

行政院所屬各機關因公出國人員出國報告書  
(出國類別：國際會議)

赴韓國參加「第 17 屆世界清淨空氣大會  
(World Clean Air Congress, WCAC)暨第 9  
屆更好空氣品質會議(Better Air Quality,  
BAQ)」

服務機關：行政院環境保護署

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空氣品質保護及噪音管制處柏雪翠副研究員

派赴國家：韓國釜山

出國期間：105 年 8 月 28 至 9 月 2 日

報告日期：105 年 11 月 30 日

## 摘要

依據本署 2016 國際環境夥伴計畫(International Environment Partnership, IEP)「臺灣全球環保參與計畫」活動，受美國環保署及主辦單位亞洲空氣清潔中心(Clean Air Asia, CAA)邀請，於 105 年 8 月 29 至 9 月 2 日赴韓國卡參加「第 17 屆世界清淨空氣大會(WCAC)暨第 9 屆更好空氣品質會議(BAQ)」，除了參與大會研討會議議程，了解亞洲區域各國空氣品質管理策略及技術新知外，亦與美國環保署及亞洲空氣清潔中心 (Clean Air Asia，以下簡稱 CAA) 討論，確認我國 IEP 計畫所贊助之城市清潔空氣夥伴計畫(Cities Clean Air Partnership, CCAP)相關期工作進展與後續方向 CCAP 計畫中城市認證(Cities Certification)工作項目目前執行進度及未來執行方式，以建立良好合作默契。

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## 壹、前言

本署與美國環保署(United States Environmental Protection Agency, USEPA)自 1993 年於「駐美國臺北經濟文化代表處與美國在臺協會環境保護技術合作協定」架構下，開始綿密的合作與交流；過去 20 餘年的合作，共執行 193 項合作計畫，有效引進美國先進的環保政策與技術，提升我國環境保護政策與技能。為進一步改善全球環境，加強國際合作，並提升臺灣在全球及區域國際環保的領導地位等為目標，本署於 2014 年 4 月 14 日宣布成立「國際環境夥伴計畫(International Environment Partnership, IEP)」，美國環保署(United States Environmental Protection Agency, USEPA)為 IEP 計畫之創始夥伴。

本次赴韓國卡參加「第 17 屆世界清淨空氣大會(WCAC)暨第 9 屆更好空氣品質會議(BAQ)」，除了參與大會研討會議議程，了解亞洲區域各國空氣品質管理策略及技術新知外，亦與美國環保署及亞洲空氣清潔中心 (Clean Air Asia, CAA) 討論，確認我國 IEP 計畫所贊助之城市清潔空氣夥伴計畫(Cities Clean Air Partnership, CCAP)相關期工作進展與後續方向 CCAP 計畫中城市認證(Cities Certification)工作項目未來執行方式及目前辦理進度。

## 貳、出國人員與行程

### 一、出國人員：

本次赴韓國釜山參加「第 17 屆世界清淨空氣大會(WCAC)暨第 9 屆更好空氣品質會議(BAQ)」人員係由本署永續發展室及空氣品質保護及噪音管制處各派一名代表與會。

服務單位		姓名	職稱
行政院	永續發展室	儲雯娣	簡任技正
環境保護署	空氣品質保護及噪音管制處	柏雪翠	副研究員

### 二、出國日期：105 年 8 月 28 日至 9 月 2 日

### 三、出國行程紀要：

日期	行程規劃
8 月 28 日	• 啟程，自臺灣桃園機場出發飛往韓國釜山
8 月 29 日	• 參加 BAQ 會前活動---「長程範圍傳輸及氣候對空氣污染影響 Session 會議」 • 與美國環保署午餐工作會議 • 參加大會歡迎晚宴
8 月 30 日	• 參加大會開幕儀式 • 參加「降低亞洲貨運運輸空氣污染排放 Session 會議」 • 參加「管理港區城市空氣品質 Session 會議」
8 月 31 日	• 參加「推動清潔空氣認證 Session 會議」，並擔任致詞 • 參加「揮發性有機物排放分布及宿命 Session 會議」 • 與美國環保署、CAA 及 C40 等討論 CCAP 與 C40 合作可行性
9 月 1 日	• 參加「加速城市與城市合作 Session 會議」 • 與美國環保署雙邊工作會議
9 月 2 日	• 返程，自韓國釜山出發飛回臺灣桃園機場

## 參、會議內容及成果說明

本次赴韓國釜山參加「第 17 屆世界清淨空氣大會(WCAC)暨第 9 屆更好空氣品質會議(BAQ)」，主要工作任務包括：參加 CCAP 城市認證、城市合作及 APMMN 等 Session 會議，蒐集會場贊助者識別情形及擔任致詞向夥伴國宣揚台灣 IEP 成果；與亞洲城市清潔空氣中心(CAA)及 C40 等組織研商未來 CCAP 可能合作方式；與美國環保署進行雙邊會議等。此外，利用空暇時間，聆聽部分場次會議報告內容，以了解目前各國關於空氣污染管理最新動態。

一、有關會場贊助者識別情形，茲就文宣處理、報告內容及致詞安排等方面，分述如下：

(一) 文宣處理：文宣看板有依照先前我國外交部及美國國務院協商結論，在 IEP 計畫及 CCAP 專案之文宣看板中，露出本署署徽，並提到 IEP 計畫係由臺灣環保署及美國環保署共同於西元 2014 年正式啟動。

(二) 報告內容：文宣看板名義上雖為美國環保署提供，實際上是由 CAA 製作，本署於會前已提供 CAA 本署署徽完整版檔案格式（包含署徽圖形加上中華民國臺灣環保署文字），該中心並未採用，僅使用署徽圖形。另 CAA 在其簡報介紹 CCAP 計畫緣由時，礙於來自中國大陸的壓力，僅提到該計畫係由 CAA 及 IEP 啟動，未提到本署為啟動成員之一事實。

(三) 致詞安排：在 CCAP 城市認證 Session 中，安排本署、美國環保署及 CAA 三方致詞，美國環保署 Director Mr. Mark Kasman 及 CAA 的 Executive Director Mr. Bjarne Pedersen 於致詞中均表達感謝臺灣在該計畫經費協助。而本署代表於為時 2 分半鐘致詞中，充分把握機會，強調旨在協助亞洲城市改善空氣品質問題之 CCAP 計畫係由本署、美國環保署及 CAA 共同啟動；並藉機宣揚臺灣空氣品質改善成功經驗，及表達願與各夥伴分享經驗共同對抗空氣污染挑戰。

二、本次 BAQ 會議安排 2 個 CCAP 相關 Session，分是如下：

(一) 其中一場「推動清潔空氣認證 Session 會議」，重頭戲為正式宣布 CCAP 城市認證制度啟動。惟 CAA 並未如預期提出完整認證制度規劃，僅由認證制度諮詢對象 Sustainable Jersey 介紹目前美國紐澤西州社區參與 Sustainable Jersey 認證制度情形；而本次赴 BAQ 會議參加認證示範城市啟動的 5 個城市（包括菲律賓 Baguio、Iloilo、Santa Rosa，尼泊爾 Kathmandu，及印尼 Malang），多僅針對該等城市空氣品質及管理現況描述，未提出參加認證制度之具體行動計畫；另對於未來城市推動空氣品質改善所需要的資金，亦似乎尚未談妥就位。整體而言，完全看不出來城市認證制度已就緒。

(二) 「加速城市與城市合作 Session 會議」為介紹城市合作推動執行情形。會議進行方式係以圓桌論壇方式分組討論，就城市之空氣品質問題、目前現況及願景等，初步交換想法及經驗。惟比較可惜的是，自去(104)年於美國華府宣布 4 對城市配對合作後已歷經 1 年，期間除越南 Haiphong 與日本 Kitakyushu、菲律賓 Pasig 與臺灣臺北市有進行雙邊交流外，其他城市合作情形均未能聽聞，且不見有更多城市投入城市配對合作之情形。另與會城市代表表示，空氣污染防制工作推動係有賴於執政者的施政意向及作為，例如馬尼拉因交通死亡人數遠多過因空污死亡的，故政府部門及當地民眾皆把資源運用於交通安全方面，而印尼代表則表示因當權者的輪替，而導致相關污染管制策略及作為無法持續推動。

三、本署與美國環保署合作之 APMMN 安排在「長程範圍傳輸及氣候對空氣污染影響 Session 會議」，由合作夥伴對象伊利諾大學 David Gay 進行簡報及攤位展示。此專案相較前述 CCAP 專案，四平八穩且可具體呈現成果，報告內容中也可看出臺灣積極投入情形，包括中央大學大氣汞濕沉降分析實驗室、成立聯合技術訓練中心，及舉辦汞採樣訓練研討會議等。透過

APMMN 專案夥伴網絡，充分展現臺灣環保技術以及實現大氣汞數據共享目標。由於汞具有神經毒性，近年來由於亞太地區經濟與工業快速發展，人為產生的汞污染物藉由大氣氣流跨境傳輸，影響全球空氣品質，同時也可能由降雨進入海洋，被人體或魚體吸收。藉由台美兩單位的汞監測能力，擴大並協調亞洲的汞監測活動，透過亞洲部分地區的參與，進行資料分享來解決汞污染問題。APMMN 在亞洲國家使用與 NADP(National Atmospheric Deposition Program)相同的儀器和標準操作程序，並共享數據以解決汞之相關問題。APMMN 未來將陸續在泰國、越南和印尼等國家開始進行監測。

- 四、8月31日下午與美國環保署、CAA及C40等開會，討論CCAP與C40合作可行性。查目前已有諸多國際組織或聯盟，從事城市間環保相關合作交流，包括C40、CityNet、ICLEI及CCAC等。C40著重於減碳及氣候變遷議題，是一相當活躍城市合作聯盟，CAA可能規劃利用C40既有聯盟資源，協助拓展CCAP業務。惟與會之C40代表表示，該聯盟主軸議題為減碳及氣候變遷，與CCAP之空氣污染改善業務固有關聯之處，但其合作最佳時機為城市規劃階段；且其服務對象為百萬人口以上城市(megacity)，與CCAP之中小型城市不同等級；另CAA欲索取之城市背景資料，為聯盟內部機密文件，不便提供，建議未來若有具體業務關聯之處，再提出合作議案。
- 五、8月29日中午及9月1日下午與美國環保署進行雙邊工作會議。美國環保署表示，本(105)年度為IEP最後1年，希望我方能夠繼續支應下一期經費，永續IEP計畫推動，美方並初步提到環境教育、空氣污染管理、大氣汞監測及廢電子廢棄物回收等，為未來繼續合作重點議題。我方表示，本署已規劃與外交部討論未來IEP計畫重點工作及經費規模，未來IEP計畫內容形成，希望能充分討論並基於臺美雙方共同需要及利益，此外，為配合我國政府新南向政策，部分計畫可能需要調整因應。因美國今年11月總統大選，預定明年1月進入政權交替，該署屆時要向新任署長及助理署長報



告 IEP 下一個 term 規劃，在此之前，資深計畫經理 Mr. Justin Harris 將先於本年 9 月底來台，初步討論未來合作事宜，其上司 Mr. Mark Kasman 則預計於今年 11 月大選前或後一週來臺，希望敲定未來合作內容。Mark 問我方認為需要多久時間敲定，並表示如未能談定，將一直留在臺灣直到談定。我方回答，談定時間之長短，視雙方共識程度，若雙方意見趨於一致，應該很快，反之相反，預告本署未來針對美國環保署提案不見得全盤接受之可能。

## 六、美國環保署 SmartWay 簡介

SmartWay 認證是 2004 年美國環保署與運輸物流領域企業共同合作創立的項目，用意是鼓勵消費者購買通過認證後的汽車和汽車配件包(例如輪胎)，進而減少燃油消耗、降低溫室氣體的排放、改善空氣品質。依據 SmartWay 的官方網站數據，截至 2012 年 5 月，運輸夥伴計畫已有 2933 家企業加入，其中卡車貨運車商超過 2200 家。而在減少排放的效果上，該計畫迄今已節省約 5500 萬桶石油（約值 65 億美元）使用量，減少二氧化碳排放約 2300 萬公噸，氮氧化合物 48 萬公噸以及懸浮微粒（PM）2.2 萬公噸。

SmartWay 計畫是一個整合型，包括多個項目計畫，如 SmartWay 運輸合作夥伴計畫、SmartWay 貨運計畫、SmartWay 推薦節能環保車型(客車、商用車均有)、SmartWay 拖車計畫、SmartWay 資金計畫、污染防制設備升級計畫，等等。

### 1. 運輸合作夥伴計畫

SmartWay 項目最核心的部分被稱為運輸合作夥伴計畫（Transport Partnership），參與該計劃的主要有四類：托運人、運輸公司、物流配送業主和附屬子公司。SmartWay 為不同類型的合作夥伴提供不同的節能減碳策略。

該計畫主要由兩大部分組成。首先是對承包商、托運人和物流企業進行評估、比較和污染排放追蹤，並頒發認證。作為美國環保署的直屬機構，SmartWay 的權威性是一致認可的。每個希望加入運輸夥伴計畫的公司都要簽署合作協議，並同意使用 SmartWay 所開發的車隊評估工具。SmartWay 會根據工具計算結果，給所有合作夥伴提供節能建議，並提供相應的資質認證。有了這個認證，貨主們在選擇承運商時就多了一項參考，而承運商則多了一項指標來展現自己的競爭力。除了評估與認證，運輸合作夥伴計劃的另一大工作是推動其他節能項目與工具，包括國家減少損耗項目、溫室氣體減排項目、碳足跡評估工具和其他合作夥伴支持。

最初，美國環保署發起 SmartWay 項目，僅計畫通過最簡單的宣導形式，向消費者、商家和政府提示哪些與交通相關的產品和服務是能夠減少污染排放，但事實證明這項目的影響力和作用已遠遠超過其初衷。從成立至今，SmartWay 已經成為交通領域節能環保的知名“品牌”，其品牌效應不但切實促進了交通物流領域的節能減排，還為很多加入項目的企業帶來效益。

## 2. 綠色貨車計畫

貨運最大的載體是車輛，而要實現綠色貨運最關鍵的因素是車輛技術的改進，因此 SmartWay 一直不遺餘力地推動節能減碳的各項新技術發展和應用。目前，SmartWay 主推的有四項技術。

第一項被稱為減少怠速（IdleReduction）技術，怠速是指汽車發動機的空轉。該技術主要應用於卡車與機車，由五大子系統組成，分別為自動熄火/啟動系統、電池動力系統、柴油加熱系統、輔助電機與卡車車站電氣化。第二項技術是低滾動阻力輪胎的推廣，通過改變花紋溝槽，子午化、扁平化和無內胎化的技術，做成寬基輪胎。據測試，用該輪胎替代並裝雙胎後，可降低滾動阻力 10%以上，減輕車重 50kg，縮短輪胎

總寬 145mm，節省橡膠 20%。第三項為輪胎壓力改進技術，旨在通過胎壓自動監測和充氣系統，確保能提高能效的合適胎壓，減少維修次數並延長輪胎壽命。第四項則是通過掛車空氣動力學的研究，設計流線型掛車頭尾，改變掛車尾部整流裝置及側裙，減少行駛過程中的動力消耗。

### 3. 資金計畫

對於想要購買通過 SmartWay 認證車輛的公司和個人，還可以通過與 SmartWay 合作的 8 家銀行申請到低利息的購車貸款。美國國會和各州政府還為參與 SmartWay 項目的企業提供不同類型的資金獎勵和研究經費。例如，SmartWay 的清潔柴油資金計畫，旨在加速發展有效利用能源和控制污染物排放的技術，2008 年和 2009 年，美國環保署分別將 340 萬美元和 2000 萬美元用於支持此項目。除了政府部門的財政支持，SmartWay 還為參與項目的企業爭取到一些私人基金會的資金支持。據美國環保署測算，加入計畫的每輛卡車每年可節約開支 9,000 美元，不僅節省了燃油費用，也降低了保養費用；間接收益則是在環保管理方面企業提升其在公眾中的聲譽，同時向員工證明了合作的重要性以及在同行業中被公認為行業領導者。

### 4. 政府合作

對於 SmartWay 而言，企業合作只是其中一方面，通過經濟因素驅動，而政府合作則是另一方面，主要是通過行業規範來體現，首先是運輸設備的規格統一。目前，美國統一的集裝箱與掛車標準是長掛車 53 英尺、北美標準 53 英尺集裝箱和國際海運標準集裝箱，水路、鐵路運輸也相應配套，為多式聯運提供了便利。第二是在統一的器具基礎下大力發展甩掛運輸，保持拖頭與掛車的比例為 1:3，做到一個掛車正在裝貨，一個掛車在運輸過程中，一個掛車保持空廂等待裝貨，讓拖車頭保持最高效的運作。通過前項調整措施，行業有效減少車輛等待和裝卸貨物時間，起到提高運輸效率，減少社會貨運車輛總數的目的。



# Congratulations to Our Multiple Award Winners!

EPA has recognized SmartWay Excellence Award winners nine times between 2006 and 2016. Seventy-two companies have been recognized as SmartWay Excellence Awardees multiple times.

## Two-Time Awardees

APL Logistics  
 Bacardi USA, Inc.  
 Container Connection  
 Contrans Group Inc.  
 Cowan Systems, LLC  
 Dedicated Transport LLC  
 Edwards Distribution Services, Inc.  
 Heartland Express, Inc. of Iowa  
 Heritage Transport, LLC  
 IKEA Distribution Services Inc.  
 JBS Carriers, Inc  
 JC Penney  
 John Christner Trucking, LLC  
 Kohl's Department Stores  
 L Brands, Inc.  
 Lake Enterprises Ltd.  
 Langford Inc.  
 Lone Star Transportation, LLC  
 Maverick Transportation LLC  
 McElroy Truck Lines, Inc.  
 New Century Transportation, Inc.  
 Old Dominion Freight Line, Inc.  
 Orlicks Inc  
 PAM Transport, Inc.  
 Polaris Transport Carriers Inc.  
 Ryder Supply Chain Solutions  
 Stan Koch and Sons Trucking  
 Thorsons Marketing Associates  
 Canada Inc.  
 Transport TFI 15, S.E.C., Gregoire  
 U.S. Xpress Enterprises, Inc.  
 Walmart Transportation, LLC  
 Whirlpool Corporation  
 White Arrow LLC  
 XPO Logistics Freight, Inc.

## Three-Time Awardees

Best Buy Co., Inc.  
 Bison Transport, Inc.  
 Celadon Group, Inc.  
 Challenger Motor Freight Inc.  
 C.R. England, Inc.  
 CRST Expedited, Inc.  
 D. P. Curtis Trucking, Inc.  
 Frito-Lay  
 Gordon Trucking, Inc.  
 H-E-B

Johnson & Johnson  
 LTI, Inc.  
 Modern Transportation Services,  
 LLC  
 New World Van Lines  
 NFI  
 Ruan Transportation Management  
 Systems, Inc.  
 SC Johnson and Son, Inc.  
 Smithfield Transportation Co., Inc.  
 Transplace  
 Werner Enterprises

## Four-Time Awardees

Arlo G Lott Trucking Inc  
 DHL Express USA  
 Doug Andrus Distributing LLC  
 Hub Group  
 May Trucking Company  
 Prime, Inc.  
 Quad Graphics / DuPlaineville  
 Transport  
 RPM Harbor Services, Inc.  
 UPS Small Package  
 XPO Logistics Truckload, Inc.  
 XPO Logistics Worldwide, Inc.

## Five-Time Awardees

Covenant Transport  
 HP Inc.  
 Mesilla Valley Transportation  
 Sharp Electronics Corporation  
 The Home Depot U.S.A., Inc

## Six-Time Awardees

Knight Transportation, Inc.

## Seven-Time Awardees

J.B. Hunt Transport, Inc.  
 Kimberly-Clark Corporation  
 Roehl Transport, Inc.  
 Schneider  
 Swift Transportation Co.

## Eight-Time Awardees

Lowe's Companies, Inc.



2006 年至 2016 年美國 SmartWay 得獎的企業

## 七、港區污染管理

### (一) 美國的港區管制作為：

美國港區管理的主要目的：港口是美國經濟的重要組成，預期未來將持續成長；港口是一個 mini-city，美國約有 3,900 萬人住在港口附近，這些人可能暴露於來自港口的柴油引擎的空氣污染與 PM 排放，並可能處於健康問題的風險中(如哮喘、心臟病等)，另外與港口相關的柴油排放問題(如二氧化碳和黑碳)，對於氣候變遷也產生部分影響；政府單位需建立更好的數據進行排放盤查，供環境規劃和決策參考。

美國 EPA 港口夥伴計畫(Ports Initiative) 的四個重點領域：消除港口技術開發和應用的障礙、排放量盤查的工具和指標、建立 EPA 與聯邦合作夥伴的橋樑、制定社區與港口參與的策略。美國 EPA 正在進行中的項目有：

- 1.社區與港口能力建構(Community-Port Capacity Building)。國家的港口策略評估報告：已於 2016 年 9 月 22 日公開於美國 EPA 網站中，提供州與地方政府、港口營運商、利害關係人及社區參考。美國 EPA 與大沼澤地市港口(Port Everglades)的合作發展：盤查未來 2020、2030、2050 年的污染排放量、污染減量策略方案，透過這項合作的相互學習，同時可與其他港口及利害關係人做分享。
- 2.減少柴油排放法案(Diesel Emissions Reduction Act，簡稱 DERA)：透過改造和更換較老舊柴油引擎，顯著提升全美各社區的空氣品質。
- 3.聯邦協調合作：美國環保署的運輸與空氣品質辦公室(OTAQ)、區域辦公室、環境司法辦公室(Office of Environmental Justice)、研發辦公室(Office of Research and Development)；海運運輸系統委員會(Committee on Maritime Transportation Systems)，成立海上能源與污染工作小組，著重於改善環境與提升空氣品質的資金決策。

## (二) 香港的空污管制作為

### 1. 香港港區管制作為：

依據吞吐量計算，2015 年，全球十大貨櫃港口排序依次為上海港、新加坡港、深圳港、寧波-舟山港、香港港、釜山港、青島港、廣州港、杜拜港、天津港。為管制船隻排放，香港依據國際防止船舶造成污染防止船舶造成污染公約附則 VI 的要求及管制船舶排放過量污染物。要求公有船隻使用歐盟四期柴油。自 2014 年 4 月 1 日起，船用柴油的硫含量不得超過 0.05%。由 2015 年 7 月 1 日起，遠洋船在香港水域停泊期間必須使用硫含量不超過 0.5% 的燃料。

除了減少來自本地的污染，香港政府亦與珠三角地區政府攜手探討減少遠洋船於珠三角水域內的排放。亦與廣東省攜手合作，致力改善珠江三角洲區域空氣質素。府於 2003 年 12 月共同制訂了珠江三角洲地區空氣質素管理計畫，針對發電廠、機動車輛及高污染作業程序研訂污染排放管理措施及各項空氣污染物減量目標。在 2012 年 11 月確認了珠三角地區直至 2020 年的污染排放減量方案，包括二氧化硫、氮氧化物、粒狀污染物和揮發性有機物等四種空氣污染物，2015 年減量目標 2020 年減量目標，並陸續推動各項減量措施，以維護區域空氣品質。

珠江三角洲地區 2015 年及 2020 年的污染減量目標／幅度如下表：

污染物	地區	2015 年 污染減量目標 (基準年為 2010 年)	2020 年 污染減量目標幅度 (基準年為 2010 較)
二氧化硫	香港特區	減少 25%	減少 35% 至 75%
	珠江三角洲經濟區	減少 16%	減少 20% 至 35%
氮氧化物	香港特區	減少 10%	減少 20% 至 30%
	珠江三角洲經濟區	減少 18%	減少 20% 至 40%
粒狀污染物	香港特區	減少 10%	減少 15% 至 40%
	珠江三角洲經濟區	減少 10%	減少 15% 至 25%
揮發性有機物	香港特區	減少 5%	減少 15%
	珠江三角洲經濟區	減少 10%	減少 15% 至 25%

2.香港主要污染物排放量係移動污染源，香港政府已於 20 年來採取各種管制措施減少移動污染源排放來改善空氣品質及保障健康。目前最新提倡以鼓勵及監測方式淘汰前四期歐規柴油商用車(DCVs)約 82,000 輛，包括貨車、小巴及非專利巴士。而符合淘汰前四期歐規柴油商用車(DCVs)使用者，可於截止日期報廢舊車輛並於 2014 年 3 月 1 日起申請特惠款項。截至 2015 年底，符合此計畫可淘汰柴油商用車約有 47%，包括 90%前歐規柴油商用車。由旺角交通測站數據顯示，柴油商用車占移動污染源排放量最大宗，其排放污染物為氮氧化物(NO<sub>x</sub>)和懸浮微粒，而數據顯示出於此計畫執行期間，2015 年氮氧化物和 2009 年至 2013 年的平均相比，下降約 29%、二氧化氮降低了 16%。以 Positive Matrix Factorization(PMF)模擬旺角地區車輛排放之細懸浮微粒於 2015 上半年和 2011 年至 2013 年的平均相比，下降約 16%；可見逐步淘汰柴油商用車對移動污染源排放量有顯著的貢獻。

### (三) 高雄港港區污染管制作為

高雄港為臺灣主要海運中心，污染排放來源主要來自裝卸作業、船舶及柴油車等。104 年轄內環保局即要求港務公司啟用噴霧設備、遮蔽式卸煤設備等方式，以降低裝卸作業粒狀物逸散情形，其中「噴霧設備為全國首創」，包含 7 座固定式噴霧塔與 3 座移動式噴霧車，每日派巡查人員駐港巡查，以確保裝卸作業落實防制措施操作；TSP 與 PM<sub>2.5</sub> 最高防制效率可提升至 86%及 71%，預估約可減少 TSP 335 噸/年。

針對船舶部份，完成 11 套高壓岸電系統設置，以提供船舶靠岸使用外，並建置「船舶減速查核系統(AIS)」，宣導船舶離岸 20 海浬時減速，並於 5 海浬時切換低硫油品,藉以降低污染排放，約可減少 41%之 CO<sub>2</sub>與 SO<sub>2</sub>。

另外針對進出港區之柴油車，要求車輛申請港區通行證時，必須要檢

具排煙檢測合格證明文件，以降低港區柴油車污染排放。

## 八、永續紐澤西及城市認證推動

### (一) 永續紐澤西(Sustainable New Jersey)

永續紐澤西(Sustainable New Jersey)係由紐澤西州政府、21 個郡縣政府、566 個市政府以及其他民間組織共同參與；地方政府對各項環境功能(environmental function)具有權力，但欠缺規劃及推動適合行動之能力。Sustainable New Jersey 因此扮演連結地方及州政府之角色，整合各類資源、工具及指引，協助市政府(各城鎮)發展永續/低碳相關計畫；並透過認證制度給予獎金及資金(grants and funding)。自 2009 年起，州內有 437 個(78%)城鎮參與，人口佔紐澤西州人口數之 88%；其中 193 個城市獲得認證，推動超過 6,000 個成功行動案例。

認證制度建構在”繁榮、地球、人”(Prosperity, Planet, People)等三主要組成下之各項行動。各行動皆有對應之積分(point)，市政府透過推動執行該行動以獲得積分，總積分達 150 分以上並完成 3 個優先行動可認證為”銅級”(Bronze)，350 分以上並完成 3 個優先行動可認證為”銀級”(Silver)。

永續紐澤西計畫三大主軸願景為：

- 1.繁榮(Prosperity):支持地區經濟及應用社區資源之行動，如:能源調節、支持在地食材、購買在地產品等等。
- 2.地球(Planet)：實踐環境管理及和保護之責任。
- 3.人(People) :擁抱社會公平和平等

永續環境乃為多面向之思維，以永續紐澤西之經驗來看，其提出之策略或行動並非僅以單項環境議題來規劃，而是以”繁榮、地球、人”之原則提出各項可能策略或行動，再分析各項行動對不同環境議題(如空氣品質改善)之直接助益與間接助益，亦即各種行動皆有其共益效益(co-benefit)。

其中與空氣品質相關之永續行動約有 94 項；其中 26 個屬高影響行動



(high impact actions)，對空氣品質改善具有明顯幫助，如：推動再生能源、智慧工作場所、反怠速教育與實施計畫等等。31 項屬中度影響行動(moderate impact)，對空氣品質改善有些許幫助，如：高能效建築、綠色屋頂、社區碳足跡、後院堆肥計畫等。37 項低度影響行動(low impact)，對空氣品質改善無直接影響，但具間接影響，如：塑膠袋再利用教育計畫、駕駛習慣訓練、能源管理等等。

計畫目標設定部分，能源目標為於 2050 年時較 2006 年降低 GHG 排放量 80%，需透過地方政府相關作為(由車隊及建築著手)以每年 3.6%減量率始能達成。Sustainable New Jersey 提出多項與市政操作相關之 GHG 減量達標策略，分為再生能源產製、綠色市府車隊、建物及街道照明效率等類型，並有細項作業及對應之實施所需時間與對 GHG 減量貢獻比例。

## (二) 城市認證

環保署贊助 CAA 辦理城市清潔空氣夥伴 CCAP 計畫，工作涵蓋城市夥伴(City-to-City Cooperation, C3)、城市認證計畫(City Certification)、知識平臺(Knowledge Platform)資源等三大項目。今年該贊助主要工作應確立城市認證的執行方式，並推出 5 個實驗城市。惟 CAA 的工作成果中無法看到此一認證項目推動方式，經與美國環保署及永續紐澤西計畫負責人商討，將以美國及台灣兩環保署皆有推動的空氣污染管制措施作為認證項目，並採永續紐澤西的積分評比方式分級作為評鑑方式，惟實際執行成效分級認定仍需確認相關因子後，另行訂定。

## 九、亞洲各國空氣品質狀況

空氣污染是影響世界各地人們的主要環境問題，根據世界衛生組織資料顯示，全世界每年有超過 200 萬人死於空氣污染，而在所有空氣污染物中，粒狀污染物 (PM) 是對人類健康危害的污染之一。粒狀污染物導致全世界約 9%的肺癌死亡，5%的心肺疾病死亡和約 1%的呼吸道感染死亡。根據世衛組織，越來越多的證據表明，亞洲的粒狀污染物濃度正在增加。粒狀

污染物主要來自沙塵暴、草原火災、燃油車輛的尾氣及發電廠，還有各種工業設備產生大量的粒狀污染物。南亞受到粒狀污染物污染嚴重。亞洲國家中，如中國、巴基斯坦、孟加拉、尼泊爾和印度等國家被世界衛生組織置於“對敏感族群不健康”類別，意味著這些國家的呼吸道、心臟病患者、老人及兒童應該限制戶外活動。

世界衛生組織亦指出，針對擁有超過 140 萬居民的超級城市，界空氣品質最差的七個城市中有六個在亞洲，分別為印度的德里、加爾各答及孟買，埃及的開羅，孟加拉國的達卡，中國的北京和上海。

#### (一) 中國：

中國新的空氣污染管制法於 2016 年開始生效，制定了明確的目標，以減少 PM<sub>2.5</sub>，嚴格管制易污染空氣的行業，特別是在北京、天津、上海等地區，導致高污染產業向西搬移，此舉恐造成中國西部空氣品質惡化。另亦積極追蹤污染排放源，並嚴格取締污染者，對造成污染的公司和車輛提高罰款等措施，部分地區開始限制燃油車輛使用，以期改善空氣品質。

#### (二) 日本：

日本為民眾對環保及污染議題關注高，除已制定大氣污染防治法、汽車氮氧化物(NO<sub>x</sub>)、粒狀物(PM)法、戴奧辛特別治理措施法等法規外；針對車輛 NO<sub>x</sub>、PM 等污染物排放，以車種管制、低公害車引進、鼓勵減少開車、交通流改善對策等四大策略為主軸，針對移動污染源之污染排放，以限制尾氣排放、限制燃料品質、限制氮氧化物及粒狀污染物的排放以及調整和降低交通需求及交通流對策、推廣普及及低公害車等尾氣排放性能更好得汽車，採取貸款及稅制的優惠等政策。

#### (三) 新加坡：

新加坡在空氣品質管理及能源議題具完善之法規訂定，並透過嚴格執行，達成空氣品質改善目標。近期細懸浮微粒 PM 為新加坡密切關注之空氣污染物，研究顯示 50%以上之 PM<sub>2.5</sub> 排放來自柴油機械。新加坡

國家能源效率委員會在 2001 年成立鼓勵方案，在空氣品質管制策略上除固定污染源管制，更加著重移動污染源減量，制定列管制措施：

- 1.現有車輛排放之廢氣測試和監測廢氣排放標準。
- 2.更新車輛排放控制設備。
- 3.清潔能源推動使用。
- 4.擴大公共巴士及計程車等交通工具使用天然氣。
- 5.加強公共交通工具替代私人車輛。
- 6.2006 年 10 月以來出產之新柴油車須符合歐盟 IV 期排放標準，2014 年將採取歐盟 V 期排放標準。
- 7.從 2007 年 1 月起實施更嚴格的底盤測試機黑煙測試取代強制性定期檢查柴油車自由加速煙度試驗。

#### (四) 印尼

印尼因大量人口及快速工業化造成嚴重的環境問題，相關問題還包括大規模森林開伐、森林大火引發遍及印尼、馬來西亞、新加坡的霾害、快速都市化及經濟發展造成空氣污染交通堵塞等問題。機動車輛的持續增加，如果不伴隨著實施加嚴汽機車排放標準，提供更乾淨的燃料、管理需求、促進非機動車交通方式，將對空氣品質產生不利影響。潛在的空氣污染源每個省或城市不同，印尼極少數城市已經開展大氣污染源的排放清單，以首都雅加達來說，主要空氣污染物來源有汽機車排放、工廠排放及廢棄物燃燒。

其中印尼因火耕、汽車排氣監管與燃料品質等問題影響，情況更是嚴重，因此印尼政府針對移動污染源、固定污染源及區域源提出相關管理政策，其中更加強移動污染源的管制，期望能改善空氣品質。針對固定污染源制定排放標準外，並制定森林及土地燃燒之規定，加強取締火耕行為，針對移動污染源擬定下列措施加強管制：

- 1.機動車排放計畫-使用乾淨燃料
- 2.提高新車污染防制設備性能。

- 3.大眾運輸和政府營運車輛的燃料使用。
- 4.加強車輛排放測試和車輛保養。
- 5.禁煙區進行車輛減排計畫。

#### (五) 越南

越南空氣污染來源主要發生於經濟較發達的城市，如河內、胡志明市、峴港等，而大城市主要貢獻來源則為移動污染源與營建工程。除越南本身境內污染外，境外影響部分由於季節性森林火災活動（如印尼蘇門答臘火耕），污染物隨著季風影響許多鄰國，影響越南南方空氣品質。而北越部分，則易受中國大陸沙塵及東南部空氣污染物所影響。由於經濟發展越南各大城市都嚴重受空氣污染影響，近年來越南政府針對移動污染源、固定污染源、能源政策、空氣品質監測及擬定相關法規等，並透過中央各部會及地方政府執行其管制政策，以期改善越南地區的空氣品質。在移動移動污染源管制方面，除訂定各期車輛排放標準外，亦開始立法提高車用油品品質並積極發展大眾運輸，以減少私人運具使用；固定污染源部分，針對高污染源的工業，制定相關法令且安裝連續排放監測系統，建置排放清冊，制定工業排放國家標準，例如粉塵及有機物質排放標準及火力發電廠之排放標準，其中新建之火力發電廠及需擴廠之工廠都必須依據其設置地點申請核發該廠允許排放限值，並建立工業區管制制度、增加能源效率及進行環境影響評估等。另針對各大城市之營建工地要求施工地區必須設置圍籬，針對其建材堆置須加以覆蓋避免揚塵，另針對施工材料要求夜間運輸且須覆蓋防塵網。

#### (六) 菲律賓

菲律賓每年約有 2,000 多人死於空氣污染，其首都馬尼拉是亞州空氣污染最嚴重的城市之一。空氣污染有 80%來自於汽車尾氣，由於城市人口眾多，管理混亂，官方缺乏足夠的技術設備和人力對汽車尾氣排放量進行監督管理。菲律賓政府還斥資為馬尼拉地區配置天然氣的汽

車，並製造天然氣加油站。對於天然氣汽車，政府在稅收和貸款方面給予優惠政策。菲律賓對於空氣污染管制策略除了建立空品監測網、建立排放清單、建立空氣區域，針對移動污染源建立機動車檢驗和排放測試系統、新車的合格審驗制度、加強機動車排放執法能力以及限制汽機車及工廠排放量，並提供企業污染防治設備購置貸款的優惠。

## 肆、心得與建議

- 一、目前各界對於 IEP 計畫，普遍有繼續推動共識。惟該計畫項下包括 7 大專案，對於部分專案執行成效不彰或屢屢發生問題之專案，建議從效益性及未來發展性等審慎評估，必要時考慮退場機制。
- 二、本次研討會主題包括空氣改善及節能減碳 2 主軸，在許多報告中都提到兩者相關性（例如在設計減污同時達到減碳效益）。該業務在本署分屬不同業務單位主政，建議可加強橫向合作。
- 三、空氣污染物會跨境傳輸，惟從部分報告資料顯示，因中國大陸不願提供監測資訊，以致缺漏中國大陸污染資料。會後一位協助韓國環境部進行空氣品質監測機構代表與我方提及監測資訊分享一事，未來除透過兩岸協商機制向陸方提案空污跨境傳輸合作計畫外，亦可考慮與日本及韓國等國家，研議空污跨境傳輸合作案，分享監測資訊及因應作法。
- 四、各國對於空污管制及各項環境議題重視度已大幅提升，尤其是污染跨域傳送之議題甚表重視，更投入許多研究、監測與管制工作。本署多年來亦持續執行國內環境監測工作，監控大區域範圍之空氣品質狀況及長期趨勢，對於國內環境現況已有相當掌握。我國因受地形及氣候的因素，環境污染物跨境傳輸的問題日益嚴重，例如東亞沙塵或東南亞生質燃燒等，其中因中國大陸因主要以燃煤主要能源，造成影響最為嚴重，每年秋天至隔年春天最易受境外污染影響；另我國因地理位置處於這些空氣污染物的傳輸路徑上，受到最直接影響，而對於境外污染物的傳輸現象監測與預測顯得相當重要。
- 五、由本次會議「降低亞洲貨運運輸空氣污染排放 Session 會議」資料顯示，美方與中國大陸刻密切進行貨運運輸污染削減計畫(SmartWay Program)，減少貨運運輸所造成之氣候變遷及空氣污染物排放。考量國內運輸車隊規模較美國小，不一定適用計畫項目，惟國內交通部推動安全駕駛、經濟部能

源局推動節能駕駛及本署推動環保駕駛等專案計畫，可以加強部會間橫向溝通，整合相關資源，除了可減少交通事故發生率、節省能源消耗，亦可達到污染減量之成效。

六、由「管理港區城市空氣品質 Session 會議」資料顯示，近年香港及眾多大陸港區城市之港區空氣污染削減有成，香港甚至是世界上第 1 個針對船舶制定空污排放管制之城市。同一時段，高雄市亦分享高雄港港區管理作為，因國內港區污染，目前除署裡已完成船舶排放清冊之建立及更新，並將港區污染納入國家排放清冊估算中，未來應協調交通部及港務公司要求船舶進港之污染削減作為，已完成船舶污染減量目標。

七、永續紐澤西計畫推動各項行動係以可獲得之民眾福祉、環境改善及永續環境為目標，只要可達成永續目標皆值得推動，並不考量成本有效性(Cost-Effectiveness)(即單位減量所需費用)，因為以多重效益所獲整體效果將可能大於執行行動所需投入經費。美國與台灣之文化及生活習慣不同，台灣在相關策略或行動規劃上，須納入在地人文條件，提出國內(各城市)適用之行動，以達到預期效益。

八、紐澤西政府認為各項市政措施可能具有多重效益，例如某一項措施也許需耗費較多之資金，而其帶來的環保方面改善有限，但卻可能提升人民的生活品質，故考量多重效益後，仍值得執行此項措施。台灣民眾對環境議題參與程度並不積極，如何促使民眾參與相關永續策略或行動，使其貼近民眾生活，乃為地方政府思考方向，中央政府需則應確立各範疇(能源、等)發展重點主軸，使資源集中產生效益；地方與中央之聯繫及資源整合，建議則可仿效永續紐澤西計畫由第三方(學校/機構)協助。

九、世界衛生組織認為亞洲地區各國空氣污染情形嚴重，由東南亞各國資料可發現，各國已逐步建立空氣污染管制法規，由固定源的行業別的排放標準及車輛尾氣排放標準，並輔以各項管制作為，以期減少空氣污染，我國各項排放標準及空氣品質管制作為在亞洲地區已居領頭羊地位，應思考除境

內污染減量外，應再積極以國內管制經驗及技術，協助東南亞地區各國執行空氣污染管制工作。



附件一：BAQ 會議相關活動照片



CCAP 專案相關文宣  
---右下方有本署 logo 露出



IEP 計畫文宣---說明 IEP 係臺灣環保署與美國環保署於西元 2014 年 4 月啟動



CAA 介紹 CCAP 認證制度，僅提出 CCAP 係 CAA 與 IEP 成立



CCAP 城市認證 Session 本署、美國環保署及 CAA 三方代表致詞



CCAP 城市認證 Session 宣布認證制度啟動



與 CAA、城市代表及美國環保署等合影



於美國環保署攤位前拍攝 family photo



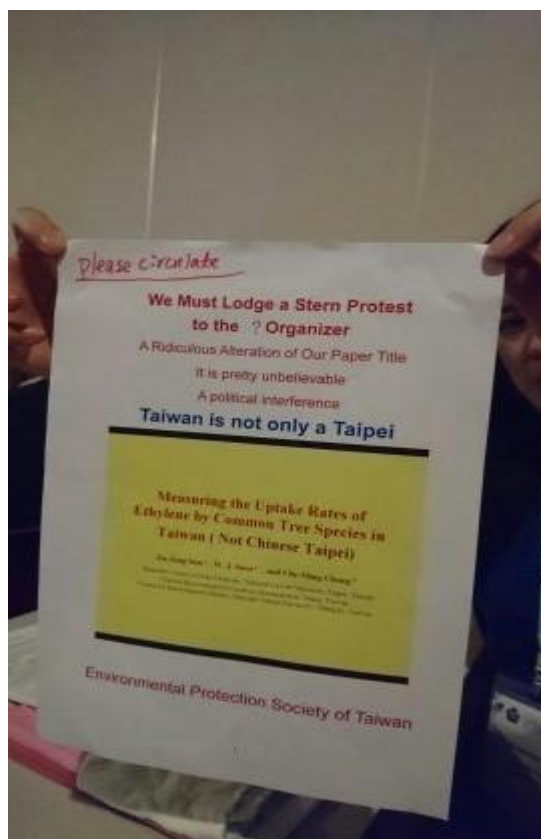
於 Welcome Reception 時與孫岩章教授及張哲民教授合影



於城市港區 Session 與高雄市環保局及交通  
局局長等合影



陸方環資部代表演講城市更好空氣路徑



孫岩章教授向大會提出抗議文書

PROGRAM OVERVIEW

29 Aug Monday – WCAC Sessions and BAQ Pre-Events

Venue	Room 101 1F, Convention Hall, BEXCO	Room 102 1F, Convention Hall, BEXCO	Room 103 1F, Convention Hall, BEXCO	Room 104 1F, Convention Hall, BEXCO	Room 105 1F, Convention Hall, BEXCO	Room 106 1F, Convention Hall, BEXCO	Capri Room, Paradise Hotel	Sixty Room, Paradise Hotel	Venice Room, Paradise Hotel	Room 213 Pusan National University (28-29 Aug)	Room 208 2F, Convention Hall, BEXCO	Everald Hall, Centum Hotel	Room 107 1F, Convention Hall, BEXCO
Time													
8:00-	REGISTRATION												
9:00-	REGISTRATION												
9:30	REGISTRATION												
10:00-12:00	Mega-city Air Quality: Current Status and Prospects	Transportation Emission Sources: Diesel	The Progress in Air Pollution Control Technologies	Air Pollution Measurement Techniques	Long-range Transport and Weather Effect of Air Pollution	MAPS-Seoul (I) (closed session)	Gh Governmental Meeting on Urban Air Quality in Asia (closed meeting)	Green Freight Logistics Day	Maintaining Air Quality in Urban Development through South-South Twinning	NASA Earth Observations, Data and Tools for Air Quality Applications	International Community of Airflow Meeting, Public Involvement and Demo/ Training on System and Tools for Air Quality Applications	Estimating the Benefits of Improving Air Quality: Info to the BenMAP-CE Tool	Soot-Free Urban Bus Fleet in Asian Cities: Needs Workshop (9:30-1:00pm)
12:00-1:30	Lunch												
1:30-3:00	Air Quality Management (I)	Air pollution and their Source Apportionment (I)	Indoor Air Pollution (I)	Air Quality Monitoring Strategy	Linking Air Pollution and Climate	MAPS-Seoul (II) (closed session)	Gh Governmental Meeting on Urban Air Quality in Asia (closed meeting)	Green Freight Logistics Day	Maintaining Air Quality in Urban Development through South-South Twinning	NASA Earth Observations, Data and Tools for Air Quality Applications	International Community of Airflow Meeting, Public Involvement and Demo/ Training on System and Tools for Air Quality Applications	Estimating the Benefits of Improving Air Quality: Info to the BenMAP-CE Tool	
3:00-3:30	Coffee Break & Networking												
3:30-5:30	Air Quality Management (II)	Air pollution and their Source Apportionment (II)	Indoor Air Pollution (II)	Organic and Bio-Aerosols	NO SESSION	MAPS-Seoul (III) (closed session)	Gh Governmental Meeting on Urban Air Quality in Asia (closed meeting)	Green Freight Logistics Day	Maintaining Air Quality in Urban Development through South-South Twinning	NASA Earth Observations, Data and Tools for Air Quality Applications	International Community of Airflow Meeting, Public Involvement and Demo/ Training on System and Tools for Air Quality	Estimating the Benefits of Improving Air Quality: Info to the BenMAP-CE Tool	
6:00-8:00	WELCOME RECEPTION! Grand Ballroom, 3F, Convention Hall, BEXCO												

WCAC & BAQ Joint Plenary/Session Activity

WCAC Session/Side Event

BAQ Session/Side Event

## 30 Aug Tuesday

Venue	Room 205 (Summit Hall), 2F, Convention Hall, BEXCO								
Time									
8:00-	REGISTRATION								
9:00-10:30	<p style="text-align: center;"><b>OPENING PLENARY</b></p> <p style="text-align: center;"><b>Conference Chairpersons</b>            Ki-Choo Moon, President, International Union of Air Pollution Prevention Associations            Robert O'Keefe, Chair, Clean Air Asia Board of Trustees</p> <p style="text-align: center;"><b>Welcome Remarks</b>            Yong-Won Jung, President, Korean Society for Atmospheric Environment            Richard Mills, Director General, International Union of Air Pollution Prevention Associations            Bjarne Pedersen, Executive Director, Clean Air Asia</p> <p style="text-align: center;"><b>Opening Address</b>            Seongkyu Yoon, Minister of Environment, Republic of Korea            Byung-soo Suh, Mayor of Busan Metropolitan City</p>								
10:30-11:00	Coffee Break and Networking								
11:00-12:30	<p style="text-align: center;"><b>OPENING KEYNOTE:</b>  <b>Climate, Air Pollution and Sustainability - New Challenges, New Science, New Opportunities</b>            Myung Ja Kim, Former Minister of Environment, Republic of Korea            Drew Shindell, Chair of the Scientific Advisory Panel, Climate and Clean Air Coalition            Jos Lelieveld, Director, Max Planck Institute for Chemistry</p>								
12:30-1:30	LUNCH								
Venue	Room 102 1F, Convention Hall, BEXCO	Room 103 1F, Convention Hall, BEXCO	Room 104 1F, Convention Hall, BEXCO	Room 105 1F, Convention Hall, BEXCO	Room 101 1F, Convention Hall, BEXCO	Room 106 1F, Convention Hall, BEXCO	Room 107 1F, Convention Hall, BEXCO	Room 108 1F, Convention Hall, BEXCO	
Time									
1:30-3:00	PM2.5 Research Consortium (Diagnosis, Removal, and Forecast)	Source-wise Emissions and their Consideration onto Air Quality	Aerosol Chemical Composition and Physical Properties (I)	Management of Transportation and Air Quality (I)	Linking Climate & Air Pollution to Achieve the SDGs and Implement the Paris Agreement	Reducing Freight Emissions in Asia	Managing Air Quality in Mountainous Cities	AirNow: Managing and Reporting Air Quality – Community Perspective and Collaboration Opportunities	
3:00-3:30	Coffee Break and Networking								
3:30									
5:00	Fine Particulate Matter (EFCA)	40 years dedication toward a better understanding of air quality	Aerosol Chemical Composition and Physical Properties (II)	Management of Transportation and Air Quality (II)	Addressing Emissions from Coal Use in Power Generation	Cleaner Fuels and Vehicles	Managing Air Quality in Port Cities	Technical Training & Development in Asia [closed meeting]	
5:30									
7:00	3rd Periodic Report on the State of Acid Deposition in East Asia (PRSD3) Room 206, 2F, Convention Hall, BEXCO								

■ WCAC & BAQ Joint Plenary/Session/Activity    
 ■ WCAC Session/Side Event    
 ■ BAQ Session/Side Event

## 31 Aug Wednesday

Venue	Room 102 1F, Convention Hall, BEXCO		Room 103 1F, Convention Hall, BEXCO	Room 104 1F, Convention Hall, BEXCO	Room 105 1F, Convention Hall, BEXCO	Room 101 1F, Convention Hall, BEXCO	Room 106 1F Convention Hall, BEXCO	Room 107 1F, Convention Hall, BEXCO	
Time									
8:00-	REGISTRATION								
9:00-10:30	Air Quality and the Future of Cities	Source and Evolution of Black Carbon	Formulating Better Urban and Regional Emission Inventories (I)	Air Quality and Health (I)	CCAC Municipal Solid Waste Initiative	Institutionalizing Fuel Economy in Asia	Introduction of Clean Air Certification Pilot Phase		
10:30-11:00	Coffee Break and Networking								
Venue	Room 205 (Summit Hall), 2F, Convention Hall, BEXCO								
Time									
11:00-12:30	<p><b>KEYNOTE SESSION:</b>  <b>Air Pollution, Health, and the Urban Future</b>            Margaret Chan, Director General, World Health Organization            Carlos Dora, Coordinator, Interventions for Healthy Environments, World Health Organization            Robert O'Keefe, Vice President, Health Effects Institute</p> <p><b>Policies for Tackling Air Pollution in Cities</b>            Yandong Tang, Director General, Foreign Economic Cooperation Office, China Ministry of Environmental Protection            Beatriz Cardenas, Centro Mario Molina, Mexico City            Murad Qureshi, Former Chair of the Environment Committee, London Assembly</p>								
12:30-1:30	Global Atmospheric Pollution Forum - Room 108 1F, Convention Hall, BEXCO [by invitation]	KOSAE Board of Trustees Meeting Room 109, 1F, Convention Hall, BEXCO		Lunch		Lunch of the Global Initiative for Child Health & Mobility Room 110, 1F, Convention Hall, BEXCO [by invitation]			
Venue									
Time		Room 102 1F, Convention Hall, BEXCO	Room 103 1F, Convention Hall, BEXCO	Room 104 1F, Convention Hall, BEXCO	Room 105 1F, Convention Hall, BEXCO	Room 101 1F, Convention Hall, BEXCO	Room 106 1F, Convention Hall, BEXCO	Room 107 1F, Convention Hall, BEXCO	
1:30-3:00		Traffic-related Air Pollution	VOCs Emissions, Distribution and Fate	Formulating Better Urban and Regional Emission Inventories (II)	Air Quality and Health (II)	Real-World Emissions	Safe, Healthy, and Clean Cities through Sustainable Mobility	Tackling Air Quality in Megacities	
3:00-3:30	Break								
3:30									
5:00	IBAQ Advisory Group Meeting Room 208 2F, Convention Hall, BEXCO [closed meeting]	Fuel Economy Experts' Group Meeting Room 107 1F, Convention Hall, BEXCO [closed meeting]	Improving air quality in cities through the Guidance Framework Room 108 1F, Convention Hall, BEXCO	KOSAE General Assembly Meeting Summit Hall 2F, Convention Hall, BEXCO	Stakeholder Roundtables 1F, Convention Hall, BEXCO	Poster Session I Rooms 201-204 2F, Convention Hall, BEXCO	Technical Tours		
5:30					Malaysia - Room 101 India - Room 102 Nepal - Room 103 Vietnam - Room 104 Philippines - Room 105		Haeundae Incineration Disposal Plant Suyeong Sewage Disposal Plant EnTech 2016 Exhibition Tour		
6:00-	IBAQ Networking Dinner [by invitation]			Walkability and Air Sensing Tour 5:00-6:30pm					

WCAC & BAQ Joint Plenary/Session/Activity

WCAC Session/Side Event

BAQ Session/Side Event

## 1 Sep Thursday

Venue	Room 102 1F, Convention Hall, BEXCO	Room 103 1F, Convention Hall, BEXCO	Room 104 1F, Convention Hall, BEXCO	Room 105 1F, Convention Hall, BEXCO	Room 101 1F, Convention Hall, BEXCO	Room 106 1F, Convention Hall, BEXCO	Room 107 1F, Convention Hall, BEXCO
Time							
8:00-							
9:00-10:30	Short-Lived Climate Pollutants; Regional Action on Climate and Air Pollution	Air Quality Modeling and Forecasting (I)	Remote Sensing to Measure Air Quality (I)	Impacts and Risk from Natural and Anthropogenic Air Pollution	Air Quality Management in China, India and Southeast Asia	Enabling and Scaling-up Electromobility	Fostering City-to-City Cooperation
10:30-11:00	Coffee Break and Networking						
Venue	Room 205 (Summit Hall), 2F, Convention Hall, BEXCO						
Time							
11:00-12:30	<b>KEYNOTE SESSION:</b> <b>The Global Challenge of Air Pollution: Finding Solutions</b> Fatih Birol, Executive Director, International Energy Agency Helena Molin-Valdes, Head of Secretariat, Climate & Clean Air Coalition William Niebling, Senior Advisor for Congressional and International Affairs, US Environmental Protection Agency						
12:30-1:30	Lunch					Launch of Clean Air Scorecard Room 208 2F, Convention Hall, BEXCO (by registration)	
1:30-3:00	Renewable Energy and Air Pollution	Air Quality Modeling and Forecasting (II)	Remote Sensing to Measure Air Quality (II)	World Air Day - Working towards a U.N. International Declaration Day	Delivering Clean Air and Climate Benefits: Reducing SLCP Emissions	Transport Debate	Next Generation Air Quality Monitoring and Communication Tools for Cities
3:00-3:30	Coffee Break and Networking						
3:30-5:30	Launch of Clean Air Asia Strategy (2017-2020) Presentation of 2016 Kong He Award for Excellence in Air Quality Management Room 205 (Summit Hall) 2F, Convention Hall, BEXCO					Poster Session II Rooms 201-204 2F, Convention Hall, BEXCO	
5:30							
6:00-8:30	GALA DINNER (Grand Ballroom, 3F Convention Hall, BEXCO)						

■ WCAC & BAQ Joint Plenary/Session/Activity    
 ■ WCAC Session/Side Event    
 ■ BAQ Session/Side Event

## 2 Sep Friday - WCAC Sessions and BAQ Post-Events

Venue	Room 102 1F, Convention Hall, BEXCO	Room 103 1F, Convention Hall, BEXCO	Room 104 1F, Convention Hall, BEXCO	Room 105 1F, Convention Hall, BEXCO	Room 101 1F, Convention Hall, BEXCO	Room 106 1F, Convention Hall, BEXCO	Room 107 1F, Convention Hall, BEXCO
Time							
8:00	REGISTRATION						
9:00-10:30	Strengthening the Global Framework for Tackling Air Pollution	Air Quality Modeling and Forecasting (III)	Emission Regulation Strategy	Management of Transportation and Air Quality (III)	Case Studies in the Implementation of Actions to Prevent Air Pollution in the Asia-Pacific Region	Train for Clean Air	Sustainable Urban Mobility and Urban Planning
10:30-11:00	Break						
11:00-12:00	17th IUAPPA WCAC and 9th CAA, BAQ Closing Ceremony Room 205 (Summit Hall), 2F, Convention Hall, BEXCO					Train for Clean Air	Sustainable Urban Mobility and Urban Planning
12:00-1:30	Lunch						
1:30-4:30							Sustainable Urban Mobility and Urban Planning

■ WCAC & BAQ Joint Plenary/Session/Activity    
 ■ WCAC Session/Side Event    
 ■ BAQ Session/Side Event

Date/Time	Title	Organizers	Venue	Remarks
<b>BAQ PRE-EVENTS (28-29 August)</b>				
<b>Pre-events - Sunday, 28 August</b>				
9:00am - 5:00pm	NASA Earth Observations, Data and Tools for Air Quality Applications (Day 1)	NASA Pusan National University	Department of Atmospheric Science Building #313 Pusan National University	Registration required
<b>Pre-events - Monday, 29 August</b>				
9:00am - 5:00pm	NASA Earth Observations, Data and Tools for Air Quality Applications (Day 2)	NASA Pusan National University	Department of Atmospheric Science Building #313 Pusan National University	Registration required
9:00am - 5:00pm	6th Governmental Meeting on Urban Air Quality in Asia	UNEP, Clean Air Asia	Capri Room, Paradise Hotel	By invitation
9:00am - 5:00pm	Green Freight and Logistics Day	ADB-led GMS CEP, GIZ, CCAC, and Clean Air Asia	Sicily Room, Paradise Hotel	Open with limited seats; registration required
1:30 - 4:30pm	South-South Twinning for Managing Urban Air Quality	ADB, Clean Air Asia	Venice Room, Paradise Hotel	By invitation
9:00am - 5:00pm	Estimating the Benefits of Improving Air Quality: Intro to the BenMAP-CE Tool	US EPA	Emerald Hall, Centum Hotel	Open with limited seats; registration required
9:00am - 4:30pm	International Community of AirNow Meeting, Public Involvement and Demo/Training on System and Tools for Air Quality Applications	US EPA	Room 208, 2F, Convention Hall, BEXCO	Open with limited seats; registration required
9:30-1:00pm	CCAC Clean Bus Fleets Workshop	CCAC, C40, ICCT, Clean Air Asia	Room 107, 1F, Convention Hall, BEXCO	Open with limited seats; registration required
<b>BAQ POST-EVENTS (2 September)</b>				
<b>Post-events - Friday, 2 September</b>				
9:00am - 12:00pm	Train for Clean Air	Clean Air Asia	Room 106, 1F, Convention Hall, BEXCO	Registration required
9:00am - 5:00pm	Sustainable Urban Mobility and Urban Planning: How to Support Urban Access for All?	IGIZ, ICLEI, and Clean Air Asia	Room 107, 1F, Convention Hall, BEXCO	Registration required
<b>SIDE MEETINGS</b>				
<b>Tuesday, 30 August</b>				
3:30 - 5:30pm	Technical Training & Development in Asia	US EPA	Room 108, 1F, Convention Hall, BEXCO	Closed meeting
5:00 - 7:00pm	3rd Periodic Report on the State of Acid Deposition in East Asia (PRPAD3)	EANET, ACAP	Room 208, 2F, Convention Hall, BEXCO	Open
<b>Wednesday, 31 August</b>				
12:30 - 3:00pm	Global Atmospheric Pollution Forum	IUAPPA	Room 108, 1F, Convention Hall, BEXCO	By invitation only
12:00 - 1:30pm	KOSAE Board of Trustees Meeting	KOSAE	Room 109, 1F, Convention Hall, BEXCO	Closed meeting
12:30 - 2:00pm	KOSAE General Assembly Meeting	KOSAE	Room 205 (Summit Hall), 2F, Convention Hall, BEXCO	By invitation only
3:00 - 5:30pm	IBAQ Advisory Group Meeting	Clean Air Asia	Room 208, 2F, Convention Hall, BEXCO	By invitation only
3:00 - 5:30pm	Fuel Economy Experts' Group Meeting	UNEP, Clean Air Asia	Room 107, 1F, Convention Hall, BEXCO	Closed meeting
<b>TECHNICAL TOURS &amp; SITE VISITS</b>				
<b>Wednesday, 31 August</b>				
3:30 - 6:00pm	Technical Tour: Haeundae Incineration Disposal Plant	KOSAE	898, Haeun-daero, Haeundae-gu, Busan, Korea	Registration required; limited slots
3:30 - 6:00pm	Technical Tour: Suyeong Sewage Disposal Plant	KOSAE	185, Oncheoncheonnam-ro, Dongnae-gu, Busan, Korea	Registration required; limited slots
3:30 - 5:30pm	EnTech 2016 Exhibition Tour	KOSAE	Exhibition Hall, BEXCO	Open; guided tour
5:00 - 6:30pm	Walkability & Air Sensing Tour	Clean Air Asia, STI, Ben's Free Tour	Around Busan city	Open event; limited slots
<b>SOCIAL EVENTS</b>				
<b>Monday, 29 August</b>				
6:00 - 8:00pm	Welcome Reception	KOSAE, IUAPPA, and Clean Air Asia	Grand Ballroom, 3F Convention Hall, BEXCO	Open event
<b>Wednesday, 31 August</b>				
12:30 - 1:30pm	Launch of the Global Initiative for Child Health & Mobility (Lunch)	FIA Foundation	Room 110, 1F, Convention Hall, BEXCO	By invitation
6:00 - 8:00pm	IBAQ Networking Dinner	Clean Air Asia	TBC	By invitation
<b>Thursday, 1 September</b>				
12:30 - 1:30pm	Launch of Clean Air Scorecard (Lunch)	Clean Air Asia	Room 208, 2F, Convention Hall, BEXCO	Registration required; limited slots
6:00 - 8:00pm	Gala Dinner	KOSAE, IUAPPA, and Clean Air Asia	Grand Ballroom, 3F Convention Hall, BEXCO	Registration required

## Monday 29 August 2016

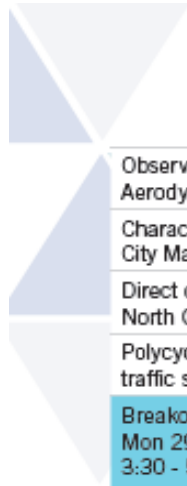
Breakout Session Mon 29 Aug 10:00am - 12:00pm	<b>Mega-city Air Quality: Current Status and Prospects</b> Chairperson: Min Hu, Peking University Venue: Room 101, 1F, Convention Hall, BEXCO
Seasonal variations of PM <sub>2.5</sub> concentrations in urban areas of five megacities of China: a long term approach	Pengjun Zhao, Peking University
A Study on Air Pollution in Ulaanbaatar City, Mongolia	Tugjsuren Nas-Urt, Mongolian University of Science and Technology
The Impact of Secondary Aerosols on Beijing Haze Events in the Year of 2014	Tianyi Tan, Peking University
How to build an indicator for the most polluted city related to air pollution?	Dietrich (Dieter) Schwela, Stockholm Environment Institute
Chemical compositions and seasonal characteristics of PM <sub>2.5</sub> in Seoul, South Korea: Focus on elevated wintertime aerosol concentrations	Yumi Kim, Korea Environment Institute
Air quality in cities and megacities in Indonesia	Muhayatun Santoso, National Nuclear Energy Agency (BATAN)
The effects of prescribed burns on air quality in Sydney	Giovanni Di Virgilio, University of New South Wales
Breakout Session Mon 29 Aug 10:00am - 12:00pm	<b>Transportation Emission Sources: Diesel</b> Chairpersons: Martin M. Ott, Eminox Limited and Patricia Krecl, Federal Technological University Venue: Room 102, 1F, Convention Hall, BEXCO
Diesel Particle Filter retrofit practice in three Chinese cities	Liyan Wang, Swiss Agency for Development and Cooperation
Black carbon, total and size-resolved particle number emission factors by fuel type in real-world conditions	Patricia Krecl, Federal Technological University
OH-Initiated Oxidation of <i>m</i> -Xylene on Black Carbon Aging	Song Guo, Peking University
Vehicle emissions inventory for heavy duty vehicles in SSA: A case study for Nairobi, Kenya	Andriannah Mbandi, Stockholm Environment Institute
Improving Air Quality by Reducing Air Pollution from Diesel Engine Vehicles	Martin M. Ott, Eminox Limited
Black carbon aging from diesel engine exhaust under polluted urban environment	Zhuofei Du, Peking University
Breakout Session Mon 29 Aug 10:00am - 12:00pm	<b>The Progress in Air Pollution Control Technologies</b> Chairperson: Masaaki Yoshikawa, Osaka Gas Co., Ltd. Venue: Room 103, 1F, Convention Hall, BEXCO
Air purifying effect of Activated Carbon Fibers installed in Noise Insulation Panel at the highway in Japan	Masaaki Yoshikawa, Osaka Gas Co., Ltd.
Development of VOCs removal system using microwave	Sang Jun Park, ECOPRO
Filtration characteristics of V-bank depth filter module with external electric field for application of HVAC system	Young-Ok Park, Korea Institute of Energy Research
Hydrogen sensing property of palladium nanocube -TiO <sub>2</sub> nanofiber composite	Woo Je-A, Inha University
Breakout Session Mon 29 Aug 10:00am - 12:00pm	<b>Air Pollution Measurement Techniques</b> Chairperson: Kangho Ahn, Hanyang University Venue: Room 104, 1F, Convention Hall, BEXCO
Atmospheric Aerosol Measurement Using Recoverable Sounding System	Kangho Ahn, Hanyang University
Demonstration of Near-Reference monitoring of air pollution using low cost compact air quality monitoring stations in Delhi, India	Paul R Pickering, Aeroqual Ltd.
Mobile Measurements of Ultrafine Particles in Various Urban Environments: The Effects of Micrometeorology and Micro-scale Built Environment	Wonsik Choi, Pukyong National University
Traceable precision dynamic dilution method to generate dimethyl sulfide gas mixtures for ambient measurement	Mi Eon Kim, Korea Research Institute of Standards and Science
Ultra-fast and high sensitivity NO <sub>2</sub> gas sensor with 2-dimensional tin disulfide (SnS <sub>2</sub> ) nanomaterials	Young-Ho Kim, Inha University



The Analysis of Particle Number Counts [PNC] at Coastal Area in Bachok, Malaysia Using Stochastic Boosted Regression Trees Approach	I.N. Azman, Universiti Malaysia Terengganu
<b>Breakout Session</b> Mon 29 Aug 10:00am - 12:00pm	<b>Long-range Transport and Weather Effect of Air pollution</b> Chairperson: Melissa Hart, University of New South Wales and Iwasaka Yasunobu, The University of Shiga Prefecture Venue: Room 105, 1F, Convention Hall, BEXCO
Mixing State of Bioaerosols Transporting Long-Range in the Free troposphere over North-East Asia; Measurements at Taklimakan desert (China) and Noto (Japan)	Yasunobu Iwasaka, The University of Shiga Prefecture
Influence of Chinese haze events in January 2013 on South Korea PM2.5 levels: Transported vs. local contributions from secondary and biomass burning sources	Jihoon Seo, Green City Technology Institute, Korea Institute of Science and Technology
Monitoring of Mercury Deposition Across Asia	David A. Gay, University of Illinois
Linking synoptic circulation patterns to air quality conditions in the Sydney basin	Melissa Hart, University of New South Wales
A Study on Wash-out Efficiency of High-Concentration PM10 by Precipitation in Jeju	Hansol S. Lee, National Institute of Environmental Research
Variation of urban air quality with the Climatic and geographical condition of the urban cities in Sri Lanka	Premasiri H.D.S, National Building Research Organisation
<b>Breakout Session</b> Mon 29 Aug 10:00am - 12:00pm	<b>MAPS-Seoul (I) [closed session]</b> Chairperson: Rokjin Park, Seoul National University Venue: Room 106, 1F, Convention Hall, BEXCO
An early report from the MAPS-Seoul field study	Joon-Young Ahn, National Institute of Environmental Research
Aerosol chemical, physical and optical properties measured in downtown Seoul during MAPS-Seoul campaign	Jeongeun Kim, National Institute of Meteorological Sciences
Monitoring of Surface Fluxes and PBL Structure in Seoul Metropolitan Area during the MAPS-Seoul campaign	Je-Woo Hong, Yonsei University
Preliminary results of PAN and VOCs measurements at Taehwa Research Forest during MAPS-Seoul 2016	Meehye Lee, Korea University
Case study of the effects of NO and NO2 on night time high O3 at urban Olympic experimental site, Seoul Korea during MAPS-Seoul campaign	Deug-Soo Kim, Kunsan National University
Black carbon measurements in metropolitan area of the Korean Peninsula performed during MAPS-2016 Seoul Study	Jeonghoon Lee, Korea University of Technology and Education
12:00 - 13:30	LUNCH
<b>Breakout Session</b> Mon 29 Aug 1:30 - 3:00pm	<b>Air Quality Management (I)</b> Chairperson: Oguntoke Olusegun, Federal University of Agriculture Abeokuta Venue: Room 101, 1F, Convention Hall, BEXCO
Air Quality Planning for Jiangsu Province: Key Findings and Lessons Learned	Rebecca L. Nicholson, RTI International
Urban Air pollution arising from municipal waste burning and the prospect of its profitable Management: Case Study of Abeokuta City, Nigeria	Oguntoke O, Federal University of Agriculture Abeokuta
Stable Isotopic Characteristics of CO <sub>2</sub> Emitted from Gasoline Vehicles	Yao Xiao, Peking University
Integrated transport master plan for Colombo Megalopolis Development Plan - New concept of high productive land use plan	Don S. Jayaweera, Strategic Enterprise Management Agency of Sri Lanka
A Study on the development of Transportation Demand Management model for urban air quality management	Jin Sik Kim, University of Seoul
<b>Breakout Session</b> Mon 29 Aug 1:30 - 3:00pm	<b>Air pollution and their source apportionment (I)</b> Chairperson: Sung-Deuk Choi, Ulsan National Institute of Science and Technology Venue: Room 102, 1F, Convention Hall, BEXCO
Concentrations and Sources of Atmospheric Polycyclic Aromatic Hydrocarbons and Nitropolycyclic Aromatic Hydrocarbons of Several Japanese Cities in Last 16 Years	Kazuichi Hayakawa, Kanazawa University
Determination of Source Contribution Combining a Receptor Model with the Emission Inventory	Qingfeng Guo, Peking University

Exploratory application of the 3-way PMF to PM2.5 and PM10 at two sites in Queensland, Australia	Godwin A Ayoko, Queensland University of Technology
Source Identification of Criteria Air Pollutants (CAPs) in Ulsan, Korea	Sang-Jin Lee, Ulsan National Institute of Science and Technology (UNIST)
<b>Breakout Session</b> Mon 29 Aug 1:30 - 3:00pm	<b>Indoor Air Pollution (I)</b> Chairperson: Gwi-Nam Bae, Korea Institute of Science and Technology Venue: Room 103, 1F, Convention Hall, BEXCO
Black carbon concentrations at airports and in passenger aircrafts. Are our travels clean?	Admir Créso Targino, Federal University of Technology
Development of Indoor Air Quality Guideline in Sri Lanka	Sugathapala A.G.T., University of Moratuwa
Factors Associated with Secondhand Smoke Incursion in Multiunit Housing	Jeonghoon Kim, Seoul Medical Center
Sealed Office Interiors in Tropical city of Colombo: Associations between comfort, air quality and worker's satisfaction	Indrika Rajapaksha, University of Moratuwa
Characterization of Ambient, On-road and Indoor Air Pollutions in Seoul, South Korea	Gwi-Nam Bae, Korea Institute of Science and Technology
<b>Breakout Session</b> Mon 29 Aug 1:30 - 3:00pm	<b>Air Quality Monitoring Strategy</b> Chairperson: Selahattin Incecik, Istanbul Technical University Venue: Room 104, 1F, Convention Hall, BEXCO
From certified regulatory PM monitoring over portable measurements up to studies in airspace - Simultaneous determination of PM fractions, particle number and particle size distribution in high time resolution applying one and the same optical measurement technique	Karsten Pletscher, Palas GmbH
Information system for real-time air quality monitoring for City of Zagreb	Silvije Davila, Institute for Medical Research and Occupational Health
The Island-wide Ambient Air Quality Monitoring Program in Sri Lanka	Priyantha M.P, Central Environmental Authority of Sri Lanka
O <sub>3</sub> Variations at Taehwa Research Forest (TRF) during 2011 ~ 2014	Hyunjin An, Korea University
Analysis of surface ozone levels in the forest and vegetation areas of the Biga Peninsula, Turkey	Selahattin Incecik, Istanbul Technical University
<b>Breakout Session</b> Mon 29 Aug 1:30 - 3:00pm	<b>Linking Air Pollution and Climate</b> Chairperson: Christopher A. James, Regulatory Assistance Project Venue: Room 105, 1F, Convention Hall, BEXCO
Black Carbon and Other Short-Lived Climate Pollutants in the Arctic - Consequences of Current Regulatory Frameworks to Emissions and Impacts	Kupiainen K., Finnish Environment Institute (SYKE) and International Institute of Applied Systems Analysis (IIASA)
Characteristics of atmospheric CO <sub>2</sub> and CH <sub>4</sub> at a suburban site in Gangwon province, Korea	Hyeon-Kook Kim, National Institute of Environmental Research
China Industrial Efficiency Programs Improve Air Quality and Reduce Energy Consumption: A Control Measure Template for Air Regulators	Christopher A. James, Regulatory Assistance Project
Emission of Short-Lived Climate Forcers from Rural Household Kitchens in North India	Khairwal Ravindra, School of Public Health, Postgraduate Institute of Medical Education and Research (PGIMER)
<b>Breakout Session</b> Mon 29 Aug 1:30 - 3:00pm	<b>MAPS-Seoul (II) [closed session]</b> Chairperson: Jin Young Kim, Korea Institute of Science and Technology Venue: Room 106, 1F, Convention Hall, BEXCO
Aerosol Pollution Characteristics and Sources in Seoul Korea during Spring: Insights from the MAPS-Seoul Campaign	Hwajin Kim, Korea Institute Science and Technology
Characteristics of high O <sub>3</sub> episodes during the 2015 MAPS (Megacity Air Pollution Study)-Seoul in relation with NOx, PAN, and H <sub>2</sub> O <sub>2</sub>	Woochul Choi, Korea University
Diurnal Variation of VOCs at Seoul during the MAPS-Seoul Campaign	Youngjin Kim, Yonsei University
Temporal, Spatial, and Vertical Distribution of Volatile Organic Compounds over Korea during MAPS-Seoul	Yong Hwan Lee, National Institute of Environmental Research
3:00 - 3:30	COFFEE BREAK & NETWORKING

<b>Breakout Session</b> Mon 29 Aug 3:30 - 5:30pm	<b>Air Quality Management (II)</b> Chairperson: Hongyan REN, Asian Development Bank and Meehye Lee, Korea University Venue: Room 101, 1F, Convention Hall, BEXCO
Keep calm and think green: what is the role of pressure groups in the battle over air pollution? Lessons and implications for air quality management in cities	Xiuxiu Gao, University of York
Air Quality Improvement Scenario for China During the 13th Five Year Plan Period	Qian Tang, Chinese Academy for Environmental Planning
South Korea air quality evaluation by CAI (Comprehensive Air Quality Index) result analysis	Seungyeon Kim, Korea Environment Corporation
The EIA system reform and regional air quality management in China	Hongyan Ren, Asian Development Bank
Evaluating Emission Reduction Efficiency of Emission Control Area in the Pearl River Delta	Xinxin Jin, Tsinghua University
Air pollution measurement and management in Chennai City, India	Ravi Shankar Pitani, Department of Community Medicine, SRMC&RI
Simulation and Assessment of Air Quality Attainment Plan in Shanghai	Zhang Yihua, Shanghai Environmental Monitoring Center
<b>Breakout Session</b> Mon 29 Aug 3:30 - 5:30pm	<b>Air pollution and their Source Apportionment (II)</b> Chairperson: Noor Z. Yahaya, Universiti Malaysia Terengganu Venue: Room 102, 1F, Convention Hall, BEXCO
Plenary) Application and Evaluation of Particulate Source Apportionment Technique for a PM Forecasting System	Byeong-Uk Kim, Georgia Environmental Protection Division
Seasonal Variation and Source Identification of Polycyclic Aromatic Hydrocarbons (PAHs) in the Atmosphere of Ulsan, Korea	Tuyet Nam Thi Nguyen, Ulsan National Institute of Science and Technology (UNIST)
Source identification of carbon in size-fractionated PM and time-resolved bulk PM <sub>10</sub> using radiocarbon and molecular source markers	Hyun-Min Hwang, Texas Southern University
Chemical Composition and Source Apportionment of Atmospheric PM <sub>2.5</sub> at a Regional Site and an Urban Site of the North China Plain	Mengren Li, Peking University
Novel Method to Analyse Air Pollution Big Data Using Stochastic Boosted Regression Trees	Noor Z. Yahaya, Universiti Malaysia Terengganu
Distribution Characteristics and Source Identification of n-Alkanes in PM <sub>2.5</sub> in the duration of 2014 APEC in the Typical Urban Area of Beijing	Hao Zhang and Hong Li, Chinese Research Academy of Environmental Sciences
The applications of machine learning on consumer-generated PM <sub>2.5</sub> data to track ambient air quality in Beijing	Liam R. Bates, Origins Technology
<b>Breakout Session</b> Mon 29 Aug 3:30 - 5:30pm	<b>Indoor Air Pollution (II)</b> Chairperson: Ki-Joon Jeon, Inha University Venue: Room 103, 1F, Convention Hall, BEXCO
Photocatalytic Indoor Air Purification: Correlation between Catalyst Structure and Durability	Seunghyun Weon, Pohang University of Science and Technology (POSTECH)
Nanoparticles and VOCs from 3D printer emission in the workplace environment	Eunji Han, Inha University
Current Status of Indoor Air Quality in a Single Cell House in Nepal and Associated Health Risk	Indira Parajuli, Incheon National University
Experimental Study on Indoor Particle Deposition Rate and Ventilation Strategies	A. Norhidayah, Universiti Malaysia Pahang
<b>Breakout Session</b> Mon 29 Aug 3:30 - 5:30pm	<b>Organic and Bio-aerosols</b> Chairperson: Hwajin Kim, Korea Institute Science and Technology Venue: Room 104, 1F, Convention Hall, BEXCO
Real time measurements of submicrometer aerosols in Seoul, Korea: Sources, characteristic and processing of organic aerosols during winter time	Hwajin Kim, Korea Institute Science and Technology
Organic Particle Formation in Korea: An Evolution of Literature and Measurements	Yong B. Lim, Korea Institute of Science and Technology
Organonitrate Formation in Wet Aerosols: A Smog Chamber Study	Yong B. Lim, Korea Institute of Science and Technology



Observations of aerosol-phase organic nitrates in Beijing using an Aerodyne High-Resolution Aerosol Mass Spectrometer	Fangting Gu, Peking University
Characterization and Source Identification of PAHs for coastal Industrial City Mangalore, India	Raj Mohan B, National Institute of Technology Karnataka Surathkal
Direct observations of organic aerosols in common wintertime hazes in North China: insights into their size, shape, mixing state, and source	Shurui Chen, Shandong University
Polycyclic Aromatic Hydrocarbons (PAHs) in air particulate matter from a traffic site in Quezon City	Everlyn Gayle T. Tamayo, University of the Philippines Diliman
<b>Breakout Session</b> <b>Mon 29 Aug</b> <b>3:30 - 5:30pm</b>	<b>MAPS-Seoul (III) [closed session]</b> Chairperson: Yu Deok Hong, National Institute of Environmental Research Venue: Room 106, 1F, Convention Hall, BEXCO
Shipboard measurements of reactive gases and aerosol properties in the Yellow Sea during MAPS-Seoul 2016 and its implication on ship emissions	Meehye Lee, Korea University
Estimating Columnar Concentrations of Chemical Components of Aerosols using AERONET Data Downwind of Seoul during the MAPS-Seoul Campaign	Yongjoo Choi, Hankuk University of Foreign Studies
Aircraft-based aerosol composition measurements during MAPS-Seoul	Taehyoung Lee, Hankuk University of Foreign Studies
Characteristics of Aerosol Size Distribution and chemical composition on the west sea around Korea peninsula by using vessel (Gisang 1) during MAPS-Seoul experiment	Joo Wan Cha, National Institute of Meteorological Science
Evaluation of inorganic aerosol simulation in East Asia using GRIMs-Chem during the MAPS 2016 campaign	Seungkyu K. Hong, Seoul National University
Inter-comparison of MAPS2016 forecasting models for surface ozone in Korea	Seungun Lee, Seoul National University

## Tuesday 30 August 2016

<b>Plenary</b> Tue 30 Aug 9:00 - 10:30		<b>Opening Plenary</b> Venue: Room 205 (Summit Hall), 2F, Convention Hall, BEXCO Moderator: Young Sunwoo, Korean Society for Atmospheric Environment	
Welcome Remarks	Conference Chairs: Kil-Choo Moon, President, International Union of Air Pollution Prevention Associations Robert O'Keefe, Chair, Clean Air Asia Board of Trustees Yong-Won Jung, President, Korean Society for Atmospheric Environment Richard Mills, Director General, International Union of Air Pollution Prevention Associations Bjarne Pedersen, Executive Director, Clean Air Asia		
Opening Address	Seongkyu Yoon, Minister of Environment, Republic of Korea Byung-soo Suh, Mayor of Busan Metropolitan City		
10:30 - 11:00		COFFEE BREAK & NETWORKING	
<b>Opening Keynote</b> Tue 30 Aug 11:00 - 12:30		<b>Opening Keynote: Climate, Air Pollution and Sustainability - New Challenges, New Science, New Opportunities</b> Venue: Room 205 (Summit Hall), 2F, Convention Hall, BEXCO Chair: Korean Society for Atmospheric Environment	
Keynote Address	Myung Ja Kim, Former Environment Minister of the Republic of Korea		
Two Targets for Climate Action: Reducing Risks for Current and Future Generations	Drew Shindell, Chair of the Scientific Advisory Panel, Climate and Clean Air Coalition		
How does the Earth's Atmosphere Maintain its Self-cleaning Capacity?	Jos Lelieveld, Director, Max Planck Institute for Chemistry		
12:30 - 1:30pm		LUNCH	
<b>Breakout Session</b> Tue 30 Aug 1:30 - 3:00pm		<b>PM2.5 Research Consortium (Diagnosis, Removal, and Forecast)</b> Chairperson: Kihong Park, Gwangju Institute of Science and Technology Venue: Room 102, 1F, Convention Hall, BEXCO	
PM2.5 mitigation technology: monitoring, toxicity, forecast, and reduction	Kihong Park, Gwangju Institute of Science and Technology		
Development of a Filter-Free Air Cleaning Device for High-Concentration PM2.5 Ultrafine Particles with Condensational Growth	Donggeun Lee, Pusan National University		
Development of air purifier to maintain particle collection efficiency	Myong-Hwa Lee, Korea Institute of Industrial Technology		
Assessment of Model Performance for Predicting Fine Particle Concentrations Using Measurement Data at the Surface	Yongjoo Choi, Hankuk University of Foreign Studies		
Trend of the chemical composition in PM2.5 at Seoul	Yong Pyo Kim, Ewha Womans University		
<b>Breakout Session</b> Tue 30 Aug 1:30 - 3:00pm		<b>Source-wise Emissions and their Consideration onto Air Quality</b> Chairperson: Cecile Nourigat, World LPG Association Venue: Room 103, 1F, Convention Hall, BEXCO	
Autogas: The Clean Burning Fuel of the Future	Cecile Nourigat, World Liquid Petroleum Gas Association		
Comparison of operation-based NOx emission rates from heavy-duty CNG buses using conventional and electric-hybrid powertrain systems	Taewoo Lee, National Institute of Environmental Research		
Atmospheric Emissions from Clamp Kilns in the Clay Brick Industry	Oladapo Akinshipe, University of Pretoria		
Impact of emissions from large point sources in Chungcheongnam-do on surface particulate matter concentration in the surrounding area	Soontae Kim, Ajou University		
Analysis of Air Pollution Trends in the Barnett Shale Gas Region of North Texas	Kuruvilla John, University of North Texas		

<b>Breakout Session</b> Tue 30 Aug 1:30 - 3:00pm		<b>Aerosol Chemical Composition and Physical Properties (I)</b> Chairperson: Chul-Un Ro, Inha University Venue: Room 104, 1F, Convention Hall, BEXCO	
Wintertime Particulate Matter and Carbonaceous Aerosols over A Rural Station in Haryana, India		P.C.S. Devara, Amity University Haryana	
Surface-active substances in primary and secondary atmospheric aerosols		Zhijun Wu, Peking University	
Single-particle investigation of summertime and wintertime Antarctic sea spray aerosols collected at King George Island using low-Z particle EPMA, Raman microspectrometry, and ATR-FTIR imaging techniques		Chul-Un Ro, Inha University	
Oxidative potential and chemical composition of ambient fine particulate matter from urban sites in Gwangju, South Korea and Metro Manila, Philippines		Lucille Joanna S. Borlaza, Gwangju Institute of Science and Technology	
Hygroscopic Properties of Newly Formed Particles in the Urban Atmosphere of Beijing during wintertime		Kai Qiao, Peking University	
Particle hygroscopicity and its link to chemical composition in the polluted urban atmosphere		Fangting Gu, Peking University	
<b>Breakout Session</b> Tue 30 Aug 1:30 - 3:00pm		<b>Management of Transportation and Air Quality (I)</b> Chairperson: Nguyen Thi Kim Oanh, Asian Institute of Technology Venue: Room 105, 1F, Convention Hall, BEXCO	
In-vehicle / Outside vehicle nitrogen dioxide concentrations to inform urban road tunnel ventilation design optimisation		Damon Roddis, Pacific Environment	
Particle emissions from road traffic – novel tools to estimate non-exhaust source contribution in emission inventories		Kupiainen K., Finnish Environment Institute (SYKE)	
A broad spatial framework for cities where mobility potential of transit systems remain to be optimally utilized		Eunice Premanjali, Anna University	
Impact of ethanol fuel on evaporative emissions of vehicles under different control conditions		Huan Liu, Tsinghua University	
Application of the GRAZ Lagrangian model (GRAL) to assess the effects of major road tunnels on air quality and health in Sydney		Paul Boulter, Pacific Environment	
Assessment of Air Quality and Climate Co-benefits of Faster Euro Technology Intrusion for Passenger Fleets in Asian Cities		Nguyen Thi Kim Oanh, Asian Institute of Technology	
<b>Breakout Session</b> Tue 30 Aug 1:30 - 3:00pm		<b>Linking Climate &amp; Air Pollution to Achieve the SDGs and Implement the Paris Agreement</b> Organized by: Institute for Global Environmental Strategies (IGES), Partnership on Low Carbon Transport (SLoCaT), Clean Air Asia Chair: Katsunori Suzuki, Kanazawa University and Co-Chair of the Asian Co-benefits Partnership Venue: Room 101, 1F, Convention Hall, BEXCO	
Welcome and Session Overview		Katsunori Suzuki, Kanazawa University and Asian Co-benefits Partnership	
Integrated Approaches in the SDGs and the Paris Agreement		Eric Zusman, Institute for Global Environmental Strategies	
Accessible Climate-Relevant Emission Measurements & Application to Brick Kilns		Tami C. Bond, University of Illinois	
Integrated Approaches in the Transport Sector		Cornie Huizenga, Partnership on Sustainable Low Carbon Transport	
The Influence of Climate Change on Air Quality in the US: Key Findings of the 2016 National Climate Assessment		Neal L. Fann, US Environmental Protection Agency	
Panel Discussion		Facilitated by Supat Wangwongwatana, Asian Institute of Technology – Regional Resource Center for Asia and the Pacific	
<b>Breakout Session</b> Tue 30 Aug 1:30 - 3:00pm		<b>Reducing Freight Emissions in Asia</b> Organized by: ADB-led GMS Core Environment Program (CEP), German International Cooperation (GIZ), Climate and Clean Air Coalition, and Clean Air Asia Chair: Clean Air Asia Venue: Room 106, 1F, Convention Hall, BEXCO	
Session Introduction and Overview		Alvin Mejia, Clean Air Asia	

Freight fuel efficiency actions in the GMS	Sumit Pokhrel, ADB-led GMS Core Environment Program (CEP)
National and Regional Strategies towards Green Freight and Logistics	Friedel Sehlleier, GIZ
Experiences on China Guangdong Green Freight Demonstration Project	Binyam Reja, World Bank
Considerations for Developing a City Freight Strategy: The Case of Beijing	Wang Boyong, Smart Freight Centre
Launching of EPA Technology Verification Training Curriculum	Buddy Polovick, US EPA
Open Discussion and Closing	Glynda Bathan, Clean Air Asia
<b>Breakout Session</b> Tue 30 Aug 1:30 - 3:00pm	<b>Managing Air Quality in Mountainous Cities</b> Organized by: International Center for Integrated Mountain Development (ICIMOD) Chair: Amico Panday, ICIMOD Venue: Room 107, 1F, Convention Hall, BEXCO
Session Introduction Air quality in Mountainous Cities: Challenges and Opportunities	Amico Panday, ICIMOD
Lessons from Latin America: Mexico City and Santiago de Chile	Luisa Molina, Molina Center for Energy and the Environment
Numerical Modeling as an Air Quality Management Tool	Bhupesh Adhikary, ICIMOD
Panel Presentations by Government Representatives	<ul style="list-style-type: none"> <li>• Ganesh Shrestha, Department of Environment, Nepal</li> <li>• Batbayar Jadamba, National Agency for Meteorology and Environmental Monitoring, Mongolia</li> <li>• Li Xiang, Beijing Environmental Protection Agency, China</li> <li>• Jatinder Singh Kamyotra, Central Pollution Control Board, India</li> </ul>
<b>Breakout Session</b> Tue 30 Aug 1:30 - 3:00pm	<b>AirNow: Managing and Reporting Air Quality – Community Perspective and Collaboration Opportunities</b> Organized by: U.S. Environmental Protection Agency (US EPA) Venue: Room 108, 1F, Convention Hall, BEXCO
Welcome and Introductions	Justin Harris and Lourdes Morales, US EPA
Opening Remarks from Various Speakers on the Importance of Air Quality Programs and the AirNow-I Community	William Niebling, US EPA
Regional Perspective on Air Quality Systems	Environmental Protection Administration City of Jakarta-Regional Environment Management Board* Vietnam Monitoring Center (CEM) Thailand Pollution Control Department*
Overview of AirNow- International Program – including the benefits of data sharing, upcoming cloud-based system and the AirNow-I community (w/ Q&A)	John E. White, US EPA
Open discussion on collaboration opportunities with session attendees (identify opportunities for sharing data, joining community, joint projects/ challenges, joint webinars, etc.)	Facilitated by John E. White, Lourdes Morales and Justin Harris, US EPA
*invited	
3:00 - 3:30pm	COFFEE BREAK & NETWORKING
<b>Breakout Session</b> Tue 30 Aug 3:30 - 6:00pm	<b>Fine Particulate Matter</b> Session sponsored by the European Federation for Clean Air and Environmental Protection Associations EFCA Chairperson: Thomas Reichert, EFCA Venue: Room 102, 1F, Convention Hall, BEXCO
Dramatic Increase Projected in Mortality Attributable to Fine Particulate Air Pollution	Jos Lelieveld, Max Planck Institute for Chemistry, Mainz, Germany
Household Combustion and Agriculture: Important Sources of Particulate Matter – Pollution with Large Mitigation Potential	Cristina B.B. Guerreiro, Norwegian Institute for Air Research (NILU), Kjeller, Norway

Carbon as a Main Traffic Pollutant in Centre of Zagreb, Croatia	Ranka Godec, Institute for Medical Research and Occupational Health, Zagreb, Croatia
Panel Session on Fine Particles and Health Effects with Jos Lelieveld, Cristina B.B. Guerreiro, Ranka Godec	Chaired by Thomas Reichert, EFCA President and Fraunhofer Institute for Chemical Technology ICT, Germany
Breakout Session Tue 30 Aug 3:30 - 5:30pm	<b>40 years dedication toward a better understanding of the air quality:</b> A session tribute to Professor. Gregory R. Carmichael Chairperson: SeogYeon Cho, Inha University Venue: Room 103, 1F, Convention Hall, BEXCO
Multi-Year Application of WRF-CAM5 over East Asia: Comprehensive Evaluation, Interannual Variability, and Chemistry-Climate Interactions	Yang Zhang, North Carolina State University
Source Apportionment Analysis of Atmospheric PM <sub>2.5</sub> Measured at a Coastal Location Near the U.S. – Mexico Border	Kuruvilla John, Texas A&M University - Kingsville
Meso-scale Air Quality Forecasting Using Initial Conditions Generated by the Global Air Quality Forecasting Model CAMS	SeogYeon Cho, Inha University
Development of a numerical system to improve particulate matter forecasts in South Korea using geostationary satellite-retrieved aerosol optical data over Northeast Asia	Chul-han Song, Gwangju Institute of Science and Technology
Improving Air Quality (and weather) Predictions via Application of New Data Assimilation Techniques Applicable to Coupled Models	Gregory R. Carmichael, University of Iowa
Breakout Session Tue 30 Aug 3:30 - 5:30pm	<b>Aerosol Chemical Composition and Physical Properties (II)</b> Chairperson: Seung-Bok Lee, Korea Institute of Science and Technology Venue: Room 104, 1F, Convention Hall, BEXCO
New Particle Formation Observed Infrequently in Yulong Mountain (3410m) in Southwest China	Min Hu, Peking University
Spatial Distribution of Cloud Condensation Nuclei in the Marine Boundary Layer along the California Coastline	Armin Sorooshian, Korea Institute of Science and Technology
Characterization of ambient aerosols from Amazonian rainforest and city of Manaus, Brazil	Li Wu, Inha University
Physical and chemical characterization of road dust collected at urban sites in Korea and Mongolia	Tsatsral Batmunkh, Gwangju Institute of Science and Technology
Estimation of the water content based on a basis of chemical composition	Zhijun Wu, Peking University
Study of Physico-chemical Characteristics of aerosol coarse particles during different seasons at an eastern coastal site in India	Upasana Panda, CSIR-Institute of Minerals and Materials Technology
Breakout Session Tue 30 Aug 3:30 - 5:30pm	<b>Management of Transportation and Air Quality (II)</b> Chairperson: Ray Minjares, International Council on Clean Transportation Venue: Room 105, 1F, Convention Hall, BEXCO
Specific actions to enhance sustainable mobility and reduce air pollution in Lisbon	Francisco Gonçalves, Lisbon Energy and Environment Agency
The Impact of the Odd/Even Scheme on Delhi's Air Quality	Isha Kulkarni, Enzen Global Solutions
Role of standards in Transport, Energy & Environment	Eng K Jayantha Sirikumara, Sri Lanka Standards Institution
Enhancing sustainability and inclusiveness of urban transportation systems in Asia	Madan Regmi, ESCAP
Impacts of emission from on-road transport changes on air quality in Bangkok Metropolitan Region (BMR), Thailand	Perwadee Cheewaphongphan, King Mongkut's University of Technology Thonburi Thailand
Assessment of routine servicing and maintenance as a low-cost policy measure to reduce emissions from 2-wheel vehicles in Kathmandu, Nepal	Prakash V. Bhave, International Centre for Integrated Mountain Development
The 'Transit Elevated Bus' in Beijing: Feasibility, Black Carbon Reduction Potential and Impact on Urban Health	Jiayi He, Climate and Clean Air Coalition



Impacts and mitigation of excess diesel NOx emissions in 11 major vehicle markets	Ray Minjares, International Council on Clean Transportation
Environmental Policy Database - Cross-Country Policy Comparison: What Does a Successful Eco-car Policy Design Look Like? -	Keiko Hirota, Japan Automobile Research Institute
<b>Breakout Session</b> Tue 30 Aug 3:30 - 5:00pm	<b>Addressing Emissions from Coal Use in Power Generation</b> Organized by: Clean Air Asia and Centre for Science and Environment Chair: J S Kamyotra, Central Pollution Control Board (CPCB) Venue: Room 101, 1F, Convention Hall, BEXCO
Keynote: Current scenario, challenges, and available solutions in addressing emissions from coal-fired power plants in Asia	Priyavrat Bhati, CSE
Sharing of good practices, including success factors: • Beijing's experience in reducing emissions from coal-fired power plants. • Improvement on allocation method of air pollutions cap and trade system in South Korea	<ul style="list-style-type: none"> <li>• Li Xiang, Beijing Environmental Protection Bureau</li> <li>• Minyoung Lee, Korea Environment Corporation</li> </ul>
Panel discussion: • Panelists will provide an overview of the current uptake of solutions to address emissions and their respective challenges for each sub-region (East Asia, Southeast Asia, and South Asia)	<p>Facilitated by: Anumita Roy Chowdhury, CSE</p> <ul style="list-style-type: none"> <li>• Savitri Garivait, King Mongkut's University of Technology Thonburi</li> <li>• S K Paliwal, Central Pollution Control Board of India</li> <li>• Batbayar Jadamba, National Agency of Meteorology and Environmental Monitoring of Mongolia</li> </ul>
<b>Breakout Session</b> Tue 30 Aug 3:30 - 5:30pm	<b>Cleaner Fuels and Vehicles</b> Organized by: United Nations Environment Programme (UNEP), Asian Clean Fuels Association (ACFA), Clean Air Asia Chair: Alvin Mejia, Clean Air Asia Venue: Room 106, 1F, Convention Hall, BEXCO
Session introduction	Alvin Mejia, Clean Air Asia
Global Strategy for Lower Sulphur Fuels	Bert Fabian, UNEP
Meeting Euro 5 Fuel Standards	Nurfarahislinda Ismail, ACFA
Advancements in Vehicle Emission Control Technologies	Steve Johnson, Faurecia
Establishing Euro 4 Roadmap in Sri Lanka	Thusitha Sugathapala, University of Moratuwa, Sri Lanka
Phasing-out Old Diesel Commercial Vehicles in Hong Kong – An Evaluation of the Programme's Effectiveness in Improving Local Air Quality	Roy Tsang, Hong Kong Environmental Protection Department
Summary	Bert Fabian, UNEP
<b>Breakout Session</b> Tue 30 Aug 3:30 - 5:00pm	<b>Managing Air Quality in Port Cities</b> Organized by: Natural Resources Defense Council (NRDC), Clean Air Asia, and United Nations Environment Programme Chair: Freda FUNG, NRDC Venue: Room 107, 1F, Convention Hall, BEXCO
Overview of Asia Port and Shipping Emissions	Freda FUNG, NRDC
Green Port and Shipping Practices in China	Chuansheng PENG, China Waterborne Transport Research Institute, Ministry of Transport
Prevention and Control Emissions in Port Cities- The Case of Hong Kong	Simon NG, Civic Exchange
Busan Port Efforts & Future Program for Green Port	Boo Wan KANG, Busan Port Authority
Emission Inventory of Tanjung Priok Port in Indonesia	Julius Adravidia Barata, Ministry of Transport (Indonesia)
Emission Control for Ships- A Perspective from a Marine Diesel Engine Developer	Thomas Werner, Winterthur Gas and Diesel
Interactive discussion: The Potential of Establishing Emission Control Areas in Asia	All speakers

## Wednesday 31 August 2016

<b>Breakout Session</b> Wed 31 Aug 9:00 - 10:30	<b>Air Quality and the Future of Cities</b> Chairperson: John Murlis, Environment Protection, UK Venue: Room 102, 1F, Convention Hall, BEXCO
Energy Futures and the Prospects for Cleaner Cities	Alan Gertler, Desert Research Institute
Sustainable Cities: Delivering Climate Mitigation and Clean Air through Resource Efficiency	Luca de Giovanetti, Swisscontact
Transport, Accessibility and Connectivity	John Murlis, Environment Protection, UK
Cleaner Air for Cities: the Role of Governance and Regulation	Christopher James, Regulatory Assistance Program
Panel Discussion: Key Challenges for Air Pollution in Asian, African and Latin American Cities	Frank Murray, Murdoch University Bert Fabian, United Nations Environment Programme Beatriz Cardenas, Centro Mario Molina
<b>Breakout Session</b> Wed 31 Aug 9:00 - 10:30	<b>Source and Evolution of Black Carbon</b> Chairpersons: Sumal Nandasena, National Institute of Health Sciences and Taehyoung Lee, Hankuk University of Foreign Studies Venue: Room 103, 1F, Convention Hall, BEXCO
Black carbon and fine particle emissions in Sri Lankan kitchens	Sumal Nandasena, National Institute of Health Sciences
Evolution of soot particles during aging process under ambient conditions	Min Hu, Peking University
An Analysis of Potential Control Options and Expected Reductions in Elemental Carbon Emissions in Delhi	Sakshi Batra, Central Pollution Control Board
Seasonal variation of ozone and black carbon observed at Paknajol, an urban area in the Kathmandu Valley, Nepal	Bhupesh Adhikary, International Centre for Integrated Mountain Development
<b>Breakout Session</b> Wed 31 Aug 9:00 - 10:30	<b>Formulating Better Urban and Regional Emission Inventories (I)</b> Chairperson: Karvosenoja Niko, Finnish Environment Institute and Deug-Soo Kim, Kunsan National University Venue: Room 104, 1F, Convention Hall, BEXCO
Importance of spatially representative emission inventories in regional air quality modeling	Karvosenoja N., Finnish Environment Institute (SYKE)
Challenges and opportunities in the design and construction of a GIS-based emission inventory infrastructure for the Niger Delta region of Nigeria	Mofoluso A. Fagbeja, National Space Research and Development Agency
Develop mobile source emission inventory for Hanoi, Vietnam	Dam Thanh Vo, Norwegian Institute for Air Research
NOx emissions variability of a light duty diesel vehicle using on-road emission factors for 1-km trip segments under different season-route combinations	Taewoo Lee, National Institute of Environmental Research
Emission Inventory of Air Pollutants in Bangkok from Road Transportation in 2013	Narisara Thongboonchoo, King Mongkut's Institute of Technology Ladkrabang
<b>Breakout Session</b> Wed 31 Aug 9:00 - 10:30	<b>Air Quality and Health (I)</b> Chairperson: Ken Yamashita, Asia Center for Air Pollution Research Venue: Room 105, 1F, Convention Hall, BEXCO
Plenary) Neurotoxicity of Ultrafine Particulate Matter and PM <sub>2.5</sub> from Urban Air Pollution	Amitava Bandyopadhyay, University of Calcutta
Indoor air quality exposure assessment in rural settings of central Nepal	Alpha Thapa, International Centre for Integrated Mountain Development
Assessing Health Impacts and Implications Associated with Air Quality in Bangkok Metropolitan Region using BenMAP-CE	Savitri Garivait, King Mongkut's University of Technology Thonburi
Outdoor PM <sub>2.5</sub> and black carbon exposure assessment in urban slums in India	Abhay Anand, IIT Bombay
Study on the evaluation of adverse effect on human health using the monitoring data of air pollutants in East Asia	Ken Yamashita, Asia Center for Air Pollution Research

<b>Breakout Session</b> <b>Wed 31 Aug</b> <b>9:00 - 10:30</b>		<b>CCAC Solid Waste Management Initiative</b> Organized by: Climate and Clean Air Coalition (CCAC), C40 Cities Climate Leadership Organization Chair: Ricardo Cepeda-Marquez, C40 Cities Venue: Room 101, 1F, Convention Hall, BEXCO	
Session Introduction		Ricardo Cepeda-Marquez, C40 Cities	
The CCAC MSW Initiative: Driving transformative changes in waste management practices in cities		Ricardo Cepeda-Marquez, C40 Cities	
Climate change and local air quality impacts from the waste sector		Mushtaq Memon, United Nations Environment Programme (UNEP)	
Showcase of projects supported by IGES / CCAC MSWI in Asia addressing waste management and air pollution challenges		Premakumara Jagath Dickella Gamaralalage, Institute for Global Environmental Strategies (IGES)	
City case Study: Overview of a case study by a representative from a city participating in CCAC MSWI		TBD	
Panel discussion: <ul style="list-style-type: none"> <li>• How cities can connect the importance of waste management actions with climate change and improved air quality</li> <li>• The benefits of city to city collaboration</li> <li>• The importance of measuring and demonstrating impacts</li> <li>• The importance for local and short term impacts in the fight against climate change</li> </ul>		Facilitated by Milag Ballesteros, C40 Cities Ricardo Cepeda-Marquez, C40 Cities Mushtaq Memon, UNEP Premakumara Jagath Dickella Gamaralalage, IGES Participating City Representative*	
Open Q&A			
<b>Breakout Session</b> <b>Wed 31 Aug</b> <b>9:00 - 10:30</b>		<b>Introduction of Clean Air Certification Pilot Phase</b> Organized by: United States Environment Protection Agency (US EPA) Chair: Katharine Thoday, Cities Clean Air Partnership, Clean Air Asia Venue: Room 107, 1F, Convention Hall, BEXCO	
The Cities Clean Air Partnership (CCAP) is an initiative that seeks to address the challenges that cities face in improving air quality by making a clear business case that links air quality improvements to cities' economic and quality-of-life decisions. The core of the initiative is the development of a certification scheme that will: <ul style="list-style-type: none"> <li>• recognize actions that cities take to address air quality,</li> <li>• increase opportunities for cities to learn from each other and collectively address issues, and make it easier to establish new collaborations with public and private stakeholders.</li> </ul>			
Overview of certification standard development		Glynda Bathan, Clean Air Asia Katsunori Suzuki, Kanazawa University Japan	
Panel Discussion: Anticipated impact of certification		Renee Haider, Sustainable Jersey Jamie Leather, Asian Development Bank Mathias Miedreich, Faurecia  Mayor Danilo Fernandez, City of Sta. Rosa Cordelia Lacsamana, City of Baguio Arif Dermawan, City of Malang	
Launch of Pilot		Bjarne Pedersen, Clean Air Asia Wen-Ti Chu, EPA, Chinese Taipei Mark Kasman, US EPA	
<b>Breakout Session</b> <b>Wed 31 Aug</b> <b>9:00 - 10:30</b>		<b>Institutionalizing Fuel Economy in Asia</b> Organized by: United Nations Environment Programme (UNEP), German International Cooperation (GIZ), and Clean Air Asia Chair: Tali Trigg, GIZ Venue: Room 106, 1F, Convention Hall, BEXCO	
Session introduction		Tali Trigg, GIZ	
Global Fuel Economy: State and Prospects		Sheila Watson, FIA Foundation	
CO2-Based Taxation Policies		Watcharin Boonyarit, Department of Alternative Energy Development and Efficiency, Ministry of Energy Thailand	
Case of South Korea: Fuel Economy and GHG Standards		Jin Young Park, The Korean Transport Institute	

Sri Lankan Experience: Impacts of Fiscal Policies on Fuel Economy	Don Jayaweera, Strategic Enterprise Management Agency of Sri Lanka
<b>Panel Discussion</b> <ul style="list-style-type: none"> <li>• Inter-ministerial cooperation and stakeholder participation in the development and implementation of policy</li> <li>• Data collection and monitoring fuel economy</li> <li>• The importance of labeling, consumer awareness and market transformation strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Ernesto Abaya, University of the Philippines National Center for Transportation Studies</li> <li>• Peerawat Saisirirat, National Metal and Materials Technology Center, Thailand</li> <li>• Le Anh Tu, Vietnam Register</li> <li>• Malaysia Automotive Institute</li> </ul>
Summary and Closing	Tali Trigg, GIZ
10:30 - 11:00	COFFEE BREAK & NETWORKING
<b>Keynote Session</b> Wed 31 Aug 11:00am - 12:30pm	<b>Air Pollution, Health, and the Urban Future</b> Venue: Room 205 (Summit Hall), 2F, Convention Hall, BEXCO Moderator: Clean Air Asia
Air Pollution: The Global Health Challenge	Margaret Chan, Director General, World Health Organization
Air Pollution Health Impacts - the Pulse for the New Development Agenda	Carlos Dora, Coordinator, Interventions for Healthy Environments, World Health Organization
Burden of Disease Attributable to Coal-Burning and Other Major Sources of Air Pollution in China - Progress and Future Challenges	Robert O'Keefe, Health Effects Institute
<b>Policies for Tackling Air Pollution in Cities</b>	
A Roadmap for Better Air Quality in Cities	Yandong Tang, Director of International Center for Environmental Technology, Foreign Economic Cooperation Office, China Ministry of Environmental Protection
Strengthening air quality governance in Central Mexico Megalopolis	Beatriz Cardenas, Centro Mario Molina, Mexico City
Driving away from diesel in European Cities	Murad Qureshi, Former Environment Committee, London Assembly
12:30 - 13:30	LUNCH
<b>Breakout Session</b> Wed 31 Aug 1:30 - 3:00pm	<b>Traffic Related Air Pollution</b> Chairperson: Erik Velasco, Singapore-MIT Alliance for Research and Technology, Center for Environmental Sensing and Modeling Venue: Room 102, 1F, Convention Hall, BEXCO
Particles exposure in the public transport of Singapore	Erik Velasco, Singapore-MIT Alliance for Research and Technology, Center for Environmental Sensing and Modeling
Time-Series Ozone Model with the Consideration of Traffic Flows and Meteorological Factors in Urban Regions	Youngkook Kim, The Korea Transport Institute
Spatial-Temporal Assessment on Marine Emission Control Policy – A Case Study of the Container Port in Hong Kong	Yiqi Zhang, Hong Kong University of Science and Technology
Characteristics of the evaporative emissions from three types of light-duty gasoline vehicles on SHED test in China	Fanyuan Deng, Tsinghua University
An Analytical Application of the Role of Carbon Monoxide as Published Indicators of Urban Transport with GIS (Case Study: Qazvin City)	Sadra Alipour, Director General for Research and Environment Technology Development, Bureau Department of Environment
Assessment of NO <sub>2</sub> concentration levels in a traffic urban hotspot in Madrid (Spain) through an experimental field campaign and high resolution modelling	Rafael Borge, Technical University of Madrid
<b>Breakout Session</b> Wed 31 Aug 1:30 - 3:00pm	<b>VOCs Emissions, Distribution and Fate</b> Chairperson: Haryono Huboyo, Diponegoro University Venue: Room 103, 1F, Convention Hall, BEXCO
Spatial and Seasonal Distribution of Volatile Organic Compounds (VOCs) and Source Identification in Ulsan, Korea	Seong-Joon Kim, Ulsan National Institute of Science and Technology
Volatile Organic Compound concentration in the city of Colombo	Perera G.B.S., University of Moratuwa Sri Lanka

Measuring the Uptake Rates of Ethylene by Common Tree Species in Chinese Taipei	En-Jang Sun, Professor, Chinese Taipei
VOCs Identification from Indonesian Peatland Fire During Smoldering Phase	Haryono S Huboyo, Diponegoro University
Community Observation Networks for Air in action	Elizabeth R. Somervell, National Institute of Water and Atmospheric Research
<b>Breakout Session</b> Wed 31 Aug 1:30 - 3:00pm	<b>Formulating Better Urban and Regional Emission Inventories (II)</b> Chairperson: Huan Liu, Tsinghua University Venue: Room 104, 1F, Convention Hall, BEXCO
An estimation of NOx emissions over East Asia using satellite-observed NO <sub>2</sub> columns	Kyung M. Han, Gwangju Institute of Science and Technology
Emission Inventory Activity on Tanjung Priok Port, Indonesia as The Base for The Implementation of Sustainable Port Concept	Yusa C. Permana, Indonesia Transportation Society
Health and climate impacts of Ocean-going vessels in East Asia	Huan Liu, Tsinghua University
Implementation of Near Real-Time Fire and Dust Emissions in Air Quality Forecast over Northeast Asia	Soontae Kim, Ajou University
Current and Future Emissions from Crop residue burning in India	Tanbir Singh, Panjab University
Improvement of CREATE emissions inventory of anthropogenic carbon monoxide for Northeast Asia	Ki-Chul Choi, Konkuk University
<b>Breakout Session</b> Wed 31 Aug 1:30 - 3:00pm	<b>Air Quality and Health (II)</b> Chairperson: Ho Kim, Seoul National University Venue: Room 105, 1F, Convention Hall, BEXCO
Health effect of future ambient ozone levels in 7 major cities, South Korea	Jae Young Lee, Seoul National University
Association Between Air Pollutants Exposure with Frequency of Micronuclei (Mn) in Exfoliated Buccal Mucosa among Primary School Children Nearby Industrial Area	Nor Ashikin Sopian, Universiti Putra Malaysia
A physico-chemical study of dust fall samples collected within human settlements that are close to derelict and ownerless asbestos mine dumps in Mpumalanga province, Republic of South Africa	Shadung John Moja, Sustainable Resources and Environment Competency, Council of Geoscience,
Ambient air PM2.5 and its impact on cardiovascular disease in Ulaanbaatar residents	Enkhjargal Altangerel, Public Health Institute
Indoor Air Quality and Its Association with Respiratory Health among Preschool Children in Urban and Suburban Area	Juliana Jalaludin, Universiti Putra Malaysia
Household air pollution in urban and rural sectors, and in poorer and better off households in the Western Province in Sri Lanka	Sumal Nandasena, National Institute of Health Sciences
<b>Breakout Session</b> Wed 31 Aug 1:30 - 3:00pm	<b>Real-World Emissions</b> Organized by: United Nations Environment Programme (UNEP), German International Cooperation (GIZ), and Clean Air Asia Chair: Bert Fabian, UNEP Venue: Room 101, 1F, Convention Hall, BEXCO
Session introduction	Bert Fabian, UNEP
US EPA experience on Light Duty Vehicle Enforcement and Compliance Program	Jim Blubaugh, US EPA
EU Experience and New Concept for Emission Testing	Antonio Multari, MAHA
Real-World and Certified Fuel Consumption Gap Analysis	Maya Ben Dror, The Innovation Center for Energy and Transportation (iCET)
Panel Discussion and Q&A	Ray Minjares, ICCT Jeong-Soo Kim, Ministry of Environment, ROK Fatehah Aziz, MAI Axel Friedrich*, GIZ
Summary and Closing	Bert Fabian, UNEP
*to be confirmed	

**Breakout Session**  
**Wed 31 Aug**  
**1:30 - 3:00pm**

**Safe, Healthy, and Clean Cities through Sustainable Mobility**  
 Organized by: International Council for Local Environmental Initiatives (ICLEI) and German Partnership for Sustainable Mobility (GPSM)  
 Chair: ICLEI and GPSM/GIZ  
 Venue: Room 106, 1F, Convention Hall, BEXCO

Introduction and Session Overview	Michel Arnd, GPSM/GIZ
Case Studies	
Walking as a Means to Urban Livability: The Case of Hong Kong	Simon Ng, Civic Exchange
Planning of Livable Cities and Sustainable Urban Transportation Systems	Mayor Chen Chu, Kaohsiung City*
Citizen Participation for Sustainable Urban Mobility	Mayor Yeom Tae-Young, Suwon City*
Reaching for Clean Air: The Role Civil Society Can Play	Dorothee Saar, Deutsche Umwelthilfe
The Role of Development Banks in Supporting Cities	Jamie Leather, Asian Development Bank
Panel Discussion	All session speakers
Summary and Closing	Sunny Kodukula, ICLEI
<i>*Invited</i>	

**Breakout Session**  
**Wed 31 Aug**  
**1:30 - 3:00pm**

**Tackling Air Quality in Megacities**  
 Organized by: Clean Air Asia  
 Chair: FU Lu, Clean Air Asia  
 Venue: Room 107, 1F, Convention Hall, BEXCO

Overview of Asia Megacities Status and Trends	Kaye Patdu, Clean Air Asia
Air Quality Improvement and Prospects of Shenzhen City	Yu Xinglu, Shenzhen Human Environment Commission
Tokyo's Experience in Vehicle Emission Control	Kaoru Akahoshi, Institute for Global Environmental Strategies
Control Strategies for Stationary Source Emissions and Their Effects on Ambient Air Quality in Shanghai	Zhang Yihua, Shanghai Environmental Monitoring Center
Sustainable Mobility in ASEAN Metropolitan Regions – A regional project approach towards avoiding the "megacity development trap"	Roland Haas, GIZ
Interactive discussion: challenges and opportunities of air quality improvement in Asian megacities	Panelists: All speakers and Naini Jayaseelan, Inter State Council Secretariat, India

**3:00 - 3:30pm** COFFEE BREAK & NETWORKING

**Breakout Session**  
**Wed 31 Aug**  
**3:30 - 6:00pm**

**Mapping steps and actions to improve air quality in cities through the Guidance Framework**  
 Organized by: Clean Air Asia  
 Chair: Gary Haq, Stockholm Environment Institute  
 Venue: Room 106, 1F, Convention Hall, BEXCO

Welcome Remarks Session Overview & Introduction of Participants	Gary Haq, Stockholm Environment Institute
The Guidance Framework for Better Air Quality in Asian Cities	Wei Wan, Clean Air Asia
The Guidance Framework Roadmap & Status of AQM in Asia	Kim Oanh, Asian Institute of Technology

Application of the Guidance Framework Roadmaps: Towards Stepwise Actions to AQM Improvement Panel Presentations & Discussion: 1. China – Best practices of city-city exchanges of tools/capacity to jumpstart emissions inventories in less-developed cities 2. Philippines – Airshed Governance 3. Mongolia – Air quality communication 4. Vietnam – National-level Clean Air Action Planning	1. Hu Ming, Shanghai Environmental Monitoring Center 2. Jean Rosete, Environmental Management Bureau, Department of Environment and Natural Resources – Philippines 3. Ministry of Environment, Green Development and Tourism (Mongolia) 4. Vietnam Environment Administration
Plenary Discussion	Facilitated by Gary Haq, Stockholm Environment Institute
Closing	Gary Haq, Stockholm Environment Institute

Breakout Session Wed 31 Aug 3:30 - 5:00pm	<p><b>Stakeholder Roundtables</b> This Roundtable will provide a platform to discuss what is needed to improve urban air quality, reduce GHG emissions, and make cities more livable in different Asian countries.</p> <p>Malaysia Stakeholders Roundtable Moderator: Noor Zaitun Yahaya, University of Malaysia Venue: Room 101, 1F, Convention Hall, BEXCO</p> <p>India Stakeholders Roundtable Moderator: Prarthana Borah, Clean Air Asia – India Venue: Room 102, 1F, Convention Hall, BEXCO</p> <p>Nepal Stakeholders Roundtable Moderator: Rajan Thapa, Clean Air Network Nepal Venue: Room 103, 1F, Convention Hall, BEXCO</p> <p>Vietnam Stakeholders Roundtable Moderator: Phan Quynh Nhu, Vietnam Clean Air Partnership Venue: Room 104, 1F, Convention Hall, BEXCO</p> <p>Philippines Stakeholders Roundtable Moderator: Julieta Manlapaz, Partnership for Clean Air Venue: Room 105, 1F, Convention Hall, BEXCO</p>
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Wed 31 Aug 3:30 - 5:00	<p><b>Poster Session I</b> Venue: Rooms 201-204, Convention Hall, BEXCO</p>
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## Thursday 1 September 2016

<b>Breakout Session</b> Thu 1 Sep 9:00 - 10:30	<b>Short-Lived Climate Pollutants: Regional Actions on Climate and Air Pollution</b> Chairperson: Kevin Hicks, Stockholm Environment Institute Venue: Room 102, 1F, Convention Hall, BEXCO
Hemispheric Transport of Air Pollution and Short-Lived Climate Pollutants: the work of the UNECE Convention	Greg Carmichael, University of Iowa
Air Pollution and Climate in Asia: The Asian Regional Assessment	Frank Murray, Murdoch University
Assessment and Action in Latin America	
The Regional Action Plan on Air Pollution in Latin America and the Caribbean	Eric Concepcion, Ministry of the Environment Peru
The Regional Assessment of Short-Lived Climate Pollutants in Latin America and the Caribbean: Findings and Conclusions	Sunday Leonard, Climate and Clean Air Coalition
Assessment and Action in Africa	
Cooperation on Air Pollution in Southern Africa: Issues and Opportunities	Hanlie Liebenberg-Enslin, Airshed Partners, South Africa
National and Sub-Regional Action on SLCs in West Africa	Bert Fabian, United Nations Environment Programme
<b>Breakout Session</b> Thu 1 Sep 9:00 - 10:30	<b>Air Quality Modeling and Forecasting (I)</b> Chairperson: Soontae Kim, Ajou University Venue: Room 103, 1F, Convention Hall, BEXCO
Development of a reactive plume model for the consideration of power-plant plume photochemistry and its applications	Yong H. Kim, Gwangju Institute of Science and Technology
Dependence of predicted ozone and its precursor concentrations to vertical diffusivity schemes in photochemical models	Chunwoong Park, Ajou University
CMAQ Simulation Study to Analyze the Long-term Variations of Criteria Air Pollutants in the Seoul Metropolitan Area, South Korea, during 2004~2015	Soontae Kim, Ajou University
Analysis of NO <sub>x</sub> and PM Improvement and Population Exposure due to On-road Mobile Source Emissions Control Plan in Seoul	Yoo Jung Kim, Konkuk University
Tracking Chemical Histories of Pollutant Plumes Using a Lagrangian-Eulerian Hybrid System	Minah Bae, Ajou University
<b>Breakout Session</b> Thu 1 Sep 9:00 - 10:30	<b>Remote Sensing to Measure the Air Quality (I)</b> Chairperson: Chang Limseok, National Institute of Environmental Research Venue: Room 104, 1F, Convention Hall, BEXCO
Introduction of Geostationary Environment Monitoring Spectrometer (GEMS)	Chang Limseok, National Institute of Environmental Research
Comparing OMI-TOMS and OMI-DOAS over High SO <sub>2</sub> Regions: Volcanic Site and China Industrial Region	Wonei Choi, Pukyong National University
The Development of the GEMS NO <sub>2</sub> algorithm: Effects of aerosol properties on AMF and SCD Precision	Hyunkee Hong, Pukyong National University
Investigation of temporal and spatial distribution of HCHO column retrieved using ground based PANDORA over the Korean Peninsula: preliminary results and analysis	Hanlim Lee, Pukyong National University
Comparison of vertical column density of sulfur dioxide between measured by PANDORA and Ozone Monitoring Instrument in Seoul between 2012 and 2015	Hanlim Lee, Pukyong National University
Development of aerosol retrieval algorithm using optimal estimation method	Mijin Kim, Yonsei University
<b>Breakout Session</b> Thu 1 Sep 9:00 - 10:30	<b>Impacts and Risk from Natural and Anthropogenic Air Pollution</b> Chairperson: Seung-Muk Yi, Seoul National University Venue: Room 105, 1F, Convention Hall, BEXCO
Estimation of volcanic ash concentration from Lagrangian dispersion model	J.Y. Lee, Chungbuk National University
Assessment of Volcanic Ash Fragility for Agricultural Crops	Woo Seok Yun, Kangwon National University
Health effects of volcano ash components	Ho Kim, Seoul National University



Development of Air Quality Management Portal for Volcanic Ash Dispersion Event	Daeyoung Heo, Kookmin University
<b>Breakout Session</b> Thu 1 Sep 9:00 - 10:30	<b>Enabling and Scaling-up Electromobility</b> Organized by: Wuppertal Institute, Urban Electric Mobility Initiative (UEMI), and Clean Air Asia Chair: Oliver Lah, Wuppertal Institute/UEMI Venue: Room 106, 1F, Convention Hall, BEXCO
Session Introduction Electromobility: Towards Achieving SDGs and Climate Goals	Oliver Lah, Wuppertal Institute/UEMI
Private Sector Initiatives: Collaboration and Challenges	Nobuhiko Koga, Toyota Motor Corporation
Electric Mobility in Developing Countries	David Rubia, United Nations Environment Programme (UNEP)
The Neglected Transport Mode: Energy Efficient 2-wheelers in ASEAN	Tali Trigg, German International Cooperation (GIZ)
Panel Discussion	<ul style="list-style-type: none"> <li>• Nobuhiko Koga, Toyota Motor Corporation</li> <li>• David Rubia, UNEP</li> <li>• Tali Trigg, GIZ</li> <li>• Jinyoung Park, The Korea Transport Institute</li> <li>• Don Jayaweera, Strategic Enterprise Management Agency of Sri Lanka</li> </ul>
Summary and Closing	Oliver Lah, Wuppertal Institute/UEMI
<b>Breakout Session</b> Thu 1 Sep 9:00 - 10:30	<b>Fostering City-to-City Cooperation</b> Organized by: United States Environment Protection Agency (US EPA) Chair: Katharine Thoday, Cities Clean Air Partnership, Clean Air Asia, and Milag Ballesteros, C40 Cities Venue: Room 107, 1F, Convention Hall, BEXCO
<p>City-to-city cooperation encourages cities to take collective actions. This interactive networking workshop led by C40 Cities and Cities Clean Air Partnership of Clean Air Asia, seeks to share experience in developing successful partnerships and to identify key areas for future cooperation with a particular focus on how cities can best meet both air quality and climate change objectives:</p> <ul style="list-style-type: none"> <li>• Which actions to address air quality are most needed at the city level?</li> <li>• What are the main challenges in addressing these?</li> <li>• What is the potential for city co-operation to address these issues?</li> </ul>	
Moderators and Facilitators	Katharine Thoday, Cities Clean Air Partnership Milag Ballesteros, C40 Cities Linda Giannelli Pratt, Green Cities California Gina Bonifacino, US EPA
<b>Breakout Session</b> Thu 1 Sep 9:00 - 10:30	<b>Air Quality Management in China, India and Southeast Asia</b> Organized by: Clean Air Asia Chair: Mary Jane Ortega, Clean Air Asia Partnership Council Venue: Room 101, 1F, Convention Hall, BEXCO
Session overview	Mary Jane Ortega, Clean Air Asia Partnership Council
Progress in Chinese cities – Launch of China Air 2016 Report	FU Lu, Clean Air Asia
Status of air quality and its management in India	Rashid Hasan, Ministry of Environment and Forests, India
Challenges in India	Prarthana Borah, Clean Air Asia
Status and trends in Southeast Asia – Launch of the Handbook on Clean Air Management in Smaller Cities in ASEAN	Tanya B. Gaurano, Clean Air Asia, and Roland Haas, GIZ

Opportunities for air quality improvements within the context of SDGs and New Urban Agenda	Avi Sarkar, South-East Asia Region Water for Asian Cities Programme & MEK-WATSAN Initiative, UN-HABITAT
Q&A	All speakers
10:30 - 11:00	COFFEE BREAK & NETWORKING
<b>Keynote Session</b> Wed 31 Aug 11:00 - 12:30	<b>The Global Challenge of Air Pollution - Finding Solutions</b> Venue: Room 205 (Summit Hall), 2F, Convention Hall, BEXCO Moderator: International Union of Air Pollution Prevention Associations
WEO Special Report on Energy and Air Pollution: Solutions for Asia	Fatih Birol, Executive Director, International Energy Agency
Reducing Short-Lived Climate Pollutants (SLCPs) to Deliver Climate and Clean Air Benefits	Helena Molin-Valdes, Head of Secretariat, Climate & Clean Air Coalition
Environmental policy, collaboration, and public access to information: Solutions to air pollution and climate change	William Niebling, Senior Advisor for Congressional and International Affairs, Office of Air and Radiation, US Environmental Protection Agency
12:30 - 1:30pm	LUNCH
<b>Breakout Session</b> Thu 1 Sep 1:30 - 3:00pm	<b>Renewable Energy and Air Quality</b> Chair: Hyun-Goo Kim, Korea Institute of Energy Research Venue: Room 102, 1F, Convention Hall, BEXCO
Air Pollutant Emission Reduction Potential of Renewable Energy in South Korea	Alexander Maennel, Korea Institute of Energy Research
The impact of biomass burning on downwelling surface shortwave radiation: Sensitivity of carbon density to aerosol concentration	Chang K. Kim, Korea Institute of Energy Research
Effect of Climate Change on Wind Resource under IPCC A1B Emissions Scenario	Jin-Young Kim, Korea Institute of Energy Research
Effect Analysis of Air Quality Improvement to Efficiency in Photovoltaic System	Shin-Young Kim, Korea Institute of Energy Research
Trend and Prediction of Food and Energy Consumption in the Korean Peninsula	Min Ju Yeo, Ewha Womans University
Methane for Power Generation	Naini Jayaseelan, Inter State Council Secretariat (India)
<b>Breakout Session</b> Thu 1 Sep 1:30 - 3:00pm	<b>Air Quality Modeling and Forecasting (II)</b> Chairperson: Youn-Seo Koo, Anyang University Venue: Room 103, 1F, Convention Hall, BEXCO
PM Episode Analysis Using the Korean Air Quality Forecasting System in Seoul Metropolitan Area	Youn-Seo Koo, Anyang University
Ozone Simulations over the Seoul Metropolitan Area for a 2014 May Episode: Application of CMAQ-HDDM to Predict Ozone Response to Different Meteorological Models	Eunhye Kim, Ajou University
Multi-scale modeling of urban air pollution: development and application of a Street-in-Grid model	Youngeob Kim, Université Paris-Est
Impact of Planetary Boundary Layer Schemes on Modeled Surface Ozone Concentrations in the Seoul Metropolitan Area, South Korea: Long-range Transport Case Study	Seunghee You, Ajou University
<b>Breakout Session</b> Thu 1 Sep 1:30 - 3:00pm	<b>Remote Sensing to Measure the Air Quality (II)</b> Chairperson: Olusegun G. Fawole, University of Birmingham Venue: Room 104, 1F, Convention Hall, BEXCO
Space-borne Monitoring of NO <sub>2</sub> Emissions from Cement Kilns in South Korea	Hyun Cheol Kim, National Oceanic and Atmospheric Administration
Development of an Improved Inventory of Air Pollutant Emissions from Biomass Open Burning Using Satellite Information for Haze Pollution Control and Management in northern Thailand	Savitri Garivait, King Mongkut's University of Technology Thonburi

In-Service Conformity Surveillance using Remote Sensing Measurements of RDE	Niranjan Vescio, Opus Inspection
Gas flaring: Aerosol pollution over West Africa using AERONET retrievals	Olusegun G. Fawole, University of Birmingham
<b>Breakout Session</b> Thu 1 Sep 1:30 - 3:00pm	<b>World Air Day – Working towards a U.N. International Day Declaration</b> Chair: Seung Cheol Hong, Inje University Venue: Room 105, 1F, Convention Hall, BEXCO
Proposing the World Air Day Declaration – Background and Future Strategies	Yoonshin Kim, Konkuk University
Aerosol Variations in Boundary Atmospheres: Reviews and Prospects	Bin Chen, Maki Teruya, Hong Chun Sang, Kim Yoon Shin, and Shi Guangyu Institute of Atmospheric Physics (IAP), Chinese Academy of Sciences (CAS)
Research on Green Patrol Technologies for Clean Air Management	Jo-Chun Kim, Konkuk University
Indoor Air Pollution in Japan – Problems, Regulation and Research Trends	Naohide Shinohara, National Institute of Advanced Industrial Science and Technology
Panel Discussion: International Cooperation for a Successful U.N. World Air Day Declaration	Yong Won Jung, Korean Society for Atmospheric Environment Gwi-Nam Bae, Korean Society for Indoor Environment and all session speakers
<b>Breakout Session</b> Thu 1 Sep 1:30 - 3:00pm	<b>Delivering Clean Air and Climate Benefits: Reducing SLCP Emissions</b> Organized by: Climate and Clean Air Coalition (CCAC), Clean Air Asia and International Union of Air Pollution Prevention Associations Chair: Sunday Leonard, CCAC Venue: Room 101, 1F, Convention Hall, BEXCO
Introduction and Overview	Sunday Leonard, CCAC
The Urban Health Initiative/Breathe Life Campaign	Carlos Dora, World Health Organization
<i>Opportunities for reducing SLCPs across sectors</i>	
Building Back Better Brick Kilns	Bidya Pradhan, International Centre for Integrated Mountain Development
Soot-free Urban Bus Fleets Initiative	Tim Dallmann, International Council on Clean Transportation
Reducing SLCPs in Asia's Waste and Transport Sectors: Progress and Challenges	Eric Zusman, Institute for Global Environmental Strategies
Panel Discussion	All speakers
Summary and Closing	Sunday Leonard, CCAC
<b>Breakout Session</b> Thu 1 Sep 1:30 - 3:00pm	<b>Transport Debate: Smart Growth for Asian Cities</b> Organized by: Clean Air Asia Venue: Room 106, 1F, Convention Hall, BEXCO
The Transport Debate has been and continues to be one of the highlights of the Better Air Quality conference. Its objective is to highlight a controversial contemporary issue that needs to be resolved and to bring forth evidence for and against the resolution, with the aim of helping policymakers see different perspectives and guide them in their decision-making on the best pathway towards sustainable transportation.	
This year's debate tackles Smart Growth strategies including mixed land use, transit-oriented and compact city developments, and linking them to sustainable transport for emerging Asian cities. Should emerging cities in Asia go for Smart Growth?	
<b>Breakout Session</b> Thu 1 Sep 1:30 - 3:00pm	<b>Next Generation Air Quality Monitoring and Communication Tools for Cities</b> Organized by: NASA ARSET and Clean Air Asia Chair: Prarthana Borah, Clean Air Asia Venue: Room 107, 1F, Convention Hall, BEXCO
Session Introduction	Prarthana Borah, Clean Air Asia
Satellite Observations of Air Quality Around the World: Methods, Applications and Future Opportunities	Pawan Gupta, NASA ARSET
Tools and Features of the New AirNow System and U.S. Embassy/EPA Monitoring Program	John White, US Environmental Protection Agency



Applications of Low-Cost Sensors for Air Quality Monitoring and Management: Technology Review and Sample Projects for Monitoring PM <sub>2.5</sub>	Tim Dye, Sonoma Technology, Inc.
Lightning Talks: Air quality monitoring and communication technologies for the community	Facilitated by the Session Chair <ul style="list-style-type: none"> <li>• Liam Bates, Origins Technology</li> <li>• Jeff Smith, Ambience Data</li> <li>• Robert Heinecke, Breeze</li> <li>• Attilio Poli, Asia Pacific Air Quality Group</li> </ul>
Open Forum	
Chair's Closing	
3:00 - 3:30pm	COFFEE BREAK & NETWORKING
Plenary Session Thu 1 Sep 3:30 - 5:00pm	<b>Plenary: Clean Air Asia Milestones and New Strategy</b> Organized by: Clean Air Asia Venue: Room 205 (Summit Hall), 2F Conference Hall, BEXCO
Clean Air Asia - 15 years	Glynda Bathan, Clean Air Asia
Launch of Clean Air Asia New Strategy (2017-2020)	Bjarne Pedersen, Clean Air Asia
Presentation of Kong Ha Award	Mary Jane Ortega, Clean Air Partnership Anumita Roychowdhury, Center for Science and Environment Bjarne Pedersen, Clean Air Asia
Acceptance Speech by the 2016 Kong Ha Award Winner	Supat Wangwongwatana Senior Policy and Technical Advisor of Regional Resources Centre for Asia and the Pacific, Asian Institute of Technology Former Director General of the Pollution Control Department of Thailand Former Secretary General of the Office of Natural Resources and Environment Policy and Planning of Thailand
Poster Session Thu 1 Sep 3:30 - 5:00pm	<b>Poster Session II</b> Venue: Rooms 201-204, 2F, Convention Hall, BEXCO

## Friday 2 September 2016

<b>Breakout Session</b> Fri 2 Sep 9:00 - 10:30	<b>Strengthening the Global Framework for Tackling Air Pollution</b> Chairperson: Richard Mills, International Union of Air Pollution Prevention Associations (IUAPPA) Venue: Room 102, 1F, Convention Hall, BEXCO
Report-back from the Global Atmospheric Pollution Forum:	
Chair's Introduction	Richard Mills, IUAPPA
Making progress on Co-operation at the Regional Scale and between Regional Networks	Kevin Hicks, Stockholm Environment Institute
Learning and Experience-Sharing on Air Quality Management between Cities in Asia, Africa, and Latin America	Beatriz Cardenas, Centro Mario Molina
Developing Global Atmospheric Data Systems	Chris Malley, Stockholm Environment Institute
The Nitrogen Balance	Kevin Hicks, Stockholm Environment Institute
<b>Breakout Session</b> Fri 2 Sep 9:00 - 10:30	<b>Air Quality Modeling and Forecasting (III)</b> Chairperson: Akula Venkatram, University of California and Cheol-Hee Kim, Pusan National University Venue: Room 103, 1F, Convention Hall, BEXCO
Interpreting Particulate Matter and Ozone Air Quality Forecasts Based on Instrumented 3-Dimensional Photochemical Grid Models for South Korea	Soontae Kim, Aju University
Urban Air Quality Simulations with On-road Air Pollutant Emissions estimated from Mobile Monitoring	Kyung-Hwan Kwak, Kangwon National University
Development and Application of Web-based Air Pollution Models for Air Quality Management	Akula Venkatram, University of California
On the Reactive Plume Dispersion over Idealized Urban Roughness	Chun-Ho Liu, The University of Hong Kong
Modelling Fine Particulate Concentrations in Metro Manila	Candy Tong, Clean Air Asia
<b>Breakout Session</b> Fri 2 Sep 9:00 - 10:30	<b>Emission Regulation Strategy</b> Chairperson: Yongsung Cho, Korea University and Hong Chun Sang, Hankuk University of Foreign Studies Venue: Room 104, 1F, Convention Hall, BEXCO
Discussion of Emission Regulation Standard for SRF Facility	Jung-Min Shim, Kanwon National University
Framework Design of Pollutant Discharge Permit for Electric Power Industry in China	Jiang Chunlai, Chinese Academy for Environmental Planning
Options to Control CO <sub>2</sub> emission as a measure of GHG Emission Mitigation in Steel Industry	Amitava Bandyopadhyay, University of Calcutta
Estimating the Consumer's Willingness-to-pay and the Costs of Korean Forest Carbon Credits	Yongsung Cho, Korea University
Quantification of Co-benefits of Low Carbon Society Policies on Air Pollution	Gakuji Kurata, Kyoto University
<b>Breakout Session</b> Fri 2 Sep 9:00 - 10:30	<b>Management of Transportation and Air Quality (III)</b> Chairperson: Jamie Leather, Asian Development Bank Venue: Room 105, 1F, Convention Hall, BEXCO
Managing motorization in Africa: Interim results of a pilot study on vehicle fleet improvement in Ethiopia and Kenya	Roger Gorham, World Bank
Low Carbon and Resilient Transport Systems for Metro Manila	Jose Bienvenido Biona, De La Salle University
Source Apportionment of PM1.0 measured with the Aerosol Mass Spectrometer (AMS)	Wajih U. Rehman, Gwangju Institute of Science and Technology
Managing urban transport in a dynamic environment	Jamie Leather, Asian Development Bank
A broad framework for developing urban road network for a city facilitating green transport system	Rajalakshmi.N, Anna University

Breakout Session  
Fri 2 Sep  
9:00 - 10:30

### Case Studies in the Implementation of Actions to Prevent Air Pollution in the Asia-Pacific Region

Organized by: United Nations Environment Programme (UNEP), Institute for Global Environmental Strategies (IGES), Stockholm Environment Institute (SEI), and Clean Air Asia  
Chair: Frank Murray, Murdoch University  
Venue: Room 101, 1F, Convention Hall, BEXCO

Most nations in the Asia-Pacific region have implemented a variety of actions to address air pollution. Some have been successful and some less so. The barriers to effective implementation are challenging but many countries have found ways to overcome them. However, there are limited opportunities to share lessons learned for the benefit of others in the region. This session aims to provide a platform to share experiences on the implementation of actions to prevent air pollution in the Asia-Pacific region. The format will be short presentations and discussion.

10:30 - 11:00

COFFEE BREAK & NETWORKING

Plenary Session

Fri 2 Sep  
11:00 - 12:00

### Closing Ceremony: 17<sup>th</sup> IUAPPA World Clean Air Congress and 9<sup>th</sup> CAA Better Air Quality Conference

Chairs: Ji Hyeon Song, KOSAE  
Venue: Room 205 (Summit Hall), 2F Conference Hall, BEXCO

Recap of key takeaways from the conference sessions	Gangwoong Lee, KOSAE Glynda Bathan, Clean Air Asia
Recognition of Excellent Posters	Yong-Won Jung, KOSAE
Introduction of the next World Clean Air Congress - Istanbul 2019	
Conference Declaration	Richard Mills, IUAPPA Bjame Pedersen, Clean Air Asia
Closing Remarks	Kil-Choo Moon, IUAPPA