With major cities harbouring key financial centres, financial instruments and divestment projects are increasingly being utilised to help accelerate the decarbonisation of the global economy. Unleashing the power of international markets, via green bonds for example, is enabling rapid build-out of green energy capacity.
The Melbourne Renewable Energy Project (MREP) has accelerated Australian investment in carbon-free electricity, with more than 3,000 MW of new renewable energy generation capacity – and $4.2 billion in investment – being underwritten by corporate PPAs in Australia since 2017. Melbourne’s strong initial political will to push MREP through has been worthwhile: the annual renewable energy supply of 88 GWh equates to a reduction of 96,800 tonnes of CO₂e emissions per year, and the PPA electricity pricing is expected to be competitive over the 10 year period.

While MREP partners, including the city, did not invest capital into this renewable energy project, all 14 members did have to negotiate and agree to a 10 year contract as opposed to the more common 2 to 3 year contracts. Instead of owning, operating, or having an equity stake in the new wind farm, the customer group committed to buy 88 GWh of electricity for 10 years, thereby keeping transaction costs lower. In all, launching MREP cost $483,000, excluding staff time, with any further model replications expected to cost half that due to market shift and intellectual property created by the project. The $138 million Crowlands Wind Farm was financed with debt provided by a consortium of Australian banks, while equity was invested by Pacific Hydro.

As part of Melbourne’s wish to decarbonise its electricity supply, in 2017, the city and its partners negotiated a 10 year power purchase agreement (PPA) with clean energy company Pacific Hydro.

In 2019, the new 39-turbine Crowlands Wind Farm began supplying electricity to myriad public and private sector buildings across Melbourne. Importantly, the project managed to develop a model for large electricity customers to accelerate nationwide investment in renewable energy.

What has the city achieved?

The Melbourne Renewable Energy Project (MREP) has accelerated Australian investment in carbon-free electricity, with more than 3,000 MW of new renewable energy generation capacity – and $4.2 billion in investment – being underwritten by corporate PPAs in Australia since 2017. Melbourne’s strong initial political will to push MREP through has been worthwhile: the annual renewable energy supply of 88 GWh equates to a reduction of 96,800 tonnes of CO₂e emissions per year, and the PPA electricity pricing is expected to be competitive over the 10 year period.

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Melbourne
**What are the co-benefits?**

**Social:**
The MREP created 140 jobs in regional Australia during the construction of Crowlands Wind Farm, as well as eight ongoing maintenance jobs. Where possible, Pacific Hydro sourced materials and skills from local businesses. Local wind farm tower manufacturer Keppel Prince, for example, was the farm’s principal tower supplier.

**Health:**
With this long-term PPA, PM emissions will be reduced, improving public health. The improvement should continue as the city’s grid becomes increasingly decarbonised.

**Economic:**
The long-term competitive electricity pricing reduces businesses’ operational costs, boosting their resilience in an increasingly uncertain global energy market. Pacific Hydro is contributing to a fund to give back to the community, supporting local health, environmental, and education initiatives.

**Environmental:**
As a direct result of this long-term PPA, 1 million tonnes of CO₂e emissions will be avoided by 2030. This clean electricity will result in fewer air pollutants being emitted, improving the city’s air quality. With the 39-turbine wind farm being built on existing farmland, local biodiversity was not impacted.

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**What can other cities learn?**

**Competitive pricing in short and long term:**
While MREP partners had to settle for a more unusual 10 year contract, the price of electricity procured under the PPA is expected to be competitive throughout the period compared to business as usual.

**Push on resolutely to drive development:**
Now that the MREP’s model has proven to be replicable, the city is making the most of its newly acquired skills and experience to work with a group of six companies intending to go to market for a PPA of 100 GWh of renewable electricity per year in late 2019.

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The 39-turbine wind farm in rural Victoria is owned and operated by Melbourne-based clean energy company Pacific Hydro. Partners in the Melbourne Renewable Energy Project have collectively committed to buying 88 GWh of renewable energy annually through 2030, equating to a yearly reduction of 96,800 tonnes of CO₂e emissions.
To meet the Paris Agreement’s goal of staying well below a 2°C global average temperature increase, an estimated 80% of the world’s remaining fossil fuels must stay in the ground. Despite that inescapable fact, annual fossil fuel investments rose to $933 billion last year, with cities retaining significant financial holdings in the industry. New York City, realising the inconsistency with their vision for the future, is putting its money where its mouth is, and divesting the entirety of its $189 billion pension funds from fossil fuels.

This $5 billion divestment will happen over the coming four years, and coincide with a doubling of investments in climate solutions to $4 billion. While the move is making increasing financial sense, it has also kickstarted a global move to place financial markets at the forefront of decarbonising the economy.

What has the city achieved?

To align financial markets with the Paris Agreement and send a market signal for a safe and sustainable future, New York City has made the move to divest its pension funds from fossil fuels.

In concert with the divestment move, the city is doubling its investment in climate solutions, to $4 billion. Importantly, unlike other sustainable investment approaches, NYC is targeting this money at investments with high impact for emissions reductions such as renewable energy and zero-carbon transport, and has kickstarted large-scale fossil fuel divestment in cities around the world.

In stranded assets grows. As such, NYC not only sees divestment as a strong market signal and political move, but also a financially savvy one in the long term.

New York City
What are the co-benefits?

Social:
Decarbonising the economy is critical to achieving climate justice. In setting the divestment agenda, NYC has not only paired with pension fund managers, but also labour unions and civil society activists, ensuring that a just transition is considered in all decision-making.

Health:
Fossil fuel combustion results in significant health risks for people around the world. By funding the transition towards a cleaner society, NYC is also creating a healthier future for its citizens.

Economic:
NYC’s approach to investing in climate solutions is innovative compared to typical institutional approaches, as it targets investments where there are tangible climate benefits on offer, putting capital to work to achieve the goals of the Paris Agreement, while also making a financial return.

Environmental:
NYC’s divestment is sending a clear signal that the end is nigh for the extraction and combustion of fossil fuels, which is the primary driver of environmental degradation, carbon emissions, and air pollution around the world.

What can other cities learn?

From black to green means red to black:
Shifting financial holdings from black to green is making increasing economic sense, as fossil fuel stocks are increasingly underperforming on the market, and are subject to greater market volatility. Given the Paris Agreement’s need to rapidly accelerate green investments, NYC sees keeping investments in fossil fuels as betting against their own future.

Take the bull by the horns:
The charging bull sculpture outside the New York Stock Exchange has become a symbol of financial markets around the world, but with this divestment initiative, the city’s Mayor has taken the bull by the horns, and put NYC at the forefront of transitioning to a decarbonised economy. Taking such ambitious action has only been possible thanks to strong political will from the Mayor’s office.
PARIS:
The socially inclusive, environmentally sustainable Paris Green Fund

In line with the rules of the French national financial markets authority, the Paris Green Fund (PGF) is managed by an independent management company – Demeter – which to date has raised $221 million in capital over two separate funding rounds.

Demeter is using this financial instrument to help innovative small- and medium-sized businesses on the cusp of rapid growth commercialise their solutions. Its priority sectors are extensive, covering construction, mobility, energy, circular economy, air quality, and digital solutions.

As a 10 year project, this $221 million capital growth fund expects to finance five ecologically sustainable, socially inclusive projects annually, with a focus on supporting fast-growing small businesses.

A law passed in 2017 enabled the City of Paris to create an investment fund the Paris Green Fund – to help accelerate the ecological transition, while also bringing about tangible, positive benefits to residents.

What has the city achieved?

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While the PGF was initiated by Paris, Demeter is responsible for raising and managing capital, while three core committees provide the governance structure to steer this long-term project. The “strategic committee” provides the forward-looking insights into markets, as well as new technologies viable for the ecological transition. The “advisory committee” gives its opinion on all investment decisions submitted by Demeter. The “investment committee” ensures Demeter’s regulations and investment policy are abided by. This governance structure is key to successfully delivering on Paris’ aim for PGF to help the French capital meet its ambitious environmental and social targets.
What are the co-benefits?

Social:
While all projects financed by PGF must help accelerate the socially just, ecological transition, they must also bring about tangible, positive benefits to the citizens of Paris.

Health:
PGF’s funding of projects that decrease air pollution will result in significant improvements in the general public’s health.

Economic:
By transitioning Paris’ economy to becoming less fossil fuel-dependent, the city’s long-term economic outlook is stronger, as it will be less vulnerable to fluctuations in future fossil fuel prices.

Environmental:
The collection of sustainability projects funded by PGF will improve the air quality of Paris by preventing the release of local air pollutants, while the transformation towards greener energy will bring about a net reduction of long-term greenhouse gas emissions.

What can other cities learn?

Making the most of municipal and national legislation:
With passage of the 2017 law, the City of Paris initiated a territorial fund to hasten the much-needed, just ecological transition. Introduction of this new legislation was crucial in that it enabled the city to take action, while also bringing about notable benefits for the capital’s inhabitants.

A successful mixed investment portfolio:
Investors in the PGF are mixed, with public institutions like City of Paris, Caisse des Dépôts, and Bpifrance all involved. From the private sector, participating organisations include Aviva, Pro BTP, Caisse d’Epargne Ile-De France, and Compagnie Européenne de Garanties et Cautions. In addition to a number of family-run businesses, several large corporations have invested, too, including Engie, Fayat, IFP Energies Nouvelles, and Suez.

PARIS

DOLLARS IS THE CURRENT SIZE OF THE CAPITAL GROWTH FUND to finance five sustainability focused European SMEs annually over the next 10 years

Paris Mayor Anne Hidalgo at the ceremony in July 2018 marking the raising of the first $110 million in capital of the Paris Green Fund. Today, the PGF stands at $221 million.
PHILADELPHIA: Shifting electricity supply to solar via power purchase agreement

As part of a wider goal of cutting carbon emissions by 80% by mid-century, Philadelphia has committed to powering 100% of municipal operations with renewable power by 2030.

To meet that challenge, the city has entered into a power purchase agreement with a renewable energy developer who will build a large-scale solar power plant with enough generation capacity to meet 22% of the city government’s power demand.

What has the city achieved?

Price volatility in electricity markets is often a barrier to accelerating the build-out of renewable energy capacity, as developers can’t be sure on the return on investment. Power purchase agreements (PPAs), however, offer a solution by providing a commitment to developers to purchase a set amount of power at a fixed price over a predefined period. In its bid to power 100% of municipal operations with renewable electricity by 2030, the City of Philadelphia signed the largest such agreement of any city in the USA.

The agreement will lead to the construction of a 70 MW solar power plant, the largest in Pennsylvania by sevenfold. The PPA will provide 22% of the power supply for municipal operations, creating a significant leap towards the city’s clean energy goals. As the agreement is fixed for 20 years, it provides a hedge against price fluctuations, meaning the city can plan effectively and the developer is offered long-term certainty.

An Economic Opportunity Plan was put in place for the project to ensure local community benefits from the city’s low-carbon transition with the creation of a number of permanent green jobs and ample opportunities for trainees.
What are the co-benefits?

Social:
The PPA is fuelling a green jobs future, with the creation of a number of permanent jobs at the solar plant. Additionally, the project will be used to provide further training opportunities in the rapidly growing solar industry.

Health:
While the shift from fossil fuels to renewables reduces many climate-induced and air pollution health risks, it also makes possible a shift from hazardous fossil fuel jobs towards healthier, safer green jobs.

Economic:
With the agreement covering 22% of the city government’s electricity demand for the next 20 years, it acts as a hedge against future price fluctuations, ensuring the municipality can continue to purchase low-cost, low-carbon electricity.

Environmental:
The 70 MW solar project enabled thanks to the PPA displaces coal and natural gas from the energy mix, and will result in an estimated annual CO₂ abatement of 60,000 tonnes.

What can other cities learn?

Look beyond your own assets:
With a commitment to fulfill 100% of its electricity demand from renewables by 2030, the municipal government must do more than install solar panels on its roofs. Philadelphia’s PPA is the simplest way to accelerate the build-out of green energy capacity, while also ensuring a significant renewable power supply, providing long-term certainty for the municipality and the project developer.

Go big or go home:
Philadelphia’s PPA, at 70 MW, is the largest any US city has made thus far. It was only made possible via close collaboration between the Energy Authority, the Mayor’s office, and the Office for Economic Opportunity. The city is now examining the possibility of replicating the agreement to cover a greater proportion of its electricity demand from renewable PPAs.
The Green Bonds Program is central to supporting San Francisco’s ambitions of becoming carbon neutral by 2050. As of 2017, the city has already reduced its CO₂ emissions by 36% compared to 1990 levels, surpassing its initial 25% target.

By working with the San Francisco Public Utilities Commission (SFPUC), low-impact development and green infrastructure technologies have been prioritised. Projects involving solar energy utilisation and green roofs, specialised landscaping, and permeable paving can provide a modest interest rate savings to investors compared to more traditional bonds. As the USA’s second-largest municipal issuer of green bonds, San Francisco expects there to be a rapid expansion of the green bond market and plans to be a leader in the market. Costs to issue green bonds range from $10,000 to $25,000 per bond for independent certification and verification, excluding staff time.

The largest San Francisco capital project financed with green bonds so far is the Sewer System Improvement Program (SSIP), which is a 20 year, $6.9 billion investment to improve the city’s aging sewer system, manage stormwater, and assure operational permit compliance.

As of 2018, San Francisco has $1.7 billion in its Green Bonds Program, part of Mayor London Breed’s commitment to investing in climate-resilient infrastructure.

The programme started in 2015 and was certified by the Climate Bonds Initiative, which finances renewable energy, public transportation, and resilient water and wastewater infrastructure projects. As a popular alternative to traditional bonds, approximately a third of the city’s capital budget – $1 billion per year – is already financed via green bonds, playing a key role in the city’s $35 billion investment in infrastructure over the next decade.

What has the city achieved?

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What are the co-benefits?

**Social:**
Projects financed by the Green Bonds Program ensure the city’s economic vitality and resilience via the support and strengthening of its neighbourhoods, local businesses, and workforce.

**Health:**
The wide variety of projects funded by the programme are having a positive impact on people’s health and quality of life thanks to a reduction in odours from wastewater treatment and excessive noise pollution, an increase in walking and biking accessibility, and increased access to healthy foods.

**Economic:**
Local workers have earned more than $88 million in wages and benefits on green bonds projects. On SSIP projects, for example, local residents have worked 32% and 65% of all normal and apprentice hours, respectively, with both figures substantially exceeding the City Local Hiring Ordinance requirements.

**Environmental:**
Compared to 1990 levels, San Francisco has already reduced its CO₂ emissions by 36%, surpassing its initial target of 25%.

What can other cities learn?

Support the Green Bonds market and reap the rewards:
San Francisco’s leadership in the USA’s green bonds market is pivotal. By supporting the market, the city increases investor demand for the bonds and ensures an ever-larger number of climate-resilient projects can be financed at a lower cost for all.

Embrace digital communications:
For public outreach, the city has distributed electronic newsletters and project updates to more than 6,300 subscribers. Its projects and programmes have been featured in nearly 40 news articles or video segments. The SFPUC has engaged with the public via social media platforms, with its Facebook and Twitter following totalling 6,000 and 15,000, respectively.

SAN FRANCISCO

36%

REDUCTION IN SAN FRANCISCO’S CO₂ EMISSIONS
compared to 1990 levels, surpassing the city’s initial target of 25%
SINGAPORE: Growing sustainable bonds via innovative grant scheme

In 2017, Singapore introduced a six-year Grant Subsidy Scheme to grow the city Monetary Authority’s Sustainable Bonds. The overarching aim is to rapidly mobilise private sector capital to meet the ever-growing green investment needs of the region, estimated to be $200 billion annually through 2030.

While bonds are privately funded, the city grants up to $73,000 towards obtaining an independent external review for the issuance of each bond, sending a strong market signal to catalyse green investments.

What has the city achieved?

By subsidising external reviews, Singapore is helping the Grant Subsidy Scheme overcome one of the key hurdles preventing potential first-time green bond issuers from partaking in the progressive scheme. As of today, more than $2.9 billion of green bonds have been issued by local and foreign companies in Singapore, aiding Asia’s sustainable economic development by supporting everything from green building projects in Singapore, to solar and wind farms in India, and geothermal projects in Indonesia. The city views sustainable bonds as a critical financial tool to tackle the global climate crisis and meet other environmental targets, which is why it is facilitating rapid market growth so that the scale and impact can be as far-reaching as possible.

Transparency and consistency are fundamental to the scheme’s credibility, which is why each grant applicant must appoint a bond arranging bank, whose role is to work with the applicant (the bond issuer) to verify the bond’s issuance will meet the scheme’s social and environmental criteria. Promoting the use of standards, such as the Climate Bond Initiative’s Climate Bonds Standard, enables the sustainable bonds to be internationally recognised by global investors as meeting high sustainability standards.
What are the co-benefits?

Social:
By making use of international sustainability standards, like the Climate Bond Initiative’s Climate Bonds Standard, this scheme ensures that any bonds issued are destined for sustainable and socially inclusive projects.

Health:
Thanks to funding projects like solar and wind farms in India, the initiative is contributing to improved public health by reducing dependence on coal-fired power plants.

Economic:
Singapore hopes to facilitate the rapid market growth of sustainable bonds, thereby harnessing the power of global markets to scale up projects with a positive climate impact, while also boosting prosperity in the financial hub of Singapore.

Environmental:
The scheme hopes to galvanise private sector capital to finance projects that will accelerate action on climate change and meet commitments under the Paris Agreement to limit global warming to well below 2°C.

What can other cities learn?

The problematic “no yield advantage”:
The project aims to attract first-time sustainable bond issuers so applicants can experience the underestimated potential of green bonds. While there are no significant yield differences between these and the more traditional financial bonds, forecasts for green bonds are often more positive in the long term as the global economy transitions toward sustainability.

2.9 BILLION DOLLARS OF SUSTAINABLE BONDS have been issued since the project’s 2017 launch.

SINGAPORE

Harbouring one of the planet’s most important financial centres, Singapore has high hopes of accelerating the growth of sustainable bonds by subsidising up to $73,000 in independent external reviews.

Photography: First page - Monetary Authority of Singapore Singapore Cityscape
Second page - Nick Fewings, Unsplash
The Cities100 report features 100 leading climate action projects from cities around the world. The report demonstrates that cities’ leadership on the climate crisis provides the added benefit of creating safe, liveable, and equitable cities for all citizens.

The 2019 digital report is the fourth edition of Cities100 and features 12 different categories of climate action.

Cities100 is a collaboration between C40 Cities and Nordic Sustainability, and is funded by the Danish philanthropic association Realdania.

Read them all by visiting: cities100report.com