The Low Carbon Cities Programme

Framework & Methodology

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CARBON TRUST

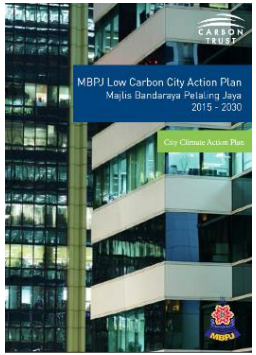
Our mission is to accelerate the move to a sustainable, low carbon economy

We work with governments, multilateral organisations, businesses and the public sector, helping them contribute to and benefit from a more sustainable future

- We cut through uncertainty to provide insights that support better decisions
- We design and manage projects that overcome financial and behavioural barriers
- We recognise clients through assurance and certification of positive outcomes
- We have >180 employees based in our offices in the UK, Netherlands, Mexico, South Africa, Singapore and China. We also have a presence in Brazil and Washington D.C.

Malaysia

Low Carbon Cities Malaysia



Developing City and municipal Carbon Management Plans

3 Participating cities: Kuala Lumpur City Hall (DBKL), Petaling Jaya City Council (MBPJ) and Ampang Jaya City Council (MPAJ)

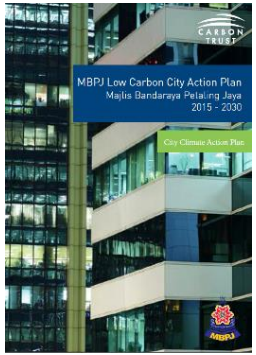
Programme vision:

Launch collaborative area-wide carbon reduction strategies

- led by city-governments or states,
- championed by the public sector,
- actively supported by the private sector
- and owned by the entire community

to build these cities' reputations as clean, desirable places to live and do business.

Low Carbon Cities Malaysia

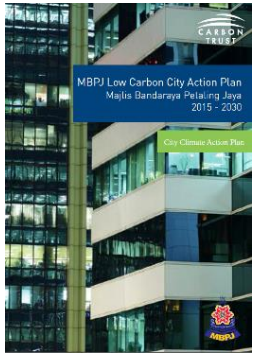


Developing City and municipal Carbon Management Plans

Approach:

- Supported to **understand & quantify emissions**, to **identify projects** and opportunities for GHG reductions and energy savings, and to create a strategy to enable them to **implement actions**
- Started with cities' own estate and **set the precedent**, then established the programmes to **lead businesses and build the scale** of the response
- Energy audits in energy hotspots & **identification of available funding** for prioritised projects

Low Carbon Cities Malaysia



Developing City and municipal Carbon Management Plans

Outputs & Impact:

- Supported the city of Kuala Lumpur's inclusion in the C40 initiative
- Raised the climate and "liveability" credentials and profile for these cities and for Malaysia
- Identified significant emissions (and cost) mitigation opportunities

City	Plan	Reduction target	Energy Savings	GHG reductions (tCO_2e)
Petaling Jaya	City Plan	30% by 2030	RM 9 Bn	6,000,000
Petaling Jaya	CMP	25% by 2020	RM 10.15 M	12,889
Ampang Jaya	City Plan	25% by 2030	RM 13.7 Bn	11,350,000
Ampang Jaya	CMP	30% by 2022	RM 13.5 M	14,668
Kuala Lumpur	CMP	20% by 2022	RM 76.1 M	134,345

To achieve this, applied a systematic framework for Low Carbon Cities analysis

www.lowcarboncities.com

Step 1 - Engaged key city stakeholders

- Low Carbon Task Force
- Identified Project Lead
- Identified Project Sponsors to support

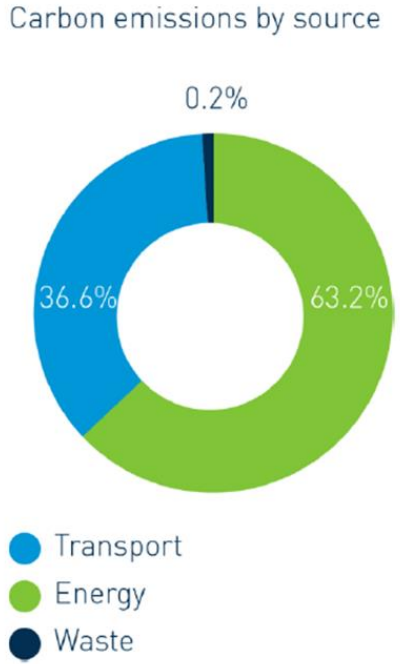
Role of Task Force:

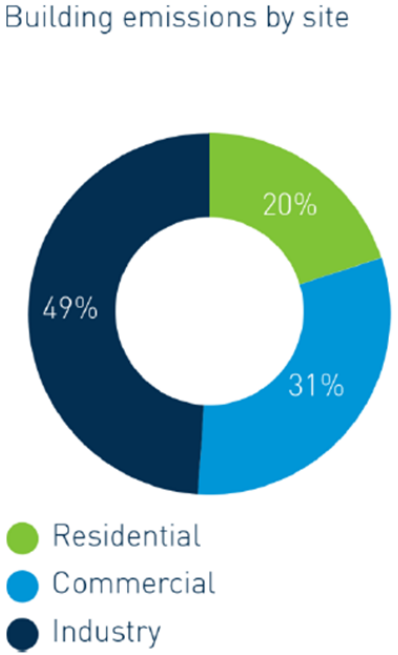
- Task Force has strategic ownership and oversight of the programme
- Monitor progress and support the development of a clear business case for project implementation
- Facilitate the removal of barriers and support the Project Leader
- Understand the benefits of the low carbon city plan, and link to your organisation's wider strategic priorities
- Engage senior & influential stakeholders in the city

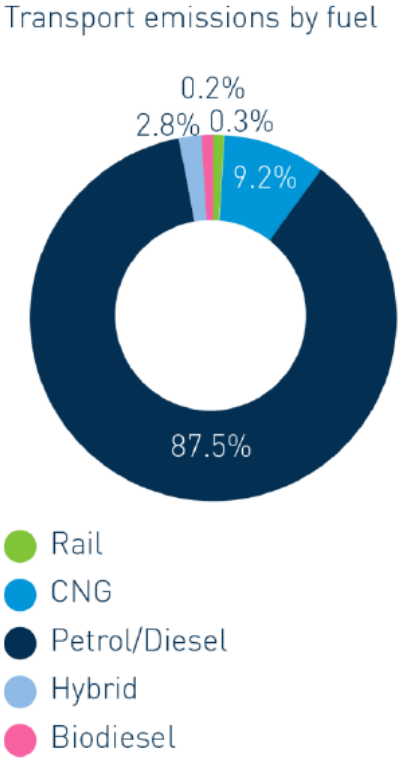
Step 2 - Defined boundaries and gather data for carbon inventory

- Define geographic boundary - usual choice is city government administrative boundary

Step 2 - Comprehensive audit of carbon emissions sources and reduction opportunities informed planning







Step 3 – Identified and prioritised key projects to cut energy use and carbon

Key projects – MBPJ buildings

Objective

Residential Emissions: reduce by 4 kilo tCO2/yr

Action: Property tax rebate scheme

Action: Residential energy audits

Objective

Industrial & Commercial: reduce emssions by 33 kilo tCO2/yr

Action: Energy management and monitoring & targeting

Action: LED lighting

Action: Energy efficient motors & drives

Objective

New Devlopment: reduce emissions by 15 kilo tCO2/yr

Action: Continue to support and promote Green building Index lead redutions

Objective

Renewable Energy: target 10% generation against 2030 BAU forecast

Action: Install Solar PV to generate 10% of 2030 forecasted requirements

Key projects – MBPJ transport

Objective

Private Vehicle Emissions: reduce by 30 kilo tCO2/yr

Action: increase the size of bus fleet

Action: Encourage public transport use through better links and scaled up Park N Ride scheme

Objective

Hybrid Vehicles

Action: encourage uptake through free parking scheme

Objective

Electric Vehicles

Action: Install supporting infrastructure via government assistance and target 1000 EVs by 2020

Objective

Cyling & Pedestrians

Action: Master plan for Main Lane PJ City Cycling Project

Step 4 – Developed strategy and established targets

April 2015

Majlis Bandaraya Petaling Jaya

Carbon Management Plan
2015 - 2020

Version: 1.0
Owner:
Approval Route: Council Board
Approval Status: Draft

Majlis Bandaraya Petaling Jaya

Carbon Management Plan 2015-2020

MBPJ worked with Carbon Trust in 2015 to develop a carbon management plan for council owned assets. The plan commits the council to a target of reducing carbon dioxide by 25% between 2014 and 2020. The strategy will create savings of around RM3m and 4000 tonnes of carbon per year.

Summary of Key Goals:

Achieve a 25% reduction in emissions from street lighting and the municipal estate

- Deliver long term financial savings
- Become a leader in carbon management in Malaysia
- Motivate and inspire staff to reduce carbon & tackle climate change

Drivers for Action MBPJ:

As a major local authority in Malaysia it is imperative MBPJ drive carbon reduction. The main drivers for taking action are:

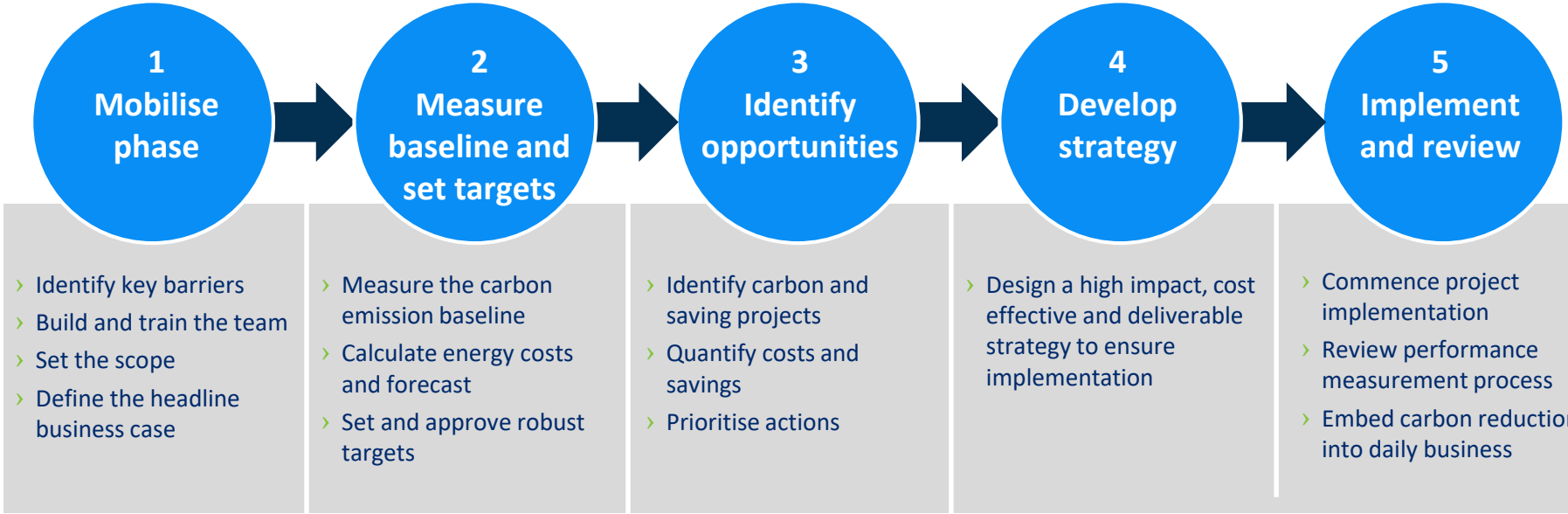
1) *Energy costs*
2) *Legislation & regulation*
3) *The leadership role of the council*

Transport Fuel Management Programme
LED Lighting Upgrade
Building Fabric Upgrades
KEY PROJECT AREAS
Cooling Systems Upgrade
Behaviour Change
Solar PV
Energy Management Metering and Monitoring

There are various opportunities across our estate for reducing carbon emissions and costs. Some examples of these are on the right. Equipment upgrades and more efficient operational practices are essential in meeting our reduction target.

The Framework & Methodology

Low Carbon Cities Programme process



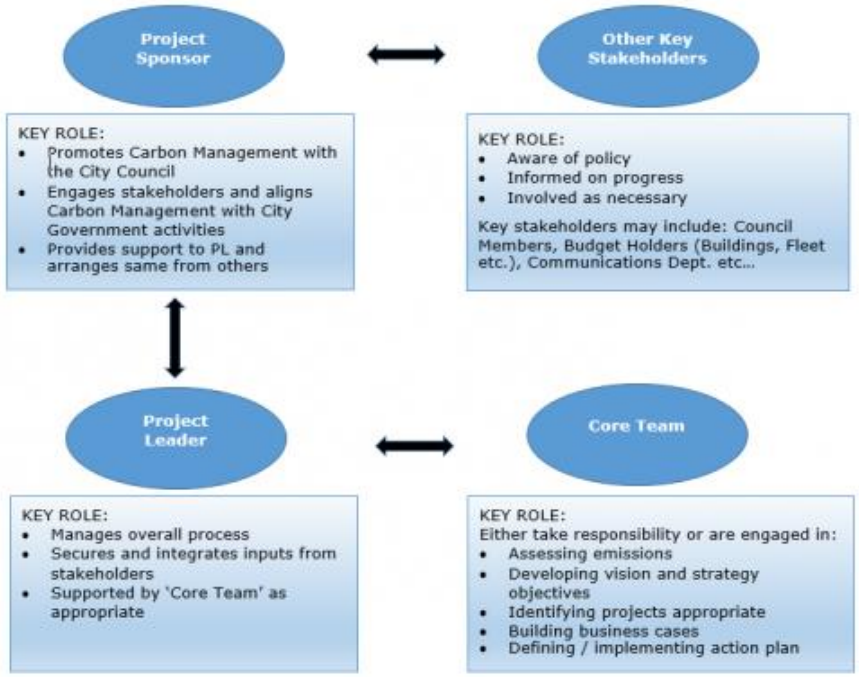
Step 1 - Mobilisation Phase

This step focuses on mobilising your organisation by identifying key responsibilities and stakeholders, and preparing the foundation for all subsequent steps

- Task 1: Establish Governance and Management Structures
- Task 2: Identify Stakeholders
- Task 3: Communicate the process internally
- Task 4: Develop a project plan

Build an effective team for carbon management

Assigning responsibilities to and empowering key city staff



Two main roles:

- **Project Leader** who is responsible for delivering the project
- **Project Sponsor(s)** support the Project leader at a higher level in the organisation

The Project Leader will also need to form a **core carbon management team** and engage with a variety of stakeholders.

Identify and analyse the key stakeholders to the carbon management programme and plan their involvement

Ongoing iterative process throughout the project; ensuring the right people are engaged internally and externally

Gather the views of the identified stakeholders and use them to devise an internal Communications Strategy

This is <u>not</u> a one-off, static process.

The analysis should be regularly revisited and the plan updated!

A **key message** to communicate at this step is the theoretical **possibility for carbon saving within a Local Government context and image improvement.**

This will help prime the core team and other stakeholders when it comes to evaluating opportunities later on in the process.

Define a project plan for how the next steps of the carbon management programme will be completed

Establish timescales and milestones for pulling together the city wide plan

Benefits

- What are the benefits your City would like to obtain from the carbon management programme and how will these be tracked?

Duration of plan

- Over what initial period do you wish to implement carbon management, and how does this fit with other city planning and budget cycles, etc.?

Provisional scope

- What will be the boundaries of your carbon management programme both for measuring your emissions baseline and undertaking emission reduction actions, and why?

Data and forecasting

- How are you going to collect the necessary data required to establish a carbon emissions baseline? Who are the data owners? On which year's data will your baseline be compiled?

Step 2 – Measure Baseline & Set Targets

This step addresses the questions “Where are we now?” and “Where do we want to be?” in terms of carbon management

- Task 1: Understand the drivers of change
- Task 2: Establish the baseline
- Task 3: Model emissions
- Task 4: Calculate the value at stake
- Task 5: Develop a vision and strategy
- Task 6: Present the case of action

Map out all known strategic influences and drivers for your City relevant to Carbon Management (both planned and already in place)

Review current commitments

Next, assess the depth of these commitments, and what has been achieved. For each document or commitment identified, you may wish to consider:

- Is it qualitative or quantitative?
  - If it is a quantitative target, is it being monitored and can it be verified?
  - For qualitative commitments, are they generic and aspirational, or is there anything about them that is measurable?
- Could the commitment conflict with future Carbon Management efforts?
- Can the City demonstrate that it has achieved the commitment, or made any progress towards doing so, or is this information not available?
- What problems has your City faced in meeting its commitment, and is any action planned to address this, whether to ensure the commitment is met, or to restate or withdraw the commitment?

Assess the status of Carbon Management within the City

It is important to have a good understanding of the extent and effectiveness of Carbon Management activities that already exist within your City and the level of awareness among key internal stakeholders.

	POLICY	RESPONSIBILITY	DATA MANAGEMENT	COMMUNICATION & TRAINING	FINANCE & INVESTMENT	PROCUREMENT	MONITORING & EVALUATION
5 **BEST**	SMART Targets signed off Action plan contains clear goals & regular progress reviews Strategy launched internally & to community	CM is **full**-time responsibility of a **few** people CM integrated in responsibilities of **senior** managers VC support Part of **all** job descriptions	Quarterly collation of CO2 emissions for all sources Data externally verified M&T in place for: • Buildings • Waste	All staff & students given formalised CM: • Induction • Training Plan • Communications CM matters **regularly** communicated to: • External community • Key partners	**Granular** & **effective** financing mechanisms for CM projects Finance representation on CM Team Robust task management mechanism Ring-fenced fund for carbon reduction initiatives	Senior purchasers consult & adhere to ICLEI's Procura+ manual & principles Sustainability comprehensively integrated in tendering criteria Whole life costing Area-wide procurement	Senior management review CM process Core team regularly reviews CM progress Published externally on website Visible board level review
4	SMART Targets developed but not implemented	CM is full-time responsibility of an individual CM integrated in to responsibilities of department managers, not all staff	Annual collation of CO_2 emissions for: • Buildings • Transport • waste Data **internally** reviewed	All staff & students given CM: • Induction • Communications CM communicated to: • External community • Key partners	Regular financing for CM projects Some external financing Sufficient task management mechanism	Environmental demands incorporated in tendering Familiarity with Procura+ Joint procuring between HEIs or with LAs.	**Core** team **regularly** reviews CM progress: • Actions Profile & Targets • New opportunities quantification
3	Draft policy Climate Change reference	CM is part-time responsibility of a few people CM responsibility of department champions	Collation of CO2 emissions for limited scope i.e. buildings only	Environmental / **energy** group(s) give ad hoc: • Training • Communications	Ad hoc financing for CM projects Limited task management No allocated resource	Whole life costing occasionally employed Some pooling of environmental expertise	CM team review aspects including: • Policies / **Strategies** • Targets • Action Plans
2	No policy Climate Change aspiration	CM is part-time responsibility of an individual No departmental champions	No CO2 emissions data compiled Energy data compiled on a regular basis	Regular poster/awareness campaigns **Staff** given ad hoc CM: • Communications	Ad hoc financing for CM related projects Limited task coordination resources	Green criteria occasionally considered Products considered in isolation	Ad hoc reviews of CM actions progress
1 **Worst**	No policy **No** Climate Change reference	No CM responsibility designation	Not compiled: CO_2 emissions Estimated billing	No communication or training	No internal financing or funding for CM related projects	No Green consideration No life cycle costing	No CM monitoring

Calculate your carbon emissions baseline with an inventory of your emission sources (e.g. buildings, transport, street lighting etc.)

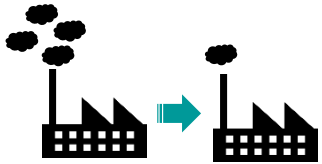
This entails:

1. Drawing a boundary around the sources you wish to include in the baseline, typically those you have management control over
2. Gather historic energy and emissions data for these sources for your selected baseline year
3. Calculate the baseline (energy and carbon); utility data needs to be converted into emissions by using the relevant CO_2 conversion factors of energy and fuels

Most carbon footprinting assessments methodologies used internationally are developed in accordance with the **Greenhouse Gas (GHG) protocol** developed by the World Business Council for Sustainable Development and the World Resources Institute

You should understand how emissions (and costs) might change in the future under ‘business as usual’ and ‘reduced emissions’ scenarios

Expected growth in size of your City, extending the volume of certain services



The probable carbon impact of known City initiatives/projects, such as major building refurbishments, property purchases or disposal, procurement of new IT equipment, changes in staff numbers, new ways of working such as home working or outsourcing

General national trends in energy use/carbon emissions, such as per capita office energy consumption or the carbon intensity of electricity generation, or more specific information such as the energy consumption of new IT equipment or vehicles

Create a common sense of direction for your City in terms of Carbon Management and what the long-term aspiration could be

You need to engage with senior management and operational personnel to determine the City's long term, qualitative aspiration for Carbon Management and how the resultant strategy supports it.

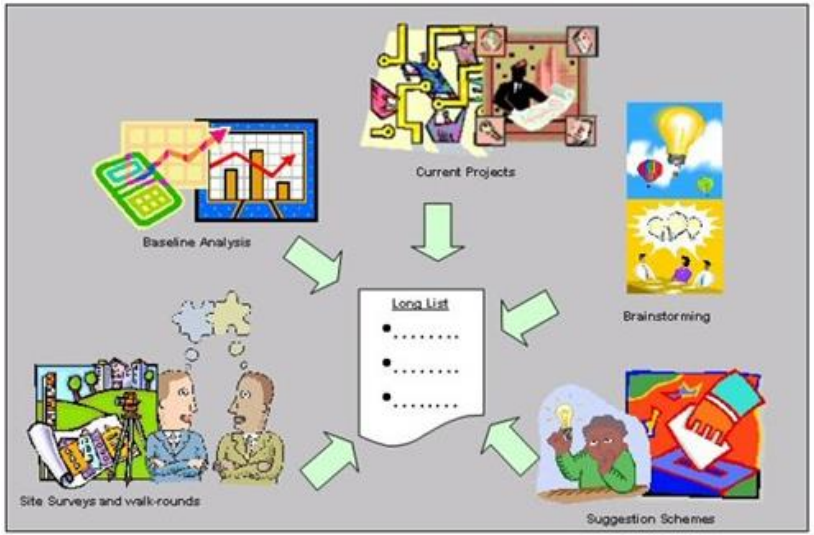
- **Vision** - long term aspiration - "Where do we want to be?"
- **Objective and targets** - these need to address the broader areas where impact on emissions is to be achieved
- **Outline strategy** - A statement or set of summary points explaining the general priorities and principles that will be adopted that will lead to the achievement of the vision and targets
- **Actions** - the specific actions (projects, initiatives, interventions) that implement the strategy

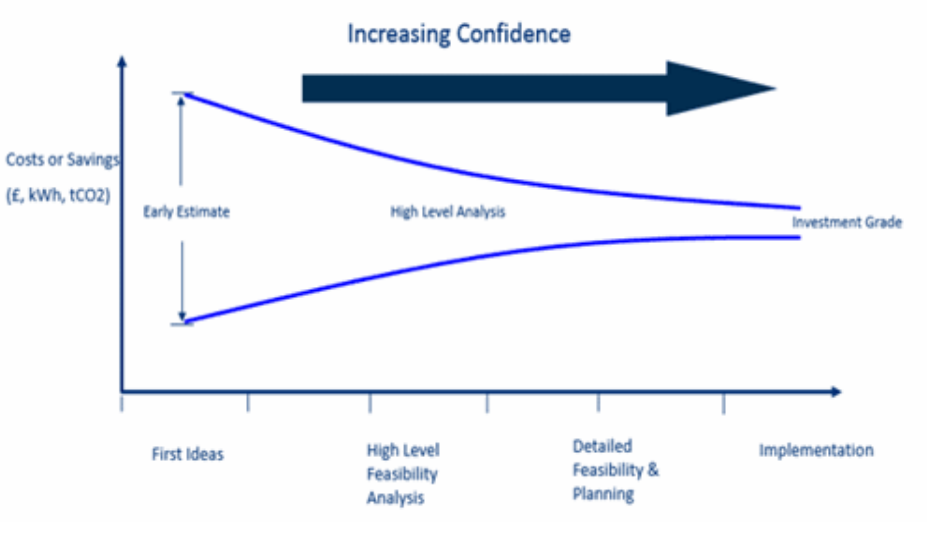
Step 3 – Identify, quantify and prioritise opportunities

This step looks at what opportunities are available for reducing emissions within your City and assessing their impact on carbon emissions and overall performance (financial implications, management practices, and public image)

- Task 1: Compile opportunities list
- Task 2: Prioritise opportunities
- Task 3: Assess costs and benefits

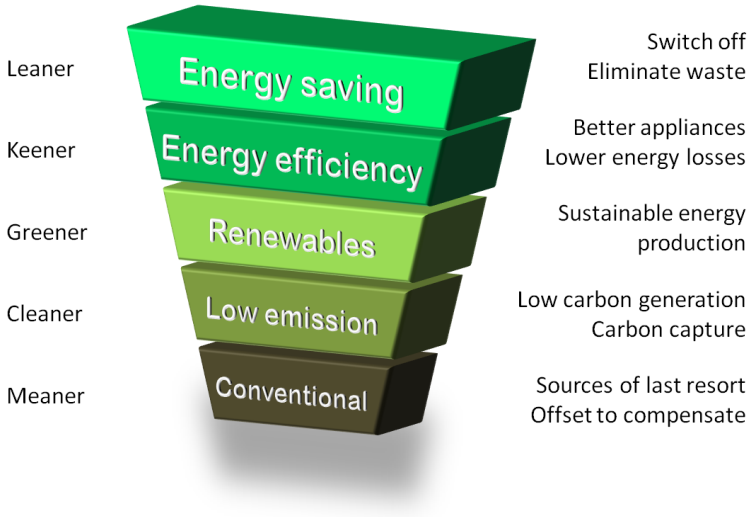
Create a long list of project ideas

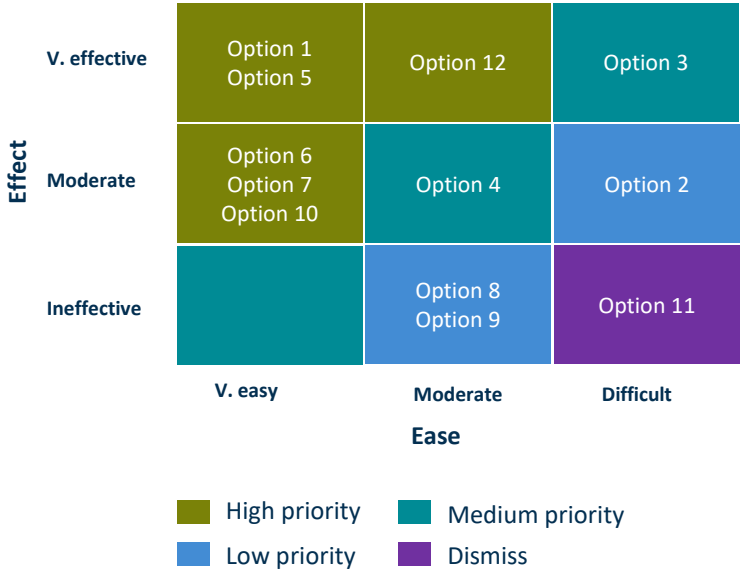




Start looking individual feasibility and practicability and prioritise project ideas on a combination of qualitative and quantitative criteria

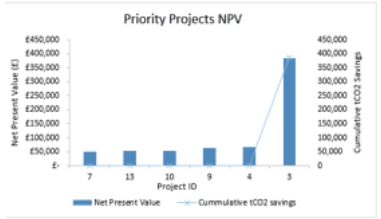
- Energy hierarchy
- Ease & effect
- Project categorisation



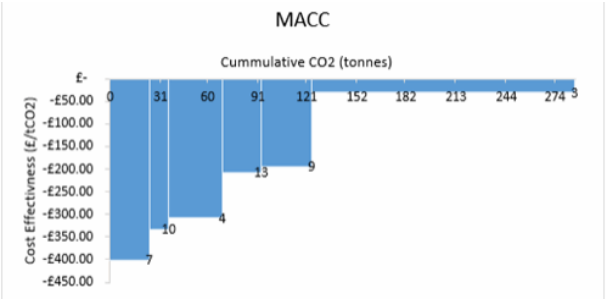


Assess costs and benefits

- Financial & Carbon Metrics



- Marginal Abatement Cost Curve (MACC)



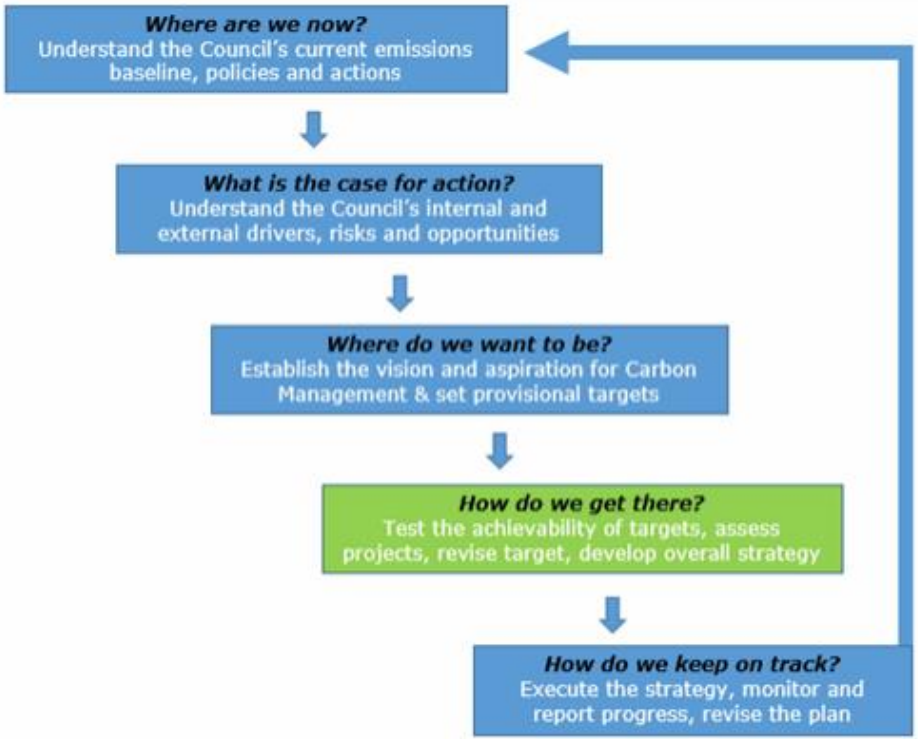
- Social Return on Investment analysis (recommended)

Step 4 – Develop strategy & implementation plan

The aim here is to complete the development of a realistic strategy for managing carbon, and to prepare a practical Carbon Management Plan that can deliver the strategy.

- Task 1: Finalise the strategy
- Task 2: Draft the implementation actions
- Task 3: Finalise and approve the plan

Finalise the Carbon Management Strategy; at a high-level the 'what' and 'how' of the Carbon Management programme

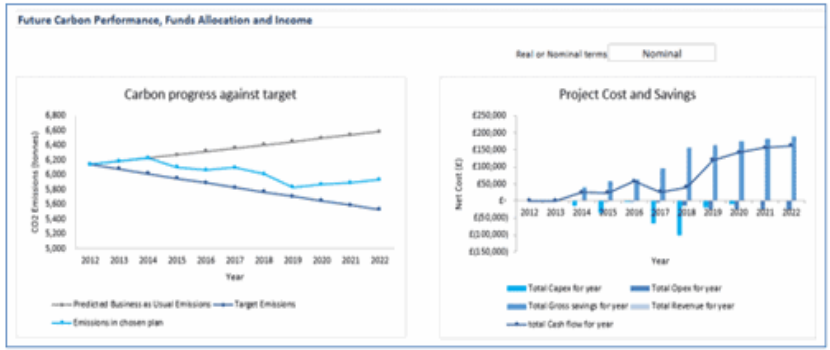


Translate vision, targets and high-level objectives into a programme of practical actions, and detail how these will be delivered

Actions
- Project alignment to strategic objectives
- Direct emissions reduction projects
- Embedding and enablement actions
- Programme management actions

Finance
- Where to obtain funds?
- Specify the steps to be taken to secure funding
- Approval process

Timescale



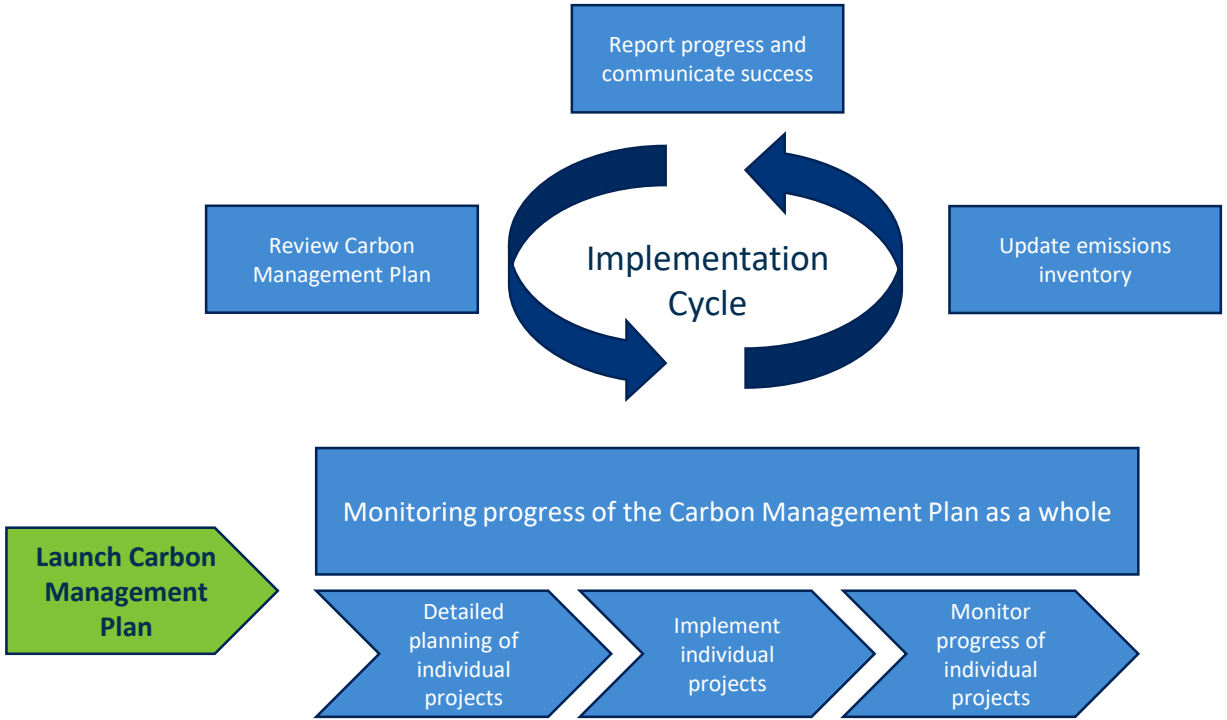
Programme Management
- Risk management
- Governance
- Key performance indicators
- Communication and reporting
- Embedding in key policy documents

Step 5 – Implement!

This stage of the programme is concerned with

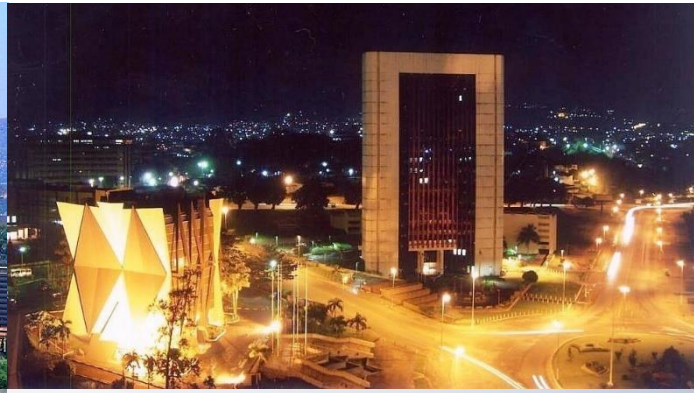
- Implementing the opportunities identified in the Carbon Management Plan
- Monitoring progress
- Communicating success to stakeholders!

Step 5 – Implement!



What can YOU do now?







What can YOU do now?

- Find out what your city or region is already doing in regards to carbon (and energy) management
- Contact your climate change / energy responsible, or initiate this!
- Build support. Make internal stakeholders aware of the potential to improve your city's image by transitioning to a low carbon economy, while at the same time saving money
- Don't be daunted to start the journey. Build the foundations (and work with what you have), and go from there.

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