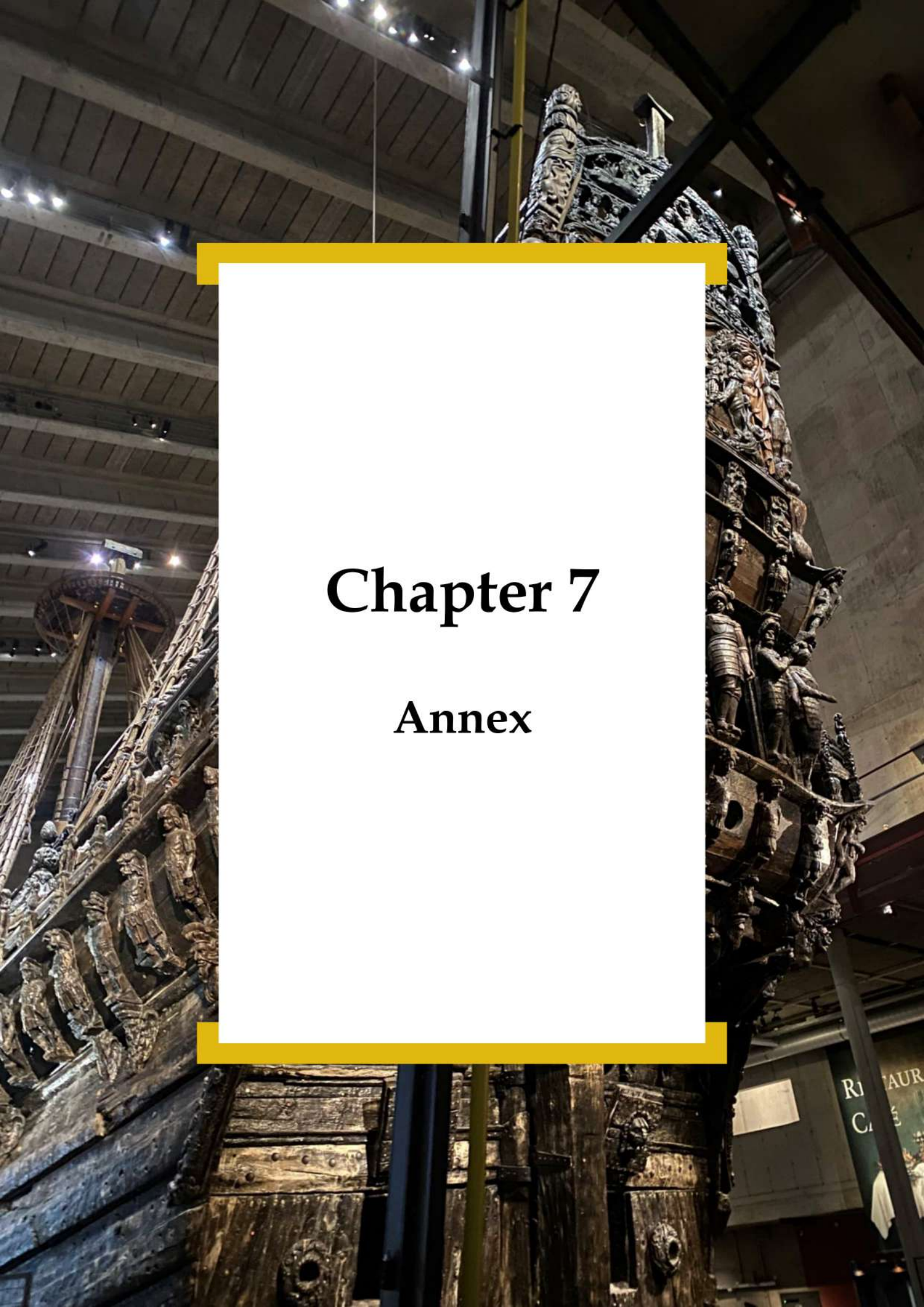
The Overseas Delegation 2024 to Sweden under the theme of "Mind-Mapping Sustainable City" has provided valuable insights and a clearer roadmap for future development. Sweden's achievements in building sustainable cities have illuminated the path forward and highlighted the attitudes necessary to create a better future.

One of the key takeaways from the delegation is the exploration of smart city initiatives in Sweden in achieving health and well-being. The integration of technology and data-driven solutions has enabled Swedish cities to optimize resource utilization, enhance mobility, and improve the overall efficiency of urban systems. From “Vision Zero” and intelligent transportation systems to digital platforms for citizen engagement, Sweden has demonstrated how technology can be harnessed to create more sustainable and liveable cities.

Furthermore, Sweden's emphasis on renewable energy sources and efficient resources management has set a benchmark for sustainable development. The delegation has witnessed firsthand the integration of clean energy technologies, such as solar power, waste-to-energy treatment and carbon capturing, into urban infrastructure. The commitment to reducing carbon emissions and transitioning to a low-carbon economy has not only mitigated the environmental impact but has also created new economic opportunities and improved the quality of life for residents.

Another notable aspect of our delegation is the importance of holistic planning and integration of various elements in creating sustainable cities. Sweden has successfully implemented a comprehensive approach that considers not only environmental aspects but also social and economic factors. The concept of mind-mapping, which involves visualizing and connecting ideas, has been instrumental in this process. By encouraging collaboration and cross-disciplinary thinking, mind-mapping has allowed Swedish cities to develop innovative solutions to complex urban challenges.

The future of urban development lies in embracing innovative ideas and adopting a forward-thinking mindset. The delegation has shown us that sustainable cities are not just a utopian vision but an achievable reality. By leveraging the knowledge gained from this visit, young engineers can chart a course for the future development of their own cities. Together, we can pave the way for the development of sustainable cities that prioritize the well-being of both current and future generations. Let us seize this opportunity to create vibrant, liveable, and resilient cities that serve as models for a sustainable future.



Chapter 7

Annex

Ir Dr Barry C H LEE

President, the HKIE

Ir Dr Barry Lee is a professional engineer specializing in mechanical, building services, environmental, chemical and energy disciplines. He has 4 years of experience in operation of power plant, 2 years of experience in vocational training and over 30 years of hands-on experience in the design, construction, operation and maintenance of energy, environmental facilities and infrastructural development projects which involved the application of engineering knowledge and collaboration with professional engineers across a wide spectrum of engineering disciplines. Ir Dr Lee is currently the Chief Executive Officer of Associated engineers, Limited overseeing the overall management of this multidisciplinary engineering company.

He has been actively serving various learned societies, universities' advisory committees and government advisory bodies for more than 20 years.

Ir Eric S C MA

Senior Vice President, the HKIE

Ir Ma is an Executive Director and Chief Operating Officer of New World Development Company Limited. Before that, he was an Executive Director and CEO of NWS Holdings Limited. Ir Ma was the Acting CEO of Hong Kong-Shenzhen Innovation and Technology Park Limited and Principal Consultant of the Hong Kong Science & Technology Parks Corporation. Ir Ma was previously the Secretary for Development of the HKSAR Government, overseeing policy areas ranging from urban planning to heritage conservation, and addressing the supply-demand imbalance in land and housing. He was Executive Vice President, Civil & Infrastructure, Asia Pacific, of AECOM prior to joining the HKSAR Government.

Ir Alice K T CHOW

Vice President, the HKIE

Ir Chow is an Arup Fellow who leads Arup's East Asia Advisory Services. She is a Registered Professional Engineer in Civil and Structural disciplines. She leads dedicated teams of multidisciplinary financial & engineering professionals executing complex projects, large & small, all-over East Asia, including Mainland China, Hong Kong, Mongolia, Vietnam, Philippines, Korea, Taiwan and Thailand.

As a Vice President of HKIE, Ir Chow is also an active member with various appeal board committees and professional associations such as project management, engineering, healthcare, facility management serving the engineering profession and the Hong Kong community.

Ir Prof Frank F CHAN

Vice President, the HKIE

Ir Prof Chan has served in various key positions. He is a Hong Kong Deputy to the National People's Congress, a member of the Council and the Court of the University of Hong Kong, an Honorary Advisor of the Hong Kong Federation of Electrical and Mechanical Contractors and the Hong Kong Civil Servants General Union. He is the former Secretary for Transport and Housing, and prior to that, the former Director of Electrical and Mechanical Services.

Ir Prof Chan received his Bachelor in Science (Engineering) and Master in Business Management from the University of Hong Kong, and Master in Medical Physics from the University of Aberdeen, United Kingdom.

Ir Edmund K H LEUNG

Past President, the HKIE

Edmund Leung is a long time Past President of the HKIE but remains passionate in nurturing young engineers.

He graduated as a mechanical engineer and started as a power station engineer, but moved to the construction industry, having led many transport infrastructure projects in planning, design and construction activities over the last 4 decades, including various stages of the Hong Kong Mass Transit Railway System and others in the region, and many road and tunnel projects in Hong Kong.

He was active with public services, and have served the Town Planning Board, Airport Authority Hong Kong, Energy Advisory Committee. He is currently the Chairman of the Drinking Water Safety Advisory Committee.

He was awarded OBE in 1996, JP in 1997 and SBS in 2010.

Ir Dr Otto L T POON BBS, OBE

Past President, the HKIE

Ir Dr Poon is a Chartered Engineer with over 50 years of E&M engineering experience. He is the Founder and Director of ATAL Engineering Group. Over the years, he has been participating in public services both to the community and the engineering profession. He is a Past President of the HKIE, Immediate Past President of Hong Kong Academy of Engineering Sciences, and Life President of Hong Kong Federation of Electrical and Mechanical Contractors. Presently, he serves as the Honorary President of Hong Kong Fire Services officers Association, Member of Advisory Committee of of the Department of Electrical & Electronic Engineering of HKU, Member of the International Advisory Committee of RISUD of PolyU and Member of the International Advisory Committee of SCRI of PolyU.

Ir Peter C K CHAK

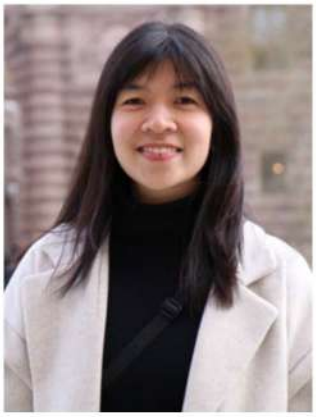
Chairman, CPDC, the HKIE

Ir CHAK had worked in the Hong Kong and China Gas Company Limited with over 40 years of gas engineering experience. He is a Fellow of the HKIE and IGEM (Institution of Gas Engineers and Managers). He actively serves the Hong Kong community and engineering profession. He is currently the Chairman of Continuing Professional Development Committee of the HKIE, Council Member of IGEM and member of IVE Engineering Advisory Board. He was a Council Member of the HKIE and Chairman of MIS Division, MIS Discipline and Gas & Energy Division. He was a Departmental Advisory Committee member and an Industrial Advisor of City University of HK Department of Systems Engineering and Engineering Management. Also, he is a member of a few Government committees.

Ir T K CHEUNG

Mechanical Engineering
Delegation Chairman
Chairman, YMC, the HKIE

T.K. obtained his Bachelor degree from the Hong Kong Polytechnic University, a Master degree from The University of Hong Kong and a Juris Doctor degree from The Chinese University of Hong Kong. He is currently the Senior Engineer of the CLP Power HK Ltd. He is responsible for the design management on the construction of the combined cycle gas turbine in the Black Point Power Station. He has also been actively participating and contributing to the engineering industry. He is now a council member of the HKIE and the Chairman of the HKIE Young Members Committee.



Ms Keiko KAM

Mechanical Engineering
Delegation Manager
Deputy Chairman, YMC, the HKIE

A performance-driven and versatile engineering professional with Bachelor of Engineering in Mechanical Engineering at the University of Hong Kong and Master of Science in High Performance Building at the Hong Kong Polytechnic University, Keiko is adept at creating innovative and cost-efficient mechanical engineering design in infrastructure projects. She possesses superior problem-solving and analytical skills and ability to implement creative and targeted solutions as the Senior Engineer in WSP (Asia) Limited.

Passionate and experienced in serving the HKIE and the engineering industry, Keiko has exceptional communication and interpersonal skills in cultivating solid business relationships. A dedicated team player, she can effectively coordinate with management, senior members and peers to achieve goals.

Ir Henry CHAN

Electrical Engineering
Deputy Manager

Henry received his BEng in Electrical Engineering and BBA Major in Management from The Hong Kong Polytechnic University and pursued further study in law to obtain LLB from Manchester Metropolitan University. He started his career in CLP Power Hong Kong Ltd and has acquired a wide spread of experience in projects relating transmission land cable and overhead line (OHL) system in Hong Kong and Shenzhen, ranging from inception, construction to commissioning. He took lead to formulate overall business strategy for Unmanned Aircrafts System (UAS) technology introduction to inspect OHL network. He is currently Senior Manager – Systems Engineering to provide various Power Quality (PQ) services to customers.

As a delegate, he aims at exploring the Sweden's recipe of success in achieving clean energy affordable and sharing our good engineering practice in large-scale construction projects to Overseas engineers to promote Hong Kong. He believes effective teamwork empowers us to reach our goals and have far more impact.

Mr Tommy CHAN

Fire Engineering
Deputy Manager

Tommy obtained his MSc in Fire and Safety Engineering from The Hong Kong Polytechnic University and his BEng in Building Services Engineering from City University of Hong Kong. He currently works as an Engineer at Arup, specifically in the fire engineering team. He has been involved in various type of projects in different locations in Asia, offering services such as fire modeling, fire load assessment, performance-based design, fire safety review. In the 2018/19 session, he joined HKIE-YMC as a helper and is now serving as the Honorary Treasurer. Tommy has represented Hong Kong's young engineers at the Young Engineers of the ASEAN Federation of Engineering Organization Conference in Bali, 2023. He believes that being part of the delegation will provide him with invaluable knowledge and experience, enhancing his exposure to engineering.

Mr Winson LEUNG

Civil Engineering
Secretary

Upon conferment of bachelor's degree in Civil Engineering at the University of Hong Kong, Winson joined MTR Corporation Limited as a Graduate Engineer with attachment to various departments and exposure to corporate events. Winson is currently focusing on the construction of Kwu Tung Station on the East Rail Line, which requires meticulous planning and execution of the works to avoid disruption to the existing railway operations. In pursuit of professional development, Winson anticipates to obtain master's degree in Civil Infrastructural Engineering and Management at the Hong Kong University of Science and Technology with concentration in Transportation Engineering by the end of 2024.

Winson aspires to broaden his knowledge in overseas engineering practices and exchange ideas with the community through the delegation. Winson believes that a profound understanding of the local culture helps producing efficient engineering solutions for the society.

Mr Martin LAM

Electronic and Electrical Engineering
Treasurer

Martin is a highly qualified professional with two Master's degrees – an MEng Electronics & Electrical Engineering with Management from the University of Bristol, and MSc in Building Surveying from UCEM. Currently, he is making significant contributions in his role as an Engineer secondee at Carrier Hong Kong, where he is a key part of the Building Controls & Integrated Solutions Department. His responsibilities include overseeing the Building Management System of the HASSC project. In addition to his primary role, he is the event coordinator for the HKIE-YMC for the year 2023-24.

Martin hopes to learn and exchange knowledge about Sweden's best practices in engineering and building management through this delegation. The goal is to use this experience to further improve the standards of engineering practices in Hong Kong.

Mr Benny CHEUNG

Electronics Engineering
Local Liaison Officer

Benny obtained his BEng in Electrical Engineering (EE) and MSc in Electrical and Electronic Engineering (EEE) from The University of Hong Kong in 2018 and 2023, respectively. He is currently an engineer at The Hongkong Electric Co. Ltd., working within the computer hardware section of the Technical Services Department, Transmission and Distribution Division.

Benny's role is pivotal in advancing the power grid, focusing on cutting-edge technologies such as Substation Automation Systems (SAS), Wide Area Monitoring Systems (WASM), Low Voltage (LV) automation, and the Internet of Things (IoT). His expertise in these areas positions him at the forefront of power grid innovation, driving efficiency and reliability in energy distribution.

With a strong foundation in both theoretical knowledge and practical application, Benny is committed to leveraging his skills to contribute to the future of smart grid technology and sustainable energy solutions.

Ms Gloria HO

Civil Engineering
Local Liaison Officer

Gloria graduated from the University of Hong Kong with a Bachelor of Engineering in Civil Engineering. She currently works as an Assistant Engineer in the Infrastructure Team at WSP (Asia) Limited. She mainly focuses on hydraulic and civil projects. In the last year, she acts as a supporting role in mainly Water Supplies Department and Drainage Service Department's projects.

Ir Helen CHONG

Structural Engineering
Overseas Liaison Officer

Helen obtained her Master's degree and Bachelor's degree in Structural Engineering at the University of Hong Kong. She acquired professional qualifications in structural, environmental and contractual aspects. She is currently a Project Engineer in the Capital Works Construction Department of Airport Authority Hong Kong, responsible for project and design management, design review and quality control to ensure successful execution and delivery of projects. In her years of practice in the industry, Helen has involved proactively in trending development such as digital transformation and MIC design.

Through the delegation, Helen wishes to gain wider exposure to technological advancement and be inspired through sharing and discussion with overseas engineers and experts. Helen believes this valuable experience would enrich her insight into shaping a better and more sustainable community.

Ms Fiona LEE

Building Services Engineering
Overseas Liaison Officer

Fiona obtained the Bachelor of Engineering in Mechanical Engineering and subsequently embarked on a further academic pursuit in the Master of Science in Engineering (Building Services Engineering) at the University of Hong Kong. She currently holds the position of Assistant Engineer in the Development and Construction Division of Hong Kong Housing Authority, where her role encompasses active involvement in the building services system design and construction of public housing developments.

In addition to her desire to delve into the building services system and its application of sustainable measures in Swedish infrastructures, Fiona also aspires to expand her expertise by acquiring knowledge in diverse engineering fields through Sweden's engineering practices.

Ms Winky POON

Civil Engineering
Overseas Liaison Officer

Winky graduated from the University College London with a Bachelor's degree in Civil Engineering and she obtained her Master's degree in Environmental Engineering from the Imperial College London. Currently working in the Airport Authority Hong Kong as a graduate engineer in the Technical Services Infrastructure department, she has gained broad exposure to sustainable airport design, cutting-edge technologies and a wide spectrum of mega-scale projects, from the design of airfield pavement to the infrastructure provision for new land development.

Winky wishes to seize upon this overseas delegation as an opportunity to delve into the evolving landscape of low-carbon economy in Sweden. She believes the insights could help promote a harmonic design vision in Hong Kong that advocates equilibrium between environmental sustainability, commercial profit, and community engagement.

Mr Kelvin LEUNG

Civil Engineering
Logistics Officer

Kelvin completed his Bachelor's degree in Civil Engineering at the Technological and Higher Education Institute of Hong Kong (THEi). He is a chartered engineer in civil engineering and currently works as an Engineer in the Infrastructure Team at WSP (Asia) Limited. With five years of professional experience, Kelvin has developed expertise in all aspects of Hong Kong's infrastructure sector. Kelvin is also an active participant in various professional institutes in Hong Kong.

As part of this delegation, Kelvin looks forward to exploring the sustainable development policies and practical applications of environmental and energy businesses in Sweden, while also considering the preservation of traditional industries. He is also keen on engaging in deep exchanges with professionals from different engineering disciplines in both Sweden and Hong Kong. Through these interactions, Kelvin hopes to contribute to shaping a better planet through enhanced professional communication and collaboration.

Mr Thomas NG

Electrical Engineering
Logistics Officer

Thomas completed his Bachelor's degree in Electrical Engineering at the University of Hong Kong and is currently pursuing a Master's degree in the same field, focusing on power systems. After graduating, he joined MTR Corporation Limited as a graduate engineer, where he rotated through various sectors of railway engineering, establishing a comprehensive foundation. Currently, he is involved in daily rolling stock maintenance and innovation projects in Rolling Stock Maintenance Department.

During his delegation visit to Sweden, Thomas explored the energy applications and infrastructures that characterize Sweden's approach to sustainable energy solutions. This visit provided him with a dual perspective on the technical advancements in energy systems and the cultural commitment to sustainability prevalent in Sweden. This experience has broadened his understanding of integrating technical solutions within a cultural context to achieve greater sustainability in public infrastructure projects.

Mr Alvan LAM

Traffic & Transportation Engineering
Publication Officer

After obtaining a Bachelor of Engineering in Civil Engineering from McGill University, Alvan has gained extensive experience in a wide spectrum of transportation planning and engineering projects, from initial feasibility studies through to project deployment with a focus on sustainability, safety, and innovation. He currently works at Ove Arup & Partners Hong Kong Limited where he is responsible for carrying out active transportation and walkability studies, public transportation design and assessments, and the transportation planning and engineering for various private and institutional developments.

As a member of this delegation, Alvan aspires to further develop his acumen for sustainable transportation planning through engagement with engineers and designers in Sweden. He believes this enriching experience will be vital in shaping a more circular, sustainable, and equitable future for the transportation network of Hong Kong.

Mr Bryan LAM

Civil Engineering
Publication Officer

Bryan graduated from the University of Hong Kong with a Bachelor of Engineering in Civil Engineering, and is currently pursuing a part-time degree of Master of Science in Civil Infrastructural and Engineering Management at the Hong Kong University of Science and Technology. He currently works as a Civil Engineering Graduate at the Major Works Project Management Office of the Highways Department, where he is involved in overseeing the construction of the Central Kowloon Route megaproject.

Bryan aims to broaden his horizon to sustainable and innovative engineering practices, through engaging in discussions with Nordic engineering professionals and witnessing ingenuity during site visits. With the rise in NDAs in Hong Kong providing opportunities for urban transformation, he aspires to apply such knowledge as an infrastructural project manager, with a refined sense of engineering judgement and emphasis on sustainability.

Ms Rosaria TAM

Mechanical Engineering
Publication Officer

Rosaria is currently an undergraduate student studying Mechanical Engineering at the University of Hong Kong. She joined the HKIE Student Chapter-HKU as an ordinary member in session 2022/2023 and is now the vice chairlady in session 2023/24. Rosaria is eager to learn about Sweden's policies on sustainable development and innovative approaches implemented, as well as to delve deeper into how engineering can contribute to a greener and more sustainable future through the delegation.

T K CHEUNG

Having participated in the HKIE-YMC delegation first as a delegate and then as a delegation manager last year, I was deeply honored to take on the mantle of chairing in this year's expedition to Sweden. The transformation from follower to guide, manager to catalyst, has been a humbling and rewarding experience.

The friendships forged, the challenges overcome, and the moments of joy have woven an immensely rewarding tapestry of my lifelong memories. This year's "Enlightening beyond our Horizon" theme pushed us to embrace new perspectives, cultivate innovative ideas, and redefine the boundaries of our profession.

The passion and dedication of our fellow delegates have truly inspired me. Witnessing their unwavering commitment to expanding horizons and emerging as pioneers of sustainable development has been profound. The insights and personal growth they've gained will undoubtedly propel our HK young engineers as visionaries shaping the cities of tomorrow.

Reflecting on this remarkable expedition, I'm filled with gratitude and pride. The camaraderie, intellectual exchanges, and shared moments of triumphs have left an indelible mark on my heart. This delegation has not only enriched our expertise, but fostered a spirit of unity, innovation, and relentless pursuit of knowledge to guide our future endeavors.

Our time in Sweden provided a unique opportunity to witness firsthand the country's commitment to sustainable engineering practices and its impact on the built environment.

Sweden's leadership in sustainability was evident through the seamless integration of renewable energy sources, energy-efficient designs, and waste reduction strategies in engineering projects. Collaborating with Swedish engineers emphasized the importance of interdisciplinary teamwork. We learned that successful sustainable development requires engaging experts from various fields, ensuring that projects meet social, economic, and environmental needs. This interdisciplinary approach was a key driver in Sweden's success in sustainable engineering.

Our interactions with the Swedish engineering community fostered knowledge exchange and highlighted the significance of global collaboration. Engaging seminars and workshops provided insights into innovative sustainable practices, inspiring us to integrate these principles into our future projects.

Personally, this delegation deepened my understanding of sustainable engineering and reinforced the need for continued learning and adaptation. As the Delegation Manager, I realized the importance of disseminating these insights within us to drive positive change.

Keiko KAM

Henry CHAN

I am honoured to be a first timer to join the HKIE-YMC Overseas Delegation with Ir Dr Barry LEE, Ir Prof Frank CHAN and 15 passionate delegates. We share same vision and mission to inspire and influence the global community of young professional engineers, supporting and promoting technology innovation to meet the needs of society. I cherish the time in the delegation to network with others and appreciate others to better myself.

Through the desktop review of the policies and practices, SDG strategies in respect of innovation and technology in Hong Kong and Sweden, we have identified top three SDGs and relevant technology that could catalyse the achievement of our goals. The itinerary is designed to meet different leading companies in Sweden and understand how to construct a mind-mapping sustainable city from Sweden's experiences and good practice. It is a very structured programme to appreciate Sweden working culture and SDG strategies and the insights are too valuable to advance Hong Kong to be a leading role in engineering industry.

Tommy CHAN

I truly appreciate the opportunity to join this year's Overseas Delegation organized by HKIE-YMC. Sweden is one of the countries devoted to making significant contributions in achieving the UNSDGs by 2030. During the delegation, I participated in technical visits and seminars to learn how Sweden is moving toward a sustainable city, with a focus on Good Health and Well-being (Goal 3), Affordable and Clean Energy (Goal 7), and Sustainable Cities and Communities (Goal 11).

My two most memorable visits were to SYSAV and Zenseact Lab. SYSAV is one of the largest and most advanced waste-to-energy plants in Europe. Their facility not only solves the landfill problem but also provides energy for the citizens to use. The Hong Kong Shek Kwu Chau I-Park is also a Waste-to-Energy Facility of the future, and hopefully, it can improve our environment. Zenseact Lab is developing autonomous driving technology using LiDAR and cameras. Although they are still in the development stage, it is incredibly exciting to see these new technologies and products that can help improve daily human life. I would love to try their products when they become available in the market. I also gained valuable experience by directly interacting and sharing experiences with professionals and engineers in Sweden. I was able to gain insights and learn concepts that I would not have obtained without the delegation.

I would like to express my gratitude to our advisors and delegates for your support and contribution in making this delegation successful. I also hope that the knowledge and experience we gained from Sweden can be shared with other members through this delegation report, ultimately making Hong Kong a better place to live.

Winson LEUNG

Sweden is a pioneer of sustainable development, exemplified by its assertive objectives to strengthen environmental protection and improve living conditions of the community. Having delved into various development projects and professional institutions, I am enlightened by the urban planning concepts and engineering practices adopted prudently in Sweden. I am particularly impressed by the redevelopment of Slussen from a traffic junction of road and marine traffic, to a dynamic social meeting place with retail, open spaces and amenities. Visits to several Sweden-based corporations such as ABB, Volvo Cars and Zenseact have also inspired me with innovative ideas to conserve energy, achieve carbon neutrality and uphold traffic safety.

I am delighted to be part of the delegation team to engage in multiple local and overseas events and share insights with the community through the delegation trip and publication. It was also an intriguing experience to explore Sweden together with two advisors.

Martin LAM

As the HKIE-YMC delegation's treasurer to Sweden, I was truly inspired by their innovative and sustainable engineering and building management practices. The focus on UNSDGs, particularly Goal 11, resonated with my commitment to inclusivity, safety, resilience, and sustainability as a financial steward.

The interaction with bright young engineers, both local and foreign, was a rewarding experience. This exchange of ideas and experiences expanded my horizons and reinforced my commitment to sustainable practices. This trip has provided me with new perspectives and insights that will undoubtedly influence my future work in sustainable financial stewardship.

I feel incredibly thankful to have been part of this delegation and am excited to apply the knowledge gained to elevate the standard of engineering practices in Hong Kong.

Having the chance to observe and learn from Sweden's advanced and sustainable engineering practices has been priceless. I am convinced that these practices can serve as a benchmark for Hong Kong, motivating us to aim for higher sustainability in our engineering and building management sectors.

Benny CHEUNG

As an engineer with a focus on power grid advancement and sustainability, my participation in the delegation was both enlightening and transformative. This delegation provided a unique opportunity to explore innovative urban development strategies that align closely with my professional interests and the broader goals of sustainable development.

The delegation highlighted Sweden's holistic urban planning approaches, which prioritize sustainability and resilience. These experiences underscored the importance of interconnected urban systems, where energy efficiency, waste reduction, and smart technology integration work in synergy in an integrated approach that considers the environmental, social, and economic dimensions. This holistic perspective is crucial for my role in advancing Hong Kong's power grid, ensuring that our infrastructure developments are aligned with broader urban sustainability goals.

The concept of "Mind-mapping Sustainable City" has provided a valuable framework for visualizing and connecting these complex interdependencies. In my professional capacity, I am now more equipped to advocate for and implement strategies that align with the SDGs, leveraging the knowledge gained from this delegation to foster sustainable energy solutions, enhance urban resilience, and contribute to the creation of healthier, more inclusive communities in Hong Kong.

This experience has been a pivotal moment in my career, broadening my perspective on the potential of sustainable urban development. The innovative strategies and best practices observed in Sweden will undoubtedly influence my work and aspirations, driving me towards contributing to the realization of resilient, inclusive, and prosperous cities of the future.

The delegation was a mind-blowing journey.

Sweden has long been renowned for its ambitious goals for sustainability such as going fossil free by 2045 and replaced by 100 per cent renewable energy.

Throughout the ten days, we were able to visit the local private and public companies, interact with the locals and walk around the cities. I was most fascinated by the Amager Bakke, a combined heat and power waste - to energy plant and recreational facility. It is a successful case of the mixed use of the infrastructure which attracts numerous of locals to the skiing slope there.

Apart from the technical side, it was a great opportunity to connect with the young engineering from diverse background, sharing the exploring the knowledge that we gain from our daily job.

Gloria HO

Helen CHONG

Sweden is widely known by its remarkable success in driving sustainable development. During this Overseas Delegation, we were fortunate to visit a range of public and private organizations and companies as well as to interact with the local engineering communities. In the pursing of well-beings, we have witnessed the technological advancement for road safety and the innovative framework for the life science industry. To overcome issues of scarce land and energy, we have appreciated the waste to energy technology which transform worthless object into something valuable. As vital individuals of the community, we have gained insight on forwarding-looking urban planning, efficient green infrastructure and significance of public engagement.

Overall, the local visits have enhanced my understanding on where Hong Kong is currently at in terms of sustainable development while the oversea delegation trip has expanded my horizon significantly and inspire me on how engineers could be one of the key contributors in fostering sustainable urban development and enhancing the quality of life. I would definitely engrave this enriching experience in my heart and strive to bring positive changes to Hong Kong as an Engineer.

Throughout the 2024 Overseas Delegation, I acquainted myself in Hong Kong's latest engineering practices and embarked on the journey to Sweden to gain profound insights into its sustainable engineering practices.

During the technical visits in Hong Kong, I had the opportunity to appreciate various engineering practices that aligned seamlessly with government's policy and demonstrated their active participation in committing the UNSDGs. Moreover, these visits deepened my understanding with the cutting-edge engineering practices in various disciplines. Building upon the insights gained from Hong Kong, the knowledge-sharing sessions and exchange with professionals in Sweden broadened my perspective on the distinction in sustainable engineering practices. Considerations such as environmental policies, geotechnical considerations, and regional development planning played pivotal roles in shaping these practices. These exchanges inspired me to explore the wide range of practical applications that the practices could offer within Hong Kong.

I would like to express my sincerest gratitude to the advisors and fellow delegates for their invaluable support. The enlightening and pleasurable exchanges we had throughout the year had greatly enhanced my engineering journey. I eagerly anticipate future collaborations and the opportunity to work together towards the common goal of shaping a more sustainable world.

Fiona LEE

Winky POON

As a graduate engineer with a strong passion for environmental sustainability, I believe that shaping a low carbon future is a commitment requiring long-term and consistent action by individuals. It was an eye-opening experience to see how Sweden has manifested a sustainable future by empowering citizens to make their own green choices – from using bikes or electric scooters for daily commute to separating recyclable materials at designated bins for paper, plastic, glass, etc.

While sustainability has rapidly become an indispensable part of our lives, there is still work to explore about the true social cost of carbon reduction, as it is yet to be known. I am incredibly honoured to be part of the team to exchange insights with the Nordic professionals, and I look forward to collaborating with the engineering community to deliver designs for Hong Kong that harmonize the space with nature.

I was also captivated by Sweden's well-preserved artistic medieval architecture. The colourful buildings and cobblestone streets of the old town Gamla Stan, located in the heart of Stockholm, has made me step away from the bustling city and appreciate the happiness in the simplest moments.

Deepest gratitude to the advisors and fellow delegates for the thought-provoking sharing on sustainable future and the exceptional teamwork which has made this delegation truly remarkable.

Participating in the Sweden Delegation organized by HKIE-YMC was a truly transformative experience for me. Not only did I gain invaluable insights into sustainable practices in Sweden, but I also formed meaningful friendships with the other delegates.

Throughout the delegation, I visited various organisations and sites that focused on safe traffic planning, green and public areas development. It was fascinating to witness how Sweden integrates traditional industries and heritage into the modern era. The waste management systems and cycling culture, in particular, left a lasting impression on me. I was able to learn from these sustainable examples and apply them to my daily life and contribute to a greener and more sustainable future.

Moreover, it was an honour to meet and connect with young professionals from diverse disciplines during the delegation. Engaging in discussions and sharing our experiences and perspectives further enriched the whole experience.

I am excited to apply the knowledge and insights gained from this delegation to my professional work and personal life, and to continue fostering meaningful connections with fellow engineers who share the same vision. Together, we can drive positive change and create a more sustainable and resilient world.

Kelvin LEUNG

Thomas NG

Reflecting on the HKIE Sweden delegation, I am significantly enriched by the insights into Sweden's advanced industrial automation and sustainability practices. The visits to ABB and Volvo factories were particularly impactful, where I observed automation and robotic arms streamline manufacturing processes effectively, thereby enhancing efficiency and precision while reducing the need for manual labor. This exposure not only broadened my understanding of modern manufacturing but also showcased the potential for these technologies to be integrated into other industries.

Equally impressive was Sweden's approach to sustainability, especially their waste-to-energy initiatives. This method exemplifies how societies can transform waste management into a productive and environmentally friendly process, contributing significantly to energy production and reducing landfill usage.

Throughout the delegation, we engaged in numerous discussions that highlighted the importance of integrating sustainable practices into all aspects of engineering and urban planning. These interactions with both local professionals and fellow delegates were invaluable, providing a platform for knowledge exchange and fostering a collaborative spirit.

I am immensely grateful to all the advisors and delegates whose expertise and perspectives made this trip not only possible but also a profound learning experience. The success of this delegation owes much to their dedication and the collective effort of every member involved. I look forward to applying the insights gained to contribute to sustainable and innovative practices in our future projects.

I truly feel blessed to have been a part of the 2024 overseas delegation to Sweden. From planning, to local visits, to the excitement when flying over to Sweden, and finally returning to Hong Kong, the entire adventure has been filled with learning, laughter and friendship.

As a world-renowned leader in sustainability and safety, the technical and cultural visits in Sweden were eye-opening experiences into the amazing outcomes of prioritizing sustainability in all aspects of the city. From Nya Slussen in Stockholm, to Volvo and Zenseact in Gothenburg, and finally to Sege Park in Malmö, I witnessed how Swedish engineers, planners, and designers drove innovation, built open dialogue, and created a greener future for all stakeholders. Their passion and dedication to serving the public good is something that deeply resounds with me as a custodian of the built environment of tomorrow. I hope to incorporate this holistic and people-centric viewpoint throughout my work, and build a Hong Kong that is enjoyable, sustainable, and resilient.

A heartfelt thank you goes out to the delegation team, our advisors, and the HKIE for this unforgettable journey. This chapter has been a highlight in my engineering life, and I look forward to shaping a better, more sustainable world together.

Alvan LAM

Bryan LAM

Sweden was indeed a global trailblazer of sustainability in multiple disciplines, from implementing renewable energy on a massive scale, to sculpting its urban landscape in regards with sustainable lifestyles. The concurrency of Sweden's investments/commitments to sustainability since the 1973 oil crisis, its economic prosperity and social wellbeing, presents an excellent example of how countries cater should develop without sacrificing needs of the future. Throughout all visits, my favorite visit point was the Slussen redevelopment, which demonstrates the role of infrastructural development in providing climate resilience, increasing transport capacity and providing recreational spaces.

Through my conversation with both locals and professionals, I also took note of how much Sweden's success was founded upon the mutual support between the public and engineers. In my personal view, for Hong Kong to also succeed in the upcoming urban transformation, the future generation of engineers in Hong Kong must 1) become trust-worthy leaders with strong integrity, 2) be competent in multiple disciplines but expertised in one, and 3) develop empathy to prevent overriding the city's future well-being with short-term demands.

During our delegation to Sweden, I had the incredible opportunity to witness firsthand the impressive strides the country has made towards achieving sustainable development goals. Two particular highlights that left a lasting impact on me were the Volvo Cars Factory and the waste-to-energy plant in Sysav.

As a car lover, the Volvo Cars Factory does not only demonstrate the whole car manufacturing process, but it also showcased Sweden's commitment to sustainability. From the use of renewable materials in car production to the implementation of energy-efficient manufacturing techniques, Volvo demonstrated their dedication to reducing the environmental footprint of their vehicles. The waste-to-energy plant in Sysav was another remarkable example of Sweden's dedication to sustainable development. The plant utilized advanced technologies to convert waste into clean energy, reducing the reliance on fossil fuels and minimizing landfill waste. These experiences highlighted the importance of integrating sustainable practices into various sectors, from manufacturing to waste management.

Sweden's commitment to innovation and environmental stewardship was evident throughout our visit, and it reinforced my belief that sustainable development is achievable through technological advancements and responsible decision-making. As I reflect on our delegation to Sweden, I am filled with inspiration and motivation to contribute to sustainable development in my own field of study. I am eager to apply the knowledge and insights gained from this experience to drive positive change and contribute towards achieving the Sustainable Development Goals in my future endeavors.

Rosaria TAM

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Acronyms

AD	Anaerobic Digestion
AFH	Age-Friendly Home
ASEAN	Association of Southeast Asian Nations
AVEH	Autonomous Vehicles
AWCS	Automated Waste Collection System
BEng	Bachelor of Engineering
BESS	Battery Energy Storage System
BIM	Building Information Modelling
CCS	Carbon-capture System
CEO	Chief Executive Officer
CHP	Combined Heat and Power
CLP	China Light and Power Company, Limited
CPDC	Continuing Professional Development Committee
CRT	Cathode Ray Tube
DER	Distributed Energy Resources
DfMA	Design for Manufacturing and Assembly
EE	Electrical Engineering
EEE	Electrical and Electronic Engineering
EV	Electric Vehicle
EPD	Environmental Protection Department
ERC	Hong Kong Elderly Resources Centre
HKIE	Hong Kong Institution of Engineers
HKSAR	Hong Kong Special Administrative Region
HKU	The University of Hong Kong
HV	High Voltage
HVAC	Heating, Ventilation, and Air Conditioning
ICT	Information and Communication Technology
IGEM	Institution of Gas Engineers and Managers
IoT	Internet of Things
IVE	Institute of Vocational Education
LiDAR	Light Detection and Ranging
LLB	Bachelor of Laws
MIS	Manufacturing, Industrial & Systems
MSc	Master of Science
MTR	Mass Transit Railway
NWS	New World Services
OHL	Overhead line
PQ	Power Quality
PV	Photovoltaic
SAS	Substation Automation Systems
SCADA	Supervisory Control and Data Acquisition
SDG	Sustainable Development Goal
SuDS	Sustainable Drainage System
SGR	Smart, Green and Resilient
SPA	Scalable Product Architecture
TD	Transport Department
THEi	Technical and Higher Education Institute of Hong Kong
UAP	Universal Accessibility Program
UCEM	University College of Estate Management
UN	United Nations
VTS	Vessel Traffic Services
V2V	Vehicle-to-vehicle
V2X	Vehicle-to-everything
WASHMS	Wind and Structural Health Monitoring System
WEEE	Waste Electrical and Electronic Equipment
WPRS	Producer Responsibility Scheme on Waste Electrical and Electronic Equipment
YMC	Young Members Committee

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