

出國報告（出國類別：參加會議）

參加「ICLEI2018世界韌性都市會議」報告

服務機關：內政部建築研究所

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派赴國家：加拿大

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摘 要

關鍵詞：氣候韌性、永續發展、氣候變遷

為執行107年度內政部建築研究所預算出國計畫「107年度核定派員出國計畫」01-ICLEI2018世界韌性都市會議，派員參加6月19日至22日假加拿大蒙特婁市召開ICLEI2018世界韌性都市會議，國際韌性城市規劃領域之發展趨勢，以供本部研擬相關政策之參考。本次會議主題為「共同邁向永續城市：整合、合作、創新」(Together towards sustainable cities: Integrate, Collaborate, Innovate)，以協助推動聯合國2030年永續發展議程與永續發展目標為方向，進行氣候韌性相關研討，將可供我國推動氣候變遷與韌性都市相關政策或計畫之參考。

壹、出國目的

為瞭解國際韌性城市規劃領域之發展趨勢，以供本部研擬相關政策之參考，本所指派賴副研究員深江參加於6月19日至22日假加拿大蒙特婁市國際會議中心召開「ICLEI 2018世界韌性都市會議」(2018ICLEI World Congress)，此會議係由地方政府永續發展理事會(Local Governments for Sustainability, ICLEI)主辦。本次會議主題為「共同邁向永續城市：整合、合作、創新」(Together towards sustainable cities: Integrate, Collaborate, Innovate)，計有來自世界177個地方政府、機構或組織等共1051人參加。

地方政府永續發展理事會(ICLEI)是一個地方政府間國際組織，宗旨是追求永續發展。其成立於1990年9月紐約，時值聯合國召開地方政府永續未來世界大會，由200個地方政府所發起，ICLEI秘書處設於德國波昂。目前ICLEI已有86個國家，超過1000個地方政府作為會員。ICLEI認為要達成從地方到全球層級的永續發展，在地發起的行動是更有效且具成本效益的途徑。為了支持會員在地方層級上落實永續發展，ICLEI透過在全球各地所設置的機構，提供地方政府會員有關於落實永續發展的技術諮詢、訓練與資訊服務。並與全球夥伴(包括聯合國環境計畫署(UNEP)、聯合國人類居住署(United Nations Human Settlements Programme, UN-HABITAT)、世界自然基金會(World Wildlife Fund, WWF)等)合作進行相關計畫，以回應國際關注之永續發展議題，協助地方政府達到國際上各項協定、議定書、條約之要求及目標。¹

聯合國於2015年9月在紐約召開聯合國永續發展高峰會，各與會之會員國正式通過於2016年1月1日起實施之「2030永續發展議程」(the 2030 Agenda for Sustainable Development)²，該議程是未來15年(2016-2030年)之協議，其內容包括於議程下制定17個「永續發展目標」(the Sustainable Development Goals)(SDGs)及169項的細目標。韌性城市則列入永續發展目標之目標11：「建設具有包容、安全、韌性及永續的城市和人類聚落」(SUSTAINABLE DEVELOPMENT GOAL 11: Make cities and human settlements inclusive, safe, resilient and sustainable)。ICLEI 秉持上述聯合國永續發展之政策脈絡下推動韌性都市營造相關工作，並為配合聯合國之「聯合國仙台減災架構(2015-2030)」推動方向，並擬訂「韌性城市議程」³(其韌性城市係定位為準備吸收任何衝擊與壓力並從中復原，同時維持主要功能、結構與特徵；在不斷的變動中調適並成長。此外，城市面對的變動可能是自然和工業的災害、環境緊急事件、經濟衝擊、氣候變遷影響、急遽的人口變化或其他不可預測的挑戰。以及，打造韌性需要辨認與評估風險，減少脆弱度與暴露程度，並增加抵抗力、調適力並為突發事件準備。)，供各國地方政府參考運用。

於本次會議各國為因應氣候變遷建構城市韌性之相關政策與推動狀況所進行研討，蒐集相關資訊擬供本所都市減災調適相關科技計畫內容與研究課題之研擬參考。

1. 維基百科全書<https://zh.wikipedia.org/wiki/%E5%9C%B0%E6%96%B9%E6%94%BF%E5%BA%9C%E6%B0%B8%E7%BA%8C%E7%99%BC%E5%B1%95%E7%90%86%E4%BA%8B%E6%9C%83>

2 永續發展議程之詳細內容請參見: Transforming our world: the 2030 Agenda for Sustainable Development https://sustainabledevelopment.un.org/content/documents/94632030%20Agenda_Revised%20Chinese%20translation.pdf

永續發展議程之執行狀況請參見: Progress towards the Sustainable Development Goals Report of the Secretary-General

http://www.un.org/ga/search/view_doc.asp?symbol=E/2017/66&Lang=E

3 ICLEI藉由研擬10個議程，以達成永續城市目標，包括永續發展城市、低碳城市、韌性城市、生物多樣性城市、高效節能城市、智慧型城市基礎建設、永續地方經濟與採購、健康快樂社區、生態交通城市、永續城市一區域合作等項。參見<http://kcc.iclei.org/tw/our-agendas.html>。

貳、過程

一、出國行程

(一)活動名稱:107年度核定派員出國計畫「01-ICLEI2018世界韌性都市會議」

(二)活動日期:107年6月17日至6月25日，合計9天(活動行程如下)

「ICLEI2018世界韌性都市會議」行程表

日期	活動內容	備註
6月17日 (週日)	1、台北-經加拿大多倫多-至蒙特婁	出發
6月18日 (週一)	2、台北-經加拿大多倫多-至蒙特婁	到達
6月19日 (週二)	3、會議開幕(第一天) 下午、開幕式 下午、2030年城市與區域願景：確保系統性及涵括性之行動	
6月20日 (週三)	4、會議第二天 上午、透過創新解決方案與集體性地方行動達成全球目標 下午、朝向韌性都市與區域之轉型 下午、地方層級之韌性營造	
6月21日 (週四)	5、會議第三天 上午、永續發展解決方案實施之女性領導能力培養 上午、永續都市、城鎮與區域的多層次與合作治理 上午、地方韌性：一個多尺度的轉型過程 下午、分組參訪：蒙特婁市的未來與共同創造	
6月22日 (週五)	6、會議閉幕(第四天) 上午、朝向低碳與韌性都市：有雄心的融資與可盈利的氣候行動 下午、城市研究：面對氣候變遷之挑戰與有利機會 閉幕式 宣布：蒙特婁議定書及蒙特婁行動計畫	
6月23日 (週六)	7、蒙特婁市區參訪及韌性政策資料蒐集	
6月24日 (週日)	8、加拿大蒙特婁-經多倫多-返台北	返國
6月25日 (週一)	9、加拿大蒙特婁-經多倫多-返台北	路程

三、會議研討情形

茲就本人參加會議場次之概要內容略述如下：

(一)會議開幕(第一天下午)

於大會開幕式中，蒙特婁市市長Valérie Plante表示，當前全球面臨的氣候變遷與永續發展之重大衝擊下，地方政府與城市首當其衝，但他也相信所有的城市與地方政府皆會承擔責任，面臨挑戰。這不僅是為了全體市民的福祉，也為了這個地球與下一個世代。



圖1 開幕式前會場留影

(2) 主題研討：「2030年城市與區域願景：確保系統性及涵括性之行動」

採取圓桌分組會議方式討論，鼓勵與會者將不同觀點納入永續行動計畫內。與會者以圓桌編組，各桌混合不同部門和組織類型的代表，例如地方政府、科研人員、產業與私部門、社區組織，國家政府和其他國際組織等。主要議題係針對如何透過現在採取的行動來達到2030年之城市與區域發展願景。會中有與會者提出可透過都市規劃來作為氣候變遷之調適因應手段。另外亦有意見認為，在政治現實考量上，需主政者認為推動永續發展、氣候變遷調適具有政治利益，方會納入其施政計畫內。



圖2 分組圓桌會議

（二）會議第二天

1. 透過創新解決方案與集體性地方行動達成全球目標(Achieving the global goals through innovative solutions and collective local action)

由聯合國人類聚落居住計畫(UN-Habitat)執行主管Maimunah Mohd Shari女士自非洲奈洛比市傳送視訊，以「全人城市」(Cities for all: Inclusive cities with the New Urban Agenda)提出需透過全面性、綜合性、整合性的都市規劃或政策，納入對女性及所有的人之考量，以連結2015年第三屆世界人類聚落居住會議提出之「新都市議程」(the New Urban Agenda)⁴。

2. 朝向韌性都市與區域之轉型(Transitioning toward resilient cities and regions)

韌性建構乃是為城市系統，市政運作及社區預為準備，以預防、吸納以及自衝擊和壓力下回復，並因應無法避免的全球變遷。地方政府必須將韌性能力納入其行動的核心，以便能夠適應快速的技術和人口變遷。快速都市化趨勢與氣候變遷的威脅（包括災害風險，疾病爆發等）與其他衝擊和壓力（如社會經濟危機等）的風險增加，威脅著我們的城市系統。各國和地方各級政府政策決策者承諾到2030年呈現實際成果，現在則是應該實施行動的時點，並需加強建立多層次的伙伴關係，運用資源以加速地方行動。

目前某些都市透過設置韌性首席官(Chief resilience officer)結合創新性問題解決方案與有效之協調以達到提升地方韌性。但其設置方式則各地不同，例如希臘雅典市由副市長兼任韌性首席官；加拿大蒙特婁市則是在市政府設置韌性局，由韌性局主管兼任韌性首席官。

3. 地方層級之韌性營造(Building resilience at the local level)

本場次由美國麻薩諸塞州劍橋市政府分享該市進行「氣候變遷準備與韌性計畫」(Climate Change Preparedness & Resilience Plan)⁵之經驗。該計畫考量海平面上升、暴風潮淹水、氣溫上升、洪水等項災害，並在麻省理工學院之相關計畫所配合建立精細之災害潛勢圖下，進而研擬降低災害風險之規劃。

其次，由「聯合國氣候變化綱要公約」(UNFCCC) 組織氣候科技中心「韌性城市之技術支援」(Technology Support for Resilient Cities) 提出報告，該中心協助印尼政府為首都雅加達市建立水體動力學模型以供作減洪及氣候韌性基礎設施發展途徑之決策工具，以因應極端天氣下之海平面上升、土地下沉之情勢。國土及都市規劃人員運用該模型來評估洪水風險及危害，以因應更趨頻繁出現的都市洪水，設計出可降低洪水衝擊規模與範圍之氣候韌性決策途徑。此外，該中心目前提供之技術支援包括生態系統基礎之調適途徑、韌性城市行動規劃、海岸災害風險圖繪製、災害預警系統、建築規範修訂等項。

4 「新都市議程」承諾達到提供所有市民基本服務、確保所有市民都能獲得平等機會且不受歧視、支持清淨城市的促進措施、加強城市的韌性能力以減少災害的風險和影響、採取減少溫室氣體排放之行動來因應氣候變遷、改善連結性並支持創新和綠色措施、促進安全便利與綠色的公共空間等項，並透過包括國家都市政策、都市立法與法令、都市計畫與設計、都市經濟與財政、地方實際施行等5大要素加以實施。取自<https://www.un.org/sustainabledevelopment/blog/2016/10/newurbanagenda/>

5 詳見Community Development Department, City of Cambridge, Massachusetts
<http://www.cambridgema.gov/CDD/Projects/Climate/climatechangeresilienceandadaptation.aspx>

(三) 會議第三天

1. 永續發展解決方案實施之女性領導能力培養(Fostering women's leadership in the implementation of sustainable development solutions)

本場次探討性別主流化的潛力，以幫助改變我們城市，城鎮和地區的政治和城市景觀，權力關係需要重塑以變得更加平等。地方政府在將婦女領導權納入主流以及通過性別觀點制定永續發展政策方面發揮關鍵作用。會中與談者加拿大蒙特婁市Valérie Plante市長為是該市375年歷史上第一位女市長，她認為性別平等是永續發展的核心。蒙特婁的性別平等委員會由52名女性和51名男性組成，是一項重大成就，她在身邊建立一個性別平等的市府內閣，內閣成員他們來自不同的背景提供市長不同的觀點。蒙特婁性別平等委員會對該市規劃實施之計畫（例如於城市內規劃新的自行車道或改造公共空間時）與政策進行性別分析，以達到全面性多觀點之分析功效。

另一位來自喀麥隆的Célestine Ketchaépouse Courtès市長依照其競選公職時與選民約定之公約，將女性帶入政治領域，於市政委員會建立所謂「斑馬規則」(一位女性、一位男性之比例原則)以確保女性從政之權利，尤其討論氣候變遷解決方案，討論水、廢棄物、糧食與能源等項，皆需女性在當地領導。

2. 永續都市、城鎮與區域的多層次與合作治理(Transforming the way we collaborate: Multi-level and collaborative governance for sustainable cities, towns and regions)

地方政府是永續城市發展政策制定和實施的關鍵參與者，但不應由地方政府單獨進行。經由「多層次治理」以達到各行政層級轄區之互動與相互依賴，並透過爭取利害關係人之支持而建立合作網絡，達到各參與者之權責分工、釐清定位角色與功能。另面對問題的複雜性，在「合作治理」之理念下國家和政府不再是唯一的決策者，執政者需要考慮其他社會團體與相關人士之意見，允許其正式或非正式參與決策過程；另外，執政者需將經由協商、談判和妥協基礎上所形成之共識作為唯一可行的選項。透過媒體、手機及互聯網等資通信手段作為合作治理之操作工具，例如電子民意調查使民眾參與可更直接及持續。

3. 地方韌性：一個多尺度的轉型過程(Local resilience : A multi-scale transformational process)

韌性是社區預測、計畫與減少危險之能力，伴隨著需抓住環境與社會變遷之機會。韌性建構過程並非價值中立的，決定需保護之對象，反映到價值觀和權力結構。進行建構韌性需先釐清韌性之界定範圍與為誰所擬訂，必須分析社區需求並建立可反映其需求之系統。此外，韌性涉及學習和適應的過程，故隨著情勢變化，必須再度檢討整個過程。在氣候變遷之危機下，地方韌性須考量包括區內(intra-regional)、區域間(inter-regional)及超區域(extra-regional)等不同層次之多尺度之影響，並形成解決方案。

4. 分組參訪：

蒙特婁市列為美國洛克斐勒基金會贊助之100個韌性都市（100 Resilient Cities）之一，且該市被列為世界最佳宜居城市之一，並獲聯合國教育、科學及文化組織（UNESCO）認定為設計之都。近年更以成為引領國際永續發展潮流之旗手自居，大力推動各項減碳作為。本次會議成為蒙特婁市宣傳其永續發展成效之絕佳場合。

本次大會安排了10個不同主題的路線，提供與會者實地參訪，現地認識蒙特婁市及其在永續發展上的各項成果。因各主題參訪分組人數受限，本人僅報名到「蒙特婁市的未來與共同創造」（Montréal - City of the future and of co-creation）主題參訪，藉此機會瞭解蒙特婁市西南側閒置工業區再利用之創新做法。

(1) 未來之城：轉型實驗室（City of the future: Transition Lab）

轉型實驗室與蒙特婁市政府、非營利組織Entremise、Maison de innovation sociale和McConnell Foundation的人民城市計畫項目合作，在空置或未充分利用空間進行最適化之土地使用和並採用實驗性之新興做法。透過有意承租者提出申請書，由現租戶共同決定是否同意新租戶加入，形成一個合作互動、社會創新的社區，而每位成員均需分擔社區服務活動（如清潔、烹飪等）。租金低廉，可供作新創企業之孵化器（育成中心），但租期有限制。



圖 3 主要通道



圖 4 內部配置

(2) 鐵路調度場站設施再利用

Bâtiment 7，此設施位於Pointe-Saint-Charles區的加拿大國家鐵路公司的舊址土地上。由於周圍社區的動員，這座古老的工業遺產建築被改建成了聚集的地方。Collectif 7àNous團體進行Bâtiment 7的開發，以使其成為文化，社會，政治，經濟和環境轉型的引擎。為籌集必要的資金，專案團隊研究了各種融資來源後，採用發售社區債券、需支付利息的長期抵押貸款等方式籌措資金。Bâtiment 7並將成為如同文化沙漠的Pointe-Saint-Charles區的文創基地。設施內線設有各類職人工坊、社區商店，並於最近即將設立酒吧與成立托兒所。



圖 5 設施外觀



圖 6 設施內設置社區商店

(3)FMR車站(地鐵車廂公園)

參觀FMR車站，這是一個由舊地鐵車廂組成的臨時公共空間，位於蒙特婁市Lachine運河沿岸。使用來自各機構提供之廢棄材料，經由巧思組成一個青少年及市民可以遊憩的空間，並可具環保教育基地（垃圾分類等環保知識）之功能。



圖 7 車站配置圖



圖 8 表演台

(四)會議閉幕(第四天)

1. 朝向低碳與韌性都市：融資於具雄心且可盈利的氣候行動(Towards low carbon and resilient cities: Financing ambitious and bankable climate action)

於2012於年聯合國成立「環境為本之永續保險方案」(The UN Environment Principles for Sustainable Insurance Initiative)，以協助推動永續發展及達到永續發展目標第11項。該方案就保險設定三種角色，包括保險者(金融風險管理)、投資者(資產管理)、風險管理者(實體風險管理)等。在該方案推動下，在2018年6月全球之保險產業承諾保護聯合國教科文組織(UNESCO)指定之世界遺產。另外，ICLEI成立「轉型行動計畫」(Transformative Action Program, TAP) 預估需投入90億美金經費，以提供支持地方政府推動低碳與韌性都市之計畫融資所需。

2. 城市研究：面對氣候變遷之挑戰與有利機會(Cities-research: Addressing challenges and leveraging opportunities for addressing climate change)

本場次由越南建設部都市及農村規劃研究院代表提出「由氣候變遷情境到落實於調適之都市規劃」(From Climate Change Scenarios to Practical Adaptive Urban Planning) 報告，為因應氣候變遷極端降雨及海平面上升之趨勢，透過以生態系統導入都市規劃與設計，並運用地表入滲、貯蓄(含貯存、綠屋頂等)、人工溼地、生態水溝等手法加以處理。演講者亦提出治水思維之思考，包括硬體與軟體、集中與分散、確定與不確定、影響調適與降低影響、多部門與單一部門、策略(永續發展)與短期(特定目的)等項。

3. 閉幕式：宣布「ICLEI 蒙特婁議定書及策略願景：建設永續發展的城市」(2018-2024年)，透過低碳、以自然為基礎、循環、韌性、公平之發展等5個相互關聯之路徑邁向永續發展，並經由治理、創新、金融等政策途徑之支援來達成。另外，提出蒙特婁市行動計畫(The ICLEI Montréal Action Plan 2018- 2021)，宣示將推動全部使用再生能源、支援產業朝向永續經濟加以轉型、低碳城市發展、氣候韌性、友善的(交通)移動性發展等項策略之實施與評估，並經由綠色採購之領先做法轉型成為綠色經濟。以及連結氣候行動至都市發展、於都市及區域層次推動全球生物多樣性之目標等項。

(五)參訪蒙特婁市區及韌性政策資料蒐集

1. 蒙特婁市韌性政策

蒙特婁市列為美國洛克斐勒基金會贊助之「100個韌性都市」(100 Resilient Cities)之一，該市為研擬及推動韌性計畫特地於是在市政府設置韌性局，由韌性局主管兼任韌性首席官(Chief resilience officer)，韌性辦公室係結合經濟發展、環境、緊急應變等相關部門所組成，為建立社會網絡以保護災害發生時最脆弱之族群而擬定韌性相關計畫。該市係於美國洛克斐勒基金會經費贊助下，針對天然災害、經濟危機、恐怖份子攻擊等各種災害預為準備。

蒙特婁市韌性都市策略報告係源於2014年12月加入「100個韌性都市」網絡，於組織上在2016年1月指定韌性首席官、2016年5月創設韌性局、2016年6月成立指導委員會。於計畫上則在2016年夏季進行計畫工作坊、意見調查與數據分析，於2017年2月公布韌性初步評估報告(Preliminary Resilience Assessment)⁶。於2017年3月至6月進行診斷及研究地區之研討；於2017年6月至於2018年6月之1年內進行韌性都市策略草案研擬及審議，此期間亦辦理

6 取自<https://resilient.montreal.ca/assets/doc/pra-synthese-en-hr.pdf>

系列性之工作坊會議。在2018年6月18日公布「蒙特婁韌性都市策略」⁷（Montréal's Resilient City Strategy），規劃未來5年之實施方向，以面對環境、社會及經濟等項挑戰，並提出蒙特婁市韌性都市行動計畫。蒙特婁市成為加拿大第1個公布韌性都市策略之都市。

蒙特婁市於「蒙特婁韌性都市策略」主要考量異常洪水、產業與技術風險（如油罐車、輸油管線建設等涉及到經濟、環境與安全之理念）、恐怖攻擊、貧窮與社會不公平、老化之公共設施等項風險。為因應上述風險，提出4大方向，包括：（1）對支援整體及安全社區採取行動、（2）對保護生活環境採取行動、（3）對維護多元及創新經濟採取行動、（4）對社區服務採取整合性治理之行動等項。

就都市空間規劃與設計而言，上述4項中最相關為第（2）「對保護生活環境採取行動」，於此方向下設定3個標的，其標的及採取行動簡述如下：

（1）標的A.確保更妥適考慮土地使用風險及基礎設施規劃。

行動a.建立適合韌性建構之方法、標準與規定，並與綠色基礎設施相結合。

行動 b.規範危險貨品之管理，並於跨蒙特婁地區設置固定之群聚區位。

（2）標的B.對減災措施進行更詳盡之成本效益分析。

行動a：分析減洪措施之成本效益。

行動b：研究減少熱島效應措施之成本效益。

（3）標的C.開發和維護基礎設施，以確保服務及基本系統之維持運作。

行動a：以促進關鍵基礎設施韌性，提升跨蒙特婁地區之氣候變遷調適能力。

行動b：以智慧城市協助韌性發展。

2. 蒙特婁市區參訪

蒙特婁市位於加拿大魁北克省(該省係加拿大唯一之法語區)，是全世界除巴黎之外的第二大法語都市。蒙特婁曾經是加拿大經濟首都，雖自1976年蒙特婁奧運會後被多倫多市超越，但蒙特婁仍自認是加拿大的文化首都，多元文化包容力較佳，於自由氛圍下吸引不少文創產業者或企業創業者前來發展。

蒙特婁因曾是法國殖民地，老城區內有眾多古蹟，百年歷史建物散發出懷舊氛圍及歐洲風情。蒙特婁市極重視觀光產業，為服務觀光客在老城區之重要路口，蒙特婁市觀光主管機關於假日會運用人力三輪車設置流動旅遊諮詢站，提供交通指引及觀光景點資訊服務。另外，蒙特婁市大力推動電動交通工具，於路邊即可看到電動車充電架，於廣場之重要景點則設置觀光電動三輪車服務遊客等節能減碳行動與宣導。

蒙特婁市建物僅市中心地區方能興建高樓，且依法令規定不能超過蒙特婁市內皇家山之高度，故多以中低樓層建物居多。另因市內歷史建物多，新舊建物盡力取得和諧，亦成為該市之特色。蒙特婁市藝文活動豐富亦是其特色，例如蒙特婁市每年辦理蒙特婁爵士音樂節、蒙特婁電影節、文化節等。就都市發展而言，具有自由、包容、創新氛圍且具有良好居住環境之城市，將是全球都市競爭下可吸引人才、投資資金匯集之重點都市，蒙特婁已具有相當優越條件。蒙特婁推動韌性都市策略，將可使其在既有基礎上，更具備因應各種危機之能力，對於跨國企業而言更具吸引力，可供我國學習。

⁷ 取自<https://resilient.montreal.ca/assets/doc/strategie-montreal-ville-resiliente-en.pdf>

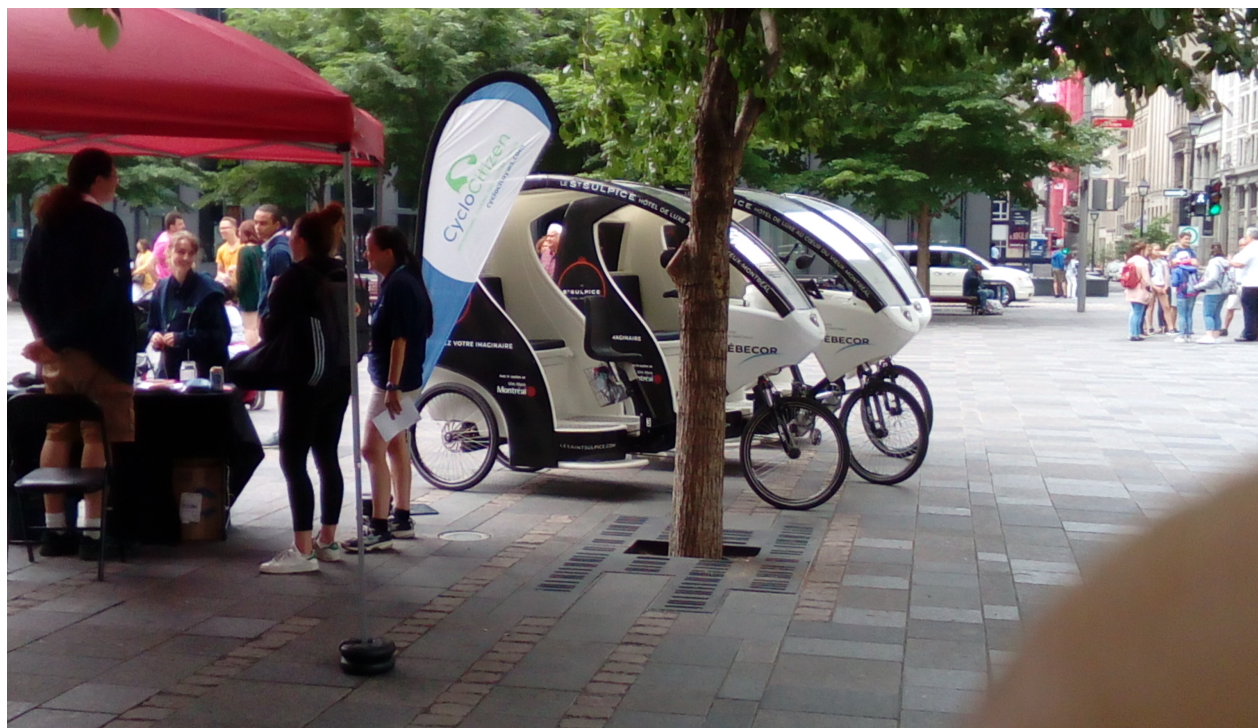


圖 9 觀光電動三輪車

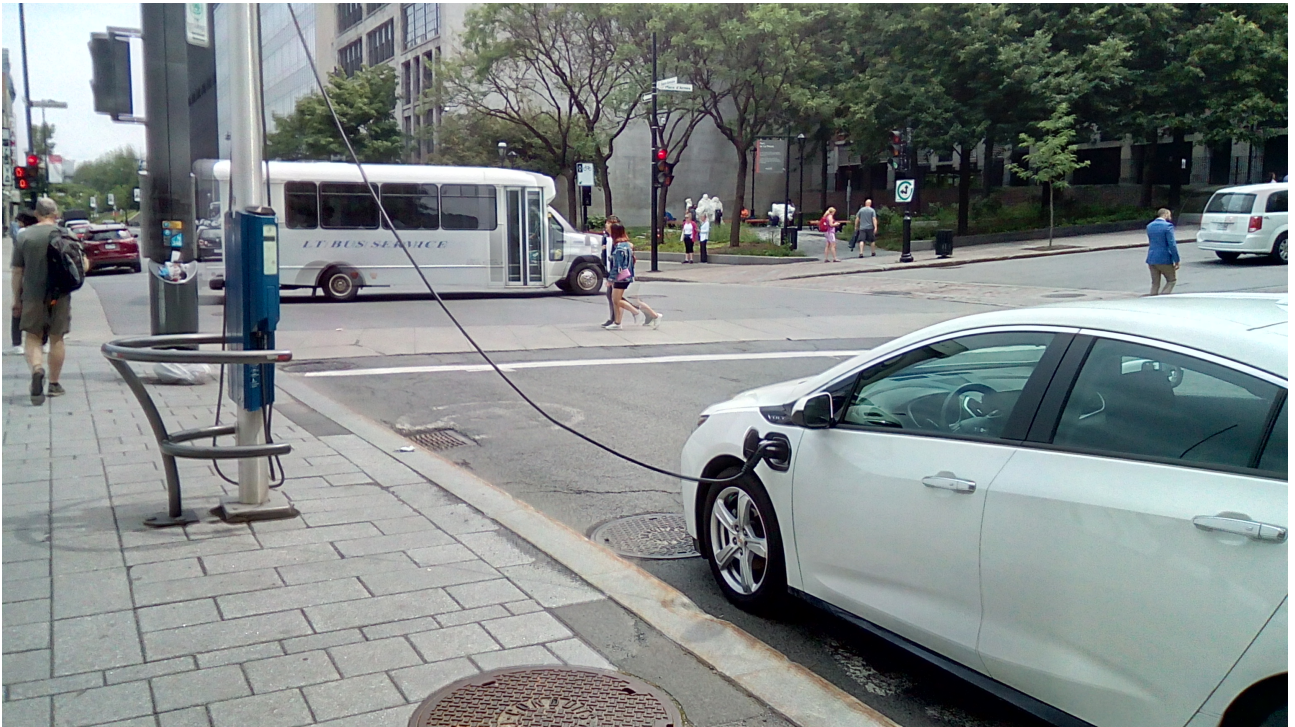


圖 10 電動車路邊充電架



圖 11 新舊建物之結合

叁、心得及建議事項

一、心得

本次參加「ICLEI2018世界韌性都市會議」獲致下列幾項心得：

- (一)國際上對韌性城市之政策定位係在聯合國之「2030永續發展議程」及17項「永續發展目標(SDGs)」(2016-2030年)永續發展目標下而展開，其中永續發展目標⁸之目標11「使城市與人類聚落具備包容、安全、韌性及永續性」則是韌性城市之最高政策目標。
- (二)國際上各國所討論之韌性，其政策脈絡係自永續發展到韌性建構，尤其以氣候韌性為焦點，惟涉及範疇不僅在都市或鄉村聚落，尚包括如糧食安全、生物多樣性等，故需有上位韌性策略之指導下，各部門分工推動，以收綜合成效。
- (三)推動全球性之韌性都市政策支援的機構約有8個⁹，包括：世界銀行(World Bank)、減災與復原全球機構(the Global Facility for Disaster Reduction and Recovery, GFDRR)、聯合國人類聚落計畫(the United Nations- Human Settlements Programme, UN-Habitat)、聯合國減災署(the United Nations Office for Disaster Risk Reduction, UNISDR)、美洲開發銀行(Inter-American Development Bank)、美國洛克斐勒基金會(the Rockefeller Foundation)與其推動之「100個韌性都市世紀挑戰」(100 Resilient Cities Centennial Challenge)、40大都市氣候領導群體(the C40 Cities Climate Leadership Group)、地方政府永續發展理事會(Local Governments for Sustainability, ICLEI)等，未來可針對全球性之韌性都市政策支援機構對韌性城市之定義、不同推動方式進行比較研究。
- (四)聯合國減災署推動「營造都市韌性」(Making Cities Resilient, MCR)，其目標是

8各永續發展目標彙列如下：

- 目標 1. 消除各地一切形式的貧窮
- 目標 2. 消除飢餓，達成糧食安全，改善營養及促進永續農業
- 目標 3. 確保健康及促進各年齡層的福祉
- 目標 4. 確保有教無類、公平以及高品質的教育，及提倡終身學習
- 目標 5. 實現性別平等，並賦予婦女權力
- 目標 6. 確保所有人都能享有水及衛生及其永續管理
- 目標 7. 確保所有的人都可取得負擔得起、可靠的、永續的，及現代的能源
- 目標 8. 促進包容且永續的經濟成長，達到全面且有生產力的就業，讓每一個人都有一份好工作
- 目標 9. 建立具有韌性的基礎建設，促進包容且永續的工業，並加速創新
- 目標 10. 減少國內及國家間不平等
- 目標 11. 促使城市與人類聚落具備包容、安全、韌性及永續
- 目標 12. 確保永續消費及生產模式
- 目標 13. 採取緊急措施以因應氣候變遷及其影響
- 目標 14. 保育及永續利用海洋與海洋資源，以確保永續發展
- 目標 15. 保護、維護及促進領地生態系統的永續使用，永續的管理森林，對抗沙漠化，終止及逆轉土地劣化，並遏止生物多樣性的喪失
- 目標 16. 促進和平且包容的社會，以落實永續發展；提供司法管道給所有人；在所有階層建立有效的、負責的且包容的制度
- 目標 17. 強化永續發展執行手段及活化永續發展全球夥伴關係

取自<http://www.tomoiiii.com/ngos/%E8%81%AF%E5%90%88%E5%9C%8B17%E9%A0%85%E6%B0%B8%E7%BA%8C%E7%99%BC%E5%B1%95%E7%9B%AE%E6%A8%99sdgs-2016-2030/>

9 取自<http://www.worldbank.org/en/news/feature/2014/04/15/stengthening-global-collaboration-for-urban-resilience>

要降低天災風險對城市的影響，於此前提下推出提供各城市作為分析應用的「計分卡」(Scorecard)工具，利用10個要素作為切入點，逐一檢討城市於韌性建置上的成效與不足之處，評估程序分為初步評估(Preliminary Assessment)及細部評估(Detailed Assessment)兩階段。初步評估內容分為10項要素，其中要素四為「追求韌性發展」，於其下區分成4項課題，包括土地使用分區管制(Land use zoning)、新都市開發(New urban development)、建築規範與標準(Building codes and standards)、分區管制及建築規範與標準之應用(Appication of zoning, building and standards)等項。10項要素區分不同課題，其下再設定評估問題，共計47個問題，結合「計分卡」的分析方式與內容，各評估問題之評分為0至3分，合計最高141分，此種方式便於評估分析之運用及績效檢討。¹⁰並據以支援「聯合國仙台減災架構(2015-2030)」之實施與評估報告之用。聯合國減災署強調易於執行韌性評估分析之操作方法，以供基本資料較欠缺之地區參考運用之方式，可供參考。

- (五)地方政府永續發展理事會(ICLEI)：推出韌性都市議程(Resilient City Agenda)，透過此議程，ICLEI動員、指導和支持其會員評估風險，確定韌性能力，並在地方發展計畫與流程中嵌入韌性戰略。韌性建構需要識別和評估危害風險，減少脆弱性和暴露，最後增加韌性、適應能力和應變準備。ICLEI 強調規劃流程與技術指導之機制，亦可供我國參考。
- (六)目前對於氣候韌性建構之規劃技術已漸趨成熟且多樣，應考慮以建置工具箱(Tool Kits)方式使不同國家、都市在不同自然、社經條件、基礎圖資建置情形等狀況下，提供符合其需求且便於操作之韌性規劃技術，以利實施。
- (七)金融手段對提升氣候韌性係重要之政策工具。
- (八)對於工廠遺址之活化再利用，除可保存都市記憶，並可導入新創企業透過相互技術支援及經驗交流，形成企業育成之社會網絡。
- (九)於韌性建構過程中，需考量女性或各不同族群之意見，以達到全人關懷之目標。
- (十)對減災措施宜進行成本效益分析，以利政策溝通及進行決策。

二、建議

- (一)建立韌性建構之方法與策略，並與綠色基礎設施相配合。
- (二)可研編都市韌性建構之規劃流程與技術參考手冊，以供各地方參考運用。
- (三)可考量於智慧城市內結合韌性發展。

10 有關初步評估可參考 DISASTER RESILIENCE SCORECARD FOR CITIES PRELIMINARY LEVEL ASSESSMENT (MAY 2017)

https://www.unisdr.org/campaign/resilientcities/assets/documents/guidelines/UNISDR_Disaster%20resilience%20scorecard%20for%20cities_Preliminary.pdf

有關初步評估之工具可參考

<https://www.unisdr.org/campaign/resilientcities/home/toolkitblkitem/?id=4>

有關細部評估可參考

https://www.unisdr.org/campaign/resilientcities/assets/documents/guidelines/UNISDR_Disaster%20resilience%20scorecard%20for%20cities_Detailed.pdf

有關細部評估之工具可參考

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附錄

THE ICLEI MONTRÉAL COMMITMENT AND STRATEGIC VISION 2018 - 2024

**BUILDING A SUSTAINABLE
URBAN WORLD**

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THE MONTRÉAL COMMITMENT AND STRATEGIC VISION 2018 - 2024

COMMITMENTS

SCALE UP
AND EXPAND THE MODEL OF
SUSTAINABLE
CITIES AND REGIONS

MAKE SUSTAINABILITY A
FUNDAMENTAL
PART OF ALL LOCAL AND
GLOBAL DEVELOPMENT

TACKLE THE MOST
PRESSING ISSUES
OF OUR TIME TO PROTECT THE
LONG-TERM INTERESTS OF
CITIZENS

UNDERTAKE A
COLLECTIVE
EFFORT
FOR GLOBAL CHANGE ACROSS ALL
SECTORS AND LEVELS OF GOVERNMENT

LOW EMISSION
DEVELOPMENT



RESILIENT
DEVELOPMENT



CIRCULAR
DEVELOPMENT



EQUITABLE AND
PEOPLE-CENTERED
DEVELOPMENT



NATURE-BASED
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WE LIVE IN AN URBAN CENTURY

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More than ever, our cities and surrounding regions are on the front line of a globally changing world and need to rapidly adapt to shifts in nearly every dimension of urban life.

The impacts of increasing urbanization, demographic change, climate change, technological advancement and development challenges, including public health crises, and the need to end systemic inequities and poverty, are particularly visible in our urban environments.

Many perceive our cities and surrounding regions as centers of opportunity and prosperity and, indeed, they are important hubs of economy, innovation, production, consumption, social and cultural interaction. At the same time, numerous cities are places where deep poverty and inequity prevail, and where severe natural degradation proliferates with ecosystems pushed past their thresholds.

As our cities rise, grow and change, so do the demands on our finite natural resources, thus further reinforcing disparities in communities across the world.

Therefore, the only way forward is to urgently reverse this trend and drastically re-orient the patterns of our daily life, our built environment and the natural systems in and around our cities.

Over centuries, we have built urban environments and today they accommodate half of humanity. For decades we experimented, pioneered and made efforts to create sustainable cities and neighboring regions. In many cases we have been successful. Now, we must accelerate and scale up these experiences to create an entire urban world that is sustainable.



OUR MONTRÉAL COMMITMENT: BUILDING A SUSTAINABLE URBAN WORLD

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When a group of forward-thinking cities founded ICLEI in 1990, they took action before sustainable development was the predominant model for change. Today, in ICLEI, we are mainstreaming sustainable development in all aspects within and interacting with our shared urban future.

Being part of ICLEI nurtures our collective potential for creating change. Our ICLEI network of more than 1,500 members and network-cities is widely recognized as a leading organization with visionary local leaders acting worldwide. We represent small, large and often fast growing cities, vast metropolitan areas, capitals, provinces and regions. Yet, we are deeply united in our commitment to inspire, learn from and work with each other on our shared journey towards a sustainable urban world.

With new UN sustainability frameworks in place towards 2030 and 2050, notably the Paris Climate Agreement, the Sustainable Development Goals (SDGs) and the New Urban Agenda – each for which we advocated so intensively over the last decades – we can now, more than ever, shape the global sustainable development agenda in collaboration with nations, subnational governments, business and civil society.

Therefore, we - the ICLEI members - commit:

- > to scale up and expand the model of sustainable cities and regions to create a sustainable urban world. We regard sustainable development not just as smart but as fundamental to life on Earth; it is a right of all and not a privilege of a few.
- > to shift the balance towards sustainable development in and among our jurisdictions and make sustainability a fundamental and inextricable part of all local and global development.
- > to tackle the most pressing issues of our time in more fundamental and systemic ways than ever before and, in doing so, take profound decisions in the long-term interests of our citizens.
- > to undertake a collective effort for global change, pushing for action by all sectors and levels of government. The sum of our efforts, actions and policies will be a catalyst for the global change that humanity needs in this urban century.



OUR VISION: ACTING THROUGH 5 STRATEGIC PATHWAYS

As a compass to manage our rapidly changing urban and global environment and to transform our cities and regions that surround them, we – the ICLEI members- will drive action through five critical and strategic pathways which are closely interlinked.

OUR VISION: ACTING THROUGH 5 STRATEGIC PATHWAYS

To achieve a sustainable urban world, we will undertake transformative actions that support:

LOW EMISSION DEVELOPMENT

to curb climate change, create new economic opportunities and improve the health of people and natural systems.

- > We will drastically reduce all environmentally harmful pollutants and emissions from heating, cooling, lighting and food systems as well as reduce noise. We will reduce our greenhouse gas emissions in all our activities, especially in our transport, waste and building sector. We commit to implement the Paris Climate Agreement goal of keeping the global warming increase to well below 2°C and will pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.
- > We will aim to achieve climate neutrality in our own infrastructure and operations before mid-century and actively promote the renewable energy era, by divesting from fossil fuels, by committing to 100 percent renewable energy and by using nature-based solutions.
- > We will promote sustainable passenger and freight mobility, prioritize clean fuel policies and electric vehicles from renewable energy where possible, and give priority to walking, cycling, public transit and shared mobility as part of people-centered solutions.

NATURE-BASED DEVELOPMENT

to protect and enhance the biodiversity and ecosystems in and around our cities, which underpin key aspects of our local economies and upon which we depend for the well-being and resilience of our communities.

- > We will prioritize healthy local environments, in which air, water, soil and all natural resources that sustain life and health are protected and nurtured.
- > We will deploy strategies and plans that use the potential nature has to provide essential ecosystem services and to unlock new economic opportunities in our jurisdictions.
- > We will apply nature-based solutions, use blue and green infrastructure options and promote green zones to reconnect and engage with nature in our new urban world.

CIRCULAR DEVELOPMENT

and new models of production and consumption to build sustainable societies that use recyclable, sharable and regenerative resources, to end the linear model of “produce, consume, discard” and to meet the material/development needs of a growing global population.

- > We will decouple urban, economic development from resource consumption and environmental degradation and factor environmental and social costs into the price of goods and services. We will encourage equitable access to resources and create closed-loop urban and peri-urban systems to end linear economic activity.
- > We will support new local economies that are productive and not extractive, where resources are exchanged and not wasted. We will prioritize sustainable waste management options including prevention, re-use and recycling of waste.
- > We will work with the business sector from early-market engagement to the delivery of solutions that support local sustainability goals and that meet the needs of all citizens. We will use our procurement power to green our economies.

RESILIENT DEVELOPMENT

to anticipate, prevent, absorb and recover from shocks and stresses, in particular those brought about by rapid environmental, technological, social and demographic change, and to improve essential basic response structures and functions.

- > We will make resilience a core part of our municipal strategies and prepare for new risks and impacts taking into account the rights and needs of vulnerable sections of our society.
- > We will continuously strengthen our essential systems, including our municipal operations, to prevent, absorb and recover from shocks, stresses and unforeseen changes, alleviating the burden on people and the environment.
- > We will pursue a transparent and inclusive approach on resilience that will enhance trust in our institutions and the processes that support them.

EQUITABLE AND PEOPLE-CENTERED DEVELOPMENT

to build more just, livable and inclusive urban communities and address poverty.

- > We will pursue processes and patterns of an “inclusive development for all” that safeguard the natural support systems for human life.
- > We will ensure that the natural and built environment in and around cities improves livability and safety, mitigates disease, promotes human health and well-being. We pursue secure and safe access to food, water, energy, sanitation for all, culture and education, as well as clean air and soil.
- > We will create and sustain human-centered, safe, and culturally vibrant communities where tangible and non-tangible cultural heritage activities are important assets and where diversity is woven into the social fabric.

OUR POLICY APPROACHES TO DRIVE GLOBAL TRANSFORMATION

By applying sustainable development principles within a local and regional context, ICLEI members can effectively address and even reverse detrimental practices, bridging divides and connecting actors, sectors and regions of the world.

To support this commitment and strategic vision, we will strengthen transformative, innovative niches of sustainability, undertake necessary regulation, mitigate and manage social and environmental risk and halt the many manifestations of unsustainable behavior in our jurisdictions.

SUSTAINABLE GOVERNANCE & MANAGEMENT: SUSTAINABLE DEVELOPMENT IS A COLLECTIVE EFFORT

WE WILL PRIORITIZE DIVERSITY AND INCLUSIVITY ACROSS OUR ADMINISTRATIONS AND COMMUNITIES.

Diversity in race, color, religion, creed, gender, age, physical and mental capabilities and sexual orientation will be a source of strength, innovation and new ideas. We celebrate the diversity of the communities we represent and ensure that the distinct voices and interests within them are heard.

WE WILL STRENGTHEN COOPERATION AT A REGIONAL SCALE.

Cities are inextricably linked with and depend on the peri-urban and rural areas and their ecosystems. We will therefore formulate and implement urban sustainable development strategies that are designed with a territorial and supply-chain approach.

WE WILL BRING THE VOICE OF OUR CITIZENS TO THE GLOBAL SUSTAINABLE DEVELOPMENT DEBATE.

Local, national and global policy must be shaped from the ground up. Our governments are the closest to the citizens of the world, and we can best demonstrate how development decisions impact their real lives, every day. It is our duty to engage with the people of our communities, to understand their perspectives and to spread the message globally. We will unite our voices and advocate for appropriate, formal consultation and hearings at all relevant international organizations, agencies and institutions.

WE WILL FOSTER STRONG PARTNERSHIPS TO ADVANCE GLOBAL SUSTAINABILITY.

Delivering on the global sustainable development goals requires coordinated action across national, regional and local governments, multilateral organizations, international agencies, research and development institutions, as well as civil society. We will push to redefine sustainable development as a joint effort, positioning all levels of government to rapidly advance global sustainability goals and seek support for our actions, including finance, capacity building, research and innovation. We will work in partnership, from the UN level to the local level, to expand sustainability across the urban world.

INNOVATION & SCIENCE: SUSTAINABLE DEVELOPMENT MUST WORK WITH AND FOR ALL

WE WILL USE DIGITAL TECHNOLOGIES AS A TOOL FOR INCLUSION AND SAFEGUARD SUSTAINABILITY-DRIVEN DIGITALIZATION.

Our connected, technological world creates many new challenges and risks for sustainable cities, including data security risks, increased infrastructure vulnerability and large resource use. At the same time, technology provides new tools for community engagement, data collection and co-creation of solutions. We will promote conscious, sustainability-driven use of these tools to promote citizen-driven action, crowdsourced ideas and co-designed solutions, bridging all forms of the social divide. We will use these open processes to empower communities and to enable citizens to drive digitalization transparently, democratically, safely, responsibly and in line with sustainability principles.

WE WILL PROMOTE EVIDENCE-DRIVEN AND SCIENCE-BASED POLICY AND ACTION AT ALL LEVELS OF GOVERNMENT.

Scientific evidence and practitioner expertise are the foundations of sound policy. We will improve the collection, creation and dissemination of scientifically sound knowledge and accurate information and enhance transparency and accountability in the process. We will take such information to national and global conversations, making sure that decisions are connected to what happens on the ground. We will empower our officials and leaders to collaborate with the scientific community, increase funding for urban research, craft and jointly pursue targeted research agendas as well as co-create and apply new knowledge and insights.

WE WILL DRIVE INNOVATION THROUGH CITY-BUSINESS COLLABORATION AND CREATE SPACE FOR OPEN INNOVATION.

Participatory planning and development has entered a new age of co-design and co-creation. We will set up partnerships with institutions and communities to generate ideas, test solutions and evaluate the potential impacts of new policies based on real-life scenarios.

FINANCE: SUSTAINABLE DEVELOPMENT NEEDS INNOVATIVE MODELS OF FINANCE

WE WILL SHIFT THE FINANCING AND PROCUREMENT LANDSCAPE.

All the aforementioned activity requires financing and we will seek funding partnerships to support our long term commitment. Making funding more directly accessible to all levels of government and distributing that same funding more appropriately is essential to advance sustainable development at our level.

We will push to unlock financing for our projects and will design innovative local mechanisms to raise capital and increase sustainable investments. We will use our public procurement potential as an instrument to accelerate the uptake of sustainable and innovative products and services.

Sustainable development is the only viable pathway for global change in today's world.

We will deliver visionary leadership and political support to accelerate action on sustainable development worldwide. We will lead by example, share our knowledge openly and speak with a united voice. We will create lasting mechanisms for change that make sustainability a permanent framework, informing all development decisions. This global imperative is vulnerable to political shifts at any moment – and we need durable forces to carry us forward.

The ICLEI Montréal Commitment and Strategic Vision is our pledge to make sustainable development the only model for development in the urban 21st century. Our joint programs, projects, initiatives, research, capacity building and advocacy in ICLEI drive worldwide action. Our mutual support for and solidarity with one another are core reasons why we are part of ICLEI. Our interactions build a global movement that includes a growing number of local and regional governments worldwide. We spark local action at a global scale and in doing so we leverage the power of the ICLEI network. The world is watching our actions and takes cues from our ambition.

This ICLEI Montréal Commitment and Strategic Vision “Building a Sustainable Urban World” was adopted by the ICLEI Council on 30 May 2018, in advance to the ICLEI World Congress 2018 in Montréal, Canada and is referred to as the ICLEI Montréal Commitment and Strategic Vision 2018 - 2024. This ICLEI Montréal Commitment and Strategic Vision provides strategic orientation for action by ICLEI members and network cities, of any size, at any subnational level, on any continent and where a sustainable model of development may soon take hold or is already well ongoing. It lays out how ICLEI members and network-cities advance sustainable urban development, now through 2024, locally and globally, in an era where new game-changing global frameworks have come into force, including the Paris Climate Agreement, the Sustainable Development Goals (SDGs), the New Urban Agenda, and where a new model of sustainable development governance that includes more stakeholders is emerging.

The ICLEI Montréal Commitment and Strategic Vision informs the ICLEI Global Action Plan 2018 - 2021 that provides an overview of programs, projects, initiatives, research, capacity building and advocacy that ICLEI offices will undertake, now through 2021, and in which ICLEI members and network cities can participate to fulfill the ICLEI Montréal Commitment and Strategic Vision 2018 - 2024.





ICLEI - Local Governments for Sustainability

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