

出國報告（出國類別：考察、開會）

## 2019 年英國全球水峰會 暨水利參訪活動

服務機關：經濟部水利署

姓名職稱：賴建信署長、莊曜成組長

派赴國家：英國

出國期間：中華民國 108 年 04 月 07 日至 04 月 12 日

報告日期：中華民國 108 年 04 月



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## 摘要

本(108)年 4 月由本署賴建信署長率團赴英國倫敦參加英國水務研究院舉辦之「全球水峰會(Global Water Summit,簡稱 GWS)」。該會議係由英國水務研究院-Global Water Intelligence(GWI)每年於 4-5 月間舉辦之全球性會議，今年度會議主題為「水與城市的顛覆性未來」(Disruptive Designs)，希望透過全球水峰會的國際化平台，探討 2019 年全球水務市場走向，以及相關政策和技術將如何影響國際水務市場的未來發展趨勢。會議有超過 700 位來自 62 個國家的高層管理人員參加，分享對於水務市場的獨特見解，其中有 52%為水務公司高層主管，19%為各國水務相關領袖，其他則為相關領域之專家學者、政府官員或相關工程師等。本次賴署長以貴賓身份受 GWI 邀請出席全球水峰會，並於會議第二天下午之圓桌會議中擔任主持人。

圓桌會議主題為「台灣的水資源未來發展規劃與智慧水管理」，賴署長特別向與會人員說明台灣面臨的洪水、乾旱、河川污染等水資源問題與挑戰，並闡述台灣水智慧管理、水資源發展與水利工程技術等，然後由與會成員針對賴署長說明之台灣水環境進行熱烈討論，會議獲得良好迴響，且有參與圓桌成員表達對於台灣水利設施之興趣，並與賴署長交換名片，透過這次交流活動，期望後續能促使我國與國際水產業相關產業鏈或政府單位建立良好關係。

全球水峰會期間，除正式研討會及圓桌會議外，賴署長亦受邀參與 4 月 8 日晚間僅限各國水務領袖參加之晚宴活動，一起探討水務領域的難題與挑戰，共同打造更好的全球用水環境，賴署長並率員出席 4 月 9 日晚上的全球水獎頒獎典禮，頒獎盛宴匯聚本次參與全球水峰會之全體成員，該獎項係由 GWI 的會員共同投票選出本年度優勝者，今年我國鳳山溪工程亦入圍全球水獎年度最佳廢水專案大獎，雖未獲得獎項，但也讓我國能在國際性場合獲得更多的關注。

本次除出席研討會論壇外，亦安排拜會英國的非營利組織-Groundwork、出席由水利署主辦之 2019 台英智慧水資源管理商業會談暨技術交流會。

參訪團於 4 月 8 日前往 Groundwork 伯明罕的總部拜會現任 CEO Graham

Duxbury。Graham Duxbury 首先簡報說明該組織設立的願景與行動宗旨，並展示 Groundwork 團隊 2018 年各計畫的成果與影響。接著介紹 Groundwork 在水務相關的行動與執行之計畫。Groundwork 透過社區行動，改變人民用水行為與實際執行親水行動(如集水區清理)；以及與政府機構、私人水公司(如泰晤士水務公司)共同合力提高用水效率，減少用水的消耗。主要計畫有：志願者清理與流域管理 (Volunteer clean-ups and catchment management)、減低污染的教育活動(Education campaigns to reduce pollution)、支持消費者減量使用(Supporting consumers to reduce usage)。賴署長並針對 Groundwork 營運方式及水資源管理方面的執行工作詳細詢問執行長 Graham Duxbury：Groundwork 如何選擇工作對象？組織經費的來源為何？Groundwork 獲得政府經費後如何支應組織活動？輔導案件（如集水區清理志工）的開始與結束如何認定？Groundwork 與英國政府之間的關係及角色定位為何？對於中央政策機關如何與 NPO 或 NGO 建立良好關係，有何建議？等問題，雙方進行廣泛的意見交換，互動甚為良好。賴署長並於會後邀請 Groundwork 執行長 Graham Duxbury 參與水利署本年度將舉辦的相關國際水務活動。

4 月 9 日下午參訪團則出席水利署於倫敦市區舉行之「2019 台英智慧水資源管理商業會談暨技術交流會」。該交流會由財團法人商業發展研究院協助安排國內業者與英國相關企業單位交流互動，共同研商水資源管理的發展，期望促進台英廠商在市場行銷、技術開發以及投資等各面向的合作。本次會議邀請我國駐英代表處林永樂大使蒞臨出席並於開場致詞，隨後由賴署長進行會議引言，同時揭開本次商業會談之序幕。本次商業會談透過我國與英國廠商的多面向交流，加深臺英雙方在智慧水管理產業的合作，共同促成國際商機，經過交流會後，雙方都得到滿滿的收穫，並加深我國與英國廠商的國際友誼。

## 壹、目的

全球水峰會(Global Water Summit,簡稱 GWS)是由英國水務研究院-Global Water Intelligence(GWI)每年 4-5 月間舉辦之全球性會議，本屆全球水峰會於 2019 年 4 月 8 日至 10 日在英國倫敦舉辦，今年度會議主題訂為「水與城市的顛覆性未來」(Disruptive Designs)，希望透過全球水峰會的國際化平台，探討 2019 年全球水務市場走向，以及相關政策和技術將如何影響國際水務市場的未來發展趨勢。全球水峰會每年超過 700 位來自 62 個國家的高層管理人員，分享對於水務市場的獨特見解，其中有 52%為水務公司高層主管、各國水務相關領袖占約 19%，其他為專家學者、政府官員或相關工程師等。

本次賴建信署長受 GWI 邀請出席全球水峰會，並於會議第二天下午之圓桌會議中擔任主持人，該圓桌主題為「臺灣水資源未來發展規劃與智慧化水管理」(Planning for Future Water and Smart Water Management in Taiwan)。除參與全球水峰會活動外，GWI 亦邀請賴署長參與全球水獎頒獎典禮，以及邀請賴署長加入國際水務領袖組織，並參與 4 月 8 日晚間之全球水務領袖晚宴活動，一起探討水務領域的難題與挑戰，共同打造更好的全球用水環境。

本次除出席研討會論壇外，亦規劃拜會英國的非營利組織-Groundwork、出席水利署主辦之 2019 台英智慧水資源管理商業會談暨技術交流會。

### (一)、 參加 GWI 舉辦之全球水峰會

英國水務研究院-Global Water Intelligence(GWI)除了出版以全國水務市場為主題的期刊雜誌和研究報告之外，每年都會舉辦全球水峰會(Global Water Summit,簡稱 GWS)，作為全球水務領域權威且高端的商務合作和交流學習的平台。

GWI 於 2019 年 4 月 8 日至 10 日在英國倫敦舉辦的第十三屆全球水峰會。本屆主題為「水與城市的顛覆性未來」(Disruptive Designs)，將聚焦於水與城市的顛覆性未來探討技術進步、氣候變化全球貿易地緣政治等多種影響下可能激發出的市場機會與挑戰。

## (二)、 拜會英國 Groundwork 團隊

Groundwork 是英國的一個非營利組織，該組織致力於保護當地環境並進行持續地改善，幫助社區變得更環保、更強大、更健康。與居住在弱勢地區的人們合作，改造開放空間，重新連接人與自然，提供培訓和創造就業機會，並減少能源使用和浪費。Groundwork 希望組織於 2020 年時，能協助各區域達到創造更好的環境、改善人們的前景、建立更環保的生活與工作三大工作目標。本次拜會期能瞭解英國非政府組織在進行活動時，如何組織起一般民眾，以及與政府單位的互動模式，以作為台灣民間與政府單位交流之參考。

## (三)、 出席 Global Water Leaders Dinner

The Global Water Leaders Group 是由來自世界各地的全球水資源行業的頂尖人士組成。成員包括水務部長，市長，主要公共和私營水務公司的董事，大型私營水務公司的執行長，非政府組織和國際組織的高級水管理人員等。Water Leaders 的存在是為了讓世界的水資源有更好地發揮。通過來自世界各地水資源領導者的專業知識來實現這一個目標，分享各領導者的想法和經驗，幫助世界提供供水相關的解決方案。

今年度 Global Water Leaders Dinner 於倫敦錫永宮(Syon House)舉行，期透過晚宴方式，讓各國水相關領袖進行廣泛的意見交流。

## (四)、 出席全球水獎頒獎活動

2019 年全球水峰會的全球水獎頒獎活動於 2019 年 4 月 9 日在倫敦自然歷史博物館舉行。作為峰會上的重要環節，全球水獎會就過去一年中為國際水務行業做出重要貢獻的公司、項目進行表彰。水獎以其公正性、專業性和高國際化程度獲得行業內高度認可。

每年水獎共計 11 個獎項，每個獎項中有 4 名實力出色的候選者進行角逐。全球水獎經過多年發展，已成為峰會的一個亮點，被譽為水務界的奧斯卡。包括：年度水務公司大獎、年度脫鹽/海淡公司大獎、年度技術公司大獎、年度技術突

破大獎、年度最佳水項目大獎、年度最佳廢水專案大獎、年度最佳脫鹽專案大獎、年度最佳再生水項目大獎、年度最佳工業水項目大獎、年度最佳水務交易大獎和水務行業最佳領導者榮譽獎。



## 貳、行程

本次出國行程如下表：

表 1 每日行程表

日期	活動時間	活動目的	地點
4/7(日)	08:40-19:25	啟程：臺北→倫敦	
4/8(一)	08:00-14:00	拜訪 Groundwork 總部	Groundwork(伯明罕)
	14:00-21:00	出席全球水務領袖晚宴	錫永宮 Syon House
4/9(二)	08:00-11:00	參與全球水峰會開幕式	Sofitel London Heathrow Hotel
	11:00-14:00	前往倫敦市區	
	14:00-18:00	出席 2019 台英智慧水資源管理商業會談暨技術交流會	One Great George Street
	18:00-22:30	全球水獎頒獎晚宴	Natural History Museum
4/10(三)	08:00-17:00	參與全球水峰會 (署長主持 14:00-15:30 圓桌會議)	Sofitel London Heathrow Hotel
4/11(四)	09:00-17:00	參訪資料整理及研討	Sofitel London Heathrow Hotel
	17:30-19:00	前往希斯洛機場	Sofitel London Heathrow Hotel
	21:35-21:15(+1)	返程：倫敦→臺北	倫敦希斯洛機場

## 參、過程紀要

茲將本次出國參加之重要會議與活動及第十三屆全球水峰會主要過程，摘錄如下，詳細拜會英文總結請參附件一：

### 一、重要會議與活動

#### (一)、 拜會英國非政府組織 Groundwork

Groundwork 是一個獨立的公益組織，致力於改變英國最弱勢社區生活的非營利組織。透過委員會來運作，並簽署一系列共同的目標、和執行的程序。目前 Groundwork 組織分布於英國 (Groundwork UK)、美國 (Groundwork USA) 與日本 (Groundwork Japan)，其中英國共有 18 個區域有 Groundwork 的組織運作。Groundwork 三個主要工作領域：創造更好的環境、改善人們的前景、更環保的生活與工作。

本次由賴署長率團前往 Groundwork 伯明罕的總部拜會現任 CEO Graham Duxbury。Graham Duxbury 首先為參訪團簡報該組織的願景與行動宗旨，並展現 Groundwork 團隊 2018 年各計畫的成果與影響：向社區投資 8800 萬英鎊、支持 24,000 個社區團體，成人和年輕人有 400,000 天擔任義工行動、種植 6,750 棵樹、幫助 65,000 戶家庭提高能源和水的使用效率。

接著介紹 Groundwork 在水務相關的行動與執行之計畫，Groundwork 透過社區行動，改變人民用水行為與實際執行親水行動(如集水區清理)；以及與政府機構、私人水公司(如泰晤士水務公司)共同合力提高用水效率，減少用水的消耗。主要計畫有：志願者清理與流域管理(Volunteer clean-ups and catchment management)、減低污染的教育活動(Education campaigns to reduce pollution)、支持消費者減量使用(Supporting consumers to reduce usage)。

賴署長並針對 Groundwork 營運方式及水資源管理方面的執行工作向執行長 Graham Duxbury 進行提問：

1. Groundwork 如何選擇工作對象：

Groundwork 主要是以在地的工作人員為主，並與當地政府合作，以落實計畫的在地性與實際發揮效用。

## 2. Groundwork 組織經費的來源為何？

Groundwork 的經費多由政府、事業單位及捐助而來，並非單一來源，由其參與（當地社區）的支持非常重要，並透過各項提案來獲得政府與事業單位的資助。

## 3. Groundwork 獲得政府經費後如何支應組織活動？

英國政府並未直接補助組織計畫，Groundwork 會透過部分的經費去執行計畫，以獲得更多的經費補助，讓組織與各計畫能夠持續且完善的運行。

## 4. 輔導案件（如集水區清理志工）的開始與結束如何認定？

大部份的計畫都是持續性地，除非為有特定目的個案，如就業輔導則於目的達成後結案。Groundwork 很明確我們的宗旨，應該執行的項目與重點，我們將持續且努力的去達成。

## 5. Groundwork 與英國政府之間的關係及角色定位為何？

在英國，有許多積極的非政府組織與政府互動，非政府組織可以支持政府的作為，成為政府的合作夥伴，協助政府完成他們難以達成的目標或行動。當然也有一些非政府組織是做為政府的反對方，但我們為社區服務，並不與政府存在對立關係，我們與在地政府彼此信任與合作。不過不論採取對抗或合作，都是一項很不容易的選擇。

## 6. 對於中央政策機關如何與 NPO 或 NGO 建立良好關係，有何建議？

許多 NPO 或 NGO 會需要資金作為向當地社區提供服務所用，建議政府能與組織們有良好的搭配，以平等的關係去建立夥伴關係。由 NPO 或 NGO 向政府提案，雙方建立互信互惠的關係去合作。但也不可否認仍有與政府採取對立面的組織，此時持續的溝通仍是非常重要的。

會後賴署長邀請 Groundwork 執行長 Graham Duxbury 參與今年 9 月由水利署舉辦的 2019 台灣國際水週活動，並邀請擔任演講人。



圖 1 賴署長與 Groundwork 執行長 Graham Duxbury 會談



圖 2 賴署長致贈 Groundwork 執行長 Graham Duxbury 禮品



圖 3 參訪團與 Groundwork 執行長 Graham Duxbury 合照

## (二)、 賴署長主持全球水峰會圓桌會議

第十三屆全球水峰會圓桌會議共兩場，4月9日共35桌的綜合議題(包含工業、金融、設施、海水淡化、科技等)；4月10日共15桌區域性主題(Regions)，賴署長於4月10日區域性主題之圓桌會議擔任其中一桌之桌長。本次圓桌會議進行方式如下：一桌約10-12人，由主持人先5-10分鐘演講及主題介紹，再進行20分鐘討論。時間到時進行換組(桌長不換)，總共進行4輪的圓桌討論。

賴署長主持之圓桌主題為「台灣的水資源未來發展規劃與智慧水管理」。首先說明台灣所面臨的洪水、乾旱、河川污染等水資源挑戰與面臨之困難，並闡述台灣水智慧管理、水資源發展與水利工程施工技術等。與會成員針對賴署長說明之台灣水環境進行熱烈討論，獲得良好迴響。且有參與圓桌成員表達對於台灣水利設施之興趣，並與賴署長交換名片，期望後續能讓我國與國際水產業相關產業鏈或政府單位建立良好關係。



圖 4 賴署長主持圓桌會議



圖 5 圓桌會議成員與賴署長談話

### (三)、 賴署長獲邀參加 Water Leaders Group 晚宴

The Global Water Leaders Group 由來自世界各地的全球水資源行業的頂尖人士組成。成員包括水務部長，市長，主要公共和私營水務公司的董事，大型私營水務公司的執行長，非政府組織和國際組織的高級水管理人員等。The Global Water Leaders Group 成員資格僅限受邀者。北美、中美洲、歐洲、亞洲、南美洲、澳大利亞皆有成員加入(圖 6)，本次 GWI 亦邀請賴署長加入 Water Leaders Group，在組織內各領導者可以分享彼此的想法和經驗，幫助世界提供水相關的解決方案。

本次 Water Leaders Group 晚宴於 4 月 8 日晚間在倫敦的錫永宮(Syon House)舉行，透過晚宴與各國水務領袖進行廣泛的意見交流，吸引多位代表對與台灣進一步合作發展表達濃厚的興趣和意願。



圖 6 The Global Water Leaders Group 成員分布

(四)、 賴署長出席 2019 台英智慧水資源管理商業會談暨技術交流會

賴署長除了帶隊赴英參與全球水峰會外，4 月 9 日下午亦參與水利署於倫敦市區舉行之「2019 台英智慧水資源管理商業會談暨技術交流會」。由財團法人商業發展研究院協助安排國內業者與英國相關企業單位交流互動，共同研商水資源管理的發展，促進台英廠商在市場行銷、技術開發以及投資等各面向的合作。本次會議邀請我國駐英代表處林永樂大使一同出席並進行開場致詞，隨後由賴署長進行致詞並進行會議引言，揭開本次商業會談之序幕。

本次與會的臺灣廠商在智慧水管理方面有著豐富的經驗及開發能量，如安研公司(AnaSystem)投注於防汛警報、蜂巢資訊(AgriWeather)投注於智慧農業、逸奇工程(AnCAD)投注於地下水管理、富鈞科技(Fenri)投注於污水處理廠的自動化、興創公司(Thinktron)投注於都市地下管線的資產管理，以及中興公司(Sinotech)投注於新世代的水庫建設。英方參與產業包括 Weather Logistics、Poseidon Analytics，以及長期服務公部門之研究機構 CEH、EMS 參加。



本次商業會談亦希望透過我國與英國廠商的多面向交流，能夠加深臺英雙方在智慧水管理產業的合作，共同促成國際商機，在會中雙方都得到滿滿的收穫及加深我國與英國廠商的國際友誼。

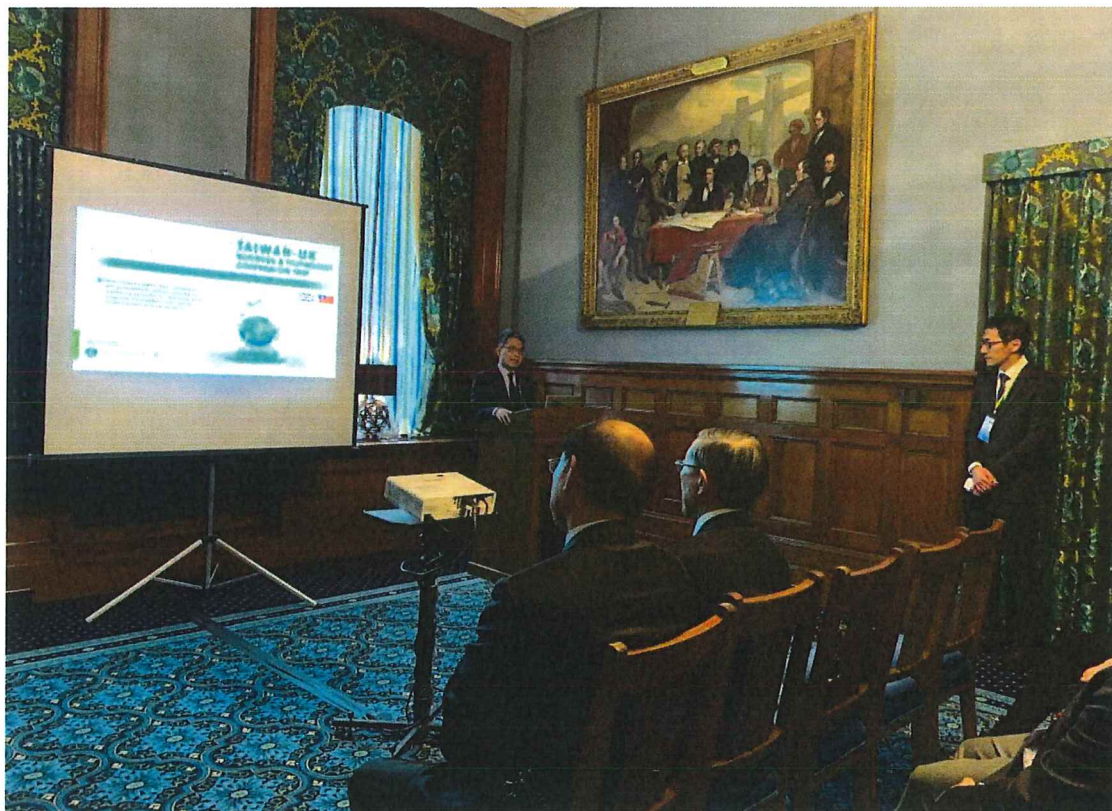


圖 7 賴署長於 2019 台英智慧水資源管理商業會談暨技術交流會致詞



圖 8 2019 台英智慧水資源管理商業會談暨技術交流會與會成員合照

#### (五)、 賴署長出席全球水獎頒獎典禮

GWI 舉辦之全球水獎頒獎典禮於 4 月 9 日晚間在倫敦自然歷史博物館舉行，每年水獎共計 11 個獎項，每個獎項中有 4 名實力出色的候選者進行角逐。全球水獎經過多年發展，已成為峰會的一個亮點，被譽為水務界的奧斯卡。包括：年度水務公司大獎、年度脫鹽/海淡公司大獎、年度技術公司大獎、年度技術突破大獎、年度最佳水項目大獎、年度最佳廢水專案大獎、年度最佳脫鹽專案大獎、年度最佳再生水項目大獎、年度最佳工業水項目大獎、年度最佳水務交易大獎和水務行業最佳領導者榮譽獎。

本次頒獎典禮匯聚參與全球水峰會的成員，一同參與本次水獎頒獎盛宴，全球水獎是由 GWI 的會員共同投票出本年度優勝者，今年度台灣鳳山溪工程亦入圍全球水獎年度最佳廢水專案大獎，雖未獲得獎項，但也讓台灣的水利工程能夠於國際性場合中露出，將可讓台灣在國際上獲得更多的關注，本次水獎獎項與得獎名單如表 2。

表 2 2019 年全球水獎獲獎名單

項目	獲獎者	卓越項目
Water Company of the Year	Water.org Suez	Jacobs Engineering
Desalination Company of the Year	Acciona Agua	IDE Technologies
Digital Water Company of the Year	Evoqua Water Technologies	Veolia Water Technologies
Breakthrough Technology Company of the Year	Microvi Biotechnologies	Typhon Treatment
Public Water Agency of the Year	Saudi Water Partnership Company, Saudi Arabia	National Mission for Clean Ganga, India
Desalination Plant of the Year	Tuas Desalination Plant, Singapore	Barka 4 IWP, Oman
Water Project of the Year	Green Meadows Water Treatment Plant, USA	Al Wajid Water Project, Saudi Arabia
Wastewater Project of the Year	Utrecht WWTP, Netherlands	Madinat Salman Plant, Bahrain
Industrial Project of the Year	Tata Steel Bara Tertiary Treatment Plant, India	Pengerang Integrated Complex Temporary Mobile Water System, Malaysia
Smart Water Project of the Year	Sydney Water Customer Hub, Australia	Cape Town Day Zero demand management, South Africa
Water Leaders Award	Istanbul Water and Sewerage Administration (ISKI), Turkey	National Water and Sewerage Corporation, Uganda
Desalination Operations Olympics	DESALCOTT (Desalination Company of Trinidad & Tobago)	
Water Technology Idol	University of Connecticut	Aqua Membranes



圖 9 全球水獎頒獎典禮(摘自水獎網頁)



圖 10 全球水獎頒獎典禮(摘自水獎網頁)

## 二、參與第十三屆全球水峰會

第十三屆全球水峰會(Global Water Summit,簡稱 GWS)，於 4 月 8 日至 10 日在英國倫敦舉辦，共計三天，本屆主題為「水與城市的顛覆性未來」(Disruptive Designs)，會議框架將分為前沿技術、項目融資、智慧水務、工業機會、市政市場、海淡脫鹽等專題，以下為參訪團參與之研討會內容簡述。

### (一)、 2019 年 4 月 9 日水峰會簡述

全球水峰會第一天的大會 opening 主題為「水與城市的顛覆性未來」(Disruptive Designs)，演講內容包括再生水、分散式(decentralized)、氣候調適。發言人名單及主要評論內容如下：

#### **Welcome Address:**

##### 1. Steve Robertson

*CEO, Thames Water, UK*

#### **Keynote Speaker:**

##### 1. Gillian Tett

*Chairman of the US Editorial Board and America Editor-at-Large,  
Financial Times*

#### **Speaker:**

##### 1. Bertrand Camus

*Group Senior Executive Vice President, Africa, Middle East, India, Asia  
and Pacific, SUEZ*

##### 2. Susanne Dorasil

*Head of Division Water, Urban Development, Mobility, German  
Federal Ministry for Economic Cooperation and Development (BMZ)*

- Steve Robertson 為 Thames Water 首席執行官，在本次會議中主要談到重新城市化如何影響全球城市，以及氣候變化如何影響水行業。
- Gillian Tett 為金融時報記者，在 opening 中透過人類學家的角度審視銀行系統文化，揭露導致全球金融危機發生之前的風險。現在 Gillian Tett 主

要探討民粹主義的興起，並試圖用文化的角度去解釋。而在現今，溝通和消費的訊息方式產生巨大的改變，對於現今社會具有重要的作用。具體而言，我們會較傾向於關注同業的意見和建議，而不是依照上位權威，也不是我們所蒐集到的訊息。這樣的結果導致單一利益集團的興起，產生令人難以想像的權力，讓長期的空間與利益平衡受到破壞。而從水的角度來看，這也意味著溝通比以往任何時刻都來得重要。

## (二)、 2019年4月10日水峰會簡述

會議第二天，參訪團成員上午參加的大會演講活動，今天的主題為：「Disrupting Cities: Catalysing The Future of Water」，發言人名單及主要評論內容如下：

### **Chair:**

#### 1. Roger Harrabin

*Environmental Analyst, BBC*

### **Speakers:**

#### 1. Katrin Bruebach

*Associate Director, Solutions Development and Innovation for Urban Water, 100 Resilient Cities*

#### 2. Laurent Auguste

*Senior Executive Vice President, Veolia*

#### 3. Peter Ng

*Chief Executive, PUB Singapore*

#### 4. Gisela Kaiser

*Executive Director: Utilities, City of Cape Town*

#### 5. Carlo Ratti

*Director, MIT Senseable City Lab & Founding Partner, Carlo Ratti Associati*

### ■ 由主題發言人介紹：

- 1.英國具有嚴重的水危機風險，水危機與金融危機有關。我們應該利用機會保護水資源。
- 2.已經建立了發展戰略，以幫助城市，特別是大城市。
- 3.眾所周知，城市發展對 GDP 有責任。未來的主要問題是人口密度的增加。這幾年大約有 50%的人口增加，並逐漸發展到大城市。
- 4.必須考慮氣候變化，以防止可能對大城市造成巨大影響。例如：貧困、洪水、海平面上升和氣候變化。
- 5.金融危機可能發生在每個國家，政府應該認真考慮這個問題。

■ 如何解決問題：

- 1.必須考慮對基礎設施的分析。需要建立多少基礎設施來解決許多環境問題？特別是未來 30 年，如何建設與處理基礎設施，彈性了解其對水系統的影響並找到水解決方案。在未來，項目設計與基礎設施設計都是極為重要的課題。
- 2.關於貧窮，如何確保了其經濟方面的發展，極為重要也需要被解決。
- 3.水危機的出現是令人震驚的，最重要的是它引起了行為的改變。必須要求各國領導共同參與並解決這些問題。
- 4.政府扮演著環境教育的重要作用，政府應該也必須與相關方面聯繫起來。
- 5.一個有趣的問題是，我們應該停止使用洗髮水和護髮素，因為它會造成環境污染。正如我們所知，磷會對海洋環境造成環境污染。

■ 以紐約為案例研究：

- 1.690 萬人口居住在紐約。在紐約，有 14 個污水處理廠。某種程度上，眾所皆知這個城市有很多水資源。紐約市的主要問題是空氣噪音和危險物質的管理。
- 2.如果我們考慮建立基礎設施，我們應該考慮如何運營和維護資產。如果我們需要 200 萬美元用於投資基金，我們需要的收入是每年 300 萬美元。如何有效使用這筆錢進行所需要的建設，是非常重要的。

■ 關注幾個國家的主要環境問題

- 1.廢水管理的重要性。
- 2.基礎設施的開發時間很重要，尤其關於水衛生方面。
- 3.大城市的發展，應該接近人民。
- 4.應考慮極端氣候與暴雨等劇烈性問題。
- 5.氣候變化需要良好的基礎設施去解決，特別是關於節約用水。此外，應關注與可持續發展和投資有關的碳排放。

三、於 4 月 11 日回程當天，參訪團安排進行本次參訪活動之資料整理及研討，期本次參訪之成果可作為國內相關水務工作推展之參考。



## 肆、參訪心得彙整

參訪團本次前往英國參與第十三屆全球水峰會並拜會英國非營利組織 Groundwork 及參訪泰晤士河水岸。茲就本次英國參訪行程相關心得彙整如下：

### 一、 因應氣候變遷，掌握水產業發展契機刻不容緩

本次參訪團參與英國水務研究院(Global Water Intelligence)舉辦之全球水峰會，在水峰會期間，參與大會 opening「水與城市的顛覆性未來」，聽取台上 keynote speakers 對於未來水務環境、市場的相關意見與願景，隨著氣候變遷及都市化人口集中的影響，有效開發運用水資源以因應社會及經濟的成長需求，已成各國水務單位努力追求項目，因此，加速發展及掌握我國相關水產業技術已刻不容緩。

### 二、 可透過全球化共同議題，鏈接台灣與國際水務單位情誼

本次賴署長透過主持圓桌會議，與各國水務相關人士進行台灣與其他國家水務政策、建設等交流。在水峰會時，亦與各國水資源行業頂尖人士透過晚宴及茶會等方式，進行廣泛的意見交流，因為全球暖化氣候變遷對各國水務工作均造成巨大的影響，而台灣地理環境特殊，相關水務工作推動經驗及需求也吸引多位代表對與台灣進一步合作發展表達濃厚的興趣和意願。與國際水協會(IWA,International Water Association)執行董事 Kala 等國際組織的會晤談話，也對我國未來加強參與國際性水務組織的活動及合作計畫有更深層的聯繫管道。

此外透過參與全球水峰會等國際性大型研討會議，亦可學習國外大型會議議題設定與辦理方式，作為水利署每年大型的研討會、展覽活動參考。

### 三、 成熟的民主社會，非營利組織、私人企業與政府單位應為合作關係

本次參訪團拜訪英國的非營利組織 Groundwork，了解到英國非營利

組織的運作，以及政府、私人企業與人民的相互關係。政府單位可以透過一些計畫或補助，去協助非營利組織推展相關業務，私人企業(如泰晤士水務公司)亦會提供資助，讓組織可以推行各項計畫。在與人民的關係上，透過在地化的發展，建構出當地自願者網絡，由組織或地方政府帶領當地居民自發性從事環境改善或建設等相關行動，這是政府、私人企業與非營利組織間一個非常良善的循環。

但由於政府法令架構的不同(如採購法)，以及國情的差異，我國政府部分單位在補助 NGO 或 NPO 或相關單位從事環境改善行動上，具有一定的難度。另外在政府與 NGO 或 NPO 的溝通上，NGO 或 NPO 主要是站在監督政府的面向去評量與檢點政府的施政與建設，較少是以攜手合作的樣態進行。

#### 四、舉行國內外廠商商談會

本次辦理「2019 台英智慧水資源管理商業會談暨技術交流會」，透過國內業者與英國水相關企業之交流，與英國的水利從業人員及專家進行技術交流，並且促成商機，加深台英雙方在智慧水管理產業的合作。此次英國當地有許多精通於大氣與水文數據分析之公司，包括 Weather Logistics、Poseidon Analytics，以及長期服務公部門之研究機構 CEH、EMS 參加，他們對於臺灣廠商解決方案中的感測器等硬體，以及維持傳輸數據品質的方法，感到高度興趣。

透過我國水相關產業界鏈結國外相關產業，除可以學習國外新知外，更可將我國水利產業供應鏈推向國際，讓臺灣在國際水利市場上佔有一席之地。

## 伍、建議

經彙整英國參訪團參訪之過程、內容與心得，提出以下各點，供水利署未來水務施政與業務推動之參考。

### 一、持續鼓勵及強化國內外水利業者鏈結與交流

水利署近年透過水利國際合作交流計畫，積極與國外商談會議相互配合辦理，在出國參訪及辦理水利相關交流活動時，同步進行水利產業的國際鏈結，截至目前為止，已在新加坡、日本、英國等地辦理我國與國外廠商之媒合及交流會議，成效不錯。建議未來能依循此由政府帶頭廠商響應之群體作業模式繼續辦理，讓產業界與公部門兩方共同邁出國際，積極推動臺灣水利產業海外行銷與國際合作。

### 二、培養參與國際水務合作或交流工作之人才

全球同時面臨氣候變遷威脅，我國應更積極派員參與國際合作計畫，以與世界潮流同步；同時應培養水務工作國際交流人才，將我國豐富防災經驗向國際宣傳，甚至進一步帶動相關產業進入國際市場。

### 三、建構政府單位與 NGO 或 NPO 多元互動模式

政府與 NGO 或 NPO 組織的互動模式是多元且無固定樣態的，如何找出適合我國的溝通與互動模式，成就公私協力，讓政策落實最大化，極為重要。

國外學者研究國外非營利組織後，提出三分法模式。一、補充性自願服務，延伸(提供)類似政府的服務。二、互補性自願服務，與政府服務有品質上的差異。三、主動式自願服務，提供政府所不提供的自願服務。其中，英國的非營利組織扮演的是第一類補充性的角色。在政府與 NGO 或 NPO 組織的溝通上，必須建立透明、順暢的溝通渠道，讓 NGO 或 NPO 組織與公民可以信任政府的執行政策，進而提供支持與協助。

建議水利署各單位可辦理如公民咖啡館、公民論壇等活動，讓水利單位能與民眾接地氣的對談，找出彼此的認知落差並尋求共識。在政策

議題面上，NGO 或 NPO 組織所具有的彈性，可提出不同的政策創新及實驗方案，而政府則可透過對話討論後付諸實行。因此各單位與 NGO 或 NPO 組織的互補可促成良性政策的形成。在政策執行面上，水利署各單位可研擬補助以及基金等方式，轉移給 NGO 或 NPO 組織，透過政府單位與 NGO 或 NPO 組織的功能互補，使得政策得以順利輸送到公民手中。

#### **四、加強政府與私部門、非營利組織及地方社區合作，群力推展與強化防災能力與在地水環境營造**

由於政府的角色與資源難以完全顧及到每個社區每個角落，因此需透過與私人企業、非營利組織等合作，向下紮根至地方社區，以有效推動政府政策。

目前水利署已建置許多即時監測、預測系統，如何將這些人工智慧與即時數據結合社區自主防災，為我國全體須努力的方向。在英國有 13 個區域洪水與海岸委員會(RFCC)，委員會工作係屬於管理面與政策面，並可以審視流域內的國土規劃，與流域未來的發展配合。英國地方政府與水務公司亦會與非營利組織合作，透過資助非營利組織來集結民眾共同推動水相關計畫。我國亦可建立防災委員會系統，邀集各區域議員、地方政府、里鄰長、水利單位、學者、非營利組織成員，分區規劃適合該區域的防災系統與機制，並透過非營利組織與里鄰長的協助，落實到地方民眾。

在地方社區營造與水環境建設上，找出城市中有潛力發展水環境的營造點，針對其設立目標/指標(可以包括防災、遊憩、教育、生態等不同面向)，並結合地方的 NGO 共同經營(台灣例如荒野、野鳥學會、濕地保護聯盟、在地的社區組織等)。

## 附件一：Groundwork 拜會紀要

### **Water issues in Taiwan**

1. In Taiwan, the government make a cooperation with Japan government in order to solve several issues that related to environmental issues such as water bodies issues and water resource.
2. Over 30 years, several issues occur in Taiwan that related to the damage of river. In this case, the Taiwan Government needs to fix it or the decrease the damage from the rivers. Owing to this reason, our Government needs to talk with the local community to solve these issues together.
3. In this context, Taiwan Government visit UK with the aim to discuss or do a visibility study from the NGO in UK, particularly how to manage the environmental issues, and to obtain the funding from the government.
4. In Taiwan, it usually difficult to obtain receive the funding from the Government and discuss with the local communities. We focused on water management.

### ***What the NGO does in UK in water management.***

1. In UK, particularly in a national scale, we work in UK (England, Wales, Scotland and Northern Ireland). We works that linked to the people's life and environment. Usually, the focus of the tasks related many group communities, a specific area, sanitation of place (city or town), transformation of environment that focused on the economic aspects and environmental aspects.
2. Usually, NGO has a collaboration with the local Government in the specific area or location (Province or Regency). In this context, they have become the partner on an appropriate location. Owing to this reason, it is more convenient to us in order to obtain the funding and mostly some people work at the local community.
3. The NGO usually asks the local community to be involved on this project in order to build the supporting system. Also their knowledge about environment can be improved and major of them works in the communities. Furthermore, we can create the focus area of project work. People can be involved to volunteer. It means they can support a project from the area.
4. Usually, the staff has a contact person in the communities. Actually, it aids the NGO to do the project easier. For example: in the school and local business. It helps the project can be implemented properly.

5. Consultation always be conducted in order to analyze and understand their ideas. It means that the NGO can understand their opinion and what actually they need from the project. For examples: the selection of the aspects and what is the purpose of the project that can be implemented on the community groups in the areas or regions. Also, there are some significant impacts that the NGO can do which is related to the Local Government program. The development of skills, increasing of knowledge and health are the examples. In other words, the money which come to us, we used it improve their life quality.
6. Interestingly, if the NGO has successfully obtained the funding, the job opportunity can be created. In this context, many people can apply the job easily which means they can improve their life quality.

### ***Actions***

1. Social mission is started in order to help people to find the job opportunity. Also, usually the social mission makes the people healthier and more active.
2. From the past, UK has faced many environmental issues.
3. The NGO has established the partnership. In fact, the NGO has been working with the local communities. Also, with local government, water industries and local business.
4. The NGO has a lot of partner of business. It makes them easier to implement their program.
5. Local communities play an important role as the volunteer. Usually the programs focus on the river catchment area effectively and responsively, environmental education (how to educated community very well). The main focuses to them are: water treatment to manage the water pollution, flush tank system, help people how to use water properly, water conservation. Since long time ago, water stress has become the main problem in UK.
6. In London, a lot of programs have been performed in order to protect the water (water conservation). Moreover, it has become the largest program in UK. It requires 10 years about the water efficiency to introduce water system. Furthermore, a lot of people suppose that it will more difficult to think due to different perspectives of it always occurred.

### ***Funding perspectives***

1. Water managements can play an important role for the NGO in UK to achieve the funding from the Government. Based on their experiences, it has a good role because the a lot of the priority programs from the Government have become the main targets or the main priority, which focused on the water management in UK. It has a massive effect to the other company. For examples: An insurance company interest to this project.

2. The support from the participation (local community) is very important. The NGO jobs to encourage them to be more active and more understand in a water quality management.
3. The NGO has been being establishing the network in the water quality. They have worked with many water supplier or water company which focused on the water utilities, particularly in the North England. Furthermore, we also improve the water catchment area. In the perspective of local community, the NGO improves the quality of land and environment, flood prevention. Also, the clearing vegetation helps communities stronger. In fact, the clearing vegetation helps community in the restore of marine that focus on the education.
4. Effectively, the commercial arguments are relating to the area catchment. Improve the life of volunteers, healthier, water management (river catchment more expensive and we obtained the money from the local government or water utilities company). These are many important points that usually being discussed.
5. When the management of environment based on the local government, the staff must be sent to the field in order to teach or educate the residence. In UK, for example: there are some places around 40 years that their communities never participate due to the lack of funding. In some places, some local communities groups that have a lot skills and capabilities to work for their self. That is the reason why we quit because they do not need a local support for the several aspects in the environmental perspective. In this context, it can be concluded that funding is not always will be achieved due to many issues of local resident groups and it is not always the perfect models.
6. Many examples of the partnership from the environmental agencies, united utilities from private sectors and Government sectors can be started properly from the schools children such as collect the garbage from the rivers. This program has been implemented widely in the school. So, usually the NGO can be obtained from this program

### ***Contract and foundation***

1. In every aspects of the programs, a contract usually should be used. The commercial contract is made to deliver service. Sometimes, the central Government has invested the money from the environmental agency. Most framework programs are the combination of funding from the government or private. For running the program, we usually combine the money from different source.
2. Government has no obligation to combine the funding or money. It is a responsibility of the providers. We have the obligations to assist or manage such kind of money that related to

environment. With money, we have the abilities to deliver the skills. Before we can obtain the money, we should attend the tender process and make a contract. This is very important.

3. Government is always running a program and distribute a lot of money in order to secure the commercial business. However, NGO in UK are also very good to persuade for Local Government to provide a lot of funding quite often in the communities. How they provide the money or funding? In fact, they have competitive money or contract to make it happened to convince Government, and demonstrate the using of money to support those community. It has being occurring in many different ways quite often.
4. The proposal must be written to secure a lot of funding from the Government, charity partner or local partner. Sometimes, for the business perspective, there are a lot of commercial opportunities. For example: if you do shopping, just show it. The money will come to us and we can distribute it to local communities. For the reference, we had spent 30 million pound sterling and those money have been distributed to approximately 10.000 communities.

### ***Concept and Program***

1. The environmental education can be presented or can be informed to the local communities. For examples: the program that related to the discharging water challenges has been successfully implemented. We also assess the risk of environmental pollution, discuss about the supporting program in a local enterprise, particularly for the business communities. We have spent a lot of time to discuss with many people at their home, help them to improve the lifestyle, quite often to save money for improving their health. In more details, this work related to community resilience, economic change, climate change and give community strength.
2. We also encourage people to be involved in the flood prevention, mostly in UK in order to access the support, meet face to face, build the networks, and work with the young people, welcoming young people, more active, increase the local communities awareness, young people to be more friendly toward the community.
3. Concept is one of more difficult thing. We have the specific program for the volunteers. Managing people for health managing condition or program. Prevent them to become not isolated. We are connect now, for the younger people for sign the community project as the single team. We can do it very well. However, for some charities in UK, it is a difficult activity to be performed effectively.



4. The department for the environment managing his program and environmental agency. What we done is set up of catchment partnership. Each of these of river catchment partners are the Local Government that can make a collaboration to manage, grand work or design, and river catchment areas. In terms of river, most of the money come from the Government program. Sometimes we need to do it with the relationship and partnership. Especially, different programs. We have to invest the water infrastructure. Invest in a high work, land, that responsible for the program. Provide programs to deliver it to some communities. Their arguments are delivering infrastructure project which requires access but sometimes it causes the frustration to local communities.
5. Capital project and education campaign for communities are very important to improve the quality of water, the benefits of its value. Especially, for the private money, united utilities, infrastructure etc. Moreover, It is a really good model. It is very important for the capital project.

***Comparison question and the answers***

1. **Question:** In Taiwan, there are a lot of NGO. What is your opinion about the relationship between NGO and Government. **Answers:** In UK, there are many aggressive NGO versus Government. 40 years ago, specifically not to be aggressive. A NGO can support the government and working together as the with partnership, not to be aggressive, help communities and establish the very well partnership.
2. **Question:** How to establish the better opinion about NGO. **Answers:** There are a lot of NGO in UK. NGO has need to manage the money because they need money as a purpose to deliver the service to local communities. If some NGO complain, it is our job to campaign that the NGO is responsible to deliver the high quality service.
3. Help them to improve the condition, partnership etc. Creating NGO for working with the partnership, especially for the Government is a role model. Sometimes there are a lot of money that makes conflict in the NGO. NGO campaign have your money and it usually like that. However, the NGO needs that. We are not campaign for the NGO, we provide a service for local communities. What we need to do is equal. So, the Idea is to create NGO that the NGO can be accepted for the local community that help them to improve the residence to improve the condition. The door should stay open. So, many consultations for the residents can be performed. We should trust each other, genuine conversation to communities on what happening on that area, very close business, improve the condition for the residence, but still

independent. It is the one of the key of successful conditions that we still keep until recently. We involved them in the very important parts.

4. We should make an important decision which project we should do and which one is no need to do. We will setup specifically, which part we should do. Especially in a private sector. For NGO, it is little difficult to do that. This is probably happening in this situation. Back to operation, we should looking for the private funding.
5. Local communities usually think that NGO will change the environment. So, we usually build a good relationship and they must trust on us. We start to begin, after that the relationship can be established.
6. Government talk about money and there is a contract with many purposes for the implementation. There are many objectives in this contract. We should see it many times. We have to check the requirement of the contract and they have the sample. Contract comes from the different Government. So, there are much flexibility on this contract. We must make sure to answer to the community. It is a difficult balance beyond of that. It is relative from that. We share of thinking. So, it helps to be successful.
7. It is more difficult, especially about the NGO in UK. Some Government programs are very difficult to be found, financially. Government policy, To support communities, they need to make it well, such as a scientific opinion. Find the willing communities volunteering, etc. What community of an organization we need to make. Reputational impact could be necessary, NGO. Reputational impact could be very important. We have to make it clear.
8. Inside the Government, there are different people. Some of them do not care about the NGO.
9. Money goes to many targets, how to promote it, how to establish and handle the project, capacity building, power full, how to engage and we think it is more important that the economic situation in UK for the central Government doesn't choose money and do not able to do it, especially 60% in the last 5 years. The community values are a real in danger and can be lost. So, The NGO provides support for the communities and they made the management of the building for the refreshment. It helps community to build it by their self. It is the most important part for the works, and social infrastructure. Furthermore, it helps Government to do it clearly, support the funding etc. We works for build the infrastructure in the company. Furthermore, we also facing the climate change. Then, it refers to what we can do to find something important which is very interesting to do anything else for the next generation together. The project is very simple because we should find the social benefits.

10. Usually the renewable energy is important but not it is not really transformational things. It usually related to the political positions or political issues.
11. **Question:** Do you have any suggestion to give or to do something for be a good in Taiwan?  
**Answers:** I cannot talk about it when the Government in UK work closely and positively in UK. So, I think it has to be started from the friendship, it should become a commitment to makes sure that the decision which has been made is close to community or people, probably In UK, it has been centralized, political capital, where I think is the best situation, sometimes it plays an important role. It is really important and not very cheap. As we can understand, we need to become to be more independent organization that not work for Government only but also can support Government, support any dependent organization, independent organization. Trust the community, discuss with the community, listen to them, it is a big challenge that we have faced in UK. Especially, to make the final decision. Waste issues, it is a quite interesting examples and most of difficult decision that should be decided. The community should understand about the community, Government, recognize etc. The design is very necessary, it has to keep community on an information about it. Think about that, or decide against decision that Government can trust community. It is a good model and very attractable.
12. How community makes the decision. That is the principle one. Some things like water transmission, complex issues etc. The consultation process plays an important role.
13. Small or large process: small process. Almost people will be employed on this project. The employee of community is really important and feed into the Government policy. When we meet, I guess the national NGO is very important. All about practical of the project for the workers, design of the landscapes, energy, all about excellent support for the communities are very important, especially for the local communities.
14. **Question:** How do you identify the project is sustainable? **Answer:** We find it very hard because we tested new thing. We setup a new thing that related to the experiment thing. it was fine. I suppose over the years, we found certain ways to understand that. Now, we are able to find the funding from the different process. A lot of things we do are in an adaptation, evolve, and networking which are related to sustainability. Furthermore, we carry for funding to communities around 60 programs. When we deliver the service programs, it means that they requires our support. The experience give the models and impacts related to the funding. Especially, that related to the communities.

15. With the program, It helps people to obtain skills and qualifications. The main focuses for the people are for the long time. Also, health issues, low skills people to be more confident, hire supervisor, land management, practical project, undertaking, diagram, have a qualification and possibility to the job. If undertaking practical tasks, probably the house of organization, related to the funding, find sponsorship, company that support our green teams. We may find the materials that related to the responsibility. That is a sustainable model that probably we need for the programs.

**Question:** Process to be a good thing. It is related to such kind of relationship. Environment is a dynamic thing and even for the culture is diverse. In my opinion, there is no SOP. However, there are some basics. **Answers:** I suppose the challenge related to diversity is so generic. The way we addressed that we try to handle the communities. Some guidance for some communities groups. It is all about what we can start for our project and how we make it last or works successfully. It has a lot of guidance on the community management, activity, and our project. Just a basic advance about the standard information, how to engage the professional project in different ways to work. Basically, it is useful for the guidelines. About situation, communities groups. Work with community will give us grand experience. Public parts will give more attention, give more assets, and it is very important. It is related to how we can provide something to community groups. Our system which face to face support for the network in a community group is necessary, and company does it, what they can delivery online, how to provides some reasons, share anything and access it as the first step. We need to learn it properly for the largest stage for some sectors in NGO organizations etc.



