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# CCW SINGAPORE WORKING TRACKS:

The Carbon War Room works to identify opportunities that have cost-negative, billion ton scale carbon reduction potential in the next 10 years. Carbon War Room has identified 17 sub-sectors across seven sectors. Each sector accounts for over 1 billion tons (or more than 2%) of global CO<sub>2</sub>e emissions annually. These sectors encompass the full spectrum of challenges that must be met to implement a low carbon economy. Please view the Carbon War Room's sectoral approach [here](#)...

## ENERGY EFFICIENCY IN THE BUILT ENVIRONMENT

### Background

In Singapore, energy cost is often the largest component of a building's total operating cost. The public sector has taken the lead on energy efficiency and is setting an example for the private sector by retrofitting many of its existing buildings. The Singaporean government achieved a decrease of 8% in its own energy intensity between 2005 to 2009 thanks to a combination of requirements and incentives.

Energy conservation practices are now set to become the norm in Singapore for all large energy users, both public and private. From April 2013, companies that consume more than 15GWh of energy each year will have to comply with minimum energy management standards outlined in the Energy Conservation Act (ECA). Under this scheme, large energy consumers will be required to appoint an energy manager, submit a report on their energy usage, and submit energy efficiency improvement plans. The ECA aims to help Singapore achieve a 35% improvement in energy intensity by 2030, from 2005 levels,

and seeks to improve the energy performance of companies, enabling their competitiveness in the global economy.

### Focus and Goals

Based on CWR's Energy Efficiency in the Built Environment operation, the track will focus on the nature of public-private partnerships and the specific challenges and opportunities for Singapore in procuring private capital to meet the mandates under the Energy Conservation Act (ECA). Track participants will consider the following questions

- Who should pay for the upgrades?
- How will companies attract the needed capital?
- What are the opportunities for investors?
- How could the ECA be scaled?
- What might future iterations or other schemes look like?



## SMART CITY SYSTEMS

### Background

Recent advances in Information and Communications Technologies (ICT) have created the potential to employ cross-sector solutions which offer major opportunities for efficiency improvements. These ICT-enabled 'machine-to-machine' (M2M) technologies include a range of specific tools, programs and devices, which, brought together into a complete system, communicate automatically to coordinate and optimize tasks and performance across many subsectors, including health care, transport, energy supply, municipal management, disaster management, materials and waste reduction, and communications.

Singapore's population increased roughly 20% in the last decade from 4 million to 5 million and is forecasted to increase 30% in the next 2 decades to 6.5 million. M2M technology can tackle many of the challenges of growing populations such as traffic congestion, improved commercial logistics, and better building efficiency in addition to reducing GHG emissions.

In addition, Singapore's unique situation as a "city-state" means that M2M technology is often developed and installed through public-private partnerships, and Singapore offers a strong test case for other municipalities and government around the globe. Singapore's future demographic and economic challenges

are an opportunities to test and integrate new M2M technology in the private sector and society.

### Focus and Goals

The working track will build upon on the Carbon War Room's current work in the sector. Working track participants will focus on identifying barriers to the scaling of M2M technology deployment, and will develop solutions to overcoming those barriers.

The working track will seek answers to the following questions:

- How can these new M2M technologies help Singapore and Southeast Asia reduce its carbon footprint by improving efficiency?
- What sectors in the region are best poised to access the benefits of M2M technologies today?
- How can M2M technologies be leveraged to interact with existing infrastructure in order to decrease human interaction with physical systems and increase efficiency?
- Determine whether the key barriers identified by CWR are consistent with the Singapore market
- Identify best practices and examples of global solutions that can be scaled to increase the adoption of efficiency technology in Singapore.



## SHIPPING

### Focus and Goals

Southeast Asia is enjoying huge regional growth in the shipping industry. The CCW Singapore Shipping working track will convene a range of key stakeholders including port owners and shipyards, major shipping companies, other ship owners and managers, charterers, insurers, banks, and clean technology companies to discuss how to scale up the adoption of clean technology in order to reduce fuel use, save money, and avoid greenhouse gas emissions. The working track will build on the Carbon War Room's September 2013 conversation at CCW Berlin with the finance community, and will consider innovative finance mechanisms for the shipping sector in Asia capable of directing capital flows towards the creation of cleaner vessels.

Participants will consider the market barriers currently prohibiting the flow of capital towards the decarbonisation of the global shipping fleet, and will address the key question:

- What would a new Asian consortium for financing the clean technology retrofit process look like, and how can summit attendees create it?
- Identify the scope of technologies available
- Discuss the different financial models available that negate the need for owner/operator capital expenditures in paying for clean technology.

The optimal outcome of a working track on self-financing would result in the creation of a self-financing fuel saving consortium in Asia/Singapore. The momentum from the working track would be maintained after CCW, with the hope that vessels would be retro-fitted and financed within one year as a result of a of the 'Asian model.'



## WASTE MANAGEMENT

### Background

Around the world, there are large inefficiencies in how the waste produced by modern society is disposed of, but there are also a bevy of proven technologies, some of which are well-proven and decades old, which can reduce emissions from waste streams while saving money for municipalities. With only 710km<sup>2</sup> to support its population of over 5 million, storing waste in landfills is a poor option for Singapore, and incineration has long been the nation's waste-disposal method of choice. Today, Singapore boasts 4 WTE plants that process around 7,600 tonnes of waste daily (more than 2.66 million tonnes per year) and produce more than 40 MW of power.

Waste-to-energy is a growing global market, forecast to expand from \$6.2 billion in 2012 to nearly \$30billion by 2022, and the Asia-Pacific region is projected to capture fully half of that growth. As megacities blossom throughout Asia, the working track will seek to change the way cities deal with waste, thereby facilitating their ability to harness this significant climate wealth creation opportunity.

### Focus and Goals

The working track will turn the idea of "waste" on its head by considering its potential as a resource through the implementation of proven waste-to-energy (WTE) technologies. Participants will consider the success of the municipality of Singapore in achieving high recycling rates of over 50%, along with implementing other waste minimization, reuse, and reduction strategies.

With the belief that Singapore's successes can serve as models for other Southeast Asian municipalities, working track attendees will consider what lessons from Singapore are easily transferable, and what methods will need to be very carefully tailored to each new local context. The track will focus on mapping out the sector to find key leverage points in recycling and waste management companies, and will consider innovative models for public-private partnerships.

Along with looking for ways to scale the current success stories happening in Singapore, track participants can consider the following questions:

- What, is currently being done by the Asian-Pacific waste sector to help these better waste management practices be more widely adopt. What barriers are standing in the way? What type of strategies could overcome those barriers to improve waste management in the Asian-Pacific?
- What sort of financing currently governs the waste sector as a whole? What sort of investing mechanisms are available for investing in sustainable waste technologies?



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