

Genervision Cape

Issue No. 16 | 04.2022

現正開放以下崗位

Positions Available

- ▶ 活動策劃員
Event Organizer
- ▶ 內容製作協調員
Content Production Coordinator
- ▶ 多媒體創意設計員
Multimedia Creative Designer
- ▶ 微信通訊助理
WeChat Communication Assistant



2022 核心成員招募 CORE TEAM RECRUITMENT



職位詳情 >>>
About the Positions

FEATURED ARTICLES

- 1 Earth Day 2022 SDGs Workshop
- 2 Introduction to SDG Framework Workshop
- 3 Earth Day Throwback: Going Beyond Green Consumption
- 4 What can Macao Learn from Neighbouring 'Smart Cities' to Forge a Path Forward?
- 5 Sustainable Procurement
- 6 Climate Change 101: Better Understand the Environmental Crisis
- 7 Extraordinary Ministerial Meeting of the Forum for Economic and Trade Co-operation between China and Portuguese-speaking Countries
- 8 Climate Change Impacts
- 9 Opportunities for Green Recovery

2022 Genervision House Core Team Recruitment: Let Us Promote Sustainable Development Together!

Are you interested in participating in social affairs and bringing positive impacts to our society's sustainable development? Are you also keen to accumulate work experience in fields related to sustainable development? Whether you are located in Macau, mainland China or overseas, we welcome like-minded and passionate individuals to create a space for community change together!

We are currently recruiting several positions. If you are interested to contribute to our organization and work by other means, we also welcome your application via email.

If you are interested, send us your CV to our mailbox (genervisionhouse@gmail.com). Our website provides further details of the positions. The roles are of a voluntary nature, which require certain amount of time commitment. We welcome you to join our team!

Past Events

Earth Day 2022 SDGs Workshop

To commemorate Earth Day's 52nd anniversary, Genervision House presented its signature SDGs workshop with a special twist under the theme of "Circular Flow: Earth Day" to the team members at Macao Water on the 20th of April. We explored how Macao Water contributes to the SDGs through their sustainability roadmap and actions, and shared Macao's general progress in achieving the SDGs as well as the actions that we can take, as individuals, to invest in our environment and future.



We also heard from representatives of Macau Special Olympics (MSO), who shared their experiences on the "coffee art" latte internship program - a collaboration between Macao Water and MSO which offers trainees the opportunity to practice making tea and snacks. We wrapped up the workshop with yummy treats made by the MSO trainees.

As one of the critical infrastructure suppliers in Macau, Macao Water has always stayed committed to integrating sustainability into their business operations. Not only are they diligent in providing high-quality services, but they are also proactively advancing community development.

It was a great pleasure for Genervision House to collaborate with Macao Water. Let's continue to work towards a sustainable future!

In partnership with:



Introduction to SDG Framework Workshop

Genervision House brought its signature SDGs Workshop to University of Saint Joseph (USJ) last Friday as one of the University's Sustainable Development Month activities. Our representatives Christy Un and Gladys Ng introduced the SDGs and their framework, and exchanged many intriguing ideas on how to make Macau a more sustainable city with a group of passionate audiences. It was a pleasure to have spent a Friday evening with our participants! We loved the dialogues and we absolutely felt the spirit and passion from them. We hope everyone has had a good time too!



Thank you to USJ and the British Chamber of Commerce in Macao for this special opportunity to share our passion for sustainable development! If it is of your interest, there will be more sustainable development workshops at St. Joseph's University of Macau this month. Check out their page to find out more!

If you are an organization looking for collaboration on communicating the SDGs, we would love to connect with you

In partnership with:



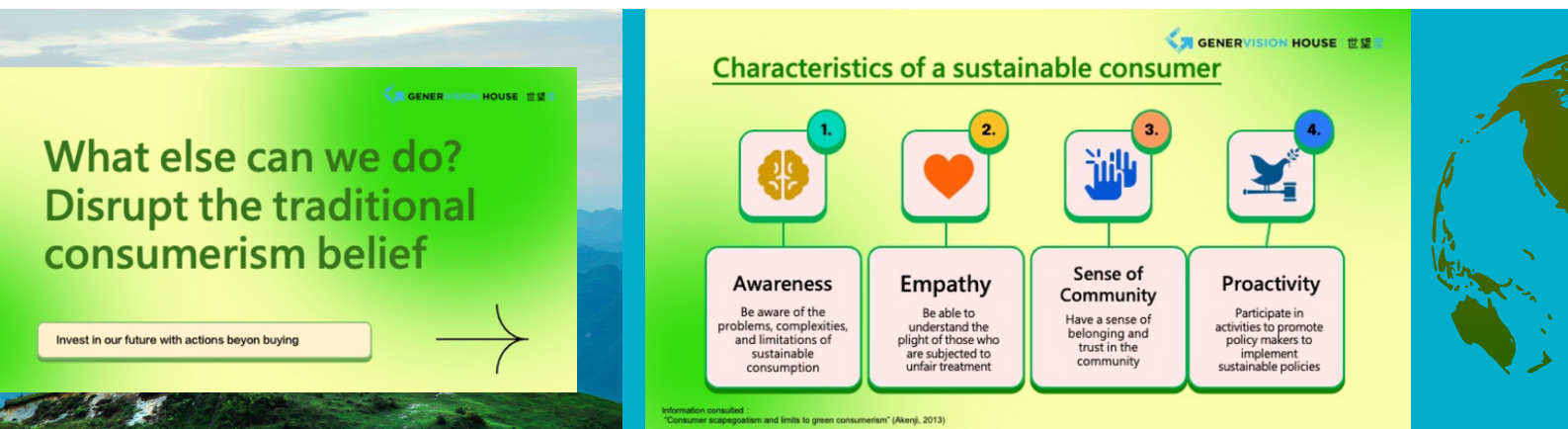
Earth Day Throwback: Going Beyond Green Consumption

On April 22, the Earth Day, Genervision House joined Social Responsibility Practitioners, Good Food Fund, China Youth Climate Action Network, and Act4Food Act4Change to discuss the role youth can play in green consumption. Our representative, Gladys Ng, shared her insights on how to become a sustainable consumer and practices from Macau.

Green consumption is generally perceived as the production and consumption of “eco-friendly” products or services, for example, household appliances with energy-efficient labels and cutlery with “biodegradable” labels. However, such products and services are not always as green/sustainable as they seem when considering their entire lifecycle. Consuming green products without reflecting on the unsustainable consumption patterns does not change the outcome of never-ending waste generation and resource exploitation. We simply can’t buy our way out of a problem.

To shift from a mere green consumer to a sustainable consumer, there are four things we can proactively practice:

1. Be aware of the complexity of what makes consumption sustainable, as well as the limitations of consumption in solving all the problems;
2. Have empathy for those who bear the brunt of unfair working conditions and environmental exploitation;
3. Develop a sense of belonging with your community, find happiness from the relationship with people you trust;
4. Participate in activities that can nudge decision-makers into making and implementing sustainable development policies.



It was well documented in the IPCC report that culture is an important lever for climate change mitigation. To nurture a culture of sustainability in the community, Genervision House organizes different community events such as the Sustainable Christmas Party, the Gutenberg Soap Series workshop, and the Period Positivity Workshop.

SDG16 indicates that decision-making should include participation from everyone at every level, and to create a positive change in the consumption system, we must actively participate in the decision-making process. Besides the invited participatory spaces such as policy public consultation, there have been different kinds of created spaces in Macau by people who are keen to contribute their voice for a more sustainable city, such as the petition to keep the 10 old Mock Bodhi trees in Cheok Ka Village and the clean recycling stations initiated by Macau for Waste Reduction. These are actions that take our roles further in making a change in the consumption and production system.

Earth Day began with a call to change the status quo for the better, so let’s invest our actions for the planet. Happy belated Earth Day!

What can Macao Learn from Neighbouring ‘Smart Cities’ to Forge a Path Forward?

Christy Un

As some of Macao’s neighbours show, becoming a ‘smart city’ means more than just improving technology.

Economies in the Asia-Pacific region – excluding Japan – will collectively contribute up to one-third of global spending on smart city initiatives between 2019 and 2023, with China accounting for the majority of the region’s investment in related technologies.

With so many neighbours demonstrating successful examples of smart city planning, Macao has plenty of lessons to draw on for its own development. We explore what it means to be a smart city, and what steps Macao should take to achieve its goals.



What is a smart city?

At the moment, there is no clear definition of what makes a city ‘smart’, but one thing is certain: it is not just about technological advancement. Although the term is an evolving concept, ‘smart city’ mostly refers to initiatives that harness digital innovations for the wellbeing of its citizens.

Best practices worldwide show that this is driven by smart governance, enhanced digital literacy, multi-stakeholder partnerships, investment in forward-looking measures and societal demand for harnessing data in beneficial ways.

As the United Nations Global Centre for Technology, Innovation and Sustainable Development notes, smart cities are inclusive, sustainable and adaptable.

什麼是智慧城市？ What is a Smart City?

智慧城市是指利用數字創新改善市民福祉的舉措
“Smart city” mostly refers to initiatives that harness digital innovations for the wellbeing of its citizens

具包容性 Inclusive	為市民提供平等和安全的公共服務 Provide citizens with equal and secure access to public services
可持續性 Sustainable	可持續的經濟、社會和環境發展 Sustainable economic, social and environmental development
適應性 Adaptable	具有抵禦全球挑戰的能力 Resilient against global challenges

GENERIVISION HOUSE 世望屋

如何善用數據 How to Make the Best Use of Data

數據的使用和再利用是否能提供價值？
Does the use and reuse of data provide value?

每個人和所有利益相關者都能從數據中得益嗎？
Do all individuals and stakeholders benefit from the data?

例如，克羅地亞將其人口普查數據與行政和住戶調查數據相結合，創建了詳細的貧困地圖，使當地政府能夠更好地分配扶貧資金。
e.g. Croatia combined its population census data with administrative and household survey data to create detailed maps of poverty, allowing the government to better allocate anti-poverty funds.

社會裏是否有一個充滿信任的環境來保障用戶的權利和利益？
例如，網絡安全和數據隱私
Is there a trust-filled environment that safeguards user rights and interests?
e.g. Cybersecurity and data privacy

GENERIVISION HOUSE 世望屋

This means that they must provide citizens with equal and secure access to public services, while simultaneously achieving sustainable economic, social and environmental development.

Smart cities should also be resilient against global challenges like climate change and pandemics. To achieve this, different stakeholders (such as civilians, and the public, private and non-profit sectors) need to put data to good use. It boils down to three key elements:

- **Value:** Does the use and reuse of data provide value? For example, Croatia combined its population census data with administrative and household survey data to create detailed maps of poverty, allowing the government to better allocate anti-poverty funds.
- **Trust:** Is there a trust-filled environment, bolstered by both governments and businesses, that safeguards user rights and interests? For example, cybersecurity and data privacy provide enhanced protection and create an atmosphere of trust.
- **Equity:** Do all individuals and stakeholders benefit from the data? Or are poorer or rural regions less likely to have access to and receive digital services? Are investments in new technology only prioritising certain stakeholders (such as large businesses and the government) while neglecting other stakeholders like non-profit organisations? All citizens, including minority groups and underserved communities, should be able to access and benefit from the data.

How ‘smart’ is Macao?

From its Five-Year Development Plans (2016-2020 and 2021-2025) to recent policy addresses, the government has poured time, resources and energy into future-oriented initiatives.

In its “Strategies for Developing Macao into a Smart City and Construction in Its Key Areas” report, published in 2018, the government called for development to revolve around two core principles: human-centric approaches and sustainable practices based on the 17 United Nations Sustainable Development Goals (SDGs).

At the regional level, the “Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area” provided a blueprint for building an international innovation and technology hub, with the Guangzhou-Shenzhen-Hong Kong-Macao science and technology innovation corridor serving as the main axis.

The 2021 Master Plan of the Development of the Guangdong-Macao Intensive Cooperation Zone in Hengqin also called for greater support for high-end manufacturing, and research and development (R&D) in this science and technology innovation corridor.

Thanks to these top-down efforts, Macao is undergoing a transformation in its digital infrastructure. Citizens now have access to a growing number of beneficial mobile applications, ranging from the “Common Access to Public Services of the Macao SAR” app to access e-government services to the “Macao-in-Pocket” all-in-one information app for citizens and tourists.

Residents in Macao have also benefited from burgeoning partnerships with innovators like Alibaba and SenseTime. For instance, Alibaba agreed to collaborate on artificial intelligence (AI) and big data-driven digital solutions to common problems. For example, the tech giant has worked with the Transport Bureau to develop a vehicle accident detection service.

The company also teamed up with the Macao Government Tourism Office to create a “tourism information interchange platform”, which collects and shares data on travellers’ preferences, behaviours, real-time footfall at popular landmarks and traffic conditions. This data simultaneously improves the travel experience for visitors and helps the government develop smarter tourism plans.

However, a disconnect remains between everyday people and such initiatives. Despite gradual improvement to our lives, Macao’s smart city initiatives remain limited in their reach and impact. Many have been delayed, too, lacking effective leadership and implementation to bring these ideas to life.

To take the next step in its smart city development, the Macao government needs to put in place clear evaluation criteria and execution plans, boost meaningful grassroots participation beyond public consultation sessions and ensure that its initiatives truly benefit everyone in the city.

澳門有多「智慧化」？ How "Smart" is Macao?

- 相關規劃和法律**
Supporting Plans & Laws
 - 2016-2020年和2021-2025年期間的五年規劃
Five-Year Development Plans (2016-2020 and 2021-2025)
 - 《澳門智慧城市發展策略及重點領域建設》諮詢文本
2018 "Strategies for Developing Macao into a Smart City and Construction in Its Key Areas" report
- 合作夥伴關係**
Partnerships
 - 與阿里巴巴在人工智能 (AI) 和大數據驅動的數字化措施方面進行合作
Collaboration with Alibaba on artificial intelligence (AI) and big data-driven digital solutions to common problems
- 智慧城市的應用**
Smart City Applications
 - 手機應用程式 (例如: 「一戶通」)
Mobile apps (e.g. "Common Access to Public Services of the Macao SAR")
 - 交通事故智慧感知服務
Vehicle accident detection service
 - 「旅遊資訊交換平台」
"Tourism information interchange platform"

如何邁向下一步 How to Take the Next Step

- 施政透明度和時間表是關鍵**
Transparency & Timelines are Crucial
 - 《澳門智慧城市發展策略及重點領域建設》諮詢文本欠缺時間表和公開的最終版本
The "Strategies for Developing Macao into a Smart City and Construction in Its Key Areas" report lacks timeline and open access to its final proposal
- 提高數位素養和多方參與**
Improving Digital Literacy & Participation
 - 24%**
受訪用戶表示他們曾遭受個人網絡隱私侵害
Users had experienced internet privacy violations
- 包容性的城市服務**
Smart City Applications
 - <10%**
本地受訪民間社會組織採取了涵蓋網路安全威脅的安全評估
Civil society organisations have undertaken risk assessments covering cybersecurity threats

Transparency and timelines are crucial

In some ways, government policies and regulations are making progress. For example, the 2019 Macao Cybersecurity Law has helped to fortify the networks, data and operations of critical infrastructure providers (such as the public sector, banks, utility companies and internet service providers), while the 2020 e-government law (Law No. 2/2020), moved some document-heavy processes online.

But the Macao government still lacks the evaluation and implementation procedures needed to realise its broader plans. The 2018 smart city consultation document, for one, does not provide clear timelines for many of the proposed targets. What’s more, the final proposal has yet to surface in the public domain after it was submitted to the government.

The four-year Framework Agreement of Strategic Cooperation on Smart City Development, signed in 2016 between the government and Alibaba, also lacked concrete timelines for its second phase of cooperation, which ran from July 2019 to June 2021. During these two years, the leading cloud-computing company planned to embark on projects related to environmental protection, customs clearance procedures, and forecasting models for Macao’s economy.

However, many of the Phase II projects were delayed due to Covid-19. And similarly, the general public does not have access to final evaluations of the projects, nor the framework agreement that assesses the investment that has gone into them, let alone their execution and impact.

The Macao government launched the Open Data Platform in 2019, which currently provides 534 data sets from 34 departments or institutions. However, the data mostly features infrequently updated operational statistics alongside some societal figures, such as census data and housing prices, but does not provide much information that can support or track smart city initiatives.

When residents cannot evaluate the government's performance, it is impossible to hold officials and their partners accountable. At the same time, it's also challenging for the government to improve their services and procedures.

Useful case studies from across the region provide valuable learning opportunities. Take Singapore's Punggol Digital District Open Digital Platform (ODP) for example. When it launches in 2023, the secured platform will provide real-time data collected from a network of sensors and systems in the district, enabling businesses and students to perform simulations for smart city initiatives.

As Singapore speeds ahead, in Macao, bureaucratic procedures need to be streamlined to effectively lead smart city initiatives. The so-called Smart City Development Group (智慧城市發展專責小組), which was chaired by former chief executive Chui Sai On until his term ended in 2019, comprises representatives from different governmental departments.

The government created this group to coordinate actions on smart city initiatives (such as the Alibaba partnership) under the Five-Year Development Plan. But since the current chief executive, Ho Iat Seng, assumed office, the group has not been active publicly since providing advisory opinions on a 2018 consultation document.

亞太區的最佳實踐

Best Practices from the Asia-Pacific



新加坡的榜鵝數碼園區的開放數字平台 Singapore's Punggol Digital District Open Digital Platform (ODP)

這個開放數字平台將在2023年啟動，將會提供從數碼園區的傳感器和系統網絡中收集的實時數據，讓企業和學生能夠為不同的智慧城市措施進行模擬。

When it launches in 2023, the secured platform will provide real-time data collected from a network of sensors and systems in the district, enabling businesses and students to perform simulations for smart city initiatives.



GENERVISION HOUSE | 世望屋

亞太區的最佳實踐

Best Practices from the Asia-Pacific



南韓的智慧城市法律改革 South Korea's Smart City Legal Reform

2019年，南韓將其「U-City Act」修訂為「Smart City Creation and Industrial Promotion Act」（簡稱「智慧城市法」），創建了一個更廣泛的法律框架，以授權多方持份者合作，並將智慧城市概念擴大到改善地下基礎設施以外的範圍。

南韓最近再度修訂的「智慧城市法」旨在支持使用新科技的創新產業（例如無人駕駛汽車和智慧電網）以及提供私人企業機會提出創意想法的私人提案制度（private proposal system）。

In 2019, the country revised its "U-City Act" into its "Smart City Creation and Industrial Promotion Act", creating a broader framework to empower multi-stakeholder collaboration and expand the scope of smart city concepts beyond improving underground infrastructure.

The country's recently amended "Smart City Creation and Industrial Promotion Act" also aims to support innovative industries using new technologies and a "private proposal system", where private companies have more opportunities to introduce creative ideas.

GENERVISION HOUSE | 世望屋

Without an effective way to manage its smart city initiatives, Macao risks falling behind when it comes to digital transformation.

For example, the new Telecommunications Law granting convergence licences to telecommunications operators (meaning, they would only need to apply for one single licence to run multiple services like landline phone services and mobile services) passed public consultation reviews in 2019, but it will not take effect until the second half of 2023 – as much as a year after the first 5G licences are expected to be issued. Without laws outlining the ground rules, major telecommunications operators could monopolise 5G services, potentially increasing prices and reducing efficiency.

In this case, South Korea’s smart city reform offers a blueprint for Macao. In 2019, the country revised its “U-City Act” into its “Smart City Creation and Industrial Promotion Act”, creating a broader framework to empower multi-stakeholder collaboration and expand the scope of smart city concepts beyond improving underground infrastructure.

The country’s recently amended “Smart City Creation and Industrial Promotion Act” also aims to support innovative industries using new technologies – such as driverless cars and smart grids – and a “private proposal system”, where private companies have more opportunities to introduce creative ideas.

Improving digital literacy and participation

A smart city’s success ultimately hinges on the perception of its citizens, and so their participation is crucial. But in order to obtain meaningful input from all sectors of society, it’s essential to improve digital literacy.

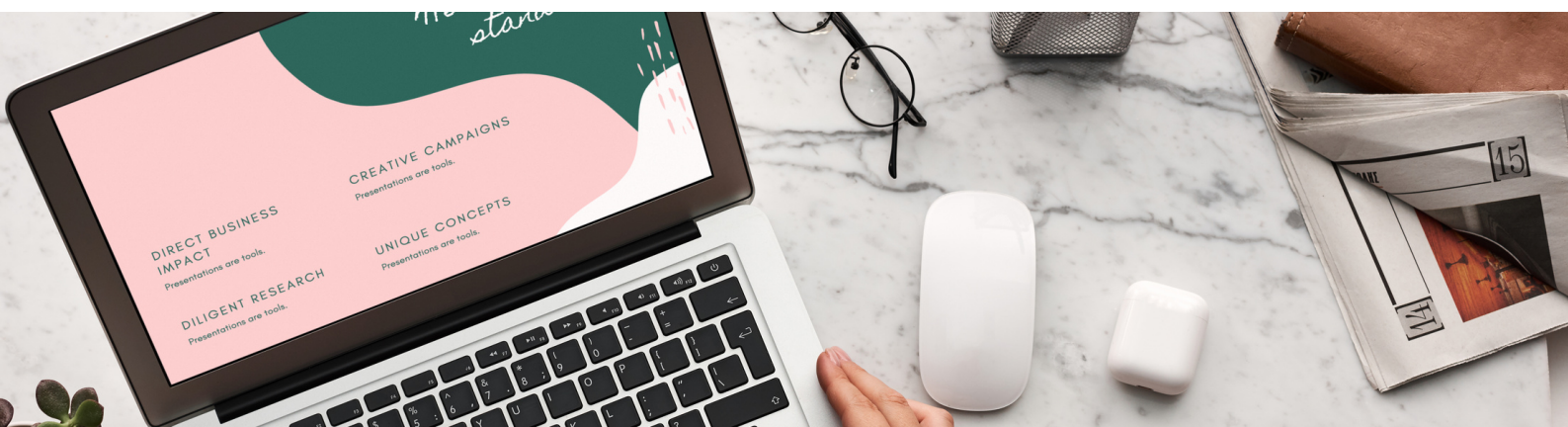
Macao has made commendable efforts to increase digital literacy in recent years, particularly among youth. For instance, information and communications technology (ICT) competitions have turned student ideas into reality, while internships with regional tech giants have empowered young minds.

However, there is a lot of work left to do to boost digital literacy across all groups.

In the 2020 Internet Usage Trends in Macao report, 24 per cent of users said they had experienced internet privacy violations, and 33 per cent said they had reposted fake news before realising the mistake.

Relatively low digital literacy presents a serious obstacle when it comes to scaling up smart city solutions and building trust in the use of technologies. The Macao government and educational institutes will need to invest in digital literacy, especially to support marginalised groups and senior citizens.

So what can Macao do? Let’s consider Thailand’s Khon Kaen municipal smart healthcare model, which won first prize at the 2018 IDC Smart City Asia Pacific Awards. The government overhauled the healthcare system in the North-Eastern Thai city, enhancing services with smart ambulance operations, a digitised Health Information Exchange platform, and monitoring via a smart wristband. To ensure elderly and vulnerable groups could benefit from the system, authorities held training sessions to teach them how to navigate the smartwatch and online platform.



如何邁向下一步

How to Take the Next Step



《澳門智慧城市發展策略及重點領域建設》諮詢文本欠缺時間表和公開的最終版本
The "Strategies for Developing Macau into a Smart City and Construction in Its Key Areas" report lacks timeline and open access to its final proposal

施政透明度和時間表是關鍵
Transparency & Timelines are Crucial



24%

受訪用戶表示他們曾遭受個人網絡隱私侵害
Users had experienced internet privacy violations

提高數位素養和多方參與
Improving Digital Literacy & Participation



<10%

本地受訪民間社會組織採取了涵蓋網絡安全威脅的安全評估
Civil society organisations have undertaken risk assessments covering cybersecurity threats

包容性的城市服務
Smart City Applications

GENERVISION HOUSE 世望屋

亞太區的最佳實踐

Best Practices from the Asia-Pacific



泰國孔敬市的智慧醫療模式

Thailand's Khon Kaen Municipal Smart Healthcare Model

泰國政府對東北部城市的醫療系統進行了全面改革，通過智慧救護車的運行、數位化的健康資訊交換平台以及智慧手錶的遠距監測來加強服務。為了確保老年人和弱勢群體能夠從該醫療系統中受益，當局舉辦了培訓課程，教導他們如何利用智慧手錶和線上平台。

The government overhauled the healthcare system in the northeastern Thai city, enhancing services with smart ambulance operations, a digitised Health Information Exchange platform, and monitoring via a smart wristband. To ensure elderly and vulnerable groups could benefit from the system, authorities held training sessions to teach them how to navigate the smartwatch and online platform.



Khonkaen Smart City
สุดยอดนวัตกรรมดิจิทัลเพื่อชีวิต

กรมสาธารณสุขและสังคมบริการ
กรมสุขภาพจังหวัดขอนแก่น
ในชื่อ Khon Kaen Smart Health

GENERVISION HOUSE 世望屋

Inclusive urban services

Currently, Macao's smart city collaboration revolves around partnerships between businesses, the government and academic research institutes. But more needs to be done to ensure that citizens and civil society organisations (CSOs) actively participate in smart city initiatives, too.

A recent report published by the United Nations University Institute in Macau states that nearly 70 per cent of local CSOs depend on digital technologies to provide services, especially to the underserved. Yet less than 10 per cent have undertaken risk assessments covering cybersecurity threats. What's more, their centres are often equipped with decade-old systems and hardware, which are more vulnerable to cybersecurity risks and computer crashes.

As underserved communities tend to rely on Macao's non-profit and NGO sector for essential services, it is important to boost investment in local CSOs to develop technical know-how among their workers and volunteers, and enable greater access to smart city initiatives on secure, safe networks.

A smart city is not just about delivering technological advancements, however. It ultimately requires putting citizens' well-being first by harnessing data to provide sustainable economic, social and environmental development for all. We need to start working together across all sectors to create a value, trust and equity-driven system where smart city initiatives can flourish and benefit all Macao citizens.

(Published in Macao News)

Sustainable Procurement

Corporate social responsibility has received increasing attention in recent decades. The United Nations also encourages corporations to incorporate sustainable development into their business plans (UN SDG12). Apart from focusing on the profit maximisation objective, corporations have now extended their attention to environmental and social issues.

Sustainable procurement is one of them. Throughout the procurement process, there are multiple stakeholders involved, and the level of greenhouse emission is a key area of concern. In 2021, Mckinsey and Company also published a report on some recommendations regarding the development of a sustainable value chain.



SUSTAINABLE PROCUREMENT

Buy as sustainable as possible,
with lowest environmental impact and most positive social results

CURRENT PROCUREMENT PRACTICES:
Products – **80 to 90 percent** of greenhouse-gas emissions are from *indirect emissions that occur across the company's value chain*, including emissions from:

- Purchased goods and services
- Employee travel and commuting
- Use and end-of-life treatment of sold products

2/3 from SUPPLIERS

STEPS TO START WITH:

- Identifying suppliers who are fair trade or environmentally friendly
- Using production materials that have been sourced responsibly (e.g., using recycled paper)
- Reducing waste by reusing packing material as opposed to throwing it away after one use
- Maintaining a healthy work environment where employees feel respected and valued

Checkpoint examples:

- Environmental management system, e.g. ISO14001
- Internationally recognised sustainable certification, e.g. Energy Star, World Fund for Nature Guideline
- Established policy on environmental, social practices

Source: <https://www.mckinsey.com/business-functions/operations/sustainability/bringing-more-sustainable-practices-to-work>
<https://www.unhcr.org/refugees/2019/04/2019-04-20-sustainable-procurement-what-it-is-and-why-it-matters/>

Climate Change 101: Better Understand the Environmental Crisis

Climate change affects all of us, regardless of national boundaries or age, and we should all understand the impacts of climate change. Nonetheless, climate change information and discussion are not easy to understand without a scientific background. Here are some common "climate" terms to decode!



氣候變化 101: 掌握氣候危機的基本術語

Climate Change 101: Better understand the environmental crisis with these essential terms



甚麼是氣候? What is climate?

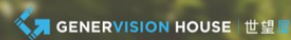
氣候是指某一地區長期的天氣模式(30年或更長時間)。

Climate refers to the long-term (30 years or more) patterns of weather in a given area.



平均氣溫、降雨量、降雪和其他天氣因素形成一個地區的氣候。

The average temperature, amount of rainfall, snow, and several other aspects of the weather all contribute to an area's climate.



全球暖化 v 氣候變化 Global Warming v Climate change

全球變暖是指由於溫室氣體排放而導致的平均氣溫的長期上升。

Global warming refers to the prolonged increase in the average temperature caused by greenhouse gas emissions.

在全球變暖的推動下，氣候變化將使一些地區的極端天氣事件(如乾旱、熱浪和風暴)更加強烈和頻繁。

Fueled by global warming, climate change will make extreme weather events(such as droughts, heatwaves and storms) more intense and frequent in some regions.



碳排放 v 溫室氣體排放 Carbon Emissions v Greenhouse Gas Emissions

碳排放是全球變暖最為人知的原因。「碳」指的是二氧化碳(CO₂)，是人類活動排放最多的溫室氣體之一。

Carbon emissions are the most commonly known source of global warming. "Carbon" refers to carbon dioxide (CO₂), a major greenhouse gas emitted by human activities.

除了二氧化碳，其他主要的溫室氣體(GHG_s)還包括甲烷(CH₄)和一氧化二氮(N₂O)。

In addition to CO₂, other major greenhouse gases (GHGs) include Methane (CH₄) and Nitrous Oxide (N₂O).





自然氣候變化 v 人為氣候變化

Natural Climate Change v Anthropogenic Climate Change

一些自然過程，比如地球軌道的微小變化、火山爆發和來自太陽的能量變化等都會導致氣候變化；但它們的影響相對較小。

Some natural processes – such as small changes in the Earth’s orbit, volcanic eruptions, and changes in energy coming from the sun – contribute to climate change; but their impact is relatively small

人類活動，包括燃燒化石燃料和砍伐森林，排放溫室氣體的規模和速度在工業革命之前是前所未有的。

Human activities, including the burning of fossil fuels and deforestation, emit GHGs at a scale and speed that was unprecedented before the Industrial Revolution.

GENERVISION HOUSE | 世望屋



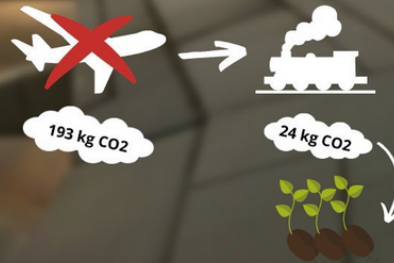
淨零碳

Net Zero Carbon

「淨零碳」排放重點減少某些活動的碳排放，然後以其他方法移除不可避免的排放。

“Net zero carbon” emissions focus on reducing carbon emissions of certain activities as much as possible, then removing inevitable emissions from the activities.

例子 Example



你可以選擇坐火車而不坐飛機，因為它排放更少的二氧化碳。但是坐火車仍然會產生一些碳排放。為了實現「淨零碳」的旅程，你可以購買碳補償，以平衡不可避免的排放。

You can opt for a train instead of a plane because it emits less CO2. But taking a train will still cause some carbon emissions. To take a “net zero carbon” trip, you can purchase credits to compensate for the inevitable emissions.

GENERVISION HOUSE | 世望屋



碳中和

Carbon Neutrality

「碳中和」不一定要要求自身活動減少排放。相反，可以通過投資環境或社區項目來減少在其他地方的溫室氣體排放，從而平衡自身的碳排放。

“Carbon neutrality” doesn’t necessarily require a company or government to reduce emissions. Instead, they can offset the GHGs they emit by investing in environmental or community projects that reduce GHGs somewhere else in the world, effectively balancing out the emissions.

例子 Example



植樹 Planting Trees 修復森林 Restoring Forest 投資可再生能源 Investing in Renewable Energy

GENERVISION HOUSE | 世望屋



全球暖化潛勢

Global Warming Potential

不同的溫室氣體具有不同的「暖化能力」。全球暖化潛勢以二氧化碳作比較，計算1噸特定溫室氣體在一段時間內能吸收多少熱量。

Different GHGs have different “warming powers”, which are referred to as their Global Warming Potential (GWP). GWP measures how much heat 1 ton of a specific gas can absorb over a period of time, compared to CO2.



GENERVISION HOUSE | 世望屋



Scan the QR code to read the full article on climate change terms published in Macao News.

Extraordinary Ministerial Meeting of the Forum for Economic and Trade Co-operation between China and Portuguese-speaking Countries

The Extraordinary Ministerial Meeting of the Forum for Economic and Trade Co-operation between China and Portuguese-speaking Countries (Macao) is being held online on 10th April simultaneously via Macao and Beijing. The Meeting, to be held under the theme “Cooperate to fight against the pandemic, Collaborate for common development”, will include several activities: the Opening Ceremony of the Extraordinary Ministerial Meeting of Forum Macao; the Unveiling Ceremony of the Plaque of the China-Portuguese-speaking Countries Exchange Centre for Epidemic Prevention; the Extraordinary Ministerial Meeting; and the Signing Ceremony of the Joint Declaration.



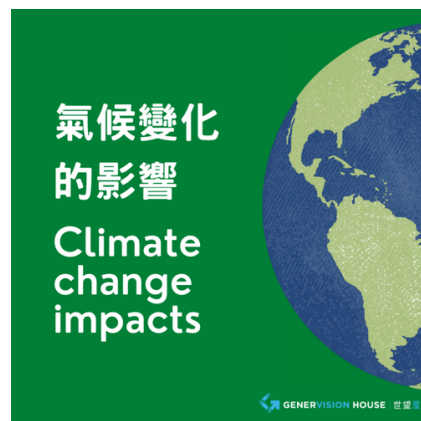
Photo source: Permanent Secretariat of Forum for Economic and Trade Co-operation between China and Portuguese-speaking Countries (Macao)

In addition, the Joint Declaration will outline, thanks to the commitment of all members of Forum Macao, a new phase for its work in several areas, including: the fight against the pandemic; promotion of economic growth; and enhancing Macao’s role as an exchange platform between China and Portuguese-speaking Countries. Such efforts would be with the aim of increasing cooperation in areas such as economic matters, trade, culture, and healthcare, between Mainland China, Macao, and Portuguese-speaking Countries.

Bilateral trade between China and Portuguese-speaking countries has increased from USD\$11 billion in 2003 to USD \$200.948 billion in 2021, a 17-fold increase. In recent years, Chinese enterprises have also been enthusiastic about investing in Portuguese-speaking countries, focusing on Brazil, Portugal, Mozambique and Angola. Ding Tian, deputy secretary general of the Permanent Secretariat of the Forum, said that with the support of the Belt and Road Initiative and the development of the Guangdong-Hong Kong-Macao Greater Bay Area and other major development opportunities, there are a lot of possibilities to be explored in cooperation between China and Portuguese-speaking countries.

Climate Change Impacts

A new report is released by the IPCC on 5th April to explore how we can mitigate climate change to prevent the severe impacts from worsening in the coming decades. We already know from the last report that humans have unequivocally caused climate change, which triggers the cascading and, to some extent, irreversible (bad) impacts on the lives on this planet. What can we do, as citizens on Earth, to help save our common future from becoming a disaster?



氣候變化的影響

Climate change impacts



GENERVISION HOUSE 世望屋

對自然系統的影響亦為我們的生活帶來變化
Impacts on the natural systems also complicates our lives

One quarter of the world's population face extremely high water stress
Seventeen countries are drawing more than 80% of their available water supply each year according to new data from WRI

「全球四分之一的人口正面臨極嚴重的水資源短缺」

Climate change is affecting crop yields and reducing global food supplies

「氣候變化影響農作物產量，減少全球糧食供應」

How climate change impacts infrastructure: experts explain

「專解析氣候變化如何影響基礎設施」

在未來，多種氣候災害將同時發生，多種氣候和非氣候風險將相互影響，導致整體風險進一步惡化。

Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions.

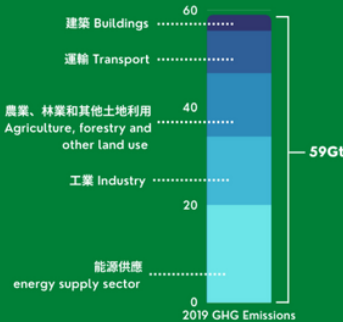
GENERVISION HOUSE 世望屋



如果我們從現在起到未來只排放500千噸的二氧化碳，就有50%的機會將全球暖化控制在1.5°C

To have a 50% chance of limiting global warming to 1.5°C, we have only 500 Gigatons of CO₂ left to emit (from 2020 and onward)

我們在2019年的溫室氣體排放量為59±6.6千兆噸二氧化碳當量。在過去十年間(2010-2019)，排放量每年增加1.3%



Global net anthropogenic GHG emissions were 59±6.6 GtCO₂-eq in 2019, and the annual emissions grew by 1.3% in the last decade (2010-2019)

人類 明確的造成了氣候變化，而且引發連鎖反應，對地球上的生命造成了不可逆轉的影響。

Humans have unequivocally caused climate change, which triggers the cascading and irreversible impacts on the lives on this planet.

氣候變化對自然系統的影響 (例子):
Impacts of climate change in the natural systems (examples):



極端高溫
Extreme Heat



強降水
Heavy Precipitation



旱災
Drought

GENERVISION HOUSE 世望屋

把全球暖化控制在 **1.5°C**
Limiting global warming to

將全球暖化限制在 1.5°C 可以降低對自然和人類系統的影響和風險惡化的可能性

Limiting global warming to 1.5°C can reduce the probability of worsening the observed impacts and risks to natural and human systems

如果不加強已實施的政策，全球暖化將在2100年達到3.2°C

Without a strengthening of policies beyond those that are implemented, global warming will reach 3.2°C by 2100

3.2°C

1.5°C



將全球暖化限制在 1.5°C 的可能性繼續縮小
The likelihood of limiting warming to 1.5°C has on average declined since 2018

GENERVISION HOUSE 世望屋

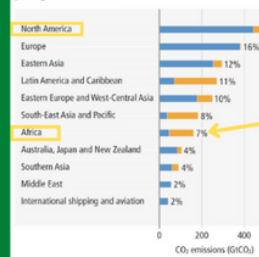
破解迷思 Myth Buster

與人口相對較少的國家相比，人口較多的國家的溫室氣體排放量更大，因此對氣候變化的貢獻更多

Country with a larger population contributes more to climate change than country with a relatively smaller population.

每個地區的累計人為二氧化碳排放量 (1850-2019年)

b. Historical cumulative net anthropogenic CO₂ emissions per region (1850-2019)



佔世界總人口的 4.73%
4.73% of the total world population

佔世界總人口的 17.2%
17.2% of the total world population

*北美的人均消費排放量是非洲的20倍
*The consumption-based emissions per person is 20 times higher in North America than that in Africa

如何減輕 氣候變化 的影響

How to make climate change impacts less severe



GENERVISION HOUSE | 世望屋

GENERVISION HOUSE | 世望屋

消費者的行動 Demand-side actions 避免-轉移-改進 Avoid-Shift-Improve Approach

Avoid 盡可能避免對商品/服務需求
as much good/service demand

Shift 選擇更高效和低排放的商品/服務
remaining demand to more
efficient and low associated
emissions good/service

Improve 降低使用商品/服務的碳強度
the carbon intensity of
good/service utilised

我們可以採取哪些個人行動？

What are some personal actions we can take?



留在本地度假而不是飛到海外旅遊
Take local holiday instead of flying overseas



優先考慮無車出行，選擇步行和騎自行車以及採用電動出行
Prioritizing car-free mobility by walking and cycling and adoption of electric mobility



選擇耐用的衣服物料和電器
Choose long lasting fabric and appliances



攝取符合日常需求和健康指南的卡路里數量
Keep calories in line with daily needs and health guidelines



選擇耗材較少的住宅設計
Opt for dwelling designs that are less material-intensive



更改著裝要求以適應健康的室內溫度
Change dress code to accomodate healthier indoor temperature



使用佔用傳感器和照明控制來減少人工照明需求
use occupancy sensors and lighting controls to minimize artificial lighting demand

....還有更多方法
...and more!

GENERVISION HOUSE | 世望屋

GENERVISION HOUSE | 世望屋

Opportunities from Green Recovery

Gladys Ng

The two-year-old pandemic has set back progress towards sustainable development, but it can also be an opportunity to change the world for the better, particularly through the relationship between the environment and the economy.

Climate change and loss of ecological diversity are one of the reasons for the current outbreak. Climate change and habitat destruction have led to the spread of viruses from animals that would otherwise not have had contact with each other, while population growth and the encroachment of natural habitats have brought humans closer to wildlife, making the spread of disease and pandemics more likely.

The old economic model overexploited the environment and natural resources, resulting in emissions and pollution that further damaged the environment and ultimately led to public health crises and economic setbacks. This pandemic has sent a clear message that business-as-normal practices are not enough to recover from a crisis, let alone to prevent the same from happening again. If we are to recover from the pandemic and become better, economic development must move in the direction of repairing nature.

With this in mind, many countries are focusing on ecological and environmental aspects as they prepare their recovery plans. The Green Recovery initiative combines economic measures with climate targets, with policies covering energy transition, green transport, low-carbon buildings, and ecosystem restoration. According to an analysis of the published spending budgets of the world's 50 biggest countries done by the University of Oxford, some US \$340 billion of public spending was designated for green projects in 2020. Furthermore, data released by the Ministry of Finance of the People's Republic of China showed that the national expenditure on energy conservation and environmental protection in 2020 reached 630 billion yuan.

The global green economy is also expanding. FTSE Russell, a British market indices company, tracked about 3,000 listed companies around the world that are linked to the green economy - including energy production, environmental resources, and sustainable food and agriculture - and found that they had generated "green revenue" equivalent to US\$4.3 trillion in 2020, and it is growing at an annual rate of 8 percent. China's green finance market has become one of the largest in the world. The size of green bonds reached 13.92 trillion yuan at the end of the second quarter of 2021, up 26.5% from the previous year.

As the size of the green economy grows, so does the number of green jobs.





Photo source: Macao Environmental Protection Bureau (DSPA)

According to the World Economic Forum, a US\$10 trillion business opportunity and 3.95 million jobs could be created if the current system of resource use and construction were transformed to be more environmentally friendly. Similarly, the Coalition for Urban Transitions estimates that the low-carbon transformation of cities around the world could create a US\$23.9 trillion business opportunity and support 87 million jobs by 2030. The Corporate Leaders Groups also found that compared to tax cuts, the "green recovery" program can have a greater influence on the social economy and the environment in a relatively short period, saving the 2 million jobs in the EU and generating long-term employment growth. It can also reduce carbon emissions by more than 15%.

A "green recovery" will not only revive the economy and help meet the Paris Agreement's carbon reduction targets and repair the environment, but it can also create huge job opportunities.

In the face of the economic challenges brought by the pandemic, the Macau SAR government has also launched a plan to stabilize the economy and ensure employment, and has provided electronic consumption benefits and tax exemptions to its citizens to stimulate the economy. To enhance Macau's economic development, the policy addresses introduced in the past two years have also repeatedly stressed the proper diversification of the city's economy, focusing on the development of new industries such as Big Medicine, modern finance, and high-tech development. But Macau's job market has inevitably suffered; The total unemployment rate at the onset of 2022 was 1.1 percent higher than before the pandemic, resulting in more than 10,000 unemployed people.

Although environmental protection was mentioned in both the 2022 Policy Address and the Second Five-Year Plan, it was not as detailed as the promotion of new industries, and the economic and fiscal measures lacked green elements. Macau has both a goal of reaching carbon peak and carbon neutrality and a vision of economic diversification. Why not integrate green measures into economic development and establish a local green jobs market? For example, Macau can strengthen the development of a green financial market, provide subsidies for low-carbon and climate-change adaptation of buildings, and finance ecological environment restoration and cleaning, which will bring many job opportunities.

As long as the government adopts a "green recovery" plan, Macau will be able to emerge from the economic crisis and become a liveable environment with a thriving ecology.

(Published in Plataforma Macau)



Founders Arianna U & Christy Un

Graphic Designers Christy Un & Dino Mok

Content Contributors Gladys Ng, Christy Un, Arianna U & Elaine Chou

Editing Assistant Samson Cheng

Contact Us

Email: info@genvision.org

Subscription Form: <https://bit.ly/3sxOYWZ>

Website: <http://genvision.org>

