

C40 Clean Energy Network Workshop Report

19-21 June 2018, Yokohama



On 19-21 June 2018, representatives from 10 C40 cities gathered in Yokohama, Japan for the second Clean Energy Network Workshop. City delegates exchanged views and best practices on the clean energy policies, programmes and technologies their Cities implement.

This document gives an overview of the key themes and city follow up actions that came out of the workshop that could inform workstreams and activities for the next year. The information included in this document has been compiled based on the network workshop discussions, city boards and the post-workshop surveys.



City delegates included:

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The workshop's objectives:

- Share good practices in rolling out clean energy plans and discuss various business and financing models to enable cities to increase their use of renewable energy
- Discuss common challenges and identify opportunities for collaboration including city exchanges and technical assistance
- Identify ways to improve stakeholder engagement
- Determine the network work plan for the next year and set priorities

Workshop agenda overview

Day	Session	Format	Subject Focus
1	Morning	Closed network working session	Municipal Clean Energy Plans & Stakeholder Engagement
	Afternoon	Closed network working session	Financing CE Projects & Rooftop Solar PV
2	Morning	Closed network working session	Clean Energy Business Models
	Afternoon	Site visit	Site visit to Low-carbon hydrogen plant and renewable energy exhibitions
3	Morning	Closed network working session	Renewable energy technologies Bilateral meetings
	Afternoon	Closed network working session	Network Action Planning



WORKSHOP THEMES & NETWORK ACTIONS

In a variety of interactive sessions, attendees shared presentations and engaged in facilitated discussions on how they are promoting and increasing the use of renewable energy in their cities. All presentations are available on the [C40 exchange](#). The main topics of discussion and network actions are listed below:

Theme 1: Municipal clean energy plans and stakeholder engagement

This topic focused on cities' municipal clean energy plans and projects and how cities can be role models and engage stakeholders. Ideas that have been discussed:

- Setting clearly defined goals and timelines and sharing these with all relevant stakeholders
- Making a business case to the stakeholders and create win-win situations to encourage joining

Theme 2: Financing CE Projects & Rooftop Solar PV

This topic focused on financing clean energy projects and discussed how to attract private sector investments for clean energy projects. Ideas that have been discussed:

- Public sector/local government has much higher credibility among the citizens, therefore the involvement of the local government in clean energy projects and financing attracts more trust from citizens and private sector
- Political support and funding availability is important but it is also important to ensure the funding is used in the best way to best engage and address what citizens are looking for

Theme 3: Clean Energy Business Models

This topic focused on using innovative business models to develop clean energy projects and increase clean energy deployment in the cities. Ideas that have been discussed:

- PPAs need good expertise on demand matching and legal issues. Cities need to be aware of the kinds of questions they should be asking before entering into such contracts.

Theme 4: Designing Pathways for being 100% Renewable

Cities will need to take bold action to develop Paris compliant action plans. While municipal clean energy plans should be the first step, cities would need to go for 100RE in the long term. Ideas that have been discussed (see also World Café Session):

- Collaboration with other levels of government is necessary
- Citizen engagement is also crucial
- Cannot achieve the goal without having an integrated approach e.g. for decarbonizing the building stock

Theme 5: Renewable technologies

This topic focused on different renewable energy technologies that cities are deploying and how technologies can lead the way. To achieve a 100RE target cities need to investigate the possibilities of all renewable technologies. Wave energy, hydrogen, micro wind projects, and biogas exploitation should be examined as potential options. Main issues that have been discussed:

- Be open to alternatives to achieve your plans
- Feasibility studies to exploit your options

SITE VISITS

The City Officials visited the pilot City Wind Power Plant which uses wind power to produce hydrogen from water CO₂-free through electrolysis. Many cities highly valued this visit and want to investigate the hydrogen option as a potential alternative to clean energy plans. Attendants also had the chance to visit the Grand Renewable Energy Exhibition 2018.

FEEDBACK FROM PARTICIPANTS

The bilateral session was very valuable as I felt that it helped focus on specific programs and initiatives with representatives of other cities and get into details & get to know better and create personal relationships

Uriel Babczyk, Tel Aviv

I have been especially inspired by the Tokyo renewable investment financial vehicle and the scale and timeframe of the Seoul PV program. I am very keen on H₂ and so really valued the chance to see the refuelling facility first hand.

Nik Midlam, Sydney

Theme 2: Financing CE Projects & Rooftop Solar PV

Brainstorming session outcomes

"Attracting clean energy investments"

Identified barriers:

- Complicated processes for multiple actors/projects
- Difficult payback periods
- Clean energy is a new area so private sector is not confident to invest in it
- Bylaws do not allow municipalities to do business, they are only allowed to provide services
- Regulatory barriers on selling power

Suggested solutions can be grouped under 3 main areas:

Regulate:

- Policies to enable/stimulate private investments
- Build commitments on top of existing ones
- Provide stability and clear policies
- Set clear goals

Invest:

- Invest in a private company to do business e.g. Setting up SPV
- Establish R&D support and investment fund
- Green bonds
- PPPs – local government to provide specific tariffs and offer their assets to promote
- Take the initial action to get trust from private sector

Promote:

- Communicate importance of renewable energy
- Stakeholder engagement (locally and internationally)
- Make the project visible
- Provide subsidy to households
- Provide subsidies and lower price to private sector for the power generation in public sites
- Utility-led projects with the support of the city
- CSR, Brand/marketing of private companies

Theme 2: Financing CE Projects & Rooftop Solar PV

Brainwriting session outcomes

"How to engage citizens to deploy Solar PV when the electricity prices are low?"

Key message: Find ways to minimize the risk for citizens and facilitate the process in any way possible

Highest rating recommendations:

- ✓ Identify roofs suitable for solar installations and send notification letters about available rebates (if any)
- ✓ Offer "soft loans" for the purchase of PV equipment. For doing so, promote a call for proposals for banks and other financial institutions to provide low interest loans
- ✓ Offer property tax reductions for those that install solar
- ✓ Structure feed-in tariffs and provide greater reward to early adoption to maximize program exposure
- ✓ Show and distribute info on Return on Investment (RoI) - Compare current and future cost of the grid and focus your campaign on the avoidance of future electricity price increases
- ✓ Create a scheme for lending out roof space of residents and find a way to provide recognition to those that provide space
- ✓ The municipality act as an intermediary: publishes tender for PV installations to get lower prices on behalf of apartment owners
- ✓ Legally enforce new construction to be equipped with solar panels
- ✓ Raise awareness and educate, specifically children, students and housewives
- ✓ Explain the benefits of energy security and independence



Theme 3: Clean Energy Business Models

Business model exercise outcomes

City Greenville

Business models

- Citizens leasing solar PV on their roofs provided by municipalities/private sector
- Bulk purchasing of solar PV panels for schools and nearby households
- Self-consumption promoted by incentives
- Community energy funded through crowdfunding on a public site, and transferring the generated energy to nearby buildings through private wire

Barriers/Challenges

Utility	Local government	Citizens	Private sector
	Illegal connections to network		Lack of knowledge
Losing revenue	Risk of stranded assets (private wire network)	Needs to be cost effective and have extra benefits	Affordability
Grid vulnerability	Limited capacity	Transferring ownership	Uncertainty around demand
		Competing uses of roofs	

Solutions

- Create institutional capacity
- Risk mitigation – agreement with national government to make sure they will not jeopardise the future of the projects (e.g. private wire network)
- Create a storage system for panels when you want to remove them
- Provide incentives that have net benefits to citizens
- Provide assurance to private sector
- Provide loans with low/without interest

Theme 3: Clean Energy Business Models

Business model exercise outcomes

City Sunnyside

Business models

- Lease land to generate electricity and pay to the owner for the land
- Large customers enter into sleeved PPA for solar and wind installations to feed power back into the city grid
- VPP model – Commercial and industrial customer installs solar PV on roof and battery storage. During peak hours, C&I customer sells to the grid and receives energy during day time to take advantage of net metering
- Conduct a 5 year PPA due to limits in retail agreements and renew it one its duration is over

Barriers/Challenges

Utility	National gov.	Local gov.	Citizens
Loss of revenue	Redundancy concerns, energy security	Restricted framework to operate within	Lack of choice for energy providers
If it is regulated, prices are set by gov. and will impact the commercial viability of the business model	Averse to seeing wide variation & fluctuations in electricity prices	Trapped between businesses and citizens	Confusion, lack of awareness of options
Risk of customer defection if rates are high	Restrictions for foreign investors due to variations in laws	Complex processes for choose providers	
Requires capital investment e.g. smart meters. Technology risk as well		Lack of localised knowledge lost to private	

Solutions

- Fair use of system changes
- Having clear national plans rather than ad hoc actions
- Provide certainty for ROI

Theme 3: Clean Energy Business Models

City clinic outcomes

Buenos Aires – “How to deal with fluctuations in energy prices?”

- Market research to evaluate risk of wholesale market prices drop and forecast RE prices – however generally forecasts are wrong
- Breaking up the PPA into stages (renegotiating either prices or demand every X years) – it could lead to losing economy of scale
- Open book contract – breaking down the costs
- Using the potential whole demand to negotiate better contract conditions/prices
- Ask the providers for ideas (RFI) to deal/overcome the situation during or before the tender
- Put a value in having a fix price for the whole period avoiding uncertainties
- Include a clause for renegotiating the prices if market prices go up or down drastically – Fair negotiation condition for both parts
- Set the PPA price following the wholesale market prices minus 10 -20% for instance (indexed)
- Set the targets in timeline for decision/political makers as well as for generators

Durban – “Legislative challenges on PPA”

- Talk with private investors
- IPP for a 3 year but if not renewed take ownership of the asset (require asset + employees)
- Force national gov. to renew contract (IPP)
- Be flexible – many paths, different timings
- Consider many solutions – municipal build, private build wind
- Assessment of how much each solution contributes
- Market sounding exercise (RFI)
- Build own lobby for changes
- Wait for changes that will be done by the national government: “Buy from whoever you want”
- PPP – use it to scale projects
- Cost assessment
- NG response to targets
- Business/citizens contributions

Theme 4: Designing pathways for being 100% Renewable

World Cafe session outcomes

"How can cities build the case for clean energy choices and advocate for green solutions at all levels of government?"

- ✓ Comprehensive and credible financial/social/GHG analysis to determine the best local approaches for clean energy – Engage other levels of government in the process
- ✓ Underline the co-benefits of actions and where possible show the externalities of specific projects using sustainable economy approach
- ✓ Communicate science-based information
- ✓ Highlight solutions that align with senior government policies and programs & enhance senior policy branding
- ✓ Identify your allies locally, nationally and internationally - Leverage Global Agreements – Raise awareness on climate change
- ✓ Tri-factor leverage:
 - energy security
 - prices
 - emissions
- ✓ Define the accountability of actions: pass down some rights to them, while they should owe some responsibilities

"How you can get people engaged?"

- ✓ Use correct and valid figures to communicate the right messages
- ✓ Locate the messages to be shared to important and visible locations
- ✓ Digital campaigns and local media to disseminate the message to the widest possible audience
- ✓ Run educational campaigns – Design "Energy saving" competitions in the school community
- ✓ Focus on neighbourhood level rather than city level
- ✓ Create a sustainability centre
- ✓ Ask citizens participations e.g. share reports for comments, ask them to vote on projects
- ✓ By getting citizens to take small action you can achieve bigger and collective action

Suggested Clean Energy Network Actions

Work streams

- Workstreams are quite high level and we need to drill down:
 - The very detailed intricacies of business of models need to be discussed
 - Stakeholder engagement deals with two sides:
 1. Supply side (private sector),
 2. Demand side (residents, commercial)
- Technical challenges around connecting RE to grid (reliability of networks)
- Change the phrasing around district heating/cooling to clarify that we focus only on **renewable energy**
- Include raising awareness and citizens engagement activities – Share good practices

Goals and objectives

- Focusing on actions that could result in significant reductions in GHG emissions and initiatives that help cities install more renewable energy
- Focusing on actions that could also enable the private sector to act – Role models
- Add another priority - first local production, then neighbouring surroundings to avoid energy losses
- Create a common voice to influence other levels of government
- Have more standardized tools to help cities - e.g. to evaluate a PPA, financial aspect, evaluation map
- Signing the RE 100 commitment and developing a basic roadmap to get there
- More cities join the network who are doing good work in district heating and cooling
- Providing certificates for cities that have good energy plans in the network



Visit to Grand Renewable Energy and PV Japan Exhibitions



Business models session



City action & network planning



Sharing best practices



Bilaterals

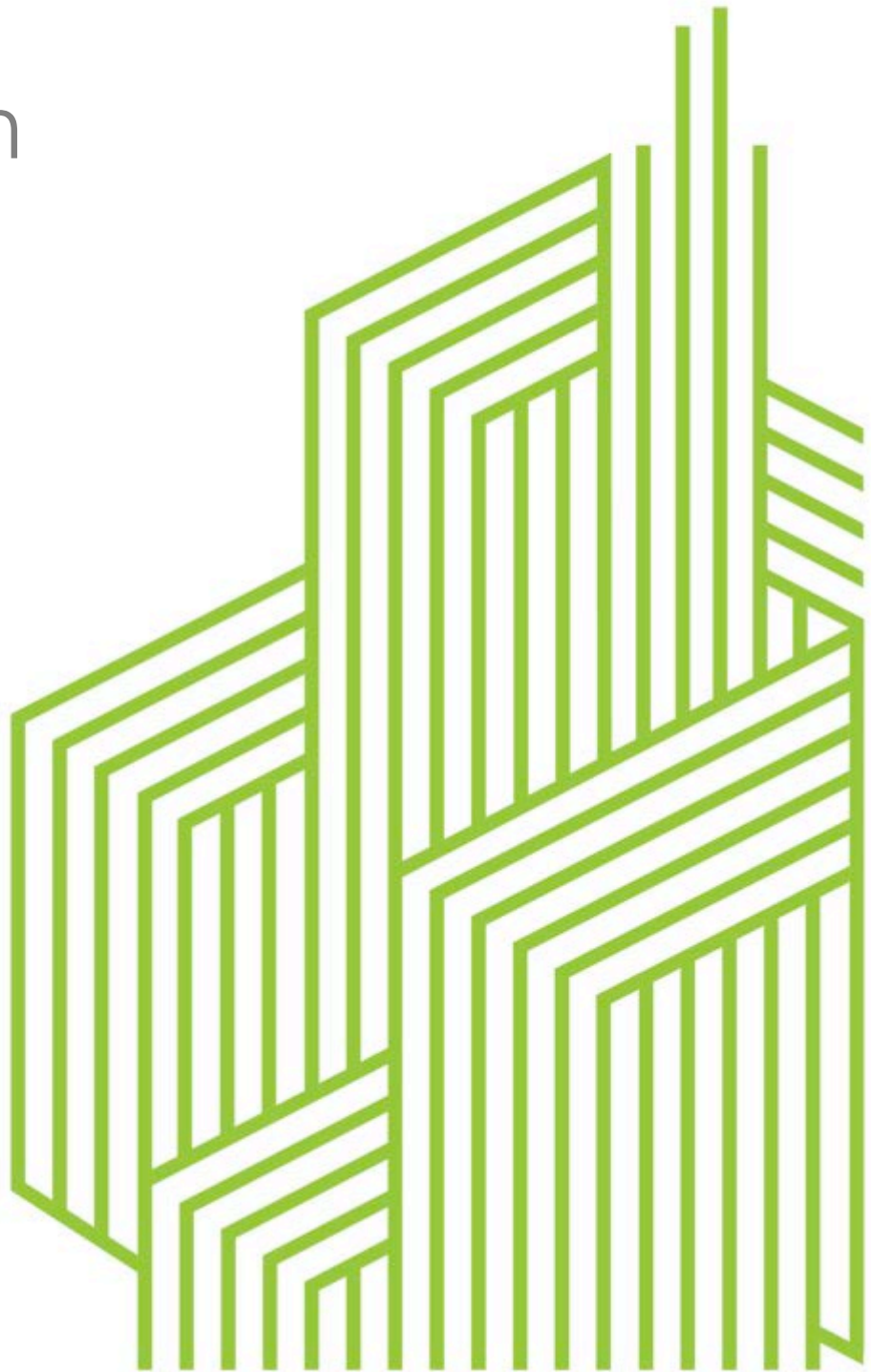


World café session



Site visit to low carbon hydrogen plant

City Action Plans



BANGKOK

Manaswee Arayasiri

Sanitary Engineer Professional Level,
Department of Public Works



Most ambitious action around CE

- Installing rooftop solar PV at BMA City hall building as a good example for other government organisations and private sectors

Individual city actions arising from the workshop

- Receive good recommendations about business models for solving the problems of creating a rooftop solar PV project at BMA city hall: Leasing model or community energy may be suitable for Bangkok

Main challenges

- Lack of knowledge about business models and good examples
- Lack of experience to create clean energy project

How C40/CEN can help

- Provide knowledge on business models that could solve the problem of developing a clean energy project
- Share experience from other cities as a guideline for creating a clean energy project

Cities to follow up with

- Seoul
- Tokyo
- Vancouver
- Tel Aviv



BUENOS AIRES



Maria Sol Aliano

Renewable energy deputy manager

Most ambitious action around CE

- To conduct a RE PPA for the larger public buildings of the city
- Develop a solar PV rooftop program for municipal buildings

Individual city actions arising from the workshop

- Evaluating the ideas that came up in the clinic session
- Assess in detail the legal and economic structure needed for the RE PPA

Main challenges

- Building up the legal and finance/economic structure for the PPA

How C40/CEN can help

- Help on getting in contact with cities that went through the same PPA process

Cities to follow up with

- Johannesburg
- Vancouver
- Sydney



DURBAN

Sibusiso Ntshalintshali Energy and Project Manager (Renewable Energy)



Most ambitious action around CE

- Strategic implementation plan: 40% RE by 2030 and 100% RE by 2050
- Deployment of solar PV across municipal buildings
- Increase the use of wind energy through partnership with academics
- Increasing the RE uptake in the next 12 years - 720 MW by 2030
- New C40 building carbon net zero to all new buildings to be adopted by the council
- Ocean generation through private investment
- Investigate the possibility of PPP

Individual city actions arising from the workshop

- Incorporate information and potential solutions received from cities into the action plan

Main challenges

- Capital requirements to deploy solar PV across the city
- Regulatory challenges - Communicate science-based information
- Energy security
- Limited contract agreement: MFMA limitation to 3 years

How C40/CEN can help

- Through Technical Assistance, facilitate the transition towards clean energy and provide an adequate roadmap
- Build a platform to cater knowledge based systems

Cities to follow up with

- Tel Aviv
- Seoul
- Sydney
- Vancouver



JOHANNESBURG



Thabo Mahlatsi

Air Quality, Climate Change and Energy

Most ambitious action around CE

- Develop 500 MW of RE generation for the city. The 500 MW will help city to achieve ambitions of 50% RE by 2040.
- To meet 2040 growth & development strategy of 50% energy coming from renewable sources

Individual city actions arising from the workshop

- Ensure that shared experiences from other cities are copied and used where appropriate
- Advocate good experiences of others to decision makers in order to replicate projects in Johannesburg and to build on success of others.

Main challenges

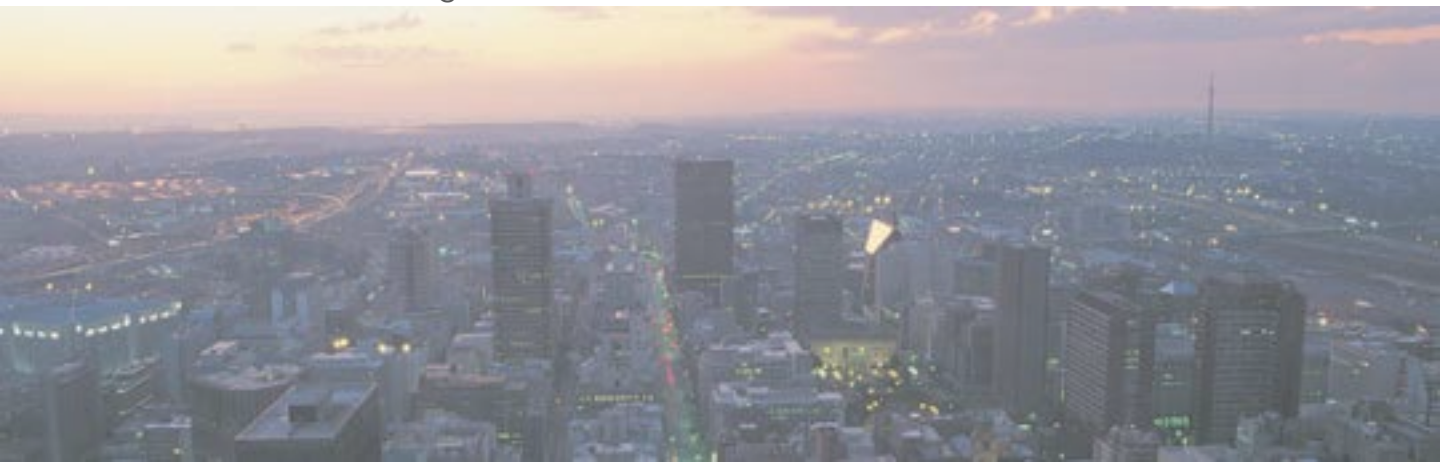
- Difference in governance models of cities may hinder collaboration and implementation of good practices

How C40/CEN can help

- Compare the cities' similarities with each other and 'pair' or exchange experiences in order to expedite the programs or action towards meeting Paris agreement

Cities to follow up with

- Buenos Aires - Share PPP and PPA experience
- Durban – Strengthen communications in order to copy the hurdles they went through to avoid committing same mistakes



SEOUL

Gyeong-seok OH

Senior Manager for Green Energy Division



Most ambitious action around CE

- To achieve the target of Solar City Seoul 2022:
 - PV capacity from 145 MW to 1 GW
 - Supply solar energy to 1 million houses

Individual city actions arising from the workshop

- Going to benchmark low carbon hydrogen plant
- Going to study and review PPA like business models suitable for Seoul
- Find ways to draw active citizen participation

Main challenges

- New technologies which are useful to dense city such as Seoul
- Energy consumption reduction
- Enhancing citizen participation to renewable energy

How C40/CEN can help

- Help on getting in contact with cities that went through the same PPA process

Cities to follow up with

- Tel Aviv
- Bangkok
- Tokyo
- Durban



SYDNEY



Nik Midlam
Manager Carbon Strategy

Most ambitious action around CE

- A subscriber based fund to invest in large scale PPA (underwritten by city)

Individual city actions arising from the workshop

- Develop a feasibility/business case for community voluntary PPA
- Investigate special purpose investment vehicle vis-à-vis Tokyo
- Tender for solar advisory service

Main challenges

- Make the business case work
- Customer engagement

How C40/CEN can help

- Help on continual conversation and sharing knowledge and best practices between cities to follow up with

Cities to follow up with

- Tel Aviv - privatisation, 100 MW target, one stop shop partnerships, closure of thermal plant
- Tokyo - high-rise solar programme, investment vehicle
- Seoul - leading the way in solar uptake, solar technology for apartments



TEL AVIV

Uriel Babczyk

Director of Sustainable Building & Planning – Engineering Authority



Most ambitious action around CE

- Create and approve alternative action plan for governments intent to triple energy production of existing central power station. 420 MW-> 1200 MW
- 100% RE for municipal energy consumption
- Solar on private roofs

Individual city actions arising from the workshop

- Power station feasibility study- Explore existing relevant TA programmes in the C40 network in order to refine TOR requirements being drafted these days
- Finalise and approve formally the current energy action plan
- Disseminate within municipality the use of the "Clean energy business model manual"- Choose relevant models to support 100RE project
- Create Energy Innovation Center

Main challenges

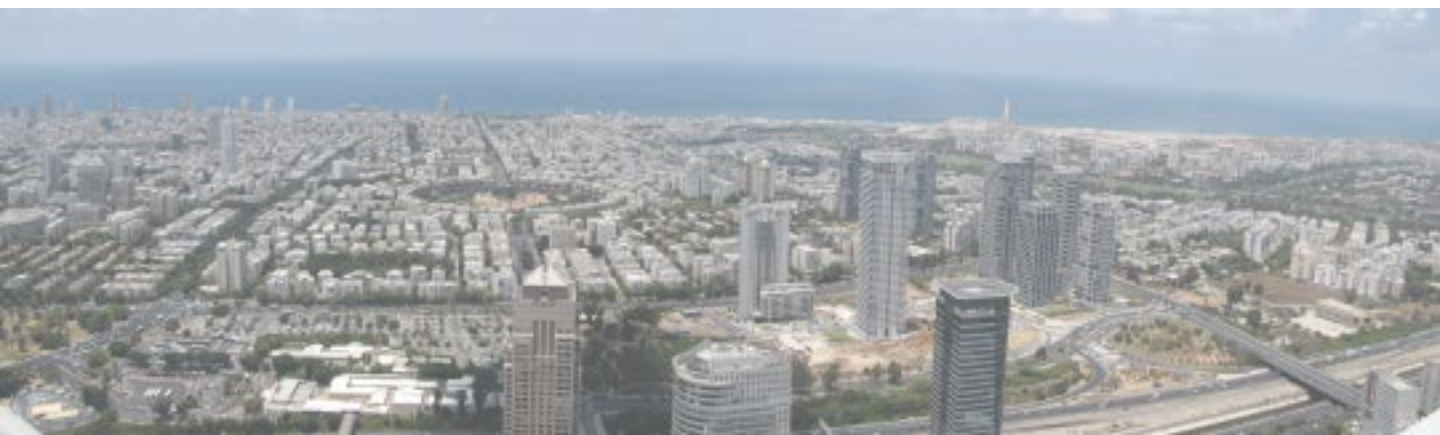
- Speed of implementation
- Budget approval (ROI, NPV)
- PPAs (not allowed by national government)

How C40/CEN can help

- Help on continual conversation between cities to follow up with

Cities to follow up with

- Athens - 'residents solar programme'
- Sydney - AGL vs state. Power station info for reading power station in TLV
 - 100RE - solar projects, outcomes of city solutions & approved programme
- Tokyo - Solar rooftop project - learn from experiences in the project
- Seoul - overall strategic approach to energy in the city
- Yokohama - Virtual grid



TOKYO



Ken Tokuda

Deputy Director
Planning Section, Climate Change &
Energy Division

Most ambitious action around CE

- Deploy 1.3 GW PVs in total by 2030 especially on the rooftop to meet our plan

Individual city actions arising from the workshop

- Learn a lot from other cities 'data' and 'policies' and implement them in Tokyo

Main challenges

- Heavy initial cost is burden to citizens (households). So TMG have to manage to do it.

How C40/CEN can help

- Provide ideas and examples for policies for citizens to deploy PV panels for free or less cost
- Provide further information on PPAs

Cities to follow up with

- Seoul - 70% people live in apartments in Tokyo. To learn more about:
 - PV panels for houses (1m families)
 - zero energy flat
 - FUND
- Vancouver – To learn about 27 concrete action in buildings area



VANCOUVER

Chris Baber
Neighbourhood Energy Manager



Most ambitious action around CE

- Implement a corporate and following that community-wide CO2 price policy to accelerate investment decision making in clean tech
- Solar farm integrated with storage & post disaster facilities
- Expand city-owned DE system & bring on new local carbon supplies

Individual city actions arising from the workshop

- Have internal resources, evaluate potential integration with post disaster facilities

Main challenges

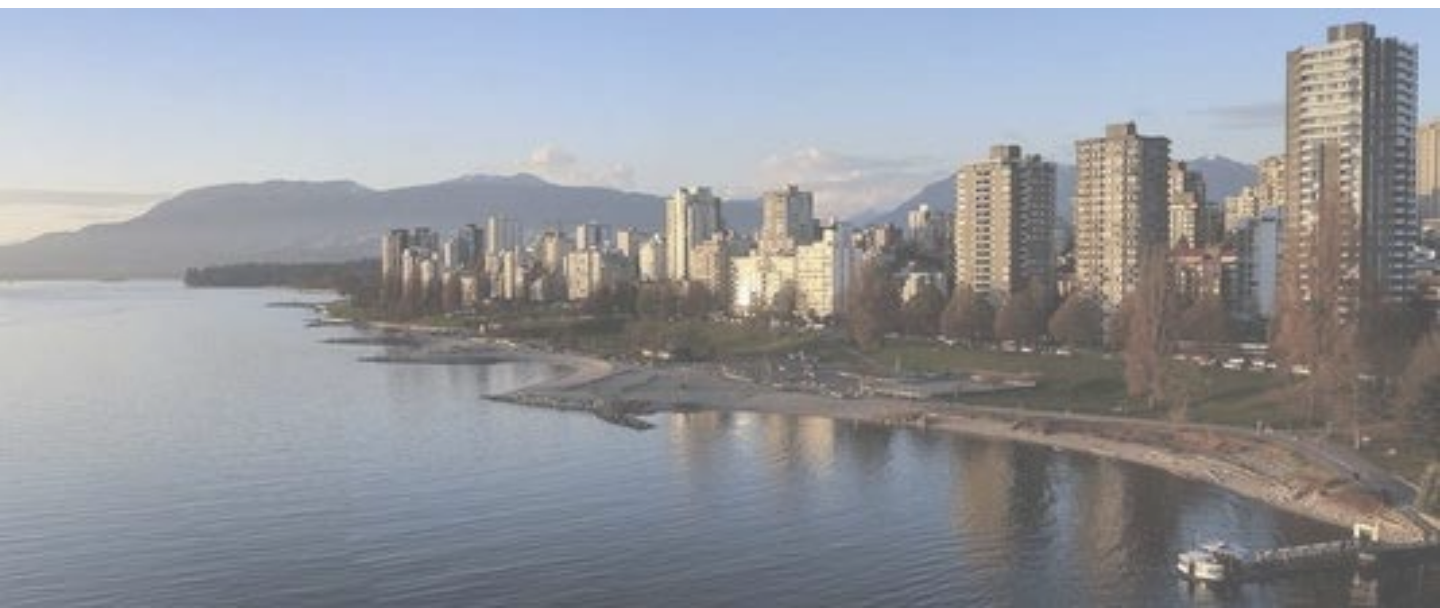
- Very cheap natural gas making it difficult to advance thermal energy projects
- Deployment of community solar
- Decarbonizing existing buildings

How C40/CEN can help

- Help on creating a dialogue with cities that have best practice and experience on community energy

Cities to follow up with

- More in depth dialogue with cities advanced in community solar initiatives



YOKOHAMA



Fumiki Natori

Manager, Climate Change Policy
Headquarters

Most ambitious action around CE

- Stabilisation of power transmission network by VPP

Individual city actions arising from the workshop

- Think about PPA (PPA is not common in Japan) and finding ways to increase renewable energy especially solar PV
- Search appropriate business models for Yokohama's situation since we learn clean energy business models from C40 and other cities

Main challenges

- The price of storage battery for Virtual Power Plant is still too high to spread broadly
- Lack of knowledge on new technologies and business models

How C40/CEN can help

- Provide information on new business models and technologies

Cities to follow up with

- Sydney - PPA
- Tokyo - funding and showcasing new technology
- Tel Aviv - wave power generation

