ADB

Technical Assistance Consultant's Report

Project Number: 48357-001
September 2016

MAL: Sustainable Urban Management (Green Cities) Support for Follow-up Activities in Melaka, Malaysia
(Financed by the Melaka Green City Technology Corporation)

Prepared by

ICLEI – Local Governments for Sustainability South Asia (ICLEI-SA), India

For Melaka Green City Technology Corporation

Asian Development Bank

FINAL REPORT

Sustainable Urban Management (Green Cities) Support for follow up Activities in Melaka, Malaysia Output 1 Firm (48357001)

Submitted to: Asian Development Bank, Manila

Submitted by: ICLEI South Asia in Association with ICLEI South East Asia

September 2016

Table of Contents

ANNEXURES

I. Final Report - Sustainable Urban Management (Green Cities) Support for follow up Activities in Melaka

I.1 Objective of the TA

The objective of the technical assistance is to formulate 3 E (environment, economy and equity) indicators for the city of Melaka and to develop a simple customized computer-based tool (to be called the PINTAR[1] tool). The 3E indicators and the associated tool will be used to assess the implementation of the Green City Action Plan by measuring performance.

The outputs of the tool will provide requisite information on priority indicators and enhance decision making. The tool will help monitor periodically the impacts of implementation of the action plan on selected indicators.

I.2 Scope of Work:

The indicator and baseline monitoring system and the PINTAR tool is developed and deployed in the State of Melaka by undertaking the following activities:

(i) Developing the PINTAR Tool:

   a. A Green City baseline and indicator system for benchmarking Melaka city

   b. the *eco*BUDGET Tool for Melaka State

(ii) Providing hands-on training to its users and city authorities to understand the methodology and application of the tool

(iii) Formulating a plan to develop and make more comprehensive the coverage of this tool.

I.3 Adopted Methodology & Outcomes:

I.3.1 Developing the PINTAR Tools

   a. A Green City baseline and indicator system for benchmarking Melaka city

   b. the *eco*BUDGET Tool for Melaka State

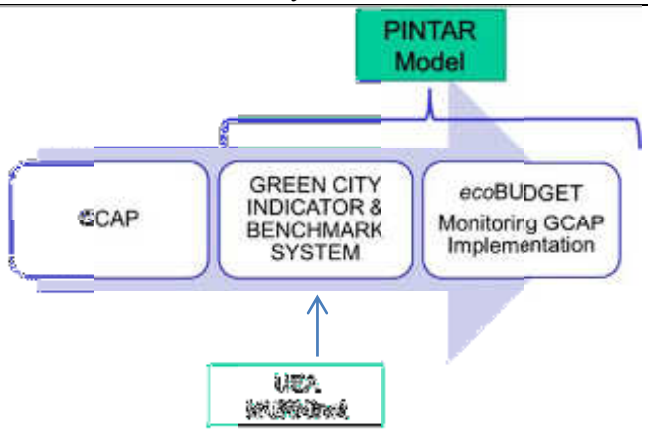
The following section indicates the methodology followed and its outcomes for each of the above defined activities

The PINTAR model developed for Melaka consists of two tools:

1. The Green City Indicator & Benchmark System

2. The *eco*BUDGET tool

[1] PINTAR: Malay word for smart and swift



I.3.1.1 Developing the PINTAR Tool – A Green City Baseline and Indicator System

A stake holder committee (attached as annex 1) is constituted at the State level to deliberate on the development of indicators, assessment of the baseline and for monitoring the progress of GCAP implementation in Melaka.

Information on prioritised programmes and projects has been collected from various departments through several meetings over the period February to July 2016. This information is used to identify key areas of intervention related to the goals of the GCAP. Priority activities given in the Green City Action Plan for Melaka were also discussed with these departments. In addition to identified priority projects, the Urban Environmental Accords and MURNInet indicators are also taken as the basis for development of the indicator and benchmark system.

A list of relevant baseline data points and indicators are then proposed to assess the baseline and to assess the impact of proposed projects and programmes; specifically in the context of furthering sustainable urban development in the State of Melaka - **the Green City Baseline & Indicator System.**

Melaka Green City Action Plan: The GCAP is recognised as the guiding plan for Melaka in this context. This project intends to support the roll-out and implementation of the Green City Action Plan in Melaka State. The intent of the GCAP is to ensure equitable and inclusive development through the adoption of resource efficient and climate resilient development. Low carbon development is the desired outcome of implementing the GCAP. Providing efficient and sustainable urban services to enhance tourist foot falls and thereby boost the economy, is a key target of the GCAP.

41 Actions are proposed under 6 themes to achieve these objectives. Water, Energy, Transportation, Waste, Culture, Tourism and Urban Forestry are the sectors considered in the GCAP.

UEA: The Urban Environmental Accords addresses 7 sectors, 6 of which are similar to themes proposed under the GCAP.

GCAP	UEA
Water Management	Water
Energy Efficiency & Renewable Energy	Energy
Green Transportation	Transportation
Zero Waste	Waste Reduction
Cultural Heritage & Tourism	Urban Design
Urban Forestry & Agriculture	Urban Nature
	Environmental Health

Consultations with identified stakeholders and administration of a questionnaire (included as Annex 2) resulted in the identification of actions that are of relevance to the GCAP and are now proposed for inclusion into the GCAP. The list of actions proposed or being undertaken by various departments in Melaka, of relevance to the GCAP are given in Annex 2. Also indicated in the annexure are the corresponding sectors/focus areas of the GCAP/UEA and whether a relevant indicator is already included in the example baseline data and indicator system that has been developed.

Current Status of UEA and MurniNET Indicators: Based on an assessment of the type of indicators and the data that is collated by PTHM, it is found that indicators being used in the Urban Environmental Accords need to be better defined and clarified in order to allow for capture of accurate data that can be used to monitor improvement resulting from actions (which are not yet identified). The indicators in the UEA system are not necessarily linked to any specific action plan. There is opportunity to define the UEA indicators in line with proposed GCAP actions, since the sectors that are considered in UEA and the GCAP are similar. Where the GCAP addresses sectors beyond the UEA, additional indicators will need to be developed.

MurniNET: MurniNET indicators are to be continued and are suggested to be included in the indicator database without any further addition/modification, unless specified by the concerned authority, since these indicators are mandated by the Government of Malaysia.

A simple and adaptable online tool with a user friendly interface is now developed to constantly update indicators: PINTAR tool: The Green City Baseline & Indicator System.

The Green City Baseline & Indicator System (an online tool) can be accessed at: http://182.72.148.158/Pinttool/

A detailed manual on the online PINTAR tool: The Green City Baseline & Indicator System is annexed to this document as Annex 3.

An offline excel version of the tool with a list of all the baseline data points and indicators currently included in the online tool is also made available and is attached to this document

as Annex 4. **This document suggests baseline data to be captured and indicators that could be considered. Formulae for calculation of indicators are also suggested.**

The offline indicator and benchmark system explained above, should be utilised to further discuss the specific actions of the GCAP and the time period of implementation of the GCAP.

This database is ONLY AN EXAMPLE OF AN INDICATOR AND BENCHMARK SYSTEM, developed on the basis of existing UEA indicators and proposed actions listed in the executive summary of the GCAP document. THESE BASELINE DATA POINTS AND INDICATORS ARE ONLY SUGGESTIVE.

It is proposed that the baseline be established for the year 2015. The time period of implementation of these actions (yet to be identified, only start year identified) will define the period of monitoring. Periodic monitoring will help assess the impact of these actions.

I.3.1.2 Developing the ecoBUDGET Tool for Melaka State

The "*eco*BUDGET" tool is now available with a specific login for Melaka, to enable the management of the GCAP implementation, while focusing on the environmental / sustainability impacts of the actions and monitoring their achievement over a period of time. As an initial example, this tool is customised with inputs for Melaka State, in line with the goals of the GCAP. This forms the second part of the PINTAR tool, the first being the Green City Indicator & Benchmark System; both of which together are called the PINTAR tool.

*eco*BUDGET is an environmental management system which allows local authorities to manage environmental resources as efficiently as they manage financial resources. The traditional budgeting accounting system is complemented by an environmental budget, in which natural resources/sustainability indicators are measured instead of money. The ultimate aim is to keep environmental spending (as measured in impacts to natural resources, climate, energy demand, etc.) within limits set in an environmental "Master Budget."

The Master Budget will consist of relevant indicators & targets drawn from the Green City Baseline & Indicator System.

The *eco*BUDGET tool is accessible at http://webcenter.ecobudget.org

For Melaka State:
Login: melaka
Password: melaka

While the green city baseline and indicator system captures and stores information on the baseline and indicators of progress, the *eco*BUDGET tool is used to define short term and long term targets and monitor achievement of progress against those targets.
A detailed manual for the *eco*BUDGET tool is attached as Annex 5 to this document.

I.3.2 Methodology for the use and sustenance of these tools

The Melaka Economic Planning Unit (Unit Perancangan Ekonomi Negeri - UPEN) has been identified as the agency responsible for collating budget plans from various departments in

the State and for preparing the financial budget for the State. UPEN also has a mandate to steer economic development of the State. Given this role, in discussions with PTHM and UPEN, it has been found that UPEN will be an ideal anchor department to advice and ultimately steer the development of the Green City Action Plan over several planning years, as is also indicated in the GCAP document.

PTHM is identified as the technical agency which will extend support to UPEN in developing and monitoring indicators, with an aim to assess the impact of the GCAP. Such indicators are to be reviewed on a yearly basis. Benchmarks are also to be defined by PTHM, pursuant to proposed GCAP actions. Technical assistance for actual implementation of the GCAP will also be provided by PTHM. Implementation of actions of the GCAP will be the responsibility of appropriate line departments/agencies (e.g. transport department, solid waste management department), which will then feed information into the green city baseline and indicator system, as indicated above.

It is to be noted that the GCAP is intended as a living document and will need to be updated periodically with an action plan pertaining to a specified time period.

In order to accomplish the definition of the GCAP actions, which will also lead to achievement of UEA targets (due to complementarity), the following actions will need to be taken by PTHM/MGTC:

- PTHM/MGTC, in consultation with UPEN: to define a specific time period for implementation of the GCAP and to identify specific actions to be undertaken within this period
- Baseline data and Indicators in the offline sheet to be modified/retained based on identified actions
- MGTC and UPEN will need to come up with specific actions and indicators which will make up the *eco*BUDGET master budget for the coming year 2017.
- Once proposed by UPEN (with technical support from PTHM), approved by the stakeholder committee and then by the Melaka Green Technology Council, the targets become politically binding for the State Government of Melaka.

I.3.3 Institutionalisation of the PINTAR Tools – Next Steps

Meetings were held on 15 August and 16 August 2016 with UPEN, Melaka and MGTC to introduce the PINTAR tools and to discuss the institutionalisation of the tools. The following were the observations on the PINTAR tools. In two instances, meetings were held with Mr. Shamsul Ambia of UPEN and Datuk Haji Kamaruddin, Mr. Hafizam Mustafa and Ms. Elina Mazuin Binti Mazuddin of MGTC.

- UPEN finds that *eco*BUDGET is a good reporting tool for Melaka, especially to showcase progress on green actions
- UPEN and MGTC to jointly be responsible for implementation of PINTAR - green city baseline and indicator database management tool and *eco*BUDGET.
- ICLEI support is needed to help Melaka state in defining the first *eco*BUDGET master budget and it is indicated by ICLEI that additional funds are to be explored: GEF funding (MGTC) and potential ADB funding.

I.3.4 Providing hands-on training to users and city authorities to understand the methodology and application of the PINTAR tools

Training for all concerned stakeholders of Melaka State was conducted on 17th of August at the training facilities of the Melaka Green Tech Corporation (MGTC). Stakeholders were trained on the utility of the Green City Baseline and Indicator System and also the *eco*BUDGET tool. In addition to the utility of the tools and the envisaged role of the various departments the plan for institutionalisation of the tools was also discussed with the stakeholders.

On the 19th of August, a 2 hour training session was conducted for all Heads of Department who participated in the training on Planning for Green Cities, conducted at MGTC by the Institute for Housing and Urban Development Studies, Rotterdam, Netherlands.

The list of attendees for the workshop on 17th and the presentation given in the training sessions are attached as annexes 6 and 7 to this final report.

I.3.5 Plan to develop and make more comprehensive the coverage of the PINTAR tools

Based on the PINTAR tool –the online baseline and indicator database management tool and the *eco*BUDGET tool showcased in meetings with UPEN and MGTC, it is agreed with UPEN that while the software is flexible enough to cater to the need of Melaka state there are several steps that need to be accomplished in order to define the first master budget for Melaka:

- A meeting is required with state level urban planners, transport planners, environment department, MGTC and UPEN - to decide on the baseline data points that are to be monitored and to define benchmarks for services in line with sustainable development goals and green priorities of Melaka
- The baseline database will need to be modified based on agreed data points

- UPEN will take the lead in asking all the departments to fill in this information for 2015 (suggestion, not discussed in meeting: we can ask for data from 2013 onwards if possible - in order to establish a time series) - all agencies to fill in data by end September 2016, provided handholding support is given by ICLEI
- At least 2 high level meetings are required to get the State level Green Council and Ex-Cos on board and to be able to get an executive order from the Ex-Co Council on adopting *eco*BUDGET and annual monitoring of baseline
- Based on this, it should be attempted to prepare a draft master budget for the year 2017. However, this will be a trial exercise and it shall not be submitted along with State budget in November
- *eco*BUDGET master budget can be presented in the proposed state level conference on development – "Melaka Maju FASA – II", that happens every year – the next conference is scheduled for November/December 2016.
- Preparation of Master Budget: Finance Department and UPEN should take the lead on providing program information that is budgeted for, including national budget programmes. For the green actions to be identified in programmes put forth in budget, MGTC would support identification and for the first two years handholding support will be given by ICLEI. State Ex-Co Council is to identify priorities for the GCAP and based on whether priorities are addressed or not through proposed actions, additional actions may be proposed and finance identified. Draft budget to be presented to all stakeholder departments and discussed and draft final budget should be submitted to the State Finance Secretary (2017 master budget) and subsequently to Council of ministers along with the State financial budget (2018 master budget)
- A Meeting on 16 August was held with the State IT team to discuss details with State IT department (Ms. Farah Wahida Mohd. Zabidi and Ms. Hayaati Hafizah Mohd. Jaafar) to host PINTAR and *eco*BUDGET on State of Melaka servers. It has been agreed to commence the migration procedure in September and complete the migration by October 2016.

I.4 Overall Status of Deliverables within the TA

Key Activities	Deliverables	Status
1. Establish methodology for developing PINTAR tool, 1.1 Develop work program with roles and responsibilities for engaging with EA, other consultants for output 2 1.2 Conduct stakeholder consultations with EA and key stakeholders 1.3 Develop stakeholder engagement plan	Inception Report	Completed and delivered

2. Draft baseline database 2.1 Indicators (include environment quality and urban profile) for benchmarking, 2.2 Draft citizen score cards, 2.3 Draft training plan and modules 2.4 Draft architecture of the PINTAR tool	Interim report	Completed and delivered
3. Final PINTAR tool 3.1 Pilot the training of the PINTAR tool EA 3.2 Citizen score cards for citizen monitoring piloted.	Final report, PINTAR Tool	Completed and delivered
4. Knowledge sharing, stakeholder consultations and dissemination plan in coordination with output 2	Knowledge sharing and dissemination workshop	Completed and delivered

ANNEXES TO FINAL REPORT

Sustainable Urban Management (Green Cities) Support for follow up Activities in Melaka, Malaysia Output 1 Firm (48357001)

Submitted to: Asian Development Bank, Manila

Submitted by: ICLEI South Asia in Association with ICLEI South East Asia

September 2016

ANNEX 1: STAKEHOLDER COMMITTEE FOR GCAP IMPLEMENTATION AND PINTAR MODEL

Implementing the GCAP, will require the collaboration of multiple departments, which are responsible for planning, implementing, financing and monitoring interventions. It was proposed and accepted to constitute a stakeholder committee which constituted departments which will be involved in the implementation o the GCAP. These agencies will also then be responsible for providing information on the various indicators which will be used to monitor the impact and progress of the GCAP.

Agencies included in the stakeholder committee:

1. Melaka Green Technology Corporation (Stakeholder Committee Convenor)
2. Melaka Economic Planning Unit: Financing support for projects
3. Melaka Historic City Council: Local authority within Melaka
4. Hang Tuah Jaya Municipal Council: Local authority within Melaka
5. Alor Gajah Municipal Council: Local authority within Melaka
6. Jasin Municipal Council: Local authority within Melaka
7. Department of Town and Country Planning Melaka: Responsible for land use planning within Melaka and also responsible for collating information to develop the Murinet indicators
8. Panorama Melaka Sdn Bhd (Bus service)
9. Mara Liner Sdn Bhd (Bus service)
10. Tenaga National Berhad (Electricity/Power distribution company)
11. Melaka Solid Waste Corporation (PPSPPA)
12. Melaka Road Transport Department
13. Melaka State Department of Environment (JAS)

The Chief Minister of Melaka is the Chairman of the Stakeholder Committee. Since the PTHM is responsible for the implementation of green activities, it was decided to anchor the GCAP monitoring unit within PTHM.

PTHM is responsible for convening all meetings of the stakeholders, collating information with respect to the indicators and managing the developed PINTAR tool. Monitoring the GCAP implementation will be the responsibility of MGTC and hence staff within PTHM will be trained on the developed tools.

ANNEX 2: RESPONSES FROM STAKEHOLDERS FOR IDENTIFYING PROPOSED ACTION PLANS IN LINE WITH GCAP OBJECTIVES

1. Melaka Biotechnology Corporation: Supplying biodegradable products produced from environmentally friendly natural materials such as food packaging equipment's, plates, bowls and cups. This is to replace disposable items like plastics and polystyrene in the market that are not biodegradable. The project will help in reducing plastic waste at landfills.
   Start year: May 2015
   Status: On-going
   Relevant Sector in GCAP/UEA: Zero Waste/ Waste Reduction
   Relevant Indicator in database system: Yes

2. Sludge Treatment Facility for Bukit Sebukor Water Treatment Plant - The Bukit Sebukor WTP is the oldest plant in Melaka. The design daily production is 72 mld. About 56 tons per day of dewatered sludge cake will be required to be disposed off-site. Due to very limited space available, a compact Mechanical sludge treatment facility has been proposed. This project is carried out to comply with Environmental Quality Act 1974, Regulations Environmental Quality (Industrial Effluent) Regulations 2009.
   Impact of project:
   - Increase the production of treated water to 77 MLD
   - Minimise the wastewater discharge from WTP to the environment

   Start year: July 2013
   Relevant Sector in GCAP/UEA: Water management
   Relevant Indicator in database system: No (to be determined based on project details)

3. Geotube Dewatering System for Filter Backwash Sludge and Sedimentation Tank Sludge at Shin-Shin Water Treatment Plan has been proposed. The design production for Chin-Chin WTP is 20 MLD. The project will be carried out in the 3rd Operation Plan (OP).
   Status: Budget Approval Stage
   Relevant Sector in GCAP/UEA: Water management
   Relevant Indicator in database system: No (to be determined based on project details)

4. Sludge Treatment for Bertam 1 & 2 Water Treatment Plants in Melaka - The Bertam 1 & 2 WTP is the largest WTP in Melaka. The design daily production is 182 mld. The existing sludge treatment for this WTP is sludge lagoon.
   Impact of project
   - Increase in treated water production

- Wastewater discharge from WTP to the environment will be reduce

Status: Budget Approval Stage

Relevant Sector in GCAP/UEA: Water management

Relevant Indicator in database system: No (to be determined based on project details)

5. Hang Tuah Jaya Municipal Council Community Garden Project (Taman Tasik Utama community, Ayer Keroh)
   Implementation Cost: RM 50,000
   Duration: 2015 - 2016
   Relevant Sector in GCAP/UEA: Urban design
   Relevant Indicator in database system: Yes (to be confirmed based on project details)

6. Hang Tuah Jaya Municipal Council Community Garden Project (Taman Sutera Wangi community, Batu Berendam)
   Implementation Cost: RM 50,000
   Duration: 2016 – 2017
   Relevant Sector in GCAP/UEA: Urban design
   Relevant Indicator in database system: Yes (to be confirmed based on project details)

7. Green Alley Development Program at 24 Housing Area in Hang Tuah Jaya
   Development Cost: RM 8,000,000
   Start year: 2017
   Relevant Sector in GCAP/UEA: Urban Design
   Relevant Indicator in database system: Yes (to be confirmed based on project details)

8. Land Transportation System Master Plan for Sustainable Development of Hang Tuah Jaya City Center
   Research Cost: RM 800,000
   Start year: 2015
   Relevant Sector in GCAP/UEA: Transportation
   Relevant Indicator in database system: Yes (to be confirmed based on project details)

9. Upgrading 97 Green Bus Stops
   Upgrading Costs: RM 2,425,000
   Start year: 2017
   Relevant Sector in GCAP/UEA: Transportation
   Relevant Indicator in database system: Yes (to be confirmed based on project details)

10. New Construction of LED Light Pole in Jalan Utama Taman Merdeka
    Construction cost: RM 879,914
    Start year: 2014
    Relevant Sector in GCAP/UEA: Energy

Relevant Indicator in database system: No (to be determined based on project details)

11. Implementation of Solid Waste Composting Program in Hang Tuah Jaya region markets
    Implementation cost: RM 650,000
    Start year: 2015
    Relevant Sector in GCAP/UEA: Zero Waste/Solid Waste Reduction
    Relevant Indicator in database system: Yes

12. Hang Tuah Jaya Green City Master Plan Research
    Research Cost: RM 500,000
    Start year: 2016
    Relevant Sector in GCAP/UEA: Urban design
    Relevant Indicator in database system: No (to be determined based on project details)

13. Upgrading Public Lighting to LED Lights in Hang Tuah Jaya Administration Area
    Upgrading cost: RM 30,000,000
    Start year: 2017
    Relevant Sector in GCAP/UEA: Energy
    Relevant Indicator in database system: No (to be determined based on project details)

14. Research and Development of Eco-Mobility Center for Hang Tuah Jaya City
    Implementation cost: RM 16,000,000
    Start year: 2017
    Relevant Sector in GCAP/UEA: Transportation
    Relevant Indicator in database system: No (to be determined based on project details)

15. LCCF
    - Energy audit 14 Buah Bangunan Terlibat
    - Energy audit Melaka mall
    - Monitoring system
    - Physical upgrade

    Implementation cost: RM 5,000,000
    Start year: 2017
    Relevant Sector in GCAP/UEA: Energy
    Relevant Indicator in database system: No (to be determined based on project details)

16. Sewage treatment plant and sewer pipe line construction in Malacca city, Malacca
    Start year: 2013
    Relevant Sector in GCAP/UEA: Water management
    Relevant Indicator in database system: Yes

17. Upgrading Melaka hospital electric supply
    Relevant Sector in GCAP/UEA: Energy

ANNEX 3: TECHNICAL MANUAL - PINTAR TOOL: THE GREEN CITY BASELINE & INDICATOR SYSTEM

PINTAR Tool

The Green City Baseline & Indicator System

Prepared Under:

TA-8781 MAL: Sustainable Urban Management (Green Cities) Support for Follow-up Activities in Melaka, Malaysia - Output 1 Firm (48357-001) for State of Melaka

Prepared by

ICLEI - Local Governments for Sustainability (South Asia and South-East Asia Secretariats)

The PINTAR Tool – The Green City Baseline & Indicator System

The purpose of this tool is to provide Melaka state with an online database repository for:

(i) baseline data relevant to implementation of the GCAP and achievement of UEA indicators and

(ii) calculating and keeping track of indicators based on the baseline data points (with an understanding that baseline data points themselves could be considered as indicators)

The tool has two discrete modules:

(i) An admin module: It is proposed that Melaka Green Tech Corporation (MGTC/PTHM) is the custodian of the tool and functions as the administrator of the tool and the admin rights will be assigned to MGTC/PTHM.

(ii) User module: Multiple departments that are responsible for feeding in information to establish the baseline periodically are assigned as users. PTHM/MGTC is also assigned a user role in addition to the admin role.

Detailed guidance on the utility and navigation of the admin and user modules is given below.

Functionalities

Admin Module

Login: admin

Password: welcome

(i) The admin module is further defined into "Master Lists" and "User Management".

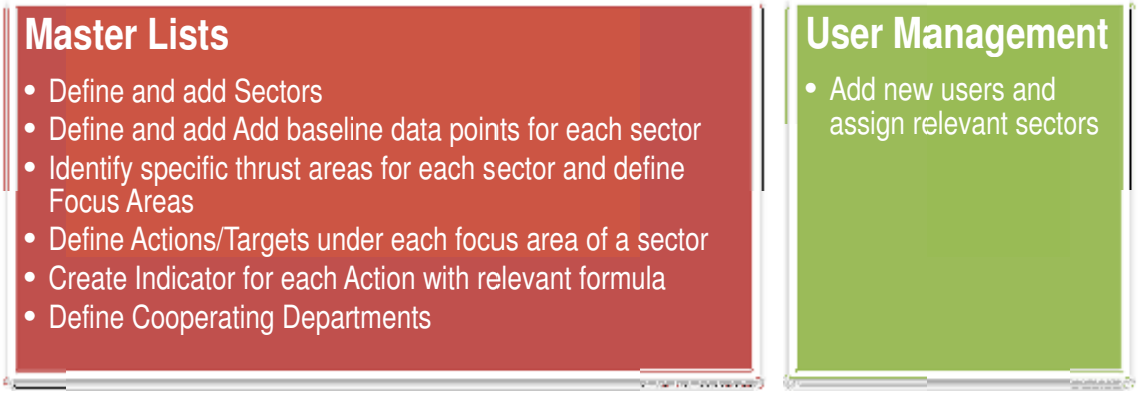
(ii) The names of baseline data points, sectors, focus areas (from UEA), actions and indicators are defined under the "Master Lists" section. The mapping of these elements is also accomplished in the following order: Sector → Focus Area → Action → Indicator

(iii) The definition of a relevant formula for calculating the indicator, as a function of selected baseline data points is also accomplished using the admin module

(iv) User management is made possible through related functionalities in the admin module. The admin has the scope to "allocate" permissions for editing baseline data for specific sectors/focus areas. (multiple departments will be required to feed in data into the baseline data sheet. This functionality allows for restricting editing rights to relevant sectors/focus areas, to ensure data control and validity. The admin has editing rights to all sectors/focus areas).

Login Page

The Admin Module Consists of Two Primary Sections: Master Lists and User Management

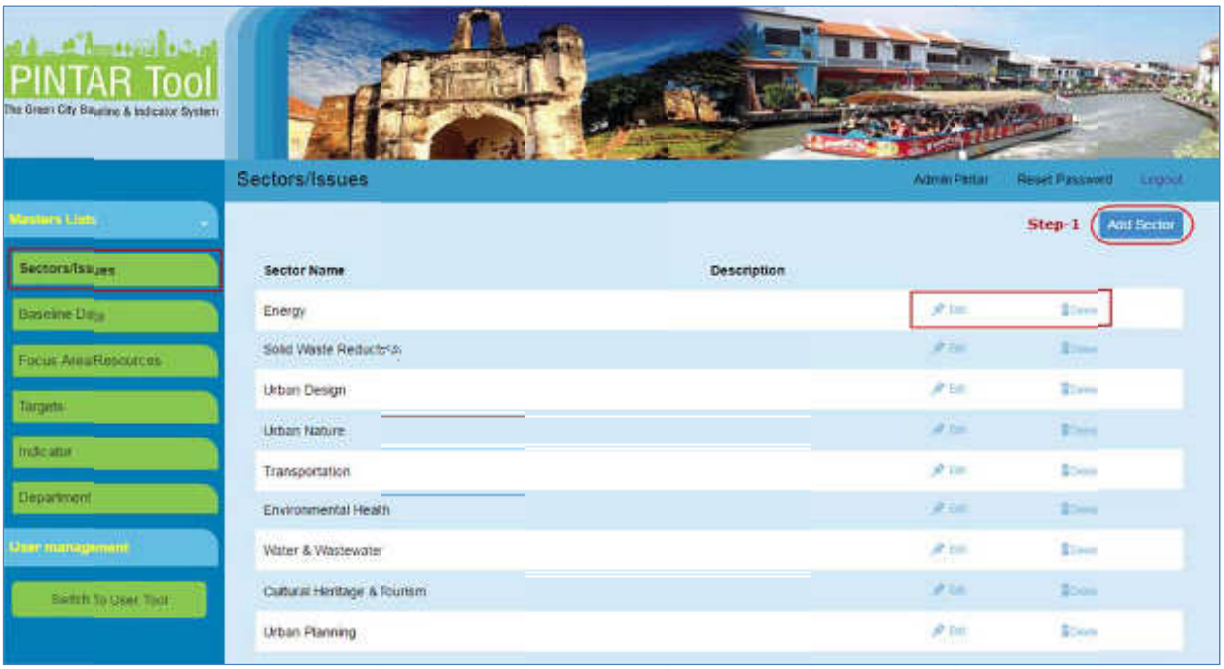


Following sections give details of each of the utilities within these modules.

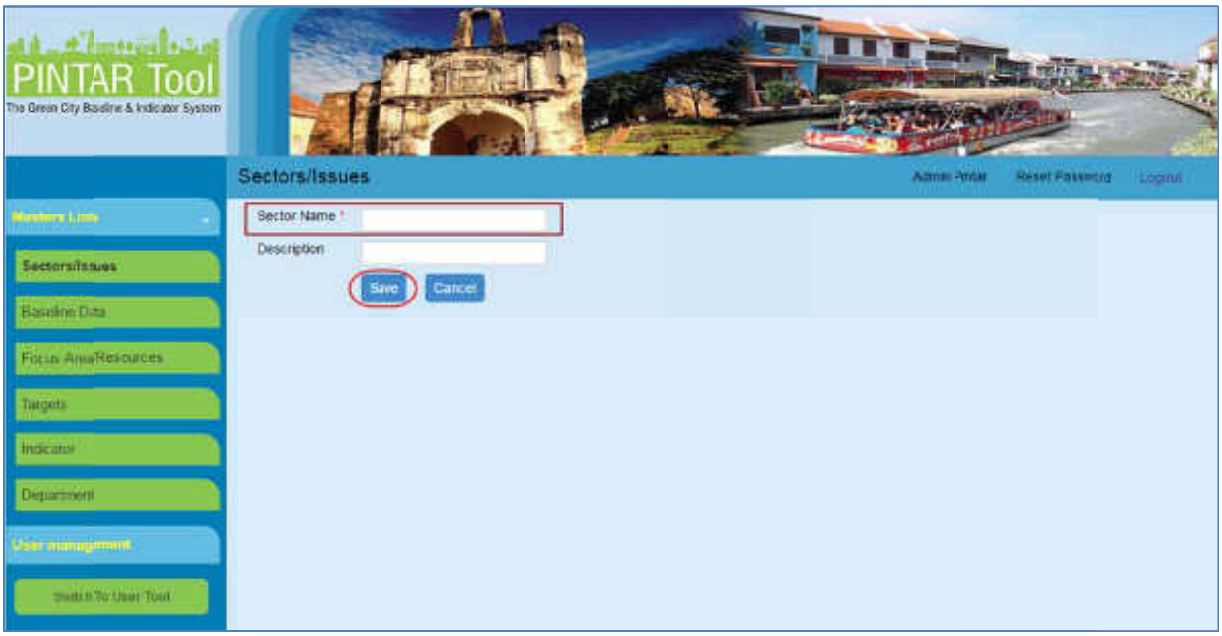
I. Master Lists

Step-1: Select **''Sectors/Issues''** tab under Masters Lists. A list of sectors already created can be viewed on this page.

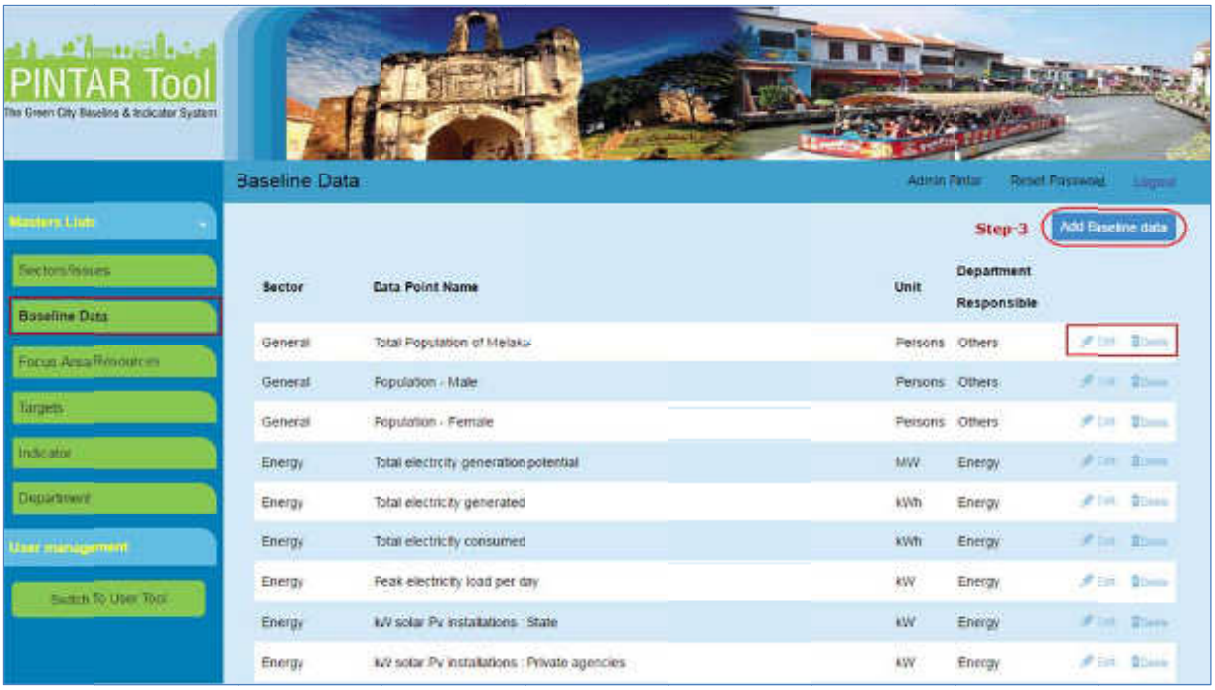
Click on ***''Add Sector''*** to create new Sector



"Add Sector" → Give Sector name in the field *'Sector Name'* and *Save* to add new sector.

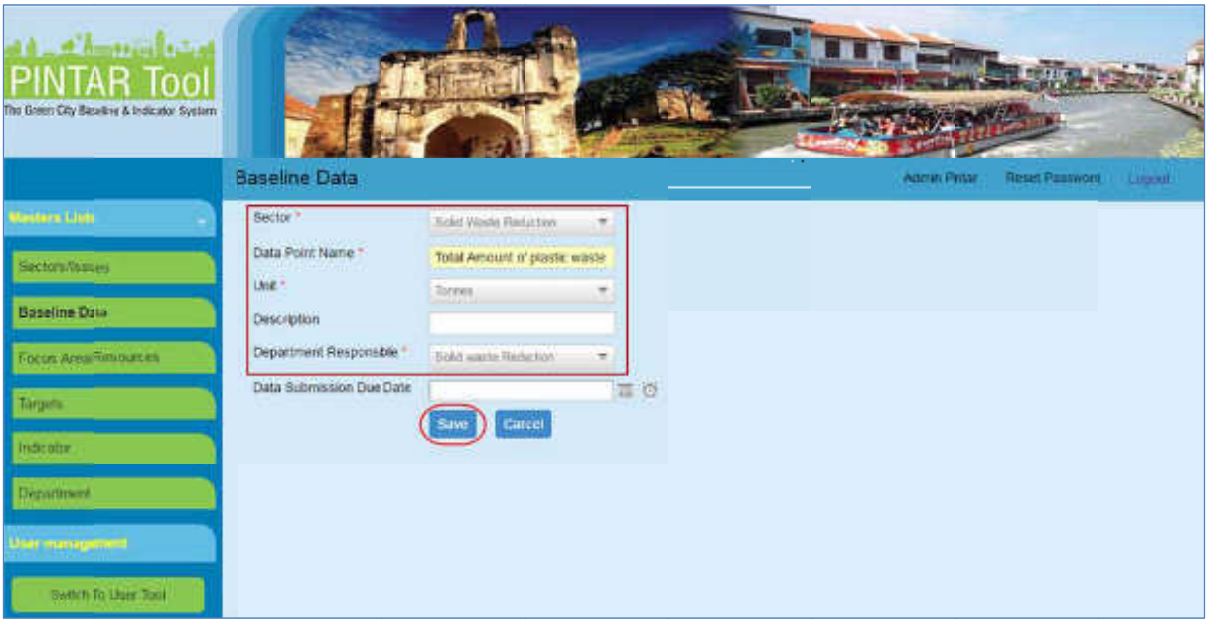


Step-2: Click on **''Baseline Data''** tab under Masters Lists where list of Baseline data points added can be viewed. Click on ***''Add Baseline Data''*** to add new Baseline points



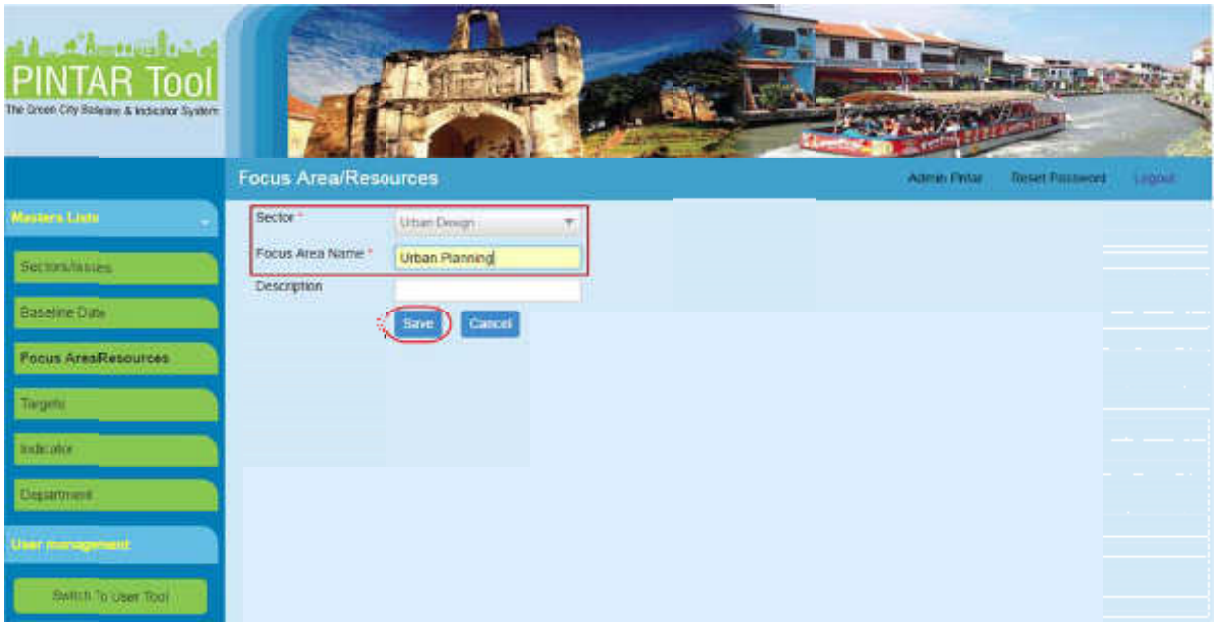
''Add Baseline Data'' → Select *Sector* under which the Baseline data is to be added, from the drop-down menu.

Define *Data point name*, select relevant *Unit* and *Department* from the drop down menu. The names of departments are to be defined under the "User Management" utility of the Admin Module. A description of the baseline data point may also be added to ensure clarity. Click on *Save* to create new Baseline data point



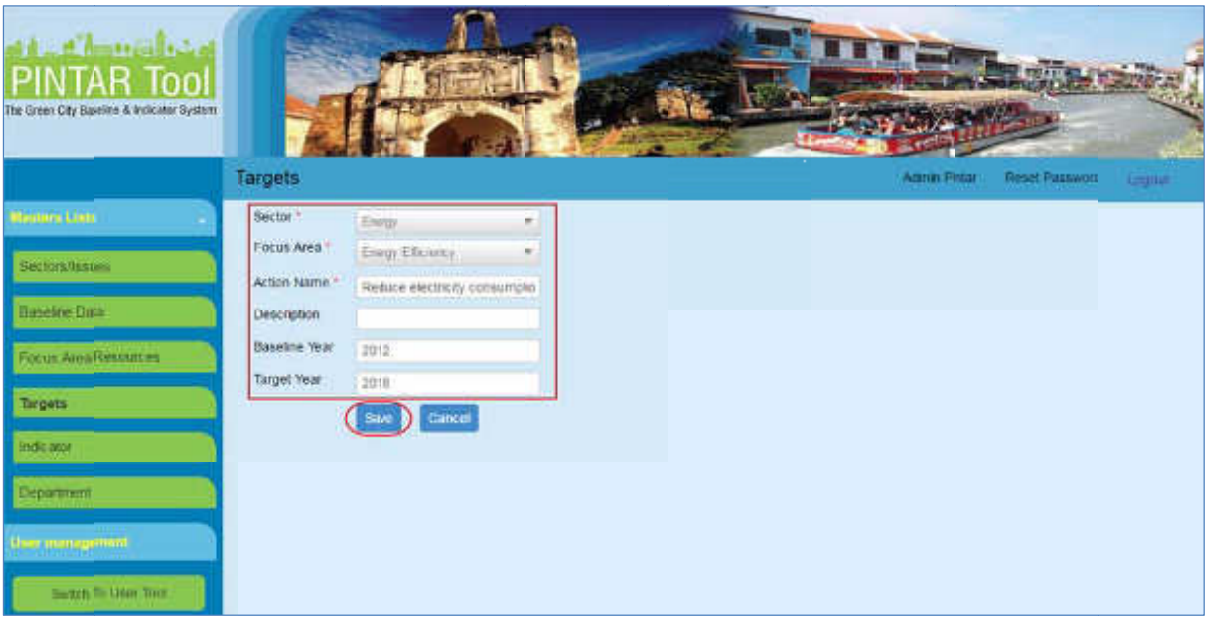
Step-4: Select **"Focus Area/Resources"** tab under Masters Lists. A list of Sector-wise Focus Areas can be viewed in this page, if already defined. To define a new *"Focus Area"*, click on the ***''Add Focus Area''*** button, which is to be found on the top right of the same page.

"Add Focus Area"→ Select a Sector from the drop down and add the name of the relevant Focus Area and click on save



Step-5: Click on **"Targets"** tab under Masters Lists. In this page a list of Sector and Action-wise Targets can be viewed, if already defined. To add new actions, select ***''Add Action''*** tab which is on the top right of the same page. Baseline and Target years can also be defined for each new action that is defined.

"Add Action" → Select Sector, Focus Area and enter relevant Action name along with defined baseline and target Year. Click on Save



Step-6: To define indicators, Indicators to assess the impact of actions can be defined in the PINTAR tool. Select **'Indicators'** tab under Masters Lists and select ***"Add Indicator"*** to create new Indicators for each Action.

''Add Indicator''→Each indicator has to be linked to a relevant *Sector*, *Focus Areas* and *Action.* These are to be selected from the drop down menu. Define the *Indicator name.*

If the Indicator is to measure the increase or decrease of a certain parameter; the response to ***"calculating indicator with increase or decrease condition?"*** will be YES. For example: reduction in use of plastics. In such cases the software automatically assigns a formula, based on baseline data points that are to be monitored and the user assigned baseline year and target year. Select the applicable *Baseline data points* and Set *Base and Target years* for which the Indicator has to be calculated. Then click on *Save.* In the case of the given example, the user should have already defined a baseline data point: "Quantity of plastics used" and should select this baseline data point from the drop down menu.

ANNEX 5: ECOBUDGET MANUAL FOR ASIAN CITIES

*eco*BUDGET Guide

Table of Contents

1 The history of *eco*BUDGET

1.1 Origin and development

"*As we can manage artificial resources - money - in term of budget, why shouldn't we do the same with natural resources*?"

This question is the backbone of *eco*BUDGET, the environmental management system developed with *local governments in mind*. Based on the physical description of use and consumption of natural resources within the municipal territory, *eco*BUDGET allows local governments to present tangible achievements of their sustainability oriented polices to the greater public.

Without assigning monetary value to the environment, *eco*BUDGET *applies principles and routines of financial budgeting* to the management of natural resources.

Unlike other environmental management systems, *eco*BUDGET is concerned with the management of natural resources within the municipal territory and community *as a whole*.

*eco*BUDGET is unique in its requirement that quantitative long-term and annual targets must be ratified by the city council. Therefore it *influences the direction of local environment policies.* The *eco*BUDGET is a process, which enables local self-governments to achieve the global targets of sustainable development. The *eco*BUDGET principles not only allows establishment of inter se priority due to local condition, it promotes sustainable planning and projectisation.

The *eco*BUDGET concept allows integration of environmental budgeting into the management process and the fiscal budget, to achieve the tasks set by the Local Agenda 21. It is based on three fundamental principles:

- it is formulated on the principles and procedures of financial budgeting
- it comprises of a full management cycle of planning to realisation
- it accepts sustainable development as a guiding goal, i.e. targets and actions strive for local sustainability.

The local authorities are ideally placed to achieve this integration. This environmental budgeting system allows management of natural resources as economically as the artificial resource "money". Following are the areas of concern, which constitute the main pillars of *eco*BUDGET.

- Resource management: conserving the natural resources and optimisation of their consumption, such as, land, air, water, flora, fauna of an area are vital to achieving sustainable development.
- Political commitment: formulate and ratify the environment budget through formally convened meeting and recording the declaration.
- Technical instruments: Adopt the technical and political instruments available for conserving ecological system through managing the urban development. Various processes as applicable to a local situation, such as, environmental planning, regulatory, economic, and communications instruments, taxes and fees, etc and also mechanisms for awareness raising including public participation etc, may be adopted.

1.2 Practical applications of *eco*BUDGET so far

*eco*BUDGET began life as ökoBUDGET in four German local authorities back in 1996. Dresden, Nordhausen, Bielefeld and Heidelberg were the pioneering cities of this environmental budgeting system, uniquely designed for implementation in local governments.

This initial endeavour came to an end in 2000, but was followed quickly by the introduction of the system in Kaiserslautern, Germany, which marked the second stage of *eco*BUDGET implementation and development in Germany.

Encouraged by successes achieved to this point, the European *eco*BUDGET was conceived and in 2003 initiated. Six cities from across Europe - Växjö, Amaroussion, Bologna, Ferrara, Kalithea and Lewes, assisted by experienced *ecobudgeteers*; Heidelberg and Dresden, embarked on the application of the system to their individual situations. Ending in 2004, the results were, once again, resounding successes.

Yet ICLEI and her partners seemed determined to push the boundaries of *eco*BUDGET even further and in 2005, launched *eco*BUDGET-Asia, which saw two Asian local governments, Guntur, India & Bohol, Philippines, take up the challenge of implementing environmental budgeting in their local government structures. In this particular chapter of the *eco*BUDGET story, Bologna and Växjö have offered their expertise and support and are working closely with their Asian partners.

1.3 Why *eco*BUDGET in Developing Countries

All development causes environmental impact, transient or permanent, short term or long term, retrievable or irretrievable. It is imperative that local authorities assess the impact of development on environmental resources. For example, providing potable water supply is a municipal responsibility. However, unless the source is conserved, it may dry up or become polluted and cease to be a source. Similarly collection and disposal of garbage is a municipal responsibility and it costs money. It could be made cost effective and environment friendly, while improving the delivery of the service. There are several such areas of concern, which can be adapted to suit local concern and priority.

The purpose of *eco*BUDGET is to select appropriate set of measures, indicators to evaluate performance, set targets for achievements in a phased manner, work out the cost of the measures, and how the municipality can achieve these goals. Experience of the municipalities, who have adopted *eco*BUDGET, shows that they profit by environment friendly measures even in short frame of time.

2 *eco*BUDGET: What to do!

The aim of this chapter is to support everyone involved in implementing the *eco*BUDGET process at the local level in the local authority. The guide can be followed step-by-step by a specific "*eco*BUDGET team" appointed by the Municipal Council to co-ordinate the complete series of activities, but also by other actors involved in the implementation of a local *eco*BUDGET (be they politicians, administrators, employees or stakeholders) who seek assistance in one or more of the phases of an *eco*BUDGET cycle.

This chapter follows, step-by-step and in a detailed way, the five stages that together comprise an *eco*BUDGET cycle. Each paragraph represents an *eco*BUDGET step and presents the main activities to be undertaken by the different actors involved, so as to comply with the step's requirements.

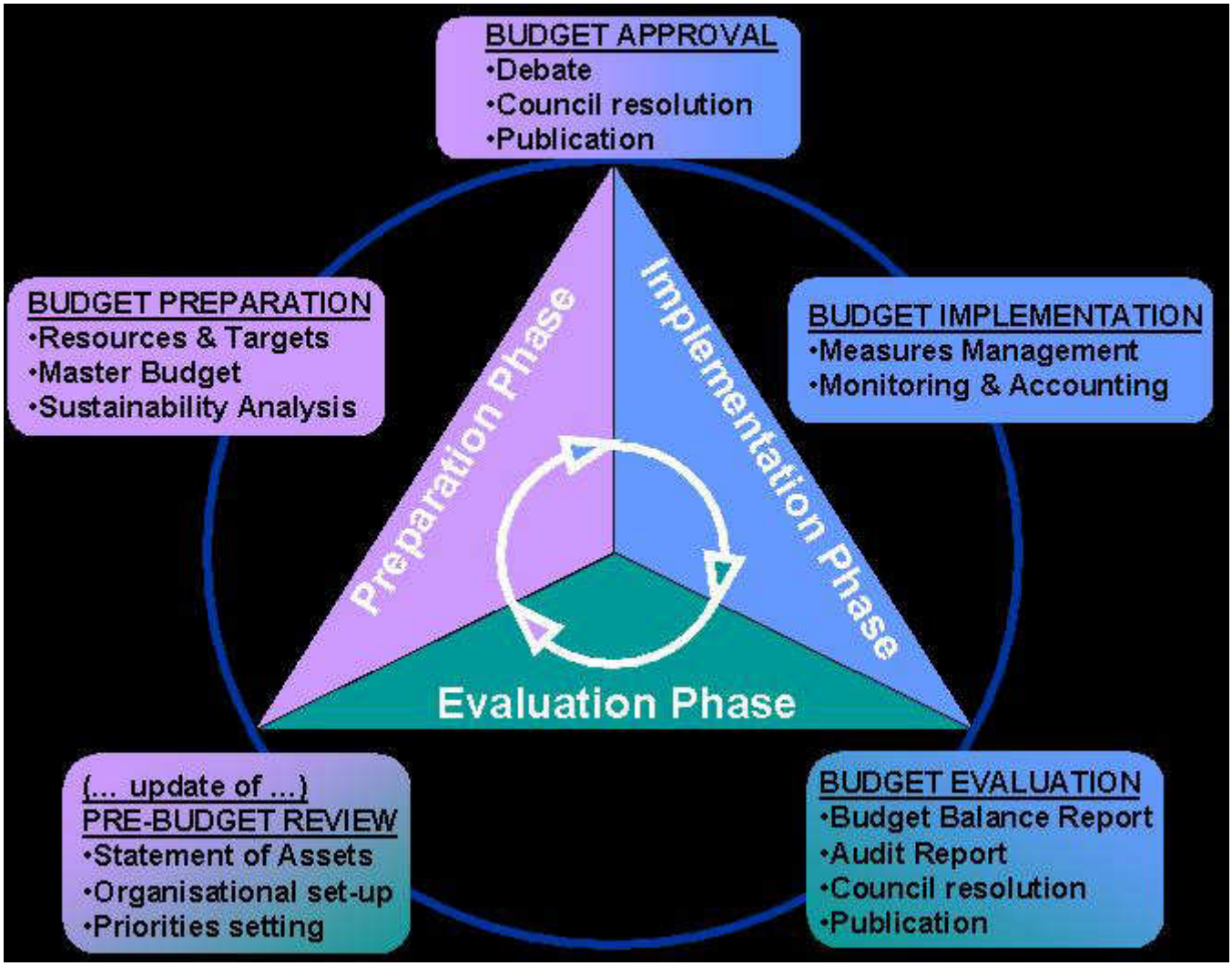
Two things must be considered. Firstly, for sake of simplicity we refer to City Council, whenever the core political body of a local authority is addressed. Needless to say, the term City Council embraces other forms of political representative bodies in local authorities, namely District, Municipal, Province, County or even Region one according to the administrative level under which *eco*BUDGET is implemented. Secondly, it is important to remember that the sequence of steps and their development as shown in the guide is only indicative. Experience shows that *eco*BUDGET's implementation can vary a lot according to the local context.

Below you can see the simple representation of *eco*BUDGET cycle.

1.1 ♫ Please remember that…

*…at wide level it is very complex to identify and then to generalise the different local actors with different roles in eco*BUDGET*, since the legislation is very diverse from country to country. However in very general terms, it is possible to identify the following categories:*

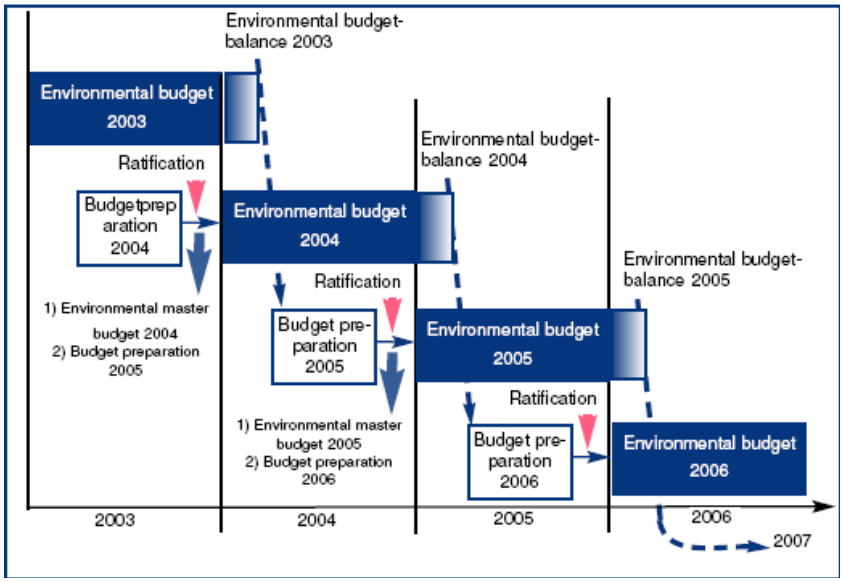
- ***Political executive body** is composed of the governing politicians, namely the Mayor and the other politicians appointed or elected to a specific department (often referred to as deputy Mayors). They represent the head of the executive part of a local government.*
- ***Political representative body** is primarily the City Council members (municipal, provincial, county, etc…), i.e. the elected representatives of the citizens. They are directly involved in the approval of eco*BUDGET*'s decisive steps. Politicians are also the members of the local parties, which can be involved in different stages of the system.*
- ***Administrative body** refers to those employees of the administration involved in the eco*BUDGET *procedure with a certain degree of responsibility (managers, departments heads, experts, etc...). This category also comprises advisors to the administration as well as staff from service companies (municipally owned or contracted) with specific responsibilities in the process.*
- ***Public stakeholders** comprise a rather open category including corporations like industry, financial institutions, commerce, as well as trade unions and non-governmental organisations (NGOs), local committees, forums, associations, and other more or less organised groups from civil society. Obviously, the contribution of these actors to eco*BUDGET *can be commissioned by a Local Agenda 21.*



Overlapping phases

*eco*BUDGET is an annual cycle. A more exact formulation would specify that *eco*BUDGET is a cycle with an annual reoccurrence. Depending on availability of data and information, subsequent *eco*BUDGET cycles overlap in part. This means that the planning phase of the subsequent year's budget overlaps with the implementation phase of the running budget year. Figures from the previous environmental budget balance are available for this purpose. Consequently, the evaluation phase may be completed at the beginning of the subsequent implementation phase. The conclusion drawn from this flows into the following budget. This follows the necessary process flow and does not cause problems for carrying out any of the steps mentioned and mirrors the analogue situation in the classical financial budget. The figure below visualises this concept. It refers to an *eco*BUDGET procedure aimed at approval at the end of the calendar year.

Despite the time lag, the data available from the previous year is highly relevant to the preparation of the new budget because, in the majority of cases, environmental changes (positive and negative) Occur both at gradual or prompt rates (e.g. oil spill of great magnitude). As *eco*BUDGET does not require unique and irreversible decisions to be made, but instead establishes a durable management system for natural resources, the overlap effects described above can be accepted without the loss of



medium-term control.

2.1 Step 1: Pre-Budget Review

The first step, particularly important in the first cycle, is to assign **roles and responsibilities**, to establish the **participatory degree** of the process, to draft a **time schedule** of activities, to review the **state of the environment**, the interactions with legal frameworks, existing instruments and environmental impacts. Setting the **priorities** is fundamental to proceed to the second step.

2.1.1 The inaugural vote of the council

Who starts? At the outset of *eco*BUDGET it is important that the council decision legitimates the *introduction of the system* during an official council meeting. Normally, this is prepared by a presentation of the system to the council. Crucial is merely that the city council members understand the functioning and the aims of the *eco*BUDGET, and adopt it as their environmental management system, without discussing indicators, targets, and measures in details. It may be an idea to first introduce the system as a pilot project for a period of at least 3-5 years, in case council members wish to first gain experience before deciding on an unlimited implementation.

2.1.2 Setting up *eco*BUDGET Team

Often, there will be an initiator of *eco*BUDGET in a local authority, a champion, someone who wants an initiative to be undertaken. This introduction may result in the unofficial proposal of preparing the adoption of *eco*BUDGET within the local government in question. The *eco*BUDGET Team is the central agency responsible for drawing up and following up on the implementation of the system. The lead may be given

♫ Please remember that…

*…in the first year this step is particularly relevant and necessarily different from the following years. Some slots – like the inaugural vote of the council – happen only the first year. Others happen only as 'review' from the second cycle onwards. Clarifying and accomplishing these prerequisites involves a "one-off" effort at the beginning of eco*BUDGET *introduction. In general, these elements will remain the same in later eco*BUDGET *cycles and not involve additional efforts every year. However, they will be "checked" against experiences and modifications in the administration in order to ensure that the organisational and procedural set-up best meets the requirements of the administration.*

to an office specially created for the task or to an existing department, but in the latter case the team should be formed also by people of other departments. Ideally, it comprises a group of 5-10 high-level local government members (depending on the size of the administration), including politicians and managers. Participation in the Team should follow a cross-departmental approach including representatives from all departments relevant for the management of natural, human and financial resources. Participants could represent, e.g., the transport department, public works, energy supply, etc., but also, the financial department. It is crucial to involve the highest managing authority of the administration, be it the mayor, the commissioner (in India and Commonwealth countries) or the chief of administration.

Good idea! Tubigon's double team

The Municipality of Tubigon has decided to build up a Co-ordination Team and an Implementation Board. The first is formed by just two people and deals with dealing with communication, harmonisation and administrative aspects; the latter, formed by high-ranked managers from different department and the Mayor settle the important strategic decisions for the whole system. The role of the 'secretariat' is given to Municipal Planning and Development Office (MPDO).

2.1.3 The preliminary analysis, or statement of environmental assets

*eco*BUDGET adopts the function of the *preliminary report* - derived from financial budgeting - and slightly extends its use. Information collected for the baseline reports can be used by the different departments much earlier than when it is submitted to the council. This will be first at the time when they are asked to predict their resource consumption needs for the forthcoming year. The transparency provided by the baseline report, of the environmental situation, of emerging legal or political frameworks and of the development of individual environmental areas, allows trends to be deduced that specialists can compare with their own planning schedules, enabling them to produce realistic values for the budget estimates.

The *eco*BUDGET Team asks other departments for information and produces a provisional preliminary report at the beginning of the environmental budget preparation. It serves to provide guidance and support to the participating administration units before being used, as a regular inclusion to the environmental budget, when the latter is presented to the council. The preliminary analysis will be summarised in a simple table defined *as statement of environmental assets*. It is formed by:

- Predicted environmental consumption needs (estimates), i.e. determining the expected consumption of natural resources by planned measures or changes made to day-to-day operations in the coming environmental budget year.
- Current values of environmental consumption and values of the previous annual balance (previous year's values) within the area of the local authority (e.g. through planned projects).
- Values and information pertaining to the current environmental budget year (if an intermediate report is available).
- External trends that influence the locality.
- The local authority's general future development, using population figures, economic and social parameters, and other relevant statements.
- Report on existing management instruments (e.g. ISO 14000) already adopted in the local authority.

Tip: Use a checklist!

In order not to get lost with the variety of issues to be included in the pre-budget review it might be advisable to use a check-list like the following:

- *Did you define the boundaries?*
- *Did you select the themes?*
- *Did you consider the legislative context?*
- *What is your current status?*
- *How to measure it?*

An important feature is that "assets" indicators are normally directly related to the resources identified during the *eco*BUDGET preparation process (see step 2). From a practical point of view, it is opportune to use the same participatory techniques, as used for

the preparation of the master budget, to set up indicators for the statement of environmental assets. All information from the departments, the finance office, the senior management and the Agenda 21 Forum, other administrative levels, including villages, local organised communities, or from individual, external actors, is assessed and summarised by the *eco*BUDGET Team.

It is evident that after the first cycle the pre-budget review becomes simpler, since most part of this document do not need to be re-written during the following cycles. Nevertheless it is important to have a review of this slot at the beginning of each cycle.

2.2 Step 2 – Budget Planning

The core of *eco*BUDGET. A stakeholder-based process ***issues-resources-indicators-targets*** defines the main documents of *eco*BUDGET, the **master budget** and the **sustainability analysis**. The process prioritises sustainability policies. They are described by a concise set of understandable **indicators**, each of them related to quantitative long- and short-term **targets**. These documents represent the goals of the local government, which will be subjected to the city council approval in the next step.

🗁 Example: from issues to targets in Guntur

In Guntur five environmental issues were chosen to be implemented as part of master budget implementation, including:

1. *Water Quality: increase in the number of parameters monitored and frequency of monitoring*
2. *Water Quantity: monitoring the loss of water in the pipelines and increased supply of potable water*
3. *Waste Management: monitoring of waste collection (% of citizens served)*
4. *Green city: increase in surface of green area*
5. *Air quality: assignment of hawkers ID and providing places to hawkers and monitoring of Suspended Particulate Matter*

*For each of these issues chosen, the GMC chalked out indicators and set short term and long term targets for themselves on the basis of the current or baseline value of the indicators. In the eco*BUDGET *programme in Guntur, although ambitious targets were set for each of the resources identified, pragmatic indicators were chosen for them. All the resources selected for the programme responds to the basic needs of the population of the city. As a result, not only was there a strong political involvement, there was also common people's participation in implementation, which resulted in the high success rate of the programme.*

2.2.1 The Master Budget, core of *eco*BUDGET

The *Master Budget* is *eco*BUDGET crucial overall planning and steering element. As is the case with the financial budget, it must be approved by the council every year, concluding the planning phase of the *eco*BUDGET cycle. In short it is a list of 5 to 15 *indicators*, describing the utilisation and consumption of several *natural resources*; each indicator presents figures for base year, previous year, *short-term targets* (annual) and *long -term targets* (10-20 years). Building the *first* Master Budget is a challenging process in five slots: *environmental issues - natural resources - indicators – long-term targets – short-term targets*. From the second cycle onwards, only short-term targets have to be set, while the first four being already given.

In practice, it is up to the local government to decide to what extent stakeholders will be involved in the process of establishing the environmental budget. However, experience shows that the process gains greater consensus through transparency. The proven techniques of participatory processes like Local Agenda 21 or citizen forums are suitable for finding agreement on the identification of main problems (i.e., environmental issues) and related resources. Thus, it is efficient and therefore recommended to perform target setting as a participatory process. The role of experts will be especially required for the selection of appropriate identification and target proposals.

From Environmental Issues to Resources: building the Master Budget:

The *eco*BUDGET concept defines, natural - or rather, environmental - resources as all the entities (common goods), which can be used directly by humankind, but which s/he cannot directly produce. Such an entity could include the supply of a certain material (e.g., the deposit of a raw material such as wood). However, it can also be the state of a system, such as the composition of the

Example: selection of resources in Tubigon and Guntur

Different places may have more or less similar problems and issues. The way of defining them through resources can be more or less similar! The table below shows how Tubigon and Guntur interpret their problems through resources.

Environmental issue(s)	Corresponding Resource(s) in Tubigon	Corresponding Resource(s) in Guntur
Poor quality of water	Drinking water	Water quality
		Water quantity
Decreasing forest cover (coastal zone)	Mangrove forest	
Decreasing forest cover (upland zone)	Timber and fruit trees	
Increasing amount of built areas	Good built environment	Green city
Solid waste disposal	Good built environment	Health
Degradation of marine habitat	Coral reef and sea grass bed	
Rapid siltation	Quarry material	
Traffic		Air quality

Earth's atmosphere, upon which the stability of the global climate depends. Generally spoken, in *eco*BUDGET environmental resources are, in the widest sense, elements or components of the ecosystems (global system), that support human life. They include raw materials, climate stability, peace and quiet, air, water, soil/land. Environmental resources can be affected and degraded by human activity.

The table shows examples of how scarce natural resources can be derived from actual environmental issues. The use of these resources for *eco*BUDGET can be maintained within set limits by including and managing them in the environmental budget. Once a set of resources, i.e. the structure for the environmental master budget, has been established, the *eco*BUDGET Team starts the process of indicator selection.

From Environmental Resources to Indicators: drawing-up the Master Budget

Once a local authority has decided which natural resources should be given priority, their availability and consumption needs to be expressed using indicators. The physical unit that expresses how it should be calculated or measured defines the indicators. The unit is therefore an integral part of the indicator and should always be specified with it. A total between five and fifteen indicators (max. twenty) should be drawn up. This, compared to the traditional environmental reports, rather small amount of indicators depends on the need for transparency and effectiveness. With a concise number of indicators, instead of a tedious list, both citizens and politicians (i.e., all non-experts) will find linking the administration's goals and policies easier.

Finalising the Master Budget - From Indicators to Long-term Targets

♫ Please remember that…

*…a good eco*BUDGET *indicator should have the following characteristics:*

1. Unambiguity*: An indicator needs to be expressed in such a way that it is clearly recognisable which parameter it monitors and in which unit it is measured. Please, be* clear*!*

2. Availability of data *(updated with appropriate frequency): This is maybe the most important pre-requisite for the implementation of eco*BUDGET *in developing countries. This requires a weighing-up of the effort needed to acquire new data against the validity and applicability of already existing data. The utilisation of existing data should, where possible, be given priority. It is important, however, that these data are capable of being updated at least once a year. Please, be* practical*!*

3. Predictability *(indicator usable for identifying trends): In order to make estimates for the draft budget, it is helpful if the technical departments have experience in handling the selected indicators.* Please, be foresighted*!*

4. Comprehensibility *(indicator understandable by non-experts): Indicators and their corresponding data must be comprehensive and available at any time in order to satisfy requests for information from third parties who were not involved in their selection and definition. Please, be* transparent*!*

5. Representativeness*: Besides the individual indicators, the composition of the complete set of indicators or the indicator system as a whole also needs to be representative. A representative reproduction of a local community's critical natural resources or most urgent environmental problems is aimed for here. These can be global in nature, such as the local community contribution to global climatic change due to carbon dioxide emissions in tonnes per year. But a local authority's environmental budget can only gain an individual character if it represents specific local environmental problems using appropriate indicators. Please, be* complete*!*

6. Clarity *(Concise set of indicators): In a discussion on indicator selection, it soon becomes clear how much is not represented. There is a great temptation to include a larger number of indicators instead of consciously "cutting out" part of the real situation. This subsequently leads to an environmental budget that can no longer fulfil its principal functions: those of steering according to priorities and making the relevant information. Please be* short*!*

Long-term targets for the environmental budget set the framework for resource consumption limits within the local authority. This framework determines the environmental quality to be attained in 5 to 15 years' time and prevents the local authority from losing sight of the route to sustainable urban development. Environmental quality is therefore represented as a reduction in resource consumption, a reduction in the emission of resource-stressing materials (so-called reduction targets), or by the compliance to standards. In certain cases, the resources are not consumption based and measurements may be qualitative as well.

☝ Tip: Good ways to select a target

- *There is not just a single way to establish a long-term target, but mostly a combination of several paths, namely:*
- ***Complying with national law****. In case an indicator is below national standards required.*
- ***International agreements or protocols****. In absence of national laws or guidelines, a city might give its contribution to global environment through adoption of international standards.*
- ***National or international campaigns.*** *Targets might be derived from projects or initiatives the city participates in.*
- ***Scientific or political advice****. In all other cases, especially when other conditions are missing. In this case adoption of existing targets of similar cities may help.*

In some developing countries, particularly in Asia, developing long-term targets can be particularly difficult because for the demographic boom (especially in the cities) and of the steep economic growth. For this reason a detailed and accurate baseline report is vital to this point.

An important element of discussion (and very often of conflict between experts and politicians, or politicians and stakeholders) are the questions: *how ambitious do we want to be?* And hence: how ambitious do targets have to be? Should one select 'comfortable' targets, so that one can celebrate success, or is it better to set more ambitious targets, that can bestow impulse and momentum to sustainable development of the community?

There is no general answer to these questions. Since *eco*BUDGET is a political framework system for local environmental management, the decision-makers have to decide on the 'philosophy' of their budget. Above all, it is a matter of political accountability to find the appropriate balance. The question will appear with every target to be set and will have to be negotiated time after time. It is

the *eco*BUDGET Team's responsibility (and eventually of the city council's) to find the right equilibrium between reliability and ambition for their proposed targets.

Completing the Master Budget - From Long-term to Short-term Targets

Choosing the short-term targets is the step that completes the draft master budget and the crucial passage, which constitutes the decisive point of the planning phase. They are established year after year for each indicator. Before setting the short-term targets for the following budget year, it is necessary to take into account the previous year's value or reference value to find orientation. Because of the phenomenon of overlapping cycles (see Chapter 3.0), this is usually the value of the previous year: if for example a city is, in autumn 2007, preparing the master budget 2008, the most recent reference value will probably be from 2006.

At this point, with base year values, long-term targets and reference years for all selected indicators, the *eco*BUDGET Team can finally agree on proposals for the following budget's operative figures, i.e., the short-term targets.

Generally speaking there are two ways to establish short-term targets on the basis of long-term targets. The first is a more *analytical* one, calculating and estimating each effect of possible measures and external trends: this way is rather complicated and sometimes requests deep analysis. The other way is more 'arithmetical' and just approaches the long-term target by successive more or less equal steps year after year. Generally, cities will not opt for either one or the other of the two methods, but for a mixture of both according to information and expertise available.

The table on the next page shows the Master Budget approved in Tubigon, in the year 2006.

Example: Master Budget in Tubigon

The table shows the master budget approved in Tubigon on 23rd of December 2005

Resource	Indicator	Unit of Measure	Current Value	Baseline Value	Short Term Target (2006)	Long Term Target
Drinking Water	Sources Positive for Colliform (out of 12 sources)	#	4	4 (2004)	**0**	0 (2015)
	Turbidity / Concentration of Suspended Solids	ppm	0	0 (2004)	**50**	100 (2015)
	Non-Revenue Water (Systems Loss)	%	?	?	**35**	20
Mangrove Forest	Area Covered/Refo rested	ha	550	550 (2004)	**555**	600 (2015)
Timber/ Fruit Tree	New Trees Planted	#	0	0 (2004)	**4.000**	20.000 (2015)
Timber/ Fruit Trees	Increase in Area Covered	ha	0	?	**50**	500 (2015)
	Survival Rate	%	0	?	**70**	70 (2015)
Coral Reefs /Sea Grass Beds	Established MPA's	#	5	5 (2004)	**7**	12 (2015)
	Coral & Seagrass Cover	%	40	40 (2004)	**45**	70 (2015)
Marine Biodiversity	Species	#	53	53 (2004)	**54**	60 (2015)
Marine Biodiversity	Established as MPAs	ha	196	196 (2004)	**222**	287 (2015)
Quarry Materials	Unregulated Quarry Permits	#	50	50 (2004)	**45**	0 (2015)
Good Built Environment	Reduction in Residual Solid Waste in tonnes/ m^3	%	0	0 (2004)	**5**	30
	HHs Practicing Segregation	#	0	0 (2004)	**15**	90

2.2.2 The sustainability analysis

The sustainability analysis is an overview (supported by indicators) of the relationship between *environmental consumption* and the *given level of satisfaction of human needs* such as work, living space, consumer activities, mobility, etc. that is achieved as a result of this consumption. As a result, the view that resource consumption is a basic prerequisite for human living and economical behaviour is reinforced. To achieve sustainable local development, the availability, or in other words the efficient use, of scarce goods is crucial.

From an operational point of view, the selection of sustainability analysis indicators appears different and more independent from the master budget. First of all, a close link to the Local Agenda 21 process is recommended. Secondly, the more open structure of this element (which is not necessarily based on the same resources of the master budget) allows for a debate on areas of human needs (according to the different aspects of sustainability). However, it is crucial under all circumstances to relate the selection of indicators to the master budget's preparation and allow for the participation of all relevant actors in order to guarantee the consistency of the whole process.

On the local authority level, practical efficiency or performance indicators need to be found. One way of expressing these is by percentage ratios of resource-consuming activities that are considered to be relatively resource saving or sustainable. In this way, ecologically efficient resource consumption in the area of mobility, for example, can be recognised (expressed by the so-called "modal split"), if the use of public transport, cycling and walking as means of transport increases in relation to the use of individual motorised transport. The same applies to the percentage of renewable energy sources contributing to total energy consumption. Finally, production methods and economic practices should be emphasised, which strive for a minimal consumption of raw materials or a continual improvement in corporate environmental protection. It becomes clear that almost all human activities are related to the consumption of several natural resources or to various types of environmental damage. The sustainability analysis indicators are therefore cross-sectoral.

Finally it has to be added, that compared to European situation, in developing countries, the border between ‘environmental’, ‘social’ and ‘economic’ is less sharp than in Europe, therefore it could be possible that local authorities decide to include such indicators in the master budget as well.

2.3 Step 3 –Budget Approval

Through a **council decision**, the targets of the master budget are set into force. The master budget is drafted, debated, approved and presented to the **public**. The administration is ordered to implement the politically binding targets

2.3.1 The master budget draft

Once the budget components for all indicators have been formed as described above, they are sent, in the form of a draft of the environmental budget, back to the departments and other participants who were involved with the estimates as part of the preliminary report during the budget preparation procedure. This feedback process enables participants to suggest improvements and comment on the master budget or parts thereof. All feedback from departments, finance office, senior management and stakeholders (e.g. Agenda 21 Forum), or from individual, external actors, has to be evaluated and assessed by the Implementation Board. Following this, all single budget components are revised for the last time and the final version of the master budget is nearly ready and presented to the council.

In parallel, the draft should be fully discussed in public. The draft document is to be put at the public's disposal. However, it will be better to provide institutions, associations and Agenda 21 committees with their own copy of the draft, and to record their respective positions and opinions.

2.3.2 Presentation to the Council

If the political executive body has approved the agreed draft, a draft resolution is formulated for the council. An explanatory report shall form part of the resolution, which is the basis for evaluating the environmental budget that is to be discussed and approved. The explanatory report is primarily a modification of the preliminary report developed during budget preparation. It comprises all necessary information to understand and analyse the environmental budget. Together with the draft environmental budget - the actual object of decision - the draft resolution is placed on the agenda of one of the forthcoming council meetings and sent to the councillors at least two weeks beforehand. .

♫ Please remember that…

*…The success of eco*BUDGET *depends to a great extent on how seriously it is accepted as a tool for political management. Council discussion, debate, and opinion forming in preparation for a decision are therefore central aspects of the procedure. The draft budget, therefore, must not be presented as an over-detailed, comprehensive work - even if collecting information, checking potential sources of error and weighing up priorities between the participating departments and within eco*BUDGET *Team and also the actors from outside the administration has generated a lot of work. Existing problems and contradictions should be outlined in the textual explanations (explanatory report). In many cases, the council will refer the draft resolution to the specialist committees (environmental panel, finance committee, executive committee, etc.) for discussion and review*

Finally it is to be remembered that this ideally described procedure may have deviations depending on local legislation: for example in the Philippines, two levels of approval are required: first, at the Local Development Council; the second is at the legislative council, which is the final ratification and approval.

2.4 Step 4 – Budget Spending

The local government agrees on **measures** to achieve targets, monitors and accounts their effects and undertakes **corrective activities** in case of deviation. The plan of measures can be connected to the **LA21** action plan. This step lasts normally the whole budget year

2.4.1 Agree on Measures and assign responsibilities

After targets are agreed it is necessary to establish for each indicator a series of measures (actions), in order to meet the targets. A measure can have impacts on different indicators.

These activities are best carried out by those responsible in the individual departments and then confirmed in a high-level round of talks between executives. The instruction to begin this step is approved by the *eco*BUDGET Team, which also reaches agreements with participants from outside the local administration. Self-imposed targets and voluntary commitments must be given a concrete form through the announcement of planned measures that are to be implemented in the coming environmental budget year.

The announced measures do not have to be completed in chronological order. Instead, a strategic plan should be produced which sets out the priorities for implementation and all relevant information, such as responsibilities, contact partners, obligations for communication and regulation, etc. The results need to be documented properly. See the example in the next page.

In order to increase the ownership of the process of *eco*BUDGET among the citizens and the civil society, it is essential to include local NGOs, individuals or other organisations who want to cooperate or collaborate.

2.4.2 Measures, existing activities and events

Another logical problem regarding measure-management refers to the simple fact that the local government does not have complete information on what happens within its territory. Moreover, since *eco*BUDGET refers to the entire community and whole territory, the range of unpredictability - expressed generally by the public's response to administration's goals - must be taken into account.

For this reason, it is recommended to analyse possible impacts on resource consumption and use, by means of:

Example: measures and responsibility in Tubigon

The table shows the list of measures and the corresponding responsibilities for a part of the master budget approved in Tubigon, in year 2006.

RESOURCE	Indicator	Short term actions	Frequency of monitoring	Main Responsibility – Department(s) and Personnel (Please add relevant information, names, e-mails, etc…)
DRINKING WATER	Sources Positive for Colliform (out of 12 sources)	- installation of chlorination units/system - technical training on water quality monitoring including procurement of portable water quality monitoring equipment - information drive on sanitation and environmental management awareness	monthly	**Mun. Waterworks Department & Mun. Health Office** **Rolando Arcayos – WWS Superintendent** **Arsenio Ceniza - Mun. Sanitary Inspector** - monthly monitoring of bacterial presence on all water sources - conduct and monitor chlorination on all water sources
	Turbidity / Concentration of Suspended Solids	- establish baseline data (national standard) -installation of filtration system	monthly	**Mun. Waterworks Department** **Rolando Arcayos – WWS Superintendent** - conduct monthly monitoring of water turbidity & suspended solids on all sources - plan for the installation of filtration units
MANGROVE FOREST	Area Covered/ Reforested	**- ID site for reforestation** - coordinate with barangays leaders and validate ID area to be planted	**monthly**	**Municipal Agricultural Office** **Yolanda Labella – MAO** - coordinate with government agencies, NGOs, volunteer groups, academe, barangays leaders in conducting reforestation activities - initiate information drive on reforestation activities of LGU and ecoBudget
TIMBER/ FRUIT TREE	New Trees Planted	**- procurement of planting materials** - monitoring of number of new trees planted	**monthly**	**Municipal Agricultural Office** **Yolanda Labella – MAO** - monitor number of tress planted by different sectors - monitor establishment of local tree nurseries in the barangays
TIMBER/ FRUIT TREES	Increase in Area Covered	**- monitoring of # of new trees planted**	**monthly**	**Municipal Agricultural Office** **Yolanda Labella – MAO** - monitor number of tress planted by different sectors - monitor establishment of local tree nurseries in the barangays
CORAL REEFS /SEA GRASS BEDS	Established MPA's	**- site ID** - formation of MPA management council - passing and ratifying of ordinance	**monthly**	**Municipal Agricultural Office** **Victor Boligao** Fishery Technician/ CRM officer - monitor the number of MPAs established - coordinate with the organization which have management responsibilities of newly established MPAs
	Coral & Seagrass Cover	**- monitoring of physical status of MPA**	**semestral**	**Municipal Agricultural Office** **Victor Boligao** **Fishery Technician/ CRM officer** - monitor the physical status of MPAs - coordinate with the organization which have management responsibilities of newly established MPAs

1. Measures: decided by the city or other actors for meeting the *eco*BUDGET targets, normally with a positive impact;

2. Existing projects/activities: already agreed plans and projects - often decided before the implementation of *eco*BUDGET and with environmental impacts;

3. Events: mostly unexpected or at least unpredictable occurrences, which can have either positive or negative impacts on *eco*BUDGET (like a natural event, the response of citizen to a particular project/plan, or a new plan decided on by a different authority).

To be able to better interpret all these cases, they must be kept track of and their impacts on the individual environmental resources, i.e. the indicators, represented in the master budget, must be analysed.

2.4.3 Monitoring and accounting

At the beginning of the budget year, an account is "opened" for each budget component and its sectoral, spatial, or material subdivisions. This happens with the approval of the master budget that establishes accounts for each indicator of the master budget. After the accounts are established, it is crucial to proceed with the monitoring of impacts and, of course, with keeping track of data. The importance of these two actions must not be underestimated, as only a sound and structured systemisation of these ensure a good basis for the implementation phase's completion.

Accounts serve also as basis for the planning phase of the following cycle, since it starts before the final real values can be collected. Sound accounting is therefore strongly recommended.

- It is *eco*BUDGET Team's responsibility to inform the departments of the current account balance and, where necessary, to point out potential budget deviations. In this case - in the spirit of a decentralised responsibility for resources - the departments must look for savings possibilities or for a change of course, or even consider putting certain projects on hold.
- It may be wise to apply a monitoring-record template, in order to keep track of all relevant information regarding the monitoring of an individual indicator. This comprises information regarding the department or actor responsible for monitoring the respective indicator, regarding ownership and access to data, the format of data and the format of submission as, well as comments regarding data manipulation or needed supporting information.

Example: accounting in Guntur

The table shows the accounting reports for a part of the master budget approved in Guntur, in year 2006.

Resources (related to issues)	Indicator	Current value	Short term target value 2006	1st Account *March 2006*	2nd Account *June 2006*	3rd Account *September 2006*
Water Quality	Monitoring of the quality (number of parameters monitored)	**1** (Only Residual Chlorine)	**14** (with indicative figure)	3	4	9
Green city	Surface of green area (m^2 per 1000 inhabitants)	**78**	**100**	78	78	78
Air quality	Assignment of hawkers' ID (number). Currently the number of identified hawkers is 1724	**450**	**650**	480	590	630
	Places Provided	**11**	**650**			

2.4.4 Corrective measures

In case of large deviations from the attainment of targets (see in the table above, the case of surface of green area) the local administration should try to agree on corrective actions during the budget year. This corresponds to the supplementary budget in financial budgeting. In order to ensure transparency, the draft resolution should provide information about how the decision in question affects the environmental budget, thereby legitimising further environmental consumption.

2.5 Step 5 – Budget Balancing

The **outcomes** of the local environmental performances are presented **as balance budget** report including simple tables. Politicians and citizens easily assess the **attainment** of annual targets and the distance to long-term targets. Through an **internal** or **peer-to-peer** audit, process and outcomes are assessed against qualitative and quantitative criteria. The council ratifies the budget balance. The public is informed on the **results** of local environmental policies. Outcomes inform the next cycles.

2.5.1 Balancing the accounts: preparing the budget balance

Ideally, the budget balance of a certain period would inform the budget preparation of the subsequent one but this does not happen, since final values are normally ready when the next cycle has already begun. To start the next budget preparation, the most recent accounts and the previous year's budget balance need to and can be applied (see Chapter 3.4).

At the end of the environmental budget year, the Co-ordination Team concludes the accounting and draws up the annual balance, i.e., a balance for each indicator included in the environmental budget. The annual balance can be regarded as a core result of the *eco*BUDGET cycle. It is presented as a table to be published at various levels in the community.

In practice, the annual balance presents a table similar to the master budget comprising five new elements for each indicator:

1. The balance (or real) value

2. A graphic evaluation of the period's performance, i.e. against the short- time targets. This presentation allows politicians and the public to immediately understand how successful the performance in the respective budget period has been.

3. The attainment-to-long-term-target index. It shows, as a percentage, how far the local authority is on the road to reaching the *long*-term target, using the respective base year as a reference point. It is easily calculated by the formula

$$\text{Distance-to-target index} = \frac{\text{Base value - Balance value}}{\text{Base value - Target value}} \times 100\%$$

4. A graphic evaluation of the distance-to-target, i.e. the performance against the long-term target. (This form of presentation helps the wider public to understand immediately the long-term target's degree of attainment.

5. Comments and considerations presenting reasons for the particular state of an indicator and the respective level of target achievement. In the next page, an example of an annual balance is presented.

2.5.2 The Internal Audit

The internal audit serves two purposes: an evaluation of the process organisation and the performance of the recent budget period. The internal auditing process allows the verification of whether or not the procedures applied throughout the cycle proved sound and appropriate to a) perform in the most effective and efficient way, and b) comply with the *eco*BUDGET requirements. The results achieved in this process during the recent budget period are checked against the management background: Have organisational elements hindered better performance? Could modification help?

> **♫ Please remember that…**
>
> *In the developing countries so far auditing procedures and figures of auditors are not very familiar in the public administration. For this reason, at least in the first 2-3 years of adoption, it may be advisable to base the internal evaluation more on peer-to-peer support, with the help of cities which have already implemented ecoBUDGET.*

2.5.3 The balance report

The budget balance should be accompanied by an environmental budget report, which summarises the analysis of the measures (at least by using key words) and displays the overall results graphically. The results of the internal audit are incorporated into the environmental budget report and submitted to the senior management for presentation to the city council for debate and ratification.

The main part of the report should provide a brief explanation of the figures and results of the individual elements of the environmental budget balance. This should cover the environmental budget year's measures, events, trends, accomplishments and problems. The box below represents a possible structure for the environmental budget report.

The set of figures given in the environmental budget balance forms a fundamental part of the environmental budget report. However, the explanatory section's length and degree of detail can be adapted to the wishes and practices of the local authority.

2.5.4 The Budget Balance Approval

The stakeholders involved shall be informed of the environmental budget balance's results before the final draft is prepared for the council debate, so as to give them an opportunity to comment. For example, the key actors and members of the Agenda 21 Forum could be included in the distribution list and provided with a copy of the draft environmental budget report at the local authority's

initiative, to retrieve opinions and comments, which should inform the council debate as a 'second view'.

The revised environmental budget report is agreed upon by the *eco*BUDGET Team and executive body, and then presented to the council for discussion and ratification. In order to promote its understanding and critical examination, it is important that problems that have been encountered and controversial points are not concealed by an overly scientific text. This ensures that the set of figures remains the focus of the discussion. Easily understandable texts and graphics should support this.

The approval will usually involve discussions in particular committees. A concluding council debate is to summarise the results of all other discussions and to determine consequences for the next environmental budget. Finally, the city council ratifies the environmental budget balance by vote. This includes the formal transfer of responsibility and accountability from the administration to the city council. Further to that, the administration is commissioned with preparing the next environmental budget cycle.

> **Tip: Budget Balance Party?**
> *The approval of the budget balance is the final act of an eco*BUDGET *cycle and for this reason should be also a moment of celebration. A possibility is that the local government organises a public event (whose nature will be suitable to the local culture) in order to inform citizens and stakeholders on the success (or needs of improvements) in meeting the targets. Such event should have the biggest possible impact on local population and media and can become a sort of 'environmental' day of the local community year after year.*

The general public must be informed of the environmental budget balance results as ratified by the city council. The ratified budget balance should be announced in both the local press and the local authority's official publication (e.g. the official gazette). It should also be sent to interested parties and made available on the internet (where possible). To ensure that the budget balance and report is fully representative, at least four weeks should be allowed after the publication of the council's final ratification for public review, before the balance is legitimised to be further used in the budget's preparation.

3 Appendix: Case Study of *eco*BUDGET implementation in Guntur

5.1 Abstract

The concept of *eco*BUDGET, fostered by the Aalborg Charter, 1994 has been introduced for the first time in South Asia through the city of Guntur in India. The project commenced in 2005 and the first *eco*BUDGET of Guntur was ratified by the Guntur Municipal Corporation in March 2006. Five environmental issues were chosen to be implemented as part of master budget implementation, including, Water Quality, Water Quantity, Waste Management, Green city and Air Quality. The GMC chalked out indicators, set short term and long term targets on the basis of the baseline value of the indicators, and implemented various measures to achieve these targets.

The *eco*BUDGET has been quite successfully implemented in Guntur with a high rate of success. The Municipal Corporation has taken measures and has improved the water quality and the quantity of water supplied to the city, increased the percentage of waste collection and segregation in the city, significantly increased the green cover in the city, issued identity cards to a large number of hawkers and assigned them places in the city. In the process of implementation of the budget, the Municipal Corporation has also identified certain obstacles such as lack of financial resources and lack of coordination among different in the way of achievement of the targets, so as to take action to overcome them.

Municipal Profile

Population: 514,000 as per 2001 census
Land Area: 48.50 square kilometers

3.2 Importance of the issue

The idea of budgeting environmental resources evolved from the Aalborg Charter, 1994 which called for the use of budgeting instruments for managing natural resources, just like money.

EcoBudget is a tool for local authorities to predict, plan, control, monitor and report the use of natural resources developed by ICLEI-Local Governments for Sustainability, a worldwide movement of local governments and their associations working to achieve tangible improvements in global environmental and sustainable development conditions. The concept of *eco*BUDGET is on the lines of local financial budgeting. An annual environmental budget is prepared which is approved by the political body and forms the framework for using resources within set limits. It does not aim to give a monetary value to the environment, but through the use of environmental indicators it keeps the use of resources within the limits of the environmental budget. The budget contains targets oriented towards the sustainable management of environmental resources. The first *eco*BUDGET model was created as early as the mid 80's and has already been successfully implemented in 9 European local authorities.

The implementation of *eco*BUDGET in Asia is more a means of achieving sustainability in environmental management rather than a goal by itself. Therefore, the immediate objectives of the implementation of *eco*BUDGET in Asia are the following:

1. To develop the urban management capacity and skills and improve local governance of the participating Asian cities through technical training, the mutual exchange of experiences, and the hand-in-hand implementation of a full cycle of the *eco*BUDGET system.

2. To improve the urban environment and the living conditions of the participating Asian cities through the application of the concept of environmental budgeting for managing natural resources.

3. To improve the decentralized co-operation practices of all participating local governments, and to establish durable peer-to-peer relationships between them at both political and administrative level.

4. To adapt *eco*BUDGET to the needs and realities of the region, thereby developing an environmental management system implementing sustainable development tailored to the needs of the Asian local governments.

5. To demonstrate the instrument's effectiveness, sustainability and potential for replication in other cities in the region.

The development of *eco*BUDGET has been fostered by the Charter of the European Sustainable Cities & Towns Campaign, Aalborg 1994, which called for the introduction of environmental budgeting instruments for managing natural resources as efficiently as the artificial resource 'money'. The concept was pilot tested in European cities and countries, and also confirmed at the UN World Summit on Sustainable Development in Johannesburg in 1992 as an appropriate mechanism for implementing Local Agenda / Local Action 21 and for supporting local – and thus global – sustainable development.

Due to substantial environmental problems and significant poverty, managing local sustainability is becoming a priority issue in many Asian local governments. However, the paucity of mechanisms to implement local sustainability has led to an increasing demand to transfer and adapt European management approaches to Asian circumstances.

The programme of *eco*BUDGET which has already been applied in European countries is therefore being implemented in Asian countries on a pilot scale so as to contribute to community empowerment by linking up with Local Agenda 21 processes and involving community stakeholders in the priority setting, target identification, measure implementation, monitoring, as well as reporting.

In India, the 74th Constitutional Amendment Act of 1992 has ushered in an era of democratic decentralization through the empowerment of local governments. The Amendment includes environmental management as one of the functions of the municipal governments. *Eco*BUDGET which is a program for environmental management specially designed for local governments and has proved to be useful to several European cities, was tried for the first time in South Asia in the city of Guntur in India as part of '*eco*BUDGET Asia' Project, funded by the European Commission's Asia Urbs programme. The other *eco*BUDGET Asia partners include two local governments from Europe – Bologna (Italy), Växjö (Sweden), and another from Asia - Bohol (Philippines).

3.3 Case

The Guntur Municipal Council was constituted in 1887 and was upgraded to a Municipal Corporation in the year 1994. Guntur City is the district headquarters of Guntur district of Andhra Pradesh Sate located in southern part of India. It is located 272 km southeast of Hyderabad.

The city is an important commercial and trading center for agricultural produce like chillies, onions, coriander, turmeric, cereals etc. But the most important agricultural produce traded at Guntur is tobacco, which is an important foreign exchange earner for the country. Guntur is also a cultural and educational center, famous for old churches, professional colleges and other higher educational institutions.

Guntur Municipal Corporation (GMC) is focused on making Guntur a city with all modern amenities for its citizens. Some of the roads and the solid waste-handling program are praiseworthy achievements as compared to many other Indian cities of similar size. Guntur also has an

underground drainage system and a reasonably effective drinking water distribution network. The city has also come up with several urban innovations such as:

* Round the clock public grievance cell.
* Computerized birth and death records.
* Corporation has formulated a citizens charter specifying time to redress various civic problems.
* Area-wise details of property tax are displayed to increase transparency.
* Display of clearance timing on the dustbins for improving waste collection.

The *eco*BUDGET program adopted by the GMC provided an opportunity to manage its environmental and natural resources in a manner consistent with its ideas of development for the city while maintaining the sustainability of the resources themselves. The process gave a political mandate to activities undertaken for environmental sustainability and increased awareness among politicians, administrators as well as citizens regarding sustainable development.

The *eco*BUDGET Asia project was commenced on December 2004. On 4th March 2006 in its council meeting, GMC ratified the *eco*BUDGET Master Budget for 2006-07. Five environmental issues were chosen to be implemented as part of master budget implementation, including:

1. Water Quality: increase in the number of parameters monitored and frequency of monitoring
2. Water Quantity: monitoring the loss of water in the pipelines and increased supply of potable water
3. Waste Management: monitoring of waste collection (% of citizens served)
4. Green city: increase in surface of green area
5. Air quality: assignment of hawkers ID and providing places to hawkers and monitoring of Suspended Particulate Matter

For each of these issues chosen, the GMC chalked out indicators and set short term and long term targets for themselves on the basis of the current or baseline value of the indicators. Each activity was reported and monitored. From September 2006, GMC started implementing the above master budget. The project was divided into five phases: 1) Training on *eco*BUDGET and planning the overall project 2) Master Budget preparation 3) Implementation of the budget after approval from council 4) Monitoring, controlling and reporting 5) Evaluation and assessment of local reports to adjust *eco*BUDGET for an Asia – wide application.

3.4 The target groups and beneficiaries in the city:

- Local administration (local bodies and other developmental agencies) who will be responsible for the implementation of *eco*BUDGET. The project was aimed to help them to:
  - Pilot new approach to environmental management, learn about instruments and management practices from European partners;
  - Better planning and implementation of developmental projects;
  - Increased accountability and transparency in decision-making.
- Local politicians who will be responsible for the preparation and approval of *eco*BUDGET. The project was aimed to provide them with:
  - Information on the status of the environment and the needs of the city;
  - Better understanding of the importance of natural resource management;
  - Support to priority setting and the actions of local bodies.
- Citizens and NGOs, who will participate in preparation, identification of priority issues, environmental indicators and targets to be used for *eco*BUDGET implementation of Action Plan. The project provided them with:

- Information on the status of the environment and the needs of the city;
- Better understanding of the importance of natural resource management;
- Support to the actions of local bodies;
- The raising of local awareness.

- The Pollution Control Department who will provide the technical input regarding the status of the environment, various environmental acts and regulations and development of environmental indicators and targets. The project was aimed to:
  - Assist the execution of measures (in particular pollution control)
  - Assist the implementation of the environmental acts and regulation by raising public awareness.

3.5 Results

Water Quality

Before the implementation of *eco*BUDGET the GMC was monitoring only residual chlorine in the drinking water supplied by it. However, water quality being one of the priority issues recognized by the GMC for improvement through *eco*BUDGET, the GMC decided to increase the number of parameters monitored by it to 14, including fecal coliform, fluoride, nitrate, chloride, hardness, and turbidity among others. In order to achieve this, 2 mobile water testing Jaltara kits (approved by UNICEF), were procured and tests were conducted by the GMC and the stakeholders committee to cross check the results. ***The GMC is now able to conduct 2 analyses of 30 samples per day for 14 parameters.***

There is a water quality testing laboratory at Sangam Jaralla Mudi and one mobile water testing laboratory which helps to monitor the major water quality parameters.

Water Quantity

The quantity of water supplied for drinking by the GMC, the regularity of water supply and the revenue generated has been increased substantially after the implementation of *eco*BUDGET.

In order to quantify the amount of water being supplied to the city, flow meters are planned to be installed at the major water filling stations to record and monitor the amount of water flowing within the next year. These are proposed to be installed at Takkellapadu, Nehru Nagar and Sangam Jaralla Mudi. A system of spot billing has been introduced to avoid unnecessary delay and discrepancy in meter reading or disbursement of notices. GMC is the First Urban Local Body to introduce this system in Andhra Pradesh. This measure has significantly reduced the wastage of water.

Water tankers have been used to supply drinking water in the areas of the municipality, which are uncovered by piped water supply. ***A computerized system was developed to monitor the water supplied through tankers***, by which a token was generated giving the gist of the trip each time the tanker took a trip. The recorded reports are placed in the Corporation website. ***In the financial year 2006-07, Rs. 0.2 Millions has been generated as income, which is an increase of 10%.*** The total quantity of drinking water supplied (daily) is 1,776,000 LPCD.

Structural improvements in the water supply system, such as replacement of existing RCC pipeline from Padmaja Petrol Station to Nehru Nagar with the new PSC pipeline of 1200 mm diameter for 1.2 km has already helped to reduce water pollution in the pipeline, prevent leakages, decrease turbidity and improve the quantity of water supply. A new filtration plant was under trial due to the renovation of the old plant to improve water purification, rectify waterbed problems, and improve chlorination process, pH reporting and alum mixing process. A new GRP (glass reinforcement plastic) pipeline at Takkellapadu Water Works, connecting from Krishna Canal to Takkellapadu New Filtration Plant with 900mm diameter has been proposed. Developmental activities have been undertaken at Guntur Channel so that raw water can be obtained throughout the year from the Krishna Canal. At present the total amount of water supplied to the city is 70MLD. ***The new***

pipelines and structural improvements will help to increase the water supply quantity from 70 MLD to 115 MLD, thereby assisting in the achievement of 24x7 water supply in the city, which is a long term target for the city.

At present ***85% of the area is covered by piped water supply*** from 24 reservoirs, the rest of the ***15% is supplied through tankers***. Additional reservoirs have been planned in 4 more areas to increase coverage.

Solid Waste Management

GMC has initiated an action plan on Solid Waste Management to achieve '0' garbage environment in a phased manner. The first phase involves improvement in the collection and transport system, including increase in number of vehicles and development of infrastructural facilities like acquiring new sites for dumping or vermi-composting. The second phase includes segregation of garbage by introducing two-bin system at the source and taking suitable measures to keep the garbage separate during transportation. Recycling is done for recyclable materials. The third phase is the generation of income from converting municipal solid waste into manure, recycling of waste, vermi-composting, or development of landfills.

A campaign was carried out by GMC to increase awareness on solid waste management and distribution of plastic bins among the public. After the implementation of the *eco*BUDGET programme, there has been a proven increase in the collection and segregation of waste, with ***60% garbage collection*** and ***70% garbage segregation*** in the city.

The existing structure for solid waste management in the city includes the vehicles for collection of waste and the dumping of waste in two private quarry pits with consent of the owner. The vehicles available include tractors, tippers, dumper placers, tractors mounted bull, dumper bins, RCC garbage bins and wheel barrows. 350 metric tonnes of waste is generated every day to be dumped or disposed off. There has been significant increase in the segregating facility.

A Short Term Action Plan for 1 to 2 years has been formulated for solid waste management. This includes increase in the area where the two bin system is followed, increase in the number of vehicles for collection of waste from households, construction of two vermi compost yards (work has already commenced), and identification of three transit dumping sites for non-biodegradable wastes. As a Medium Term Action Plan of 2-5 years, the government has approved the acquisition of 1000 acres of land belonging partly to Zilla Parishad and partly to Railway Department for the dumping of solid wastes.

Lack of resources and space for disposal of solid wastes have been a major hurdle in the achievement of 100% waste disposal in the city. Lack of awareness among citizens is the major obstacle in achievement of 100% segregation of waste. Moreover, segregated waste is not used in any way. The Municipality is however looking for further opportunities to utilize segregated waste such as vermi-composting and pelletisation.

Green Area

According to the budget, the green area per 1000 persons was to be increased to 100m^2 from existing area of 78 m^2.

GMC has taken up massive developmental activities for beautification of the city through development of greenery and tree plantation. Almost 1 lakh saplings have been planted in various parts of the city. Taking a 10% survival and an area of 0.5 m^2 per sapling, 5000 m^2 of area is now covered under a green cover only due to the saplings. Apart from the saplings, green avenues have been created for an area of 1400 m^2. Although it has not been possible to achieve 100 m^2 of green area for 1000 inhabitants, ***the city has 89.6 m^2 of green area for every 1000 inhabitants***.

The GMC has also taken up renovation of existing parks, stadium, walking tracks and GMC office places with an area of 1750 sq. mt. with greenery (carpet grass turfing). Six places with an area of 2580 sq. mt. of open spaces will also be turned into green patches (carpet grass turfing) in the near future. GMC has also planned development of 15 road dividers with greenery for a length of 12 km. In order to achieve the targets for increase in green area cover, nine areas (green spots) have been

identified for Smruti Vanams (resting / relaxing points) under joint venture of GMC and APUSP at a cost of Rs. 2 million. Smruti Vanams have been proposed at Udyog Nagar in Palakalur Road, Santhi Nagar and Muthyalareddy Nagar, Navabharath Nagar, RTC Colony, Srikanth Nagar, Stambalagaruvu, Lakshmi Nagar Main Road beside HLR, IPD Colony 8th Line and at Koritepadu Triangle. Proposals have also been made to developing an area of 6 acres of open land as park play ground, at Konda Venkatappiah colony, and of Gurjanagulla Tank Bund and Koritipadu Tank Bund.

Air Quality

The different indicators for air quality improvement in the city included monitoring of suspended particulate matter and regularization of hawkers to avoid traffic congestion in roads. For regular traffic improvement GMC, with the coordination of Police department and Traffic advisory committee, implemented some developmental activities like identification of parking places, removal of unauthorized cellar constructions in areas marked for parking purpose, maintaining regular co-ordination with Pollution Control Board for monitoring air quality and concentrating on traffic regulation and developing of junction improvements.

The GMC has completed the survey and identification of 1732 hawkers in the city. Only 450 of them had identity cards initially. With the implementation of the budget, ***1395 have been issued identity cards*** at present. Vending zones have been marked out to provide spaces for the hawkers. The city has been demarcated into 500 Green Vending Zones, 10 Amber Vending Zones and 12 Red Vending Zones. ***950 hawkers have been allotted spaces*** in green and amber zones, whereas the rest can roam around the city to sell their wares.

3.6 Lessons learned

The implementation of the *eco*BUDGET program in Guntur has resulted in the incorporation of environmental concerns into the city's administration process. Since the budget has been ratified by the council, all decisions of the municipality have to take into account the environmental targets set by the budget, and take actions accordingly.

The eco*BUDGET programme was implemented in a place where no such system was previously existing. As such, it faced several challenges, the strongest being the challenge of getting people on board. Certain issues are not entirely handled by the Municipal Corporation and therefore it was difficult to successfully implement all actions to meet the targets. Moreover, the rapid urbanisation and development of the city makes it difficult to accurately calculate the improvements brought about by the programme. Coordination among different departments have been limited, thereby restricting the effectiveness of certain measures undertaken by the GMC to achieve targets. Lack of financial and infrastructural resources have also been a major constraint to the achievement of targets and there is need to identify resources for implementation of all measures and activities for the* eco*BUDGET programme.*

In spite of these challenges, the eco*BUDGET programme fairly successfully implemented in the city of Guntur and innovatively addressed problems of each of the resources identified. The programme also generated jobs in the process of implementation of various activities. In the* eco*BUDGET programme in Guntur, although ambitious targets were set for each of the resources identified, pragmatic indicators were chosen for them. All the resources selected for the programme responds to the basic needs of the population of the city. Not only was there a strong political involvement, there was also common people's participation in implementation which resulted in the high success rate of the programme.*

3.7 Key Replication Aspects

The *eco*BUDGET programme in Guntur is part of the *eco*BUDGET Asia project funded by The European Union. The *eco*BUDGET tool is flexible enough to be replicated in the municipalities of different cities according to their needs. This is evident from the fact that the tool initially designed for European cities has been quite successfully replicated in the Asian city of Guntur.

The crucial cause for the success of the ecoBudget programme in Guntur was the strong political commitment and the selection of issues which are of relevance to the people of the city. This increased the ownership of the programme among the city officials as well as the citizens, leading to greater public involvement and better implementation of the project activities.

3.8 Staff

The staff involved in the programme included a programme coordinator and an assistant programme coordinator at the city level. However, the implementation of the activities involved the Local Implementation Team and a number of Municipal Corporation officials as well.

4 Appendix: Case Study of *eco*BUDGET implementation in Tubigon

4.1 Program Goals

Tubigon has experienced major threats to its natural resource base, such as indiscriminate use of fertilizers and pesticides, solid waste dumping (including toxic materials), shrinking agricultural lands because of population pressures, decreasing forest reserves due to illegal logging and forest fires, as well as coastal resource management issues. Tubigon decided to implement *eco*BUDGET as a framework for local environmental management in order to enhance its environmental governance and management capacity, thereby improving its local environment and the living conditions in its communities. The municipality saw *eco*BUDGET'S potential as a platform for linking its municipal vision, plans, strategy, resource allocation, and performance measures in order to promote sustainable development and alleviate poverty. Additionally, the municipality wanted to harmonize its different environmental management initiatives under one umbrella program and saw *eco*BUDGET as a key step in that direction. The Province of Bohol intends to use the lessons learned from Tubigon's experience with *eco*BUDGET to implement the program in the 47 other communities in the province.

Population (year): 40,385 (2000)

Land area (sq. km): 82 sq. km.

Overall municipal budget: PHP 71,148,600 (USD 1,489,047) (2007)

Municipal Profile (Description):

The Municipality of Tubigon's Municipal Council has eight elected members and two ex-officio members with the Vice-Mayor as the Presiding Officer. It approves the development agenda proposed by the municipality's executive branch in the form of policies and ordinances together with the annual budget.

In the Philippines, the Municipal Development Council (MDC) is a multi-sectoral council that initiates multi-sectoral development plans for the local government unit concerned. Tubigon's MDC has 48 regular members including government representatives, elected officials, leaders of Tubigon's 34 *barangays* (villages), and representatives of non-governmental organizations (NGOs), citizens' organizations and civil society.

4.2 Summary

The Municipality of Tubigon began implementing *eco*BUDGET in 2005 in order tackle major threats to its environmental resources as well as quantify the impact of its existing environmental initiatives and make them easier to monitor and evaluate.

Through the work of a Local Implementing Team composed of municipal staff, Tubigon developed and adopted its first *eco*BUDGET Master Budget in November 2005. The second Master Budget for Tubigon followed one year later, in December 2006. Citizen and stakeholder participation is an integral component of Tubigon's policy implementation process, and is therefore a key part of its *eco*BUDGET management system. The municipality and its citizens continue to work towards the short- and long-term targets set out in each annual Master Budget, which serves as a clear action plan for the implementation of initiatives to increase the sustainability of Tubigon.

4.3 Importance of the Issue

The foundation of the economy of Bohol Province -in which Tubigon is located- is agriculture, fishery and tourism. Consequently, the viability of the municipality's (and the province's) economy depends on the health of its natural resources: fertile soil, clean water, high biodiversity, adequate forest cover, and healthy mangroves, seagrass, and coral reefs. The poor in the province's rural and urban areas are particularly dependent on the province's natural resources. Tubigon is acutely aware that it is in its interest to preserve the natural habitats that support the socio-economic and cultural

life of Bohol in the face of current sustainable development challenges. Additionally, Tubigon is also aware of the need to meet the United Nations Millennium Development Goals (MDGs) and from the beginning has chosen to link its *eco*BUDGET to the MDGs. As a result, Tubigon's *eco*BUDGET process is based on the strong participation of community groups and *barangays*.

4.4 Description of the case

In April 2005 a municipal administrative order created Tubigon's *eco*BUDGET Local Implementing Team. Composed of nine municipal staff from different offices and departments, the team is the focal point for *eco*BUDGET in the municipality and is in charge of drafting the annual *eco*BUDGET Master Budget and the other relevant documents. The Office of the Municipal Planning and Development Coordinator serves as coordinator.

Citizen and stakeholder participation is an integral component of Tubigon's policy implementation process, and is therefore a key part of its *eco*BUDGET management system. The process begins with the *eco*BUDGET indicators, targets, and measures being discussed and debated by members of the Municipal Development Council, which consists of representatives of all elements of Tubigon society. MDC representatives are encouraged to inform and consult directly with their communities about *eco*BUDGET. After the Master Budget is approved, the LIT works directly with different stakeholders and citizens' groups to implement the planned measures. Both informal meetings and community assemblies are held to coordinate citizens' involvement in the implementation of measures.

At the end of June 2005 Tubigon kicked off its first *eco*BUDGET cycle with a high level of local involvement: 15 municipalities as well as numerous representatives from the private and non-governmental sector attended the kick-off meeting.

Because *eco*BUDGET is an environmental development initiative it must pass through Tubigon's 48-member multi-sectoral Municipal Development Council. In July 2005, after consultating and deliberating, the MDC shortlisted environmental issues and concerns based on priorities, applicability, and the capacity of the stakeholders to implement. From July to October 2005, several dissemination events took place to keep the public involved and informed about the development of the draft Master Budget. The six subsequently ratified environmental resources that form the basis of Tubigon's Master Budget are: Drinking Water, Forest Cover (Upland Forestry and Mangrove Cover), Timber/Fruit Trees, Coral Reefs and Seagrass Beds, Quarry Materials, and Good Built Environment.

On November 22, 2005 the MDC ratified and endorsed the 2006 draft Master Budget. Next, the draft Master Budget was reviewed by Tubigon's municipal council and endorsed by the three-member Committee on Environment. In December 2005 Tubigon's 2006 Master Budget ordinance was unanimously ratified and enacted by the municipal council.

After Tubigon's Master Budget was approved for implementation, the LIT, together with a team of Bohol provincial staff, prepared an annual workplan for each municipal sector that was incorporated into the respective departments' annual workplans.

During 2006 a variety of initiatives were implemented by various departments in order to meet the targets set in the Master Budget. Initiatives included the planting of timber and fruit trees, reforestation of mangroves, establishment of a new marine protected area, and the implementation of an ecological solid waste management program.

From October to December 2006 the Tubigon LIT drafted a Budget Balance which showed progress made towards the targets set out in the Master Budget. The LIT conducted consultative meetings with stakeholders regarding the submission of their progress reports. The Budget Balance was approved by the Municipal Council in March 2007. The Municipality approved its second Master Budget for 2007 in December 2006.

4.5 Results

The Municipality of Tubigon is making progress towards its *eco*BUDGET targets. The results of its 2006 Budget Balance show:

- The municipality has met most of its short-term targets for indicators in the drinking water resource area except for a reduction in the percentage of non-revenue water because the rehabilitation of old distribution pipelines was delayed.
- The municipality has reached its short-term target regarding the establishment of marine protected areas (the target for 2006 was two new community-managed protected areas) because of strong support from the community and a partnership with non-governmental organisations working towards the same objectives.
- The municipality has met all its short-term targets in the coral reefs and sea grass beds area, forest cover, timber and fruit trees, and good built environment (which focuses on solid waste management) areas.
- The area with the least progress was the Quarry Materials resource, where the municipality has had difficulty making progress due to jurisdictional issues.
- Community involvement in areas such as mangrove reforestation and solid waste management has been very high, which contributed to meeting the *eco*BUDGET targets for those resources.

Tubigon has found that its implementation of *eco*BUDGET has had the following benefits:

- Strengthened the capacity of the municipality to implement an integrated environmental management system through procedural discipline, training, and intellectual support
- Created an enabling environment of appropriate policies, procedures and structures which has allowed the municipality to address and co-ordinate local environmental issues more effectively
- Allowed the municipality to take the lead in initiating environmentally responsible behaviour in its internal administrative procedures and throughout the whole municipality
- Increased political commitment to sustainability
- Achieved greater participation (communication and interaction) between local authorities and stakeholders.

4.6 Lessons Learned

Tubigon found that strong community involvement leads to good results. The municipality engaged people's organisations from the start and continues to engage them in on-going projects (such as mangrove reforestation) to help meet the *eco*BUDGET targets.

The creation of the LIT as a central co-ordinating team and the incorporation of the *eco*BUDGET into the relevant departments' work plans have made implementation less complicated. Additionally, the specific financial budgets for Tubigon's *eco*BUDGET activities were reduced because funds for most activities to meet *eco*BUDGET targets are allocated as part of each department's annual budgetary allocation.

Tubigon recognised the importance of political commitment and secured the support of elected officials from the very beginning. Since the municipality is currently working on several environmental initiatives involving local and foreign partner NGOs, implementing a program such as *eco*BUDGET is not new. Tubigon's current political leadership is very development oriented and welcomes initiatives that promote sustainable community development.

Because Tubigon doesn't have the power to regulate certain areas (such as quarries) it has been difficult for the municipality to implement make progress in addressing these areas. Tubigon has addressed some concerns and issues unofficially through discussions with its counterparts at

different levels of government, however, municipal staff feel that there is a need for more concrete legislative reforms at higher levels of government.

As well as addressing environmental issues, Tubigon has found that *eco*BUDGET can be used to address poverty alleviation and the MDGs. In the Quarry Materials resource, an alternative livelihood project is one of the activities in the municipality's workplan. In the Drinking Water resource, the municipality has plans in place to expand the water service delivery area to provide increased access to clean and safe drinking water. One of the main causes of child mortality in Tubigon is diarrhoea traced to unsafe drinking water.

Tubigon has found that public education on environmental management is crucial. In the Philippines people tend to focus on the economy and prioritise putting food on the table over taking care of the environment. In order to address this situation Tubigon feels that more advocacy and more information campaigns to raise citizens' level of awareness are necessary. Tubigon has made some progress in this area but still believes it has a lot more work to do.

4.7 Key Replication Aspects

The experiences of Tubigon and other cities that have implemented *eco*BUDGET have shown that *eco*BUDGET can be readily applied in a range of local governments. The instrument is applicable in various world regions, in large cities and small towns, and developed and developing countries, regardless of political persuasion. *eco*BUDGET also has the potential to support poverty alleviation efforts and meet the Millennium Development Goals.

Based on Tubigon's experience with *eco*BUDGET, the Province of Bohol has developed a list of recommendations for the implementation of *eco*BUDGET in other parts of the province:

- Focus on an annual investment model rather than annual implementation targets. Keep in mind that depleted resources cannot be replaced in a year. Also, a short-term approach is not responsive to gradual, long-term environmental damage such as soil erosion and depletion, biodiversity loss, etc.
- Develop environmental indicators appropriate for a rural setting. Since the livelihoods of rural dwellers (such as farming and fishing) are often heavily dependent on natural resources, it is important to address the interrelationship between poverty and environmental degradation. As well, more proactive strategies must be used. Since rural environments are often less degraded than urban environments, it is necessary to focus on preventing environmental degradation, rather than solely reacting to environmental damage. Address relevant local threats (such as El Niño and La Niña) and customize indicators to each locality.
- Utilize indicators that measure environmental health, and levels of poverty and natural resources (such as access to safe water and sanitation, time/distance involved in collecting water, prevalence of dengue, percent of rural children under age five who are underweight, number of deaths from natural disasters by income class, percent of farmers on land situated on slopes).

4.8 Staff

One full-time staff person spends part of his time providing administrative support to the Office of the Municipal Planning & Development Co-ordinator and serving as a liaison between and among the LIT members.

Nine municipal staff members from various departments form Tubigon's Local Implementing Team. As well, there are a number of partners from academia, NGOs, and people's organisations involved in the project. Tubigon received peer support from the cities of Växjö (Sweden) and Bologna (Italy), two cities with significant experience with *eco*BUDGET. Technical assistance was provided by ICLEI staff.

5 Annex – Budget Balance 2006 and Master Budget 2007 in Tubigon and Guntur

5.1 How to read the tables

The two tables represent the two most important steps realised by Guntur and Tubigon in the first part of 2007.

They are a combination of the Budget Balance 2006 and the Master Budget 2007 (the last column). We can see how the cities met (or did not meet) the short-term targets (compare the columns 'Short Term Target 2006' and Value 2006', generating the archery symbol for a clear understanding). Moreover comparing the 'Value 2006' with the 'Long Term Target' brings to the Attainment of long-term targets percentage and its graphic representation with the green and yellow bullets.

Finally the last column shows the new Short Term Targets 2007, approved by the city councils and forming the Master Budget 2007. In this way both cities have already started their second *eco*BUDGET cycle.

5.2 Budget Balance 2006 and Master Budget 2007 in Guntur

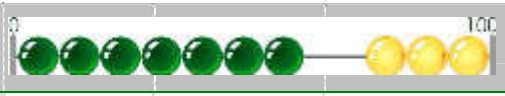
RESOURCE	Indicators	Unit of Measure	Value 2004	Value 2006	Short term target (2006)	*long-term target* (2010)	Short-term target evaluation	New short term target (2007)
WATER QUALITY	Monitoring of the Quality	# of parameters monitored	1	14	14 (with indicative figure)	14 (with full fledged Laboratory with all equipment)		14 (with indicative figure)
	Attainment of Long-term target							
	Monitoring Frequency	N. analysis per month, at each reservoir, on a basis of 30 samples per day	1 parameter with 2 samples at each reservoir	2 (on 14 parameters)	2 (on 14 parameters)	5 (on 14 parameters)		3 (on 14 parameters)
	Attainment of Long-term target			40% 				
WATER QUANTITY	Monitoring the Loss of Water from Pipelines	Descriptive indicator	Water supply through piped Network covered : 80%area; through Tankers 20% area, but water quantity is not quantified	Water supply through piped Network covered : 85% area, through Tankers 15% area, and water quantity is going to be quantified	Quantity of water supply through tankers is quantified and monitored through a special software	Quantity of water supply through tankers is quantified and monitored through a special software		
	Attainment of Long-term target							

RESOURCE	Indicators	Unit of Measure	Value 2004	Value 2006	Short term target (2006)	*long-term target* (2010)	Short-term target evaluation	New short term target (2007)
	Supply of potable water	Litres per capita per day (LPCD)	110	110	120	150 (2015)		120
	Attainment of Long-term target			0%				
HEALTH	Monitoring of Waste Collection	% of citizens served	50 (assumption)	70 Proved with an increase in % of segregation facility	70 (proved, with an increase in % of segregation facility)	100		90
	Attainment of Long-term target			40%				
GREEN CITY	Surface of Green Area	m^2/1000 inhabitants	78	100	100	200		130
	Attainment of Long-term target			18%				
AIR QUALITY	Assignment of Hawker IDs (Numbers)		450	1240	650	1724 (year 2015)		1440
	Attainment of Long-term target			62%				

RESOURCE	Indicators	Unit of Measure	Value 2004	Value 2006	Short term target (2006)	*long-term target* (2010)	Short-term target evaluation	New short term target (2007)
	Monitoring of Concentration of Suspended Particulate Matter	Qualitative indicator	No Monitoring System at GMC	No Monitoring System at GMC		To introduce monitoring system and monitor SPM once in a month at one location		A full fledged monitoring system in place at GMC
	Attainment of Long-term target							

The city council of Guntur Municipal Corporation approved the Budget Balance 2006 in March 2007 and the Master Budget 2007 in June of the same year. The document clearly shows that most short-term targets for the year 2006 have been brilliantly met, the only problems being within the two indicators of the resource "water quantity". A second consideration has to be devoted to the "courage" of the city councillors, who dared to set very ambitious targets for the year 2007, especially for the surface of green area and monitoring of waste collection. Moreover it has to be noted how for some indicators already the long-term target attainment is on a very good trend.

5.3 Budget Balance 2006 and Master Budget 2007 in Tubigon

RESOURCE	Indicators	Unit of Measure	Baseline Value (2004)	Value *(2006)*	Short term target (2006)	*Long-term target (2015)*	Short-term target evaluation	New short term targets (2007)
DRINKING WATER	Sources Positive for Colliform (out of 12 Municipal Waterworks sources)	#	4	**0**	0	0		0
			Attainment of long-term target	***100%***				
	Turbidity (Municipal Waterworks Sources meeting DOH Standard concentration for suspended solids (ntu)	#	0	**6**	6	12		9
			Attainment of long-term target	***67%***				
	Systems loss (non-revenue water [NRW])	%	60.0	**57.6**	55.0	20.0		35.0
			Attainment of long-term target	***10%***				
FOREST COVER (COASTAL ZONE)	Area Covered or Reforested	Ha	550	**553.7**	555	600		560
			Attainment of long-term target	***8%***				

RESOURCE	Indicators	Unit of Measure	Baseline Value (2004)	Value *(2006)*	Short term target (2006)	*Long-term target (2015)*	Short-term target evaluation	New short term targets (2007)
TIMBER AND FRUIT TREES	New trees planted	#	0	**4,279**	4,000	20,000		6,000
			Attainment of long-term target	***21%***				
	Survival Rate	%	0	**75**	70	70		70
			Attainment of long-term target	***over 100%***				
CORAL REEF AND SEA GRASS BEDS	Established Protected areas	#	5	**7**	7	12		9
			Attainment of long-term target	***29%***				
	Coral and Sea Grass Cover	%	40	**41**	45	70		48
			Attainment of long-term target	***3%***				

RESOURCE	Indicators	Unit of Measure	Baseline Value (2004)	Value *(2006)*	Short term target (2006)	*Long-term target (2015)*	Short-term target evaluation	New short term targets (2007)
	Established Marine Protected areas	Ha	196	**240**	222	287		260
			Attainment of long-term target	***48%***				
QUARRY MATERIALS	Unregulated quarry permits	#	50	**50**	45	0		35
			Attainment of long-term target	***0%***				
	Alternative livelihood introduced	#	0	**0**	2	6		5 (to be lobbied by SB Members) (PO Establishment)
			Attainment of long-term target	***0%***				
GOOD BUILT ENVIRONMENT	% of reduction of Solid Waste in tons/cu.m.	%	0	**49.19**	5	30		10
			Attainment of long-term target	***over 100%***				

RESOURCE	Indicators	Unit of Measure	Baseline Value (2004)	Value *(2006)*	Short term target (2006)	*Long-term target (2015)*	Short-term target evaluation	New short term targets (2007)
	Households practising segregation	%	0	**80.6**	15	98		90
			Attainment of long-term target	**90%**				

The Municipality of Tubigon has proved to have fully understood and managed the mechanisms and the goals of *eco*BUDGET system.

First of all it has to be noted that not only were 7 out of 13 short-term targets for the year 2006 reached, but also that in three cases (Sources Positive for Colliform, Survival rates of timber and fruit trees, % of reduction of Solid Waste) the long-term target has been met, long before the year 2015! This proves how *eco*BUDGET can be used to analyse the needs and challenges of a local authorities, comparing them also with the perception of media and citizens. This is especially true in a place like Tubigon, where targets setting has been continuously managed through a fully participatory methodology involving villages, associations, experts and politicians.

The only two serious problems regarding the meeting of annual targets have been shown within the system loss of the drinking water system, the coral and sea grass cover, the unregulated quarry permits and the alternative livelihoods introduced. Nevertheless even for these four indicators the administration could convince the city council to approve even more ambitious targets for the year 2007. We will see at the beginning of 2008, if this courageous decision will have proved to be the right one.

ANNEX 6: LIST OF PARTICIPANTS IN PINTAR TRAINING CONDUCTED AT MGTC BY ICLEI ON 17TH AUGUST 2016

SENARAI KEHADIRAN AHLI MESYUARAT

BENGKEL *TRAINING AND HANDS ON EXPLORATION OF GREEN CITY INDICATOR AND BENCHMARK SYSTEM*

TARIKH : 17 OGOS 2016 (RABU)
MASA : 10.30 PAGI
TEMPAT : BILIK MESYUARAT UTAMA
PERBADANAN TEKNOLOGI HIJAU MELAKA

NO.	NAMA	JAWATAN	JABATAN	NO. TEL/HP/E-MAIL	TANDATANGAN
1	SHAHIRA BINTI SHAHRIL	PEGAWAI PENYELIDIK	PANORAMA MELAKA	012-6043193 shahira_shahril@gmail.com	
2	FARAH WAHIDA MOHD ZABIDI	PSU	UPEN	06-2307366 farahwahida@melaka.gov.my farah_fwmz@yahoo.com	
3	HAYATI HAFIZAH MOHD JAAFAR	PSU	UPEN	06-2307596 hafizah@melaka.gov.my teknologihijauupen@gmail.com	
4	LOKMAN BIN MD GHANI	PEN. JURUTERA	JPJ.	06-2328411 lokman.ghani@jpj.gov.my	
5	ARIS HARUN	~~MARA~~ P. PENYELIA	MOXA LINER	012-2839176	
6	NORDIANA BT. ABU SAMAH	PEN-PEG-PERANCANG BANDAR	JPBD MELAKA	06-3333333 inpirasi_diana@yahoo.com	
	Radhi Robi	Pen. Peg. II	PTHM	232 3591	

SENARAI KEHADIRAN AHLI MESYUARAT

BENGKEL *TRAINING AND HANDS ON EXPLORATION OF GREEN CITY INDICATOR AND BENCHMARK SYSTEM*

TARIKH : 17 OGOS 2016 (RABU)
MASA : 10.30 PAGI
TEMPAT : BILIK MESYUARAT UTAMA
PERBADANAN TEKNOLOGI HIJAU MELAKA

NO.	NAMA	JAWATAN	JABATAN	NO. TEL/HP/E-MAIL	TANDATANGAN
7	NORLIAH ABD. RAHMAN	PEGAWAI PERANCANG	MBMB	012-7607497	[signature]
8	NOSORA MOHD. JADI	PEN. PEG. KAWALAN KANAN ALAM SEKITAR	JAS	017-614 2900 nmj@doe.gov.my	[signature]
9	Emani. B.V. Kumar	ICLEI - South Asia	ICLEI	+91-9810544035	[signature]
10	Soumya Chaturvedula	ICLEI - South Asia	ICLEI	+91-9866168713.	[signature]
11	ELINA MAZUIN BINTI MAZUDIN	JURUTERA	PTHM	017-6726472 ~~[illegible]~~	[signature]
12	Mohd Hafizan Mustaffa	~~PTHM~~ Pengurus Projek	PTHM	0196856229	[signature]
	Nuriana Zainul Adnan	Jurutera	PTHM	Samb. 5249	

ANNEX 7: PINTAR TRAINING PRESENTATION USED IN THE TRAINING WORKSHOP ON 17TH AUGUST 2016 AND 19TH AUGUST 2016.

PINTAR Tool(s) for Melaka

Emani B V Kumar

Deputy Secretary General, ICLEI

Soumya Chaturvedula

Programme Coordinator

ICLEI – Local Governments for Sustainability, South Asia

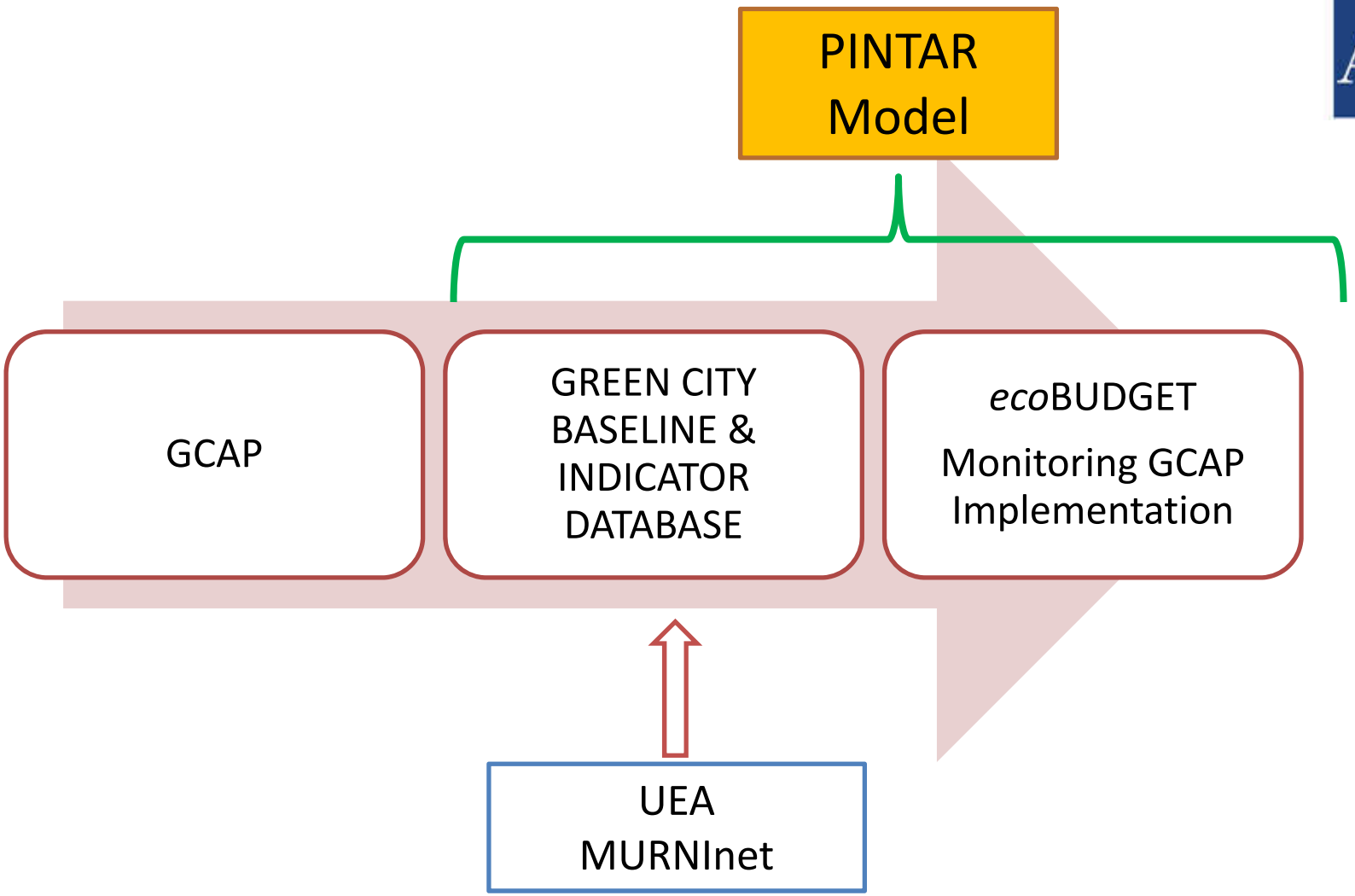
Scope of Work

- Developing a baseline database and indicators for benchmarking GCAP implementation in Melaka state
- Developing a simple customized computer-based tool (s)
- Developing a methodology for its use and sustenance
- Providing hands-on training to its users and city authorities to understand the methodology and application of the tool
- Formulating a plan to develop and make more comprehensive the coverage of this tool

PINTAR Tool(s)

- Simple customized computer-based tools
- Assess the implementation of the Green City Action Plan by measuring performance
- Analysis of the outputs of the tools will enhance decision making and result in enhancing the efficiency of implementation of GCAP

PINTAR Tool(s)



Methodology

- Development of a database to capture information from GCAP sectors to establish a valid baseline in the State
- Develop valid indicators for assessing progress in implementation of the GCAP
  - MurniNET indicators
  - GCAP targets
  - UEA indicators

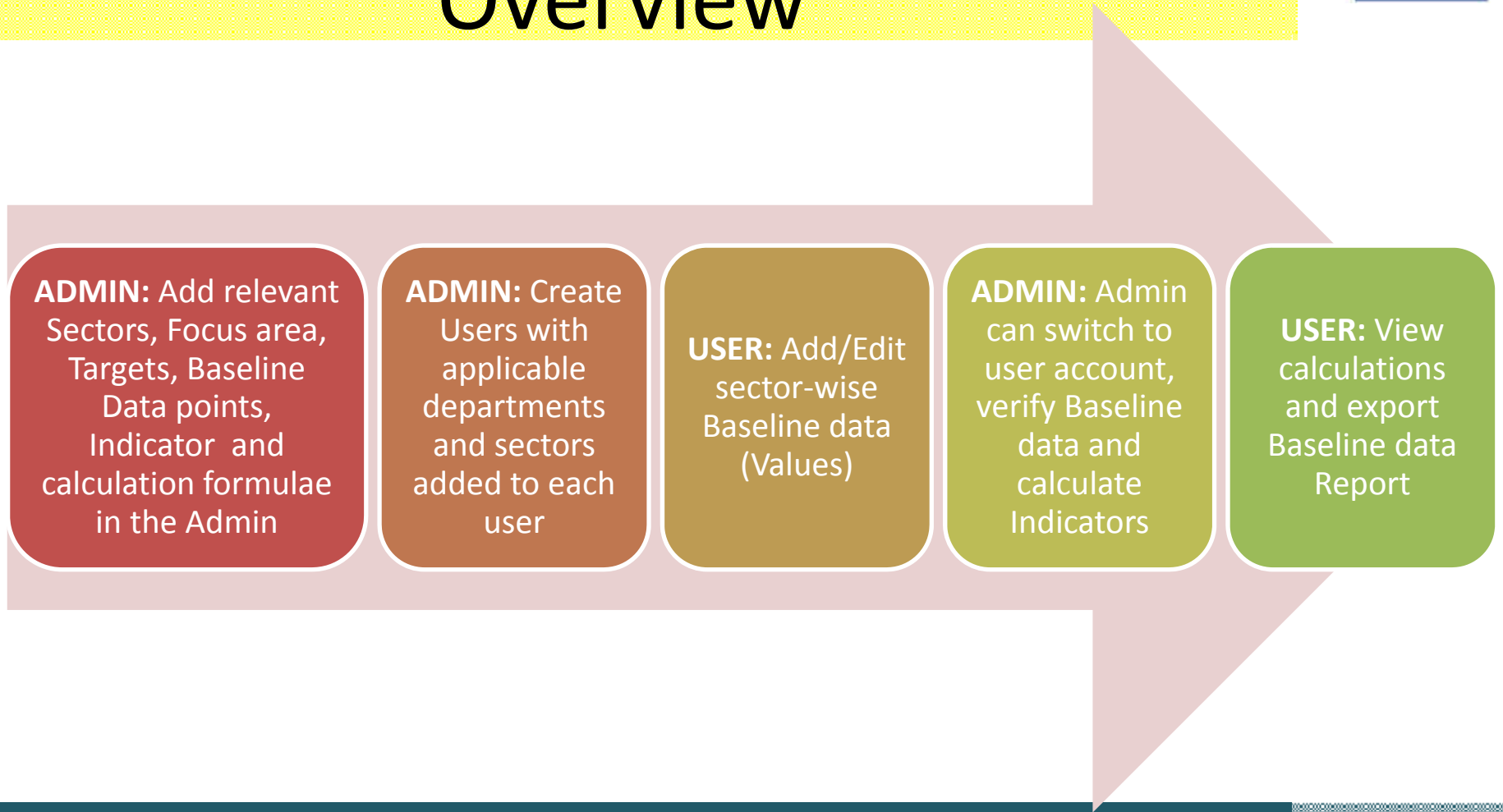
- Monitor achievement of targets through *eco*BUDGET process

Green City Baseline & Indicator System

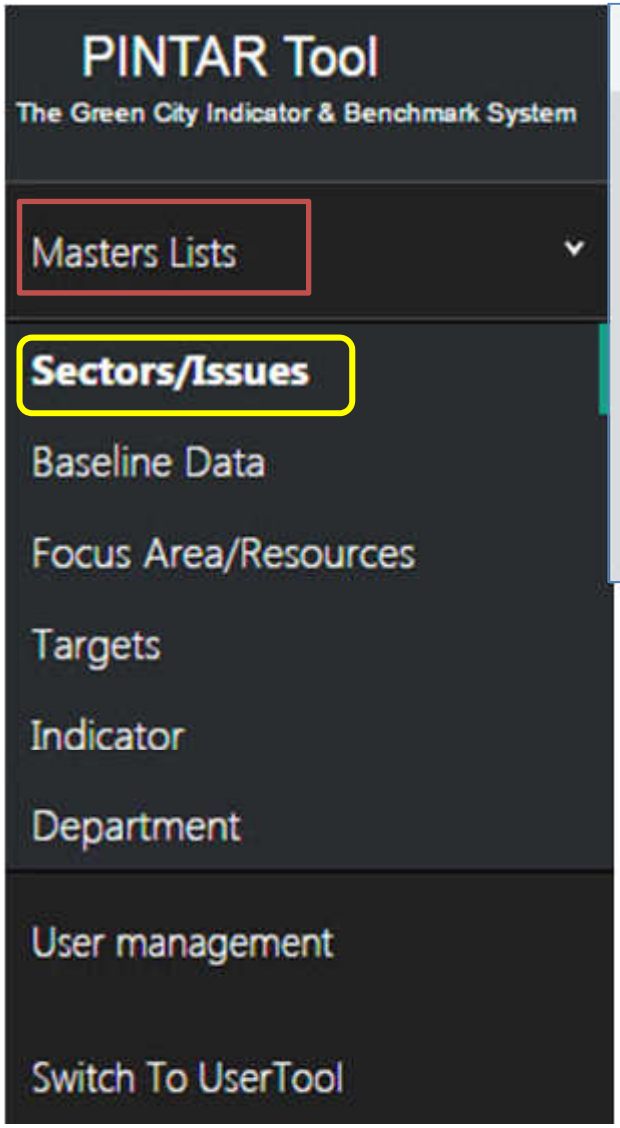
GCAP sectors and sample Actions

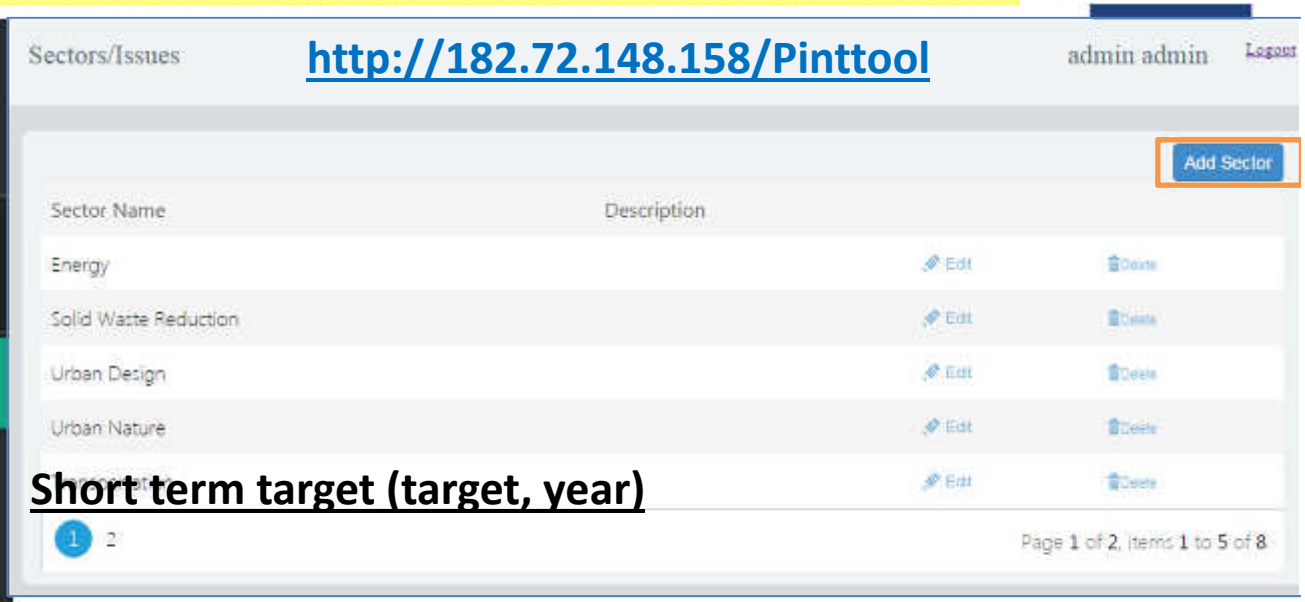
Sector	Focus Area	Actions	Indicators
Energy	Energy Efficiency	Reduce electricity consumption by 10% by 2020	Percentage reduction in electricity consumption
Solid waste Reduction	Reduction in Waste Generation	Reducing the quantity of hazardous waste at least by 50% by 2020	Percentage reduction in hazardous waste generated
Urban Design	Green Building	All new government buildings meet green building norms	Percentage of new government buildings following green building norms
Urban Nature	Tree Canopy	Increase in Percentage Coverage of tree Planting by 50%	Increase in percent over of tree planting over 2017 baseline
Transportation	Percentage of fleet based on clean fuel	Increase in percentage of clean fuel buses to 50% of total fleet by 2020	Increase in percentage of clean fuel buses
Environmental Health	Air quality	Number of days categorized as unhealthy/hazardous reduced by 75% by 2022	Percent reduction in Number of days categorized as unhealthy/hazardous
Water	Potable Water Conservation	Percentage of new buildings with Rain Water Harvesting Systems (100% by 2020)	Percentage of new buldings with Rain Water Harvesting Systems
Cultural heritage & Tourism	Conservation of private properties in the heritage zone	Percentage of private properties addressed through conservation efforts (target: 100%)	Percentage of private properties addressed through conservation efforts

Green City Indicator & Benchmark System Overview



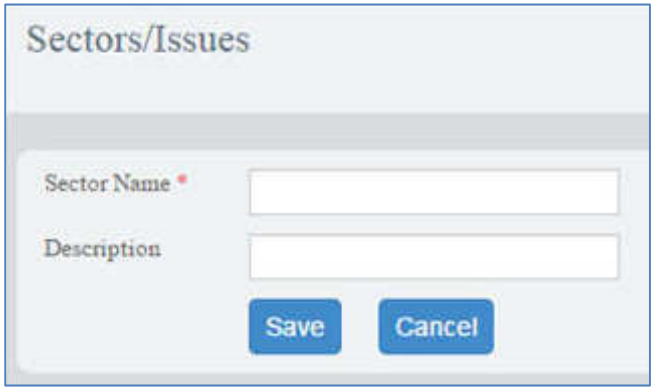
Admin - Masters



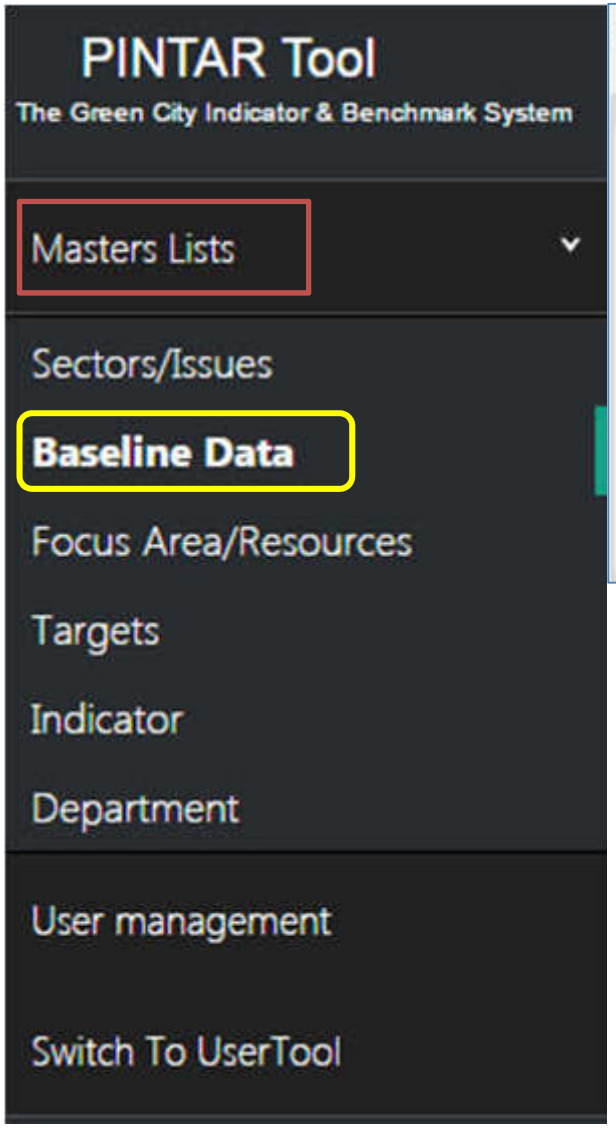


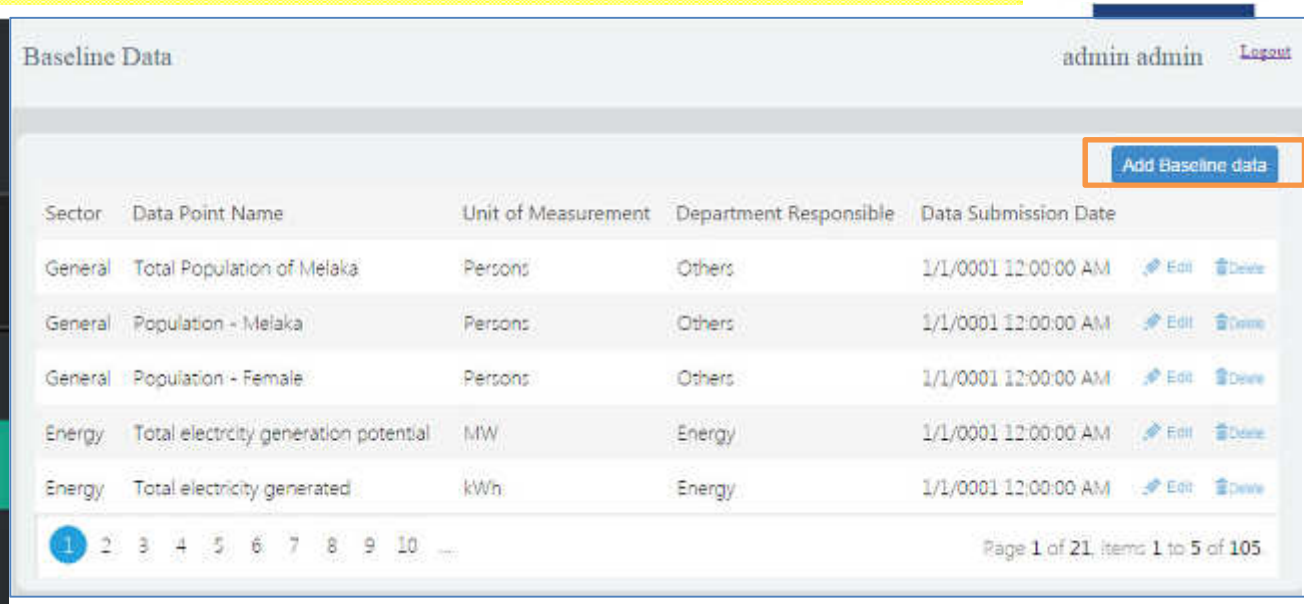
Short term target (target, year)

Add/Edit sector

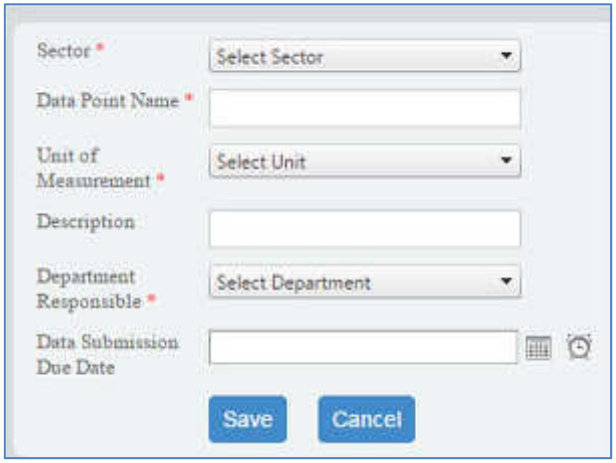


Admin - Masters

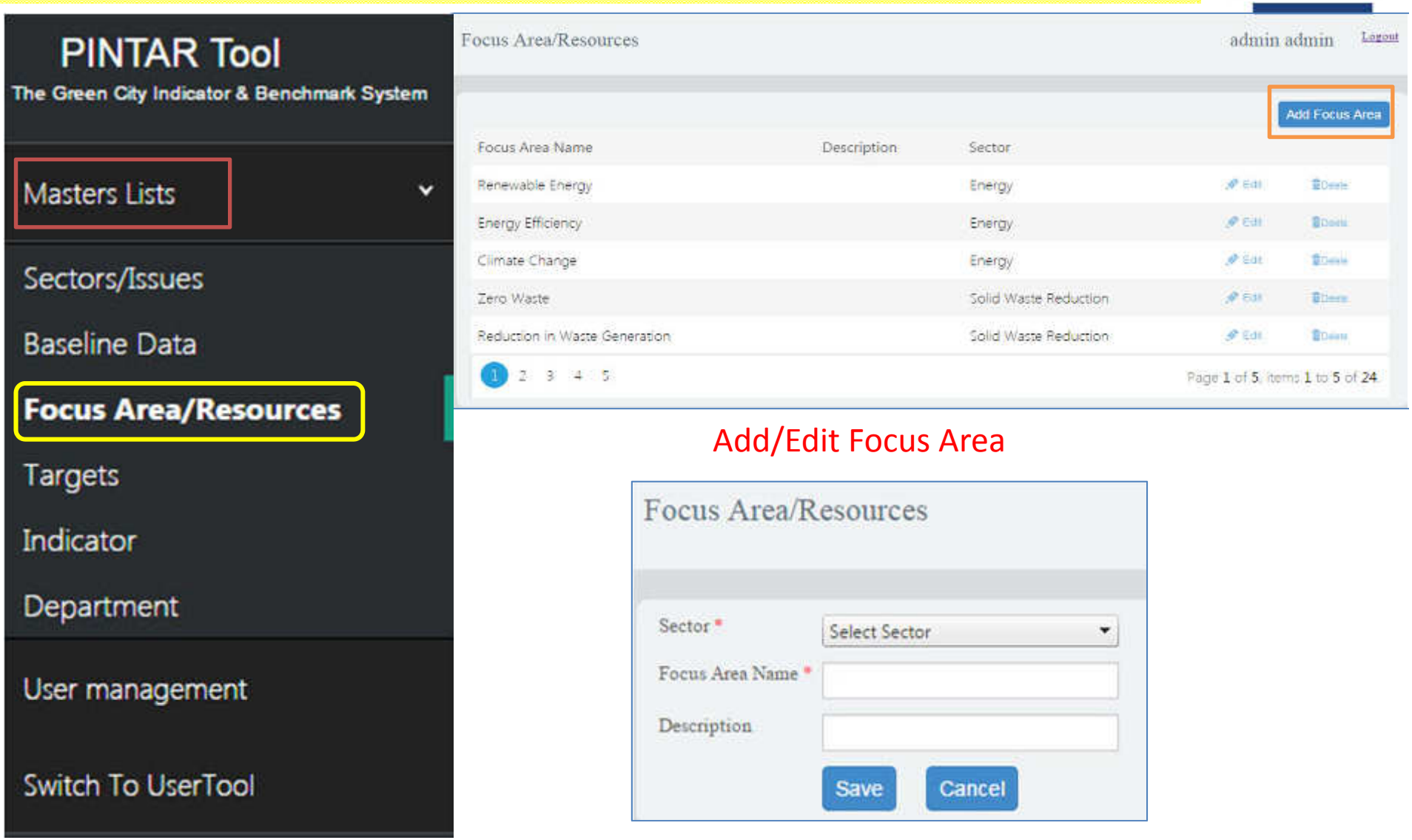




Add/Edit Baseline data

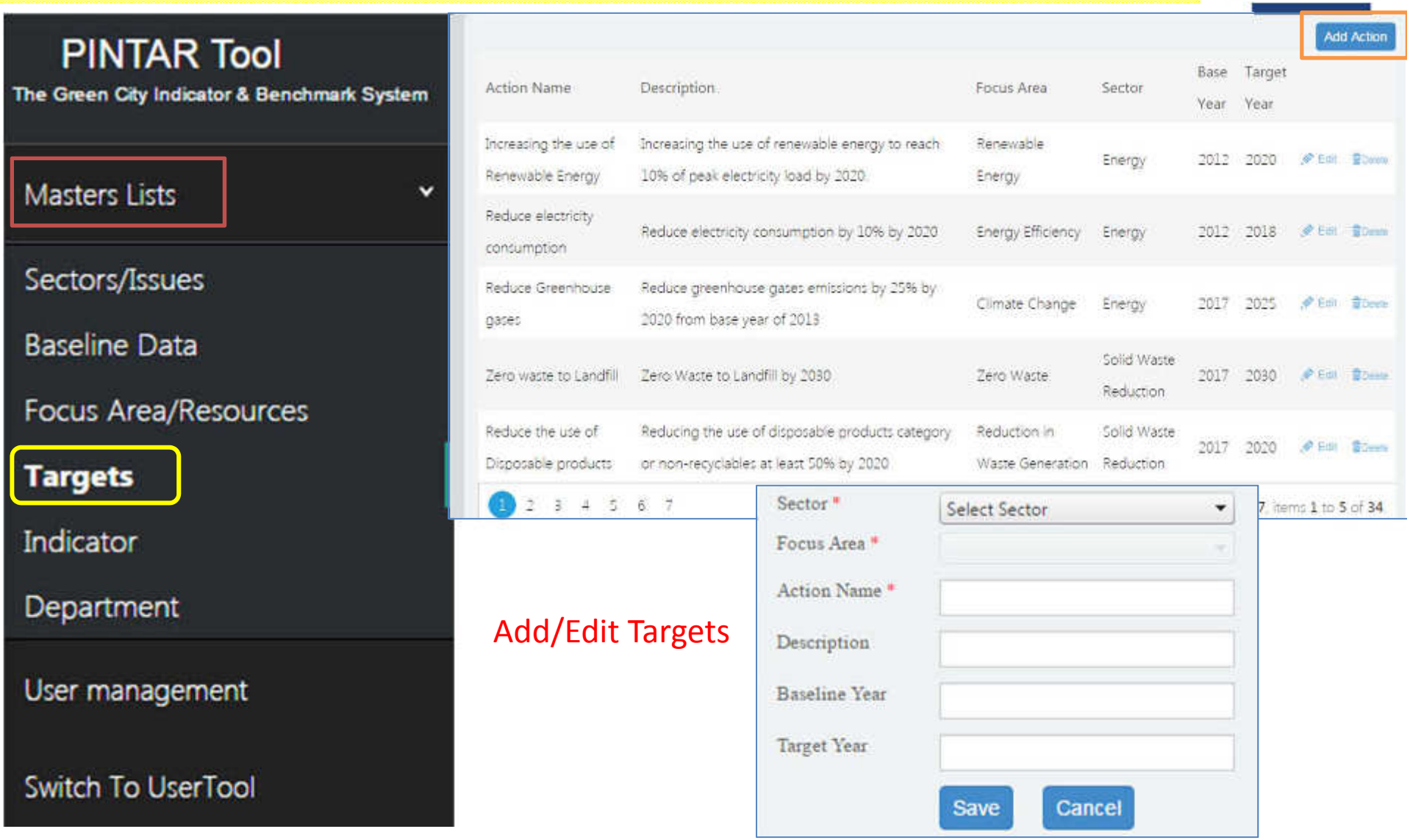


Admin - Masters



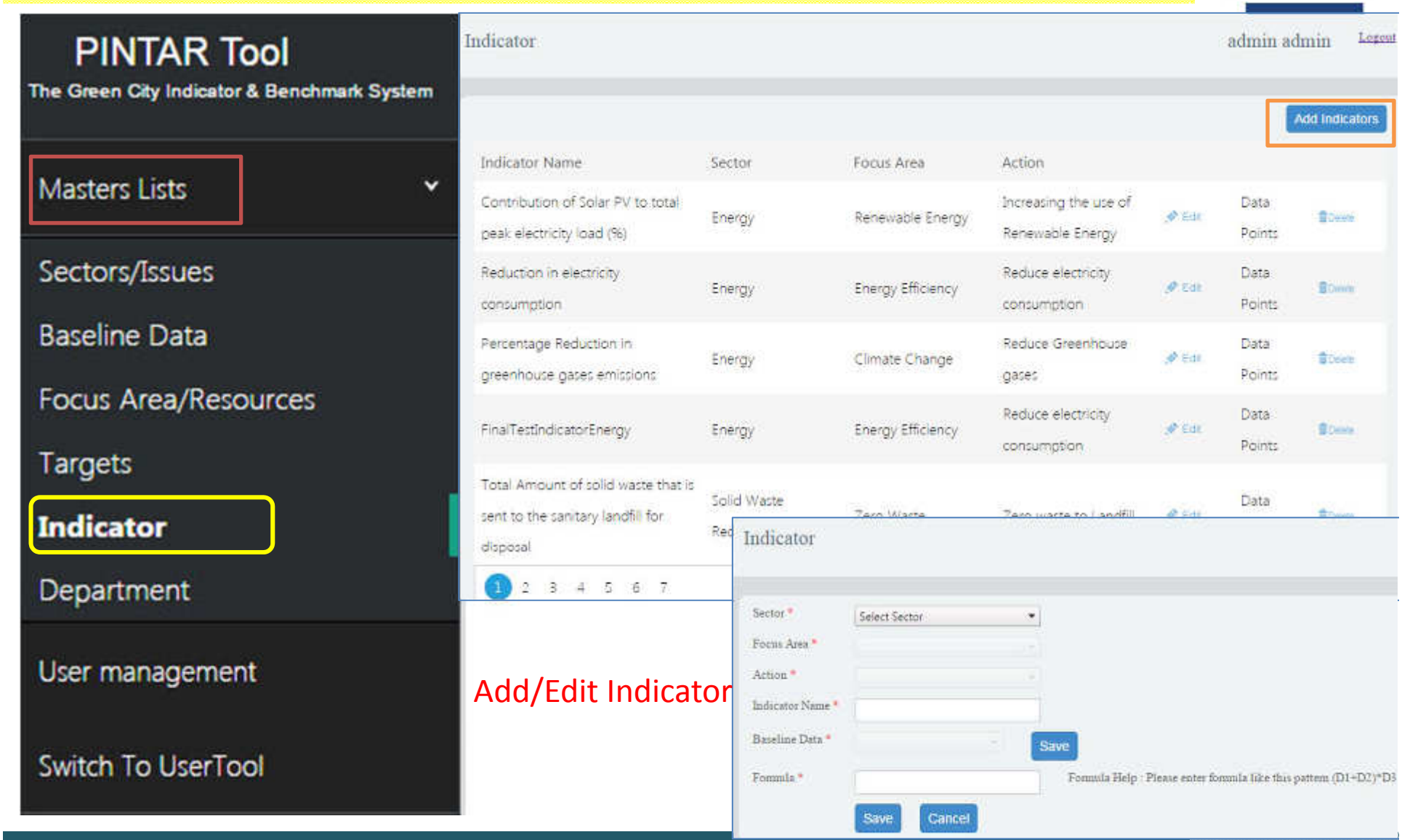
Add/Edit Focus Area

Admin - Masters

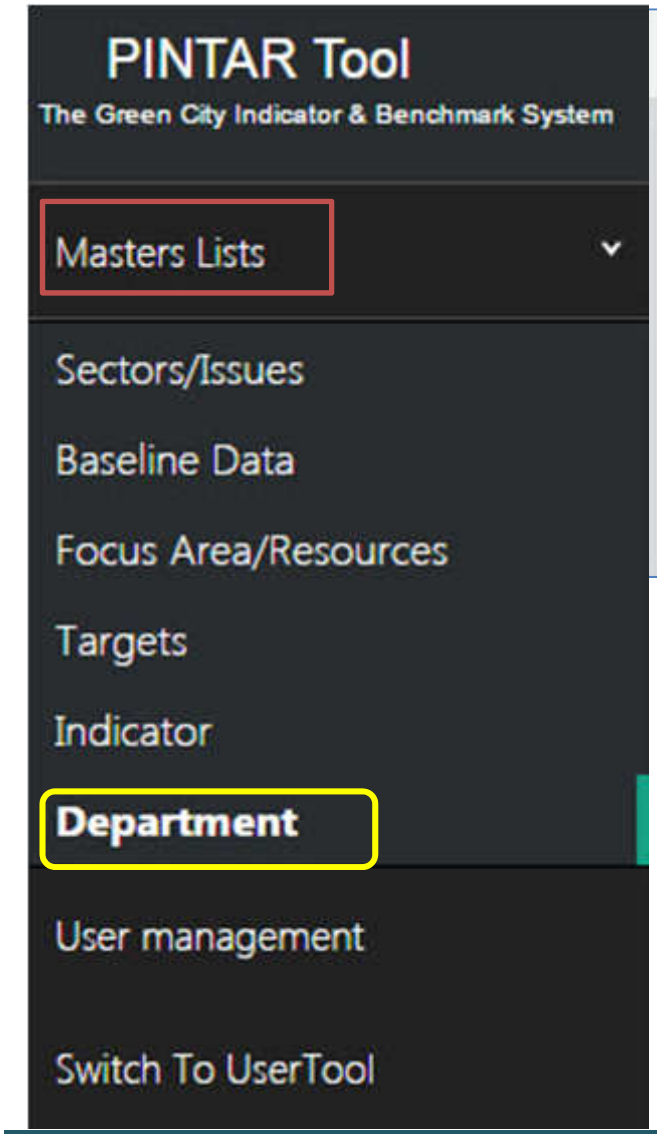


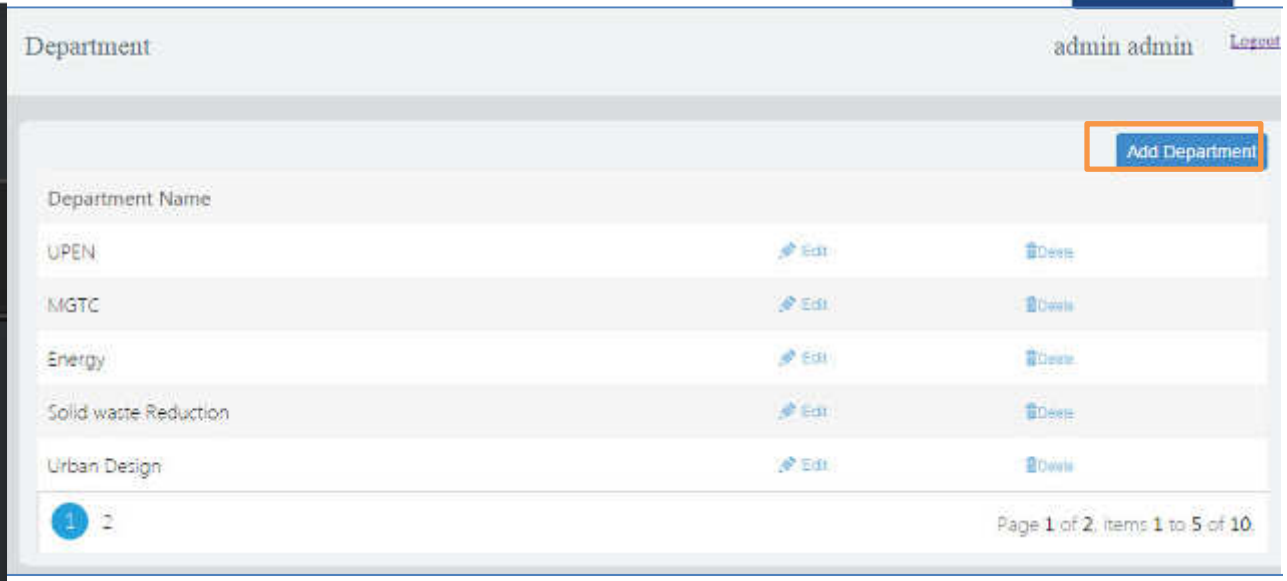
Add/Edit Targets

Admin - Masters

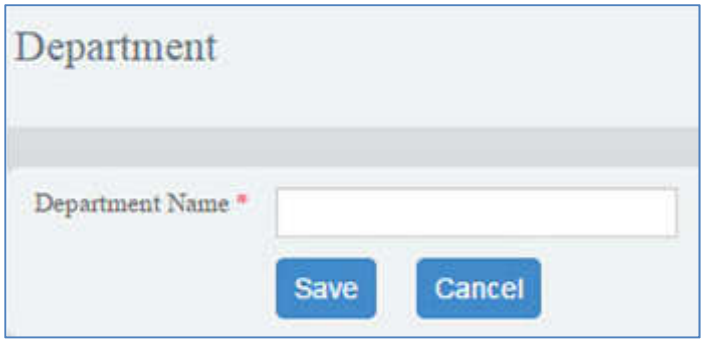


Admin - Masters

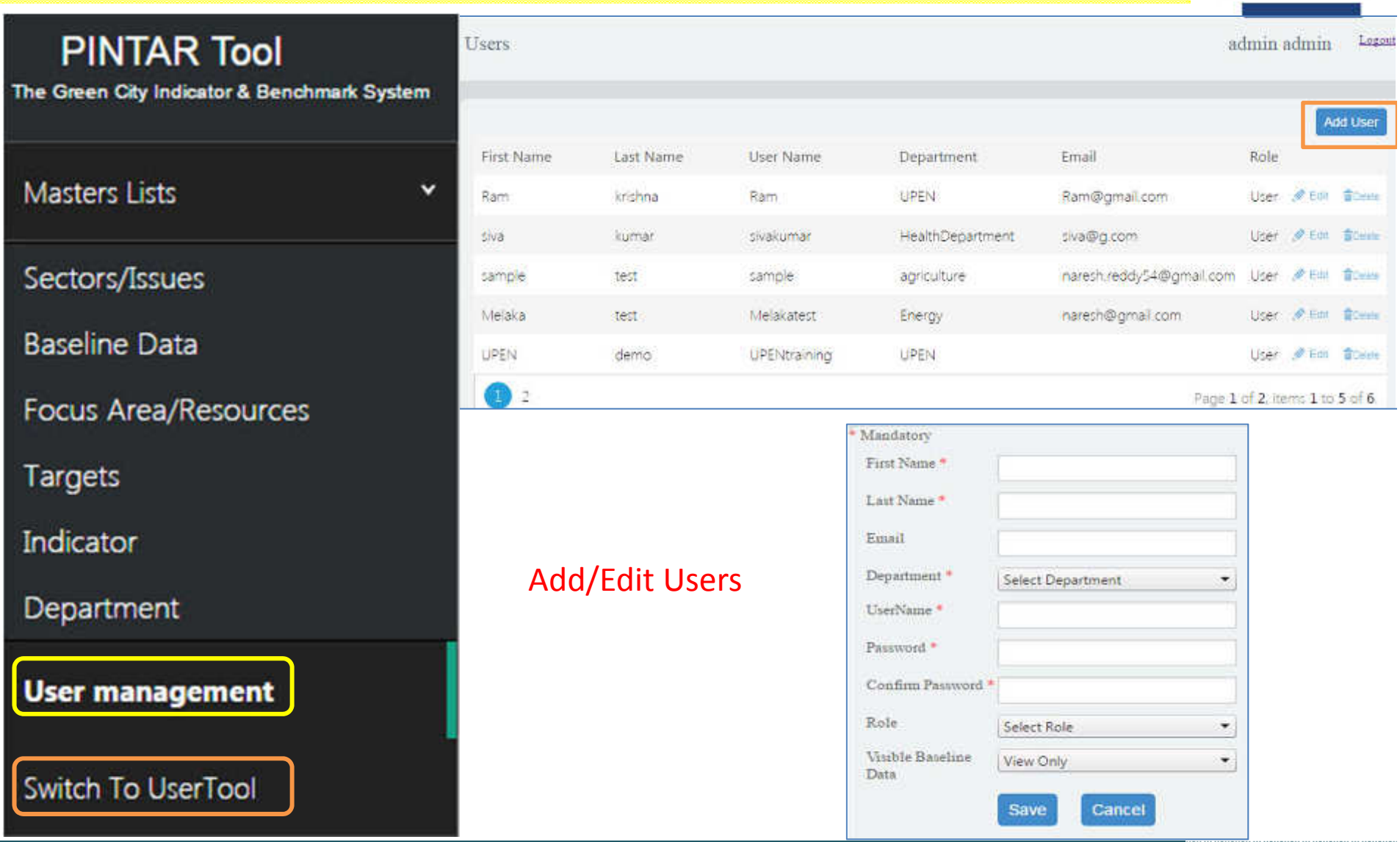




Add/Edit Department

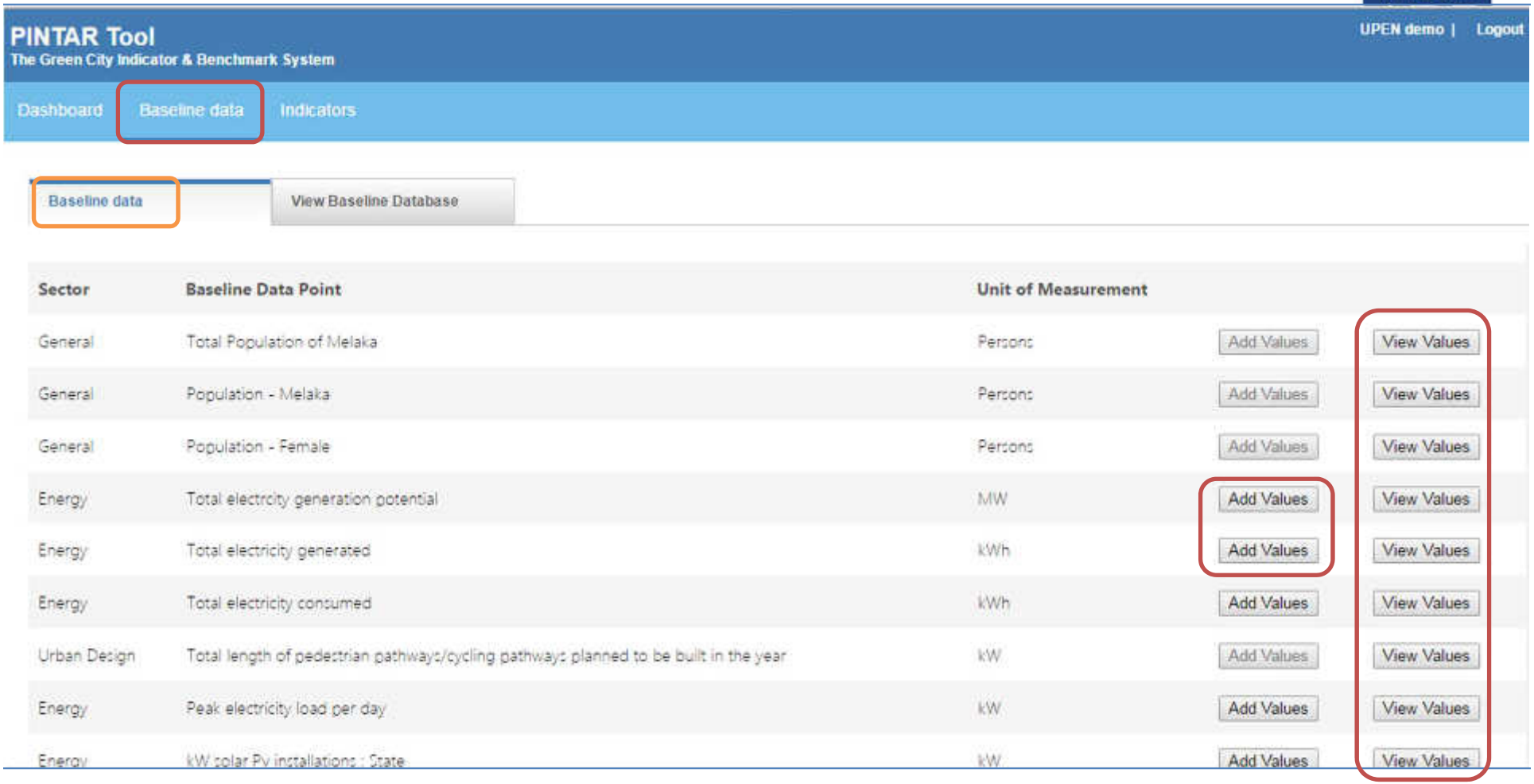


Admin – User Management

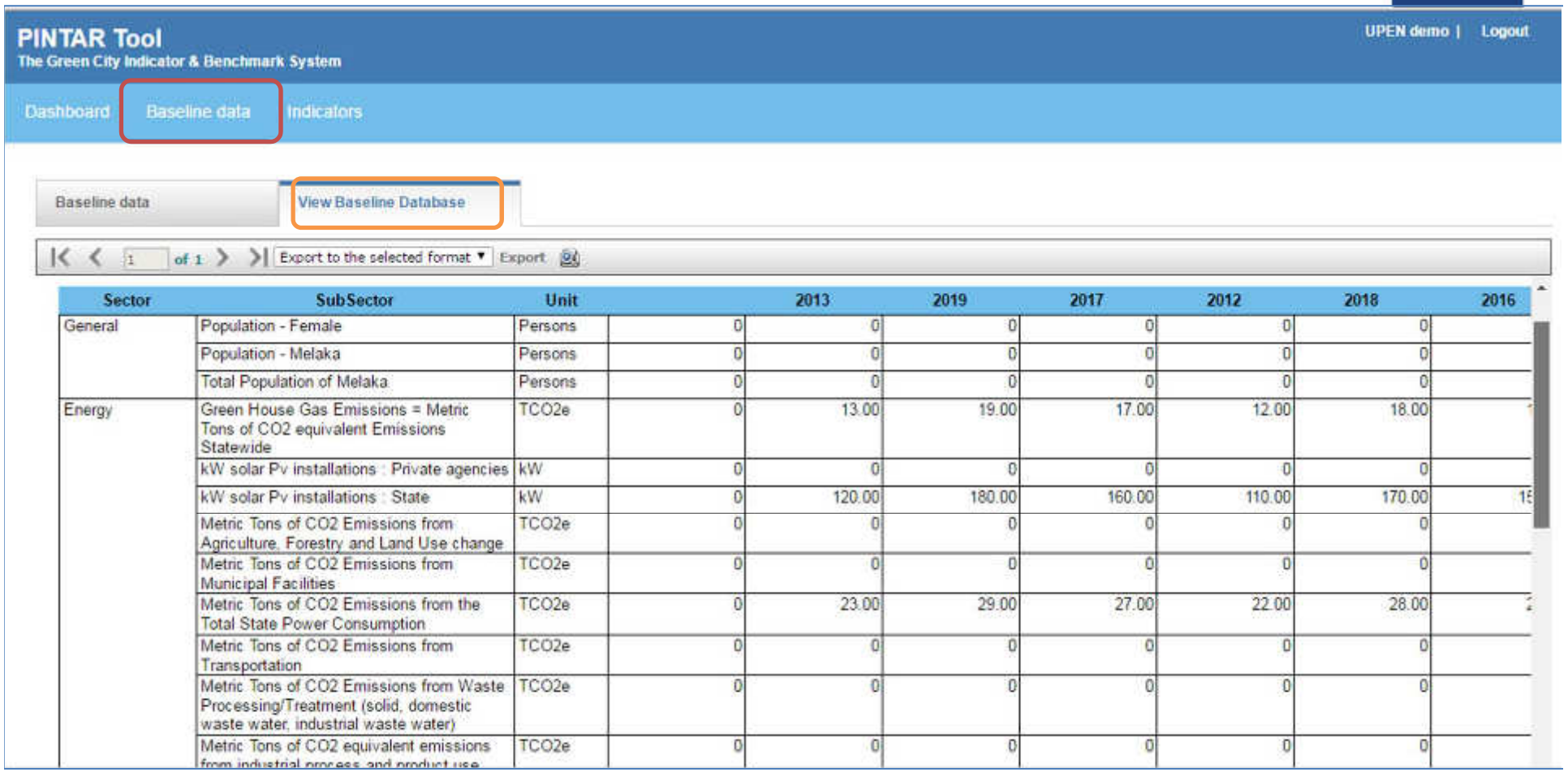


Add/Edit Users

User – Add/View Baseline data



User – Baseline data Report



Sector	SubSector	Unit		2013	2019	2017	2012	2018	2016
General	Population - Female	Persons	0	0	0	0	0	0	
	Population - Melaka	Persons	0	0	0	0	0	0	
	Total Population of Melaka	Persons	0	0	0	0	0	0	
Energy	Green House Gas Emissions = Metric Tons of CO2 equivalent Emissions Statewide	TCO2e	0	13.00	19.00	17.00	12.00	18.00	
	kW solar Pv installations : Private agencies	kW	0	0	0	0	0	0	
	kW solar Pv installations : State	kW	0	120.00	180.00	160.00	110.00	170.00	
	Metric Tons of CO2 Emissions from Agriculture, Forestry and Land Use change	TCO2e	0	0	0	0	0	0	
	Metric Tons of CO2 Emissions from Municipal Facilities	TCO2e	0	0	0	0	0	0	
	Metric Tons of CO2 Emissions from the Total State Power Consumption	TCO2e	0	23.00	29.00	27.00	22.00	28.00	
	Metric Tons of CO2 Emissions from Transportation	TCO2e	0	0	0	0	0	0	
	Metric Tons of CO2 Emissions from Waste Processing/Treatment (solid, domestic waste water, industrial waste water)	TCO2e	0	0	0	0	0	0	
	Metric Tons of CO2 equivalent emissions from industrial process and product use	TCO2e	0	0	0	0	0	0	

User – Indicators

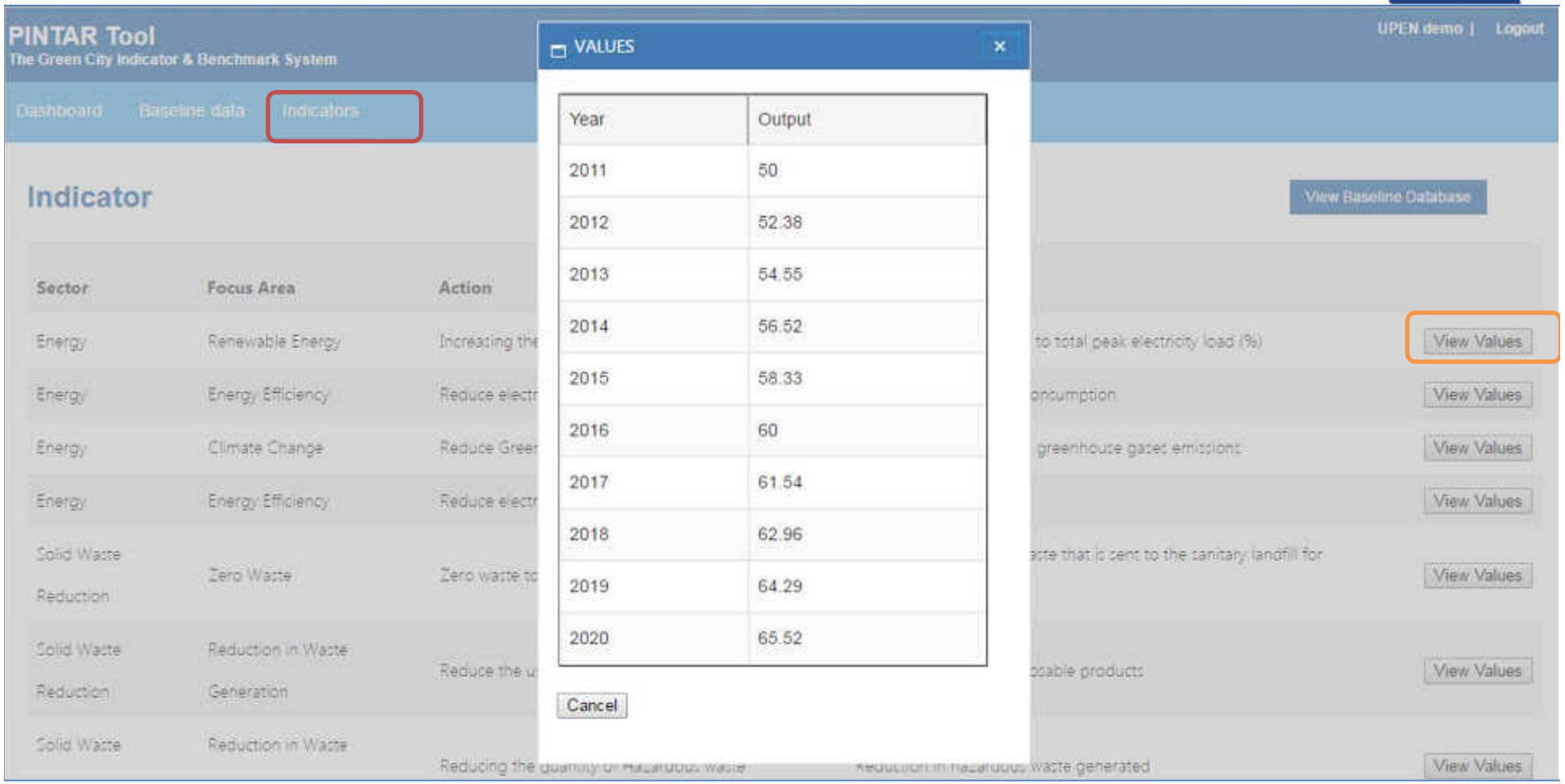
Dashboard | Baseline data | Indicators

Indicator

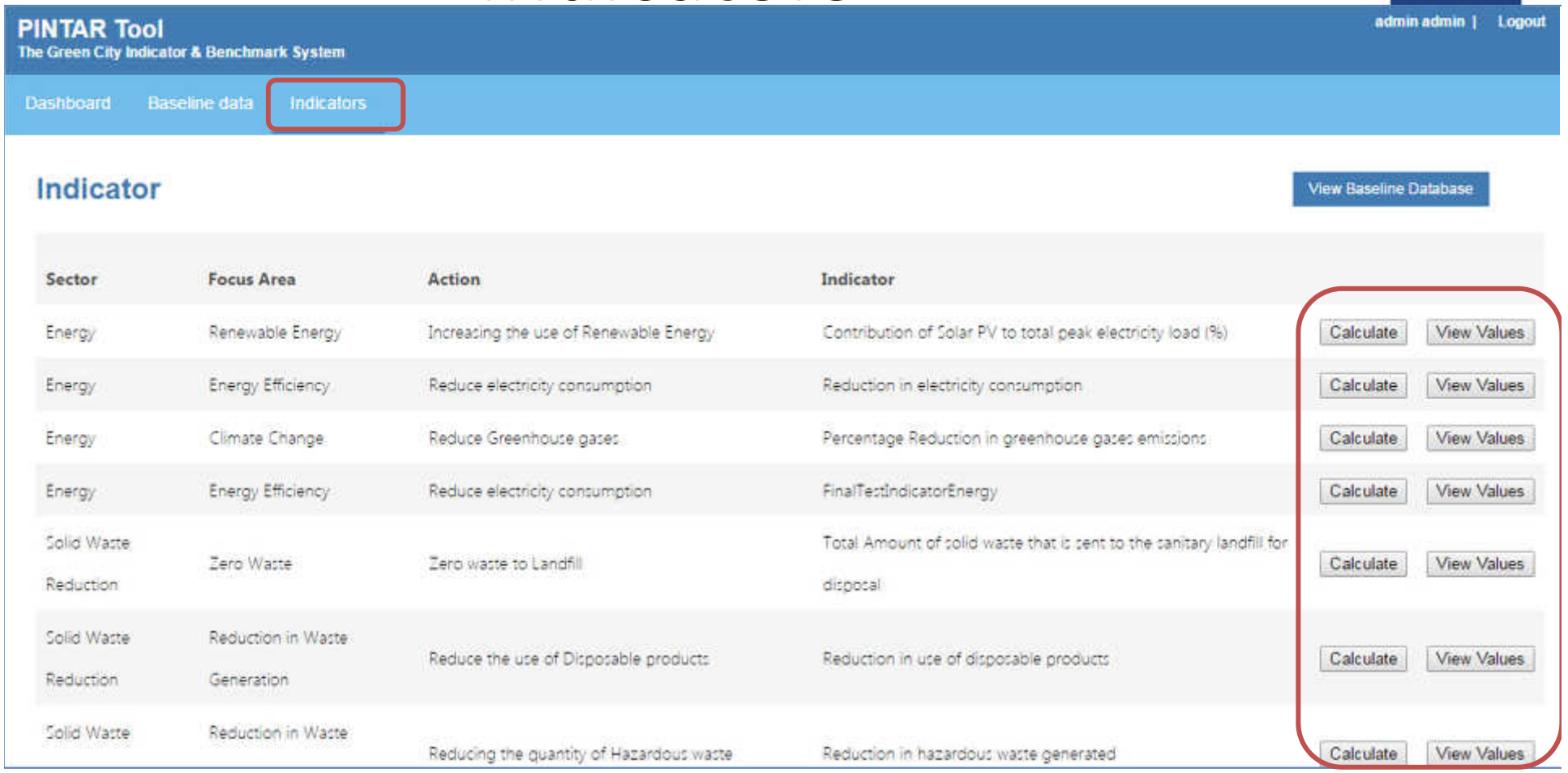
View Baseline Database

Sector	Focus Area	Action	Indicator	
Energy	Renewable Energy	Increasing the use of Renewable Energy	Contribution of Solar PV to total peak electricity load (%)	View Values
Energy	Energy Efficiency	Reduce electricity consumption	Reduction in electricity consumption	View Values
Energy	Climate Change	Reduce Greenhouse gases	Percentage Reduction in greenhouse gases emissions	View Values
Energy	Energy Efficiency	Reduce electricity consumption	FinalTestIndicatorEnergy	View Values
Solid Waste Reduction	Zero Waste	Zero waste to Landfill	Total Amount of solid waste that is sent to the sanitary landfill for disposal	View Values
Solid Waste Reduction	Reduction in Waste Generation	Reduce the use of Disposable products	Reduction in use of disposable products	View Values
Solid Waste Reduction	Reduction in Waste Generation	Reducing the quantity of Hazardous waste	Reduction in hazardous waste generated	View Values
Solid Waste			Reduction in amount of solid waste sent to sanitary landfill for	

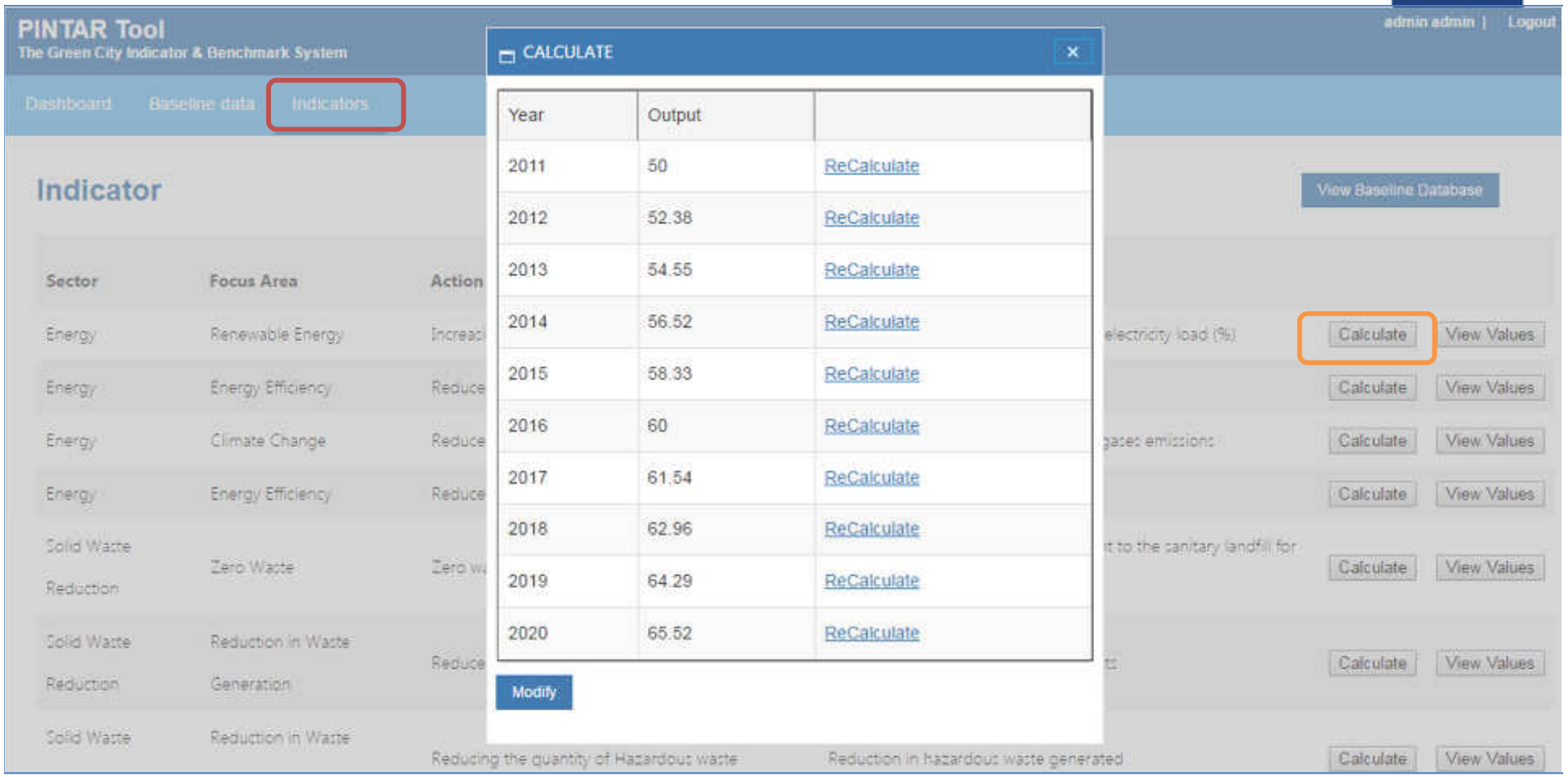
User – View calculated Indicators



Admin – View/Calculate Indicators

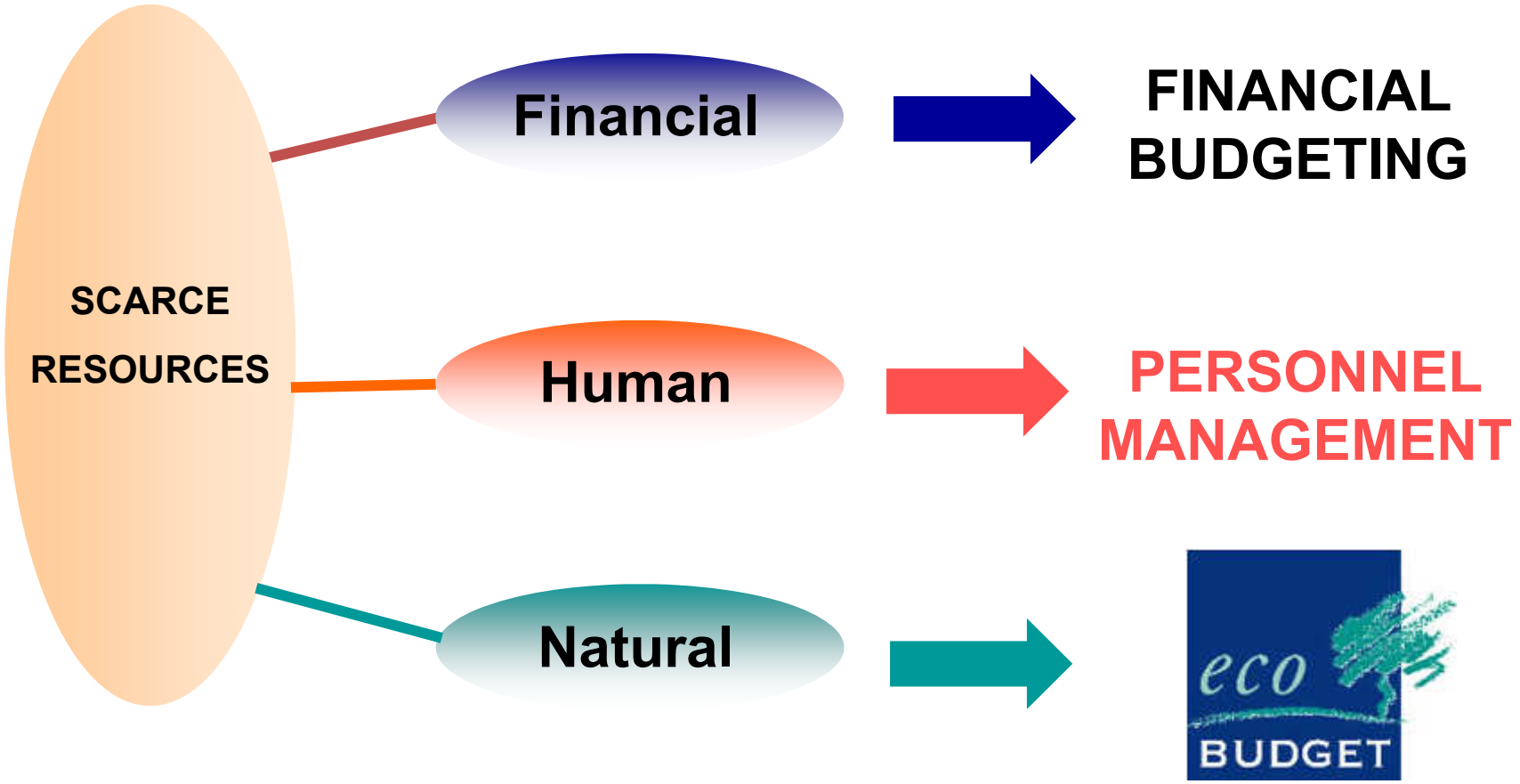


Admin – Calculate/Recalculate Indicators



*eco*BUDGET
The Environmental Resource Budgeting Tool

Managing Resources



*eco*BUDGET – Monitor GCAP Implementation

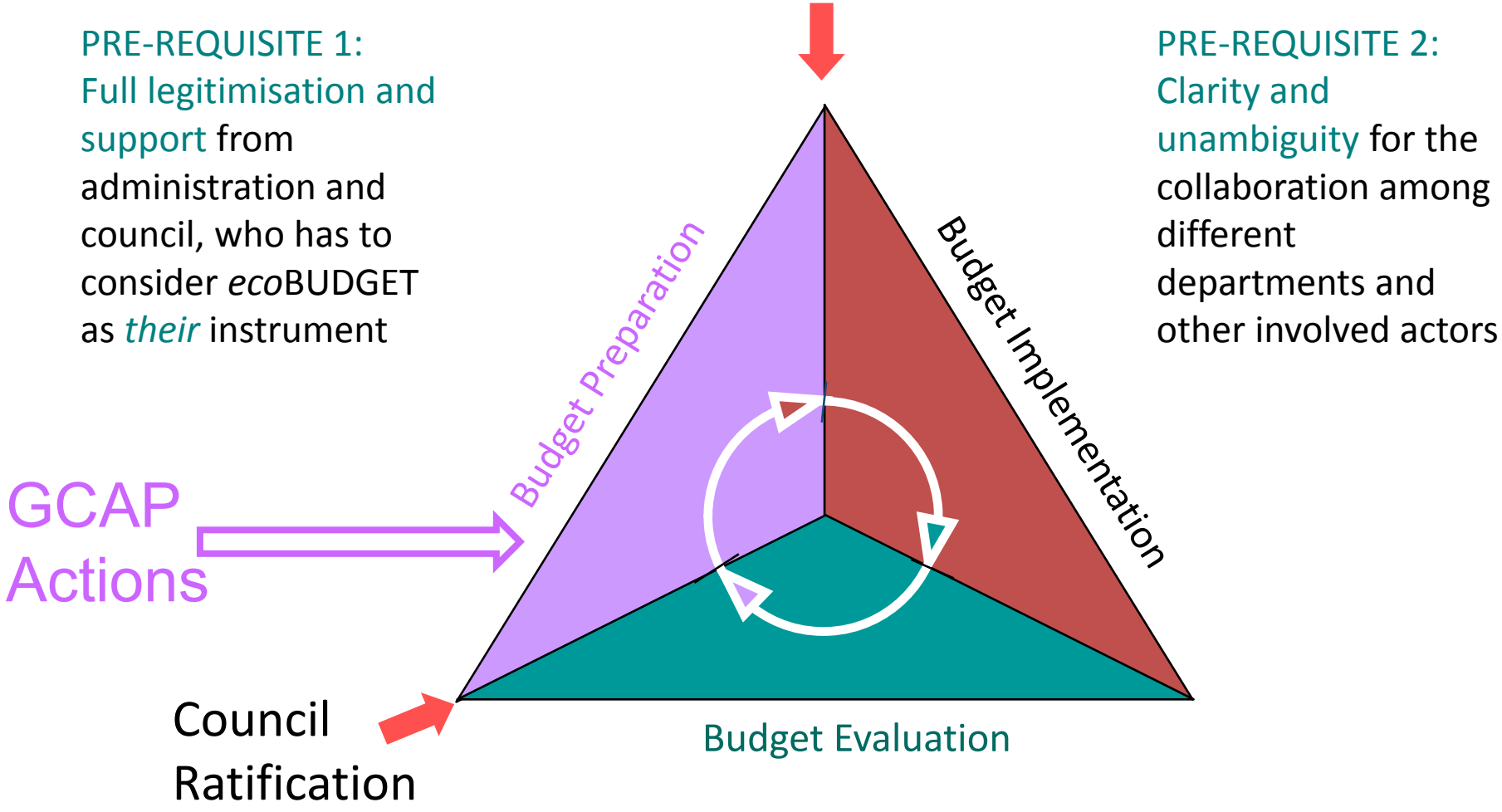
- Environmental management system
- To assess, plan, monitor and report the utilization of natural resources
- System applied to the whole territory and the whole community
- Imitation of the financial budget - No monetary values
- Based on natural resources and environmental indicators
- Targets set environmental budgetary limits

*eco*Budget Process Overview

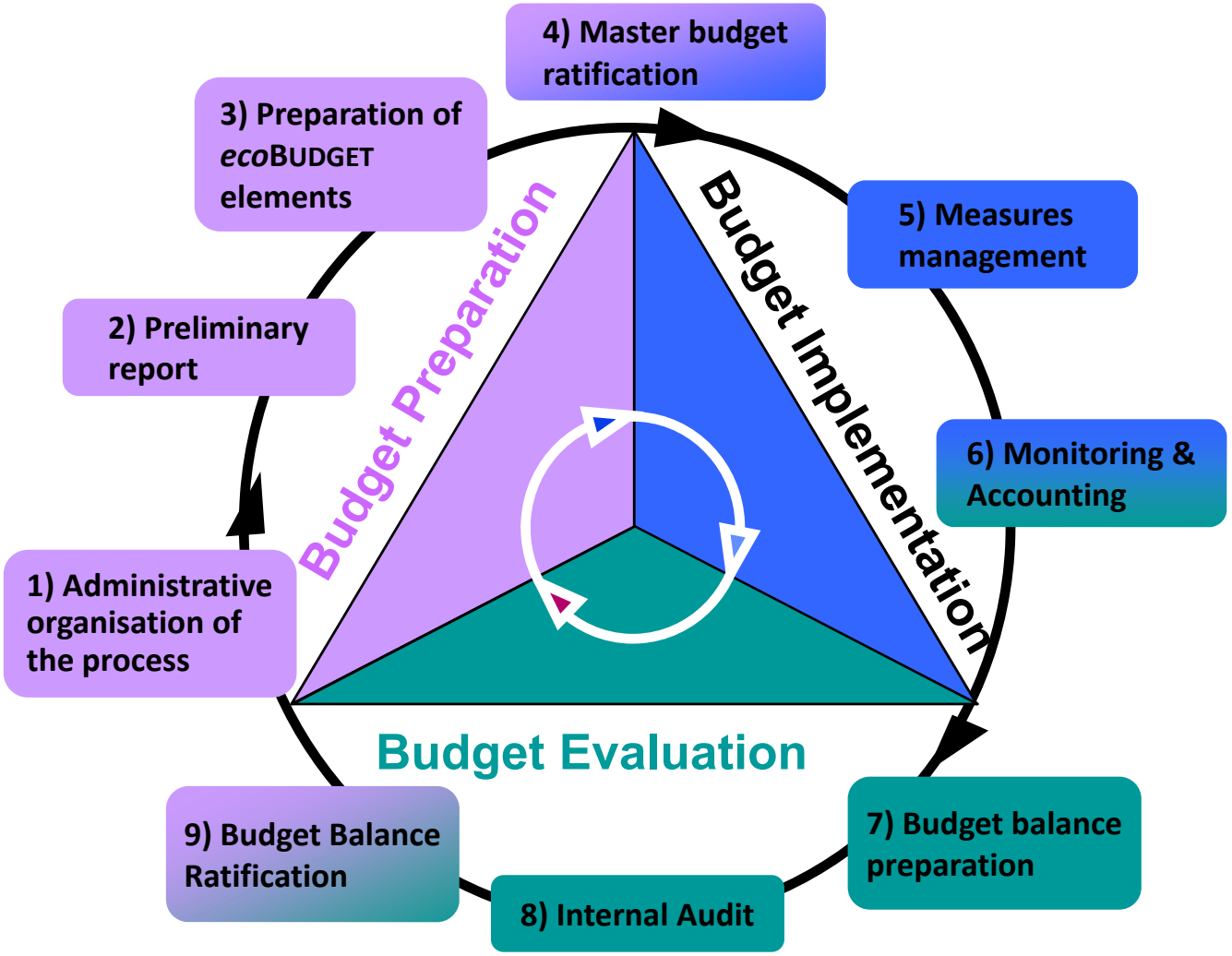
Council Ratification

PRE-REQUISITE 1:
Full legitimisation and support from administration and council, who has to consider *eco*BUDGET as *their* instrument

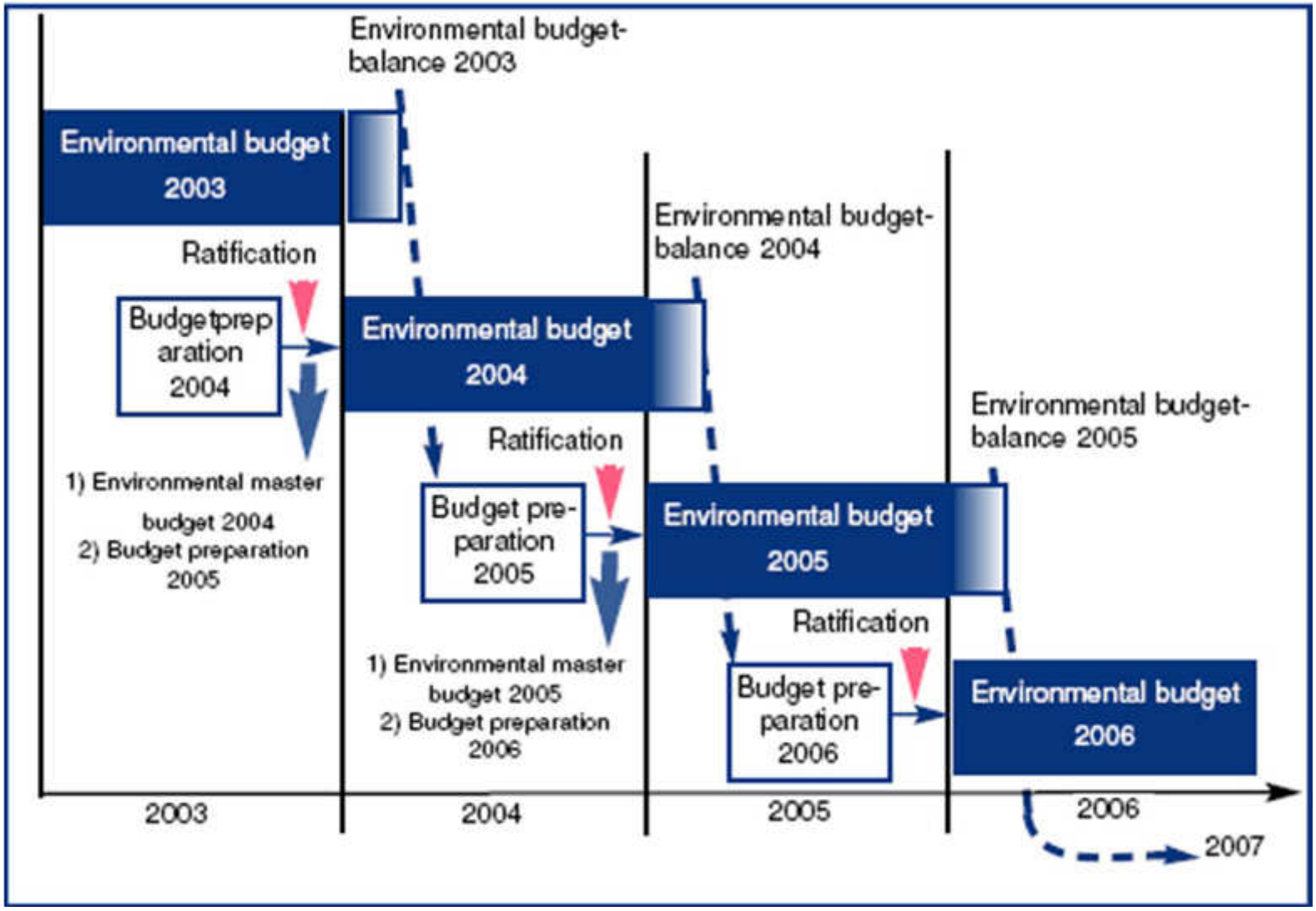
PRE-REQUISITE 2:
Clarity and unambiguity for the collaboration among different departments and other involved actors



The *eco*BUDGET Planning Cycle



The *eco*BUDGET Planning Cycle

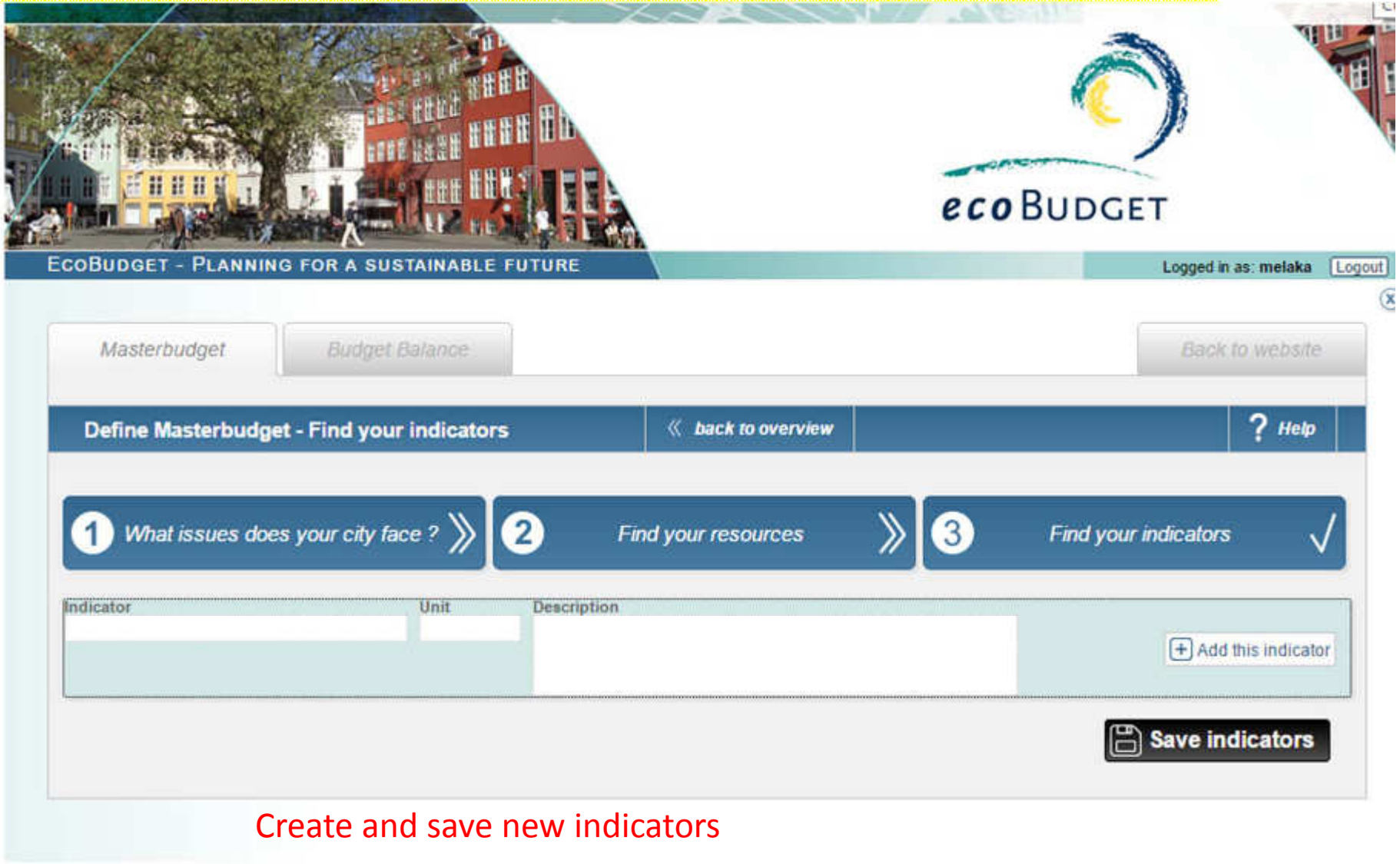


How to use the webcenter

url: webcenter.ecobudget.org
Username: melaka
Password: melaka

Create and edit Master Budget

Define Master Budget



Create and save new indicators

Change/add resources/indicators

Environmental Issues	Resources	Indicators
Energy	Renewable Energy	Contribution of RE to electricity consumption
	Energy Efficiency	Energy consumption for street lighting
	Climate Change	Reduction in GHG Emissions
Environmental Health	Air Quality	Reduction in umber of bad air quality/haze days
	Environmental Toxins	Quantity of malathion/diesel used for fogging operations
Urban Planning	Open Space	Percent area of open space accessible to citizens
Solid Waste	Recyclables	Reduction in amount of solid waste going to landfills for disposal
Transportation	Bicycle lanes	Increase in coverage of bicycle lanes

Correlation: *eco*BUDGET – Baseline & Indicator Database

*eco*BUDGET		Baseline & Ind. Database
Issue	⟺	Sector
Resources		Focus Area
Long term/ Short term Targets		Actions
Indicators		Indicators

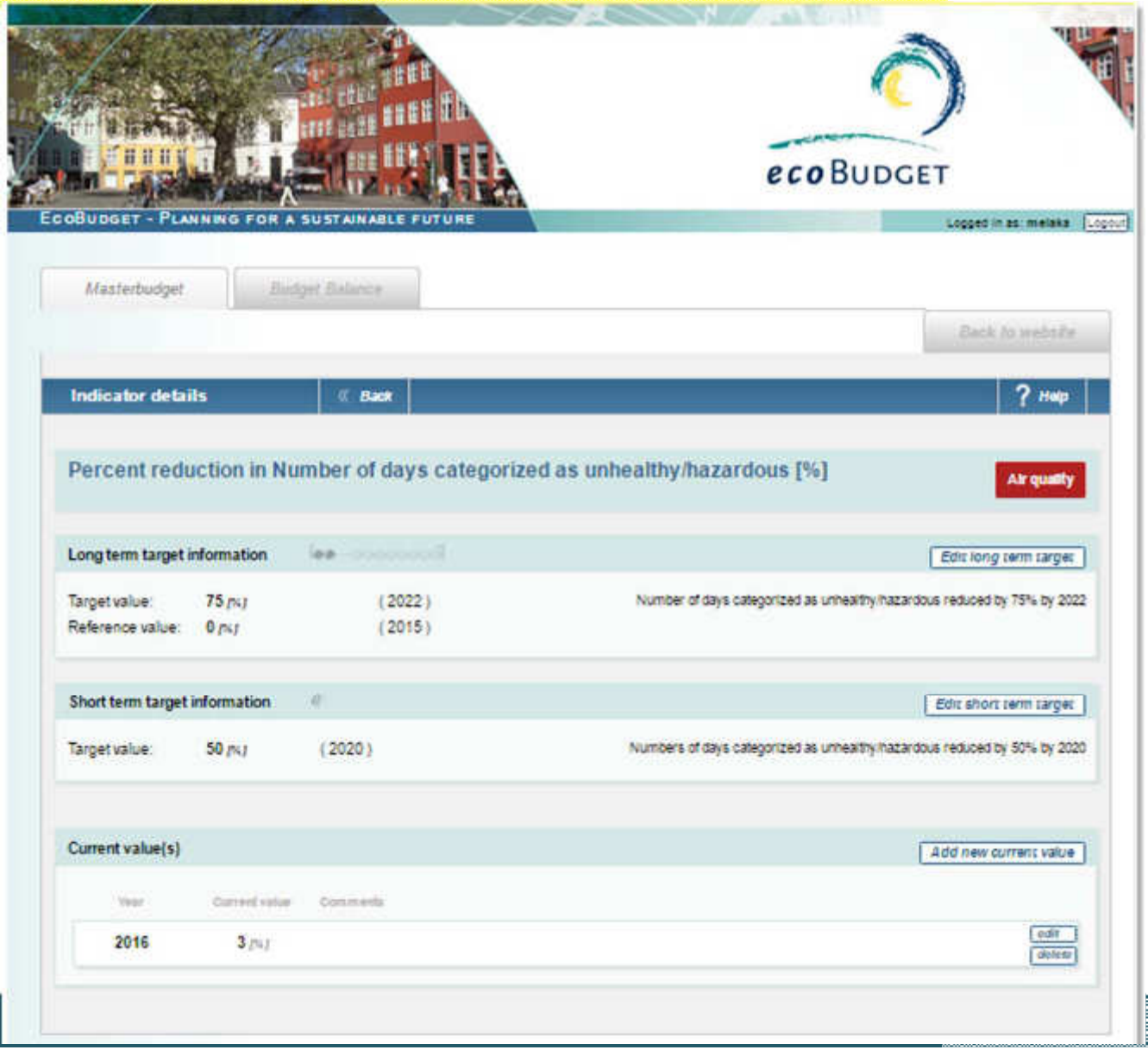
Set targets for indicators!

Reference Value: Value in baseline year

Short Term Target

Long term Target

Current Value



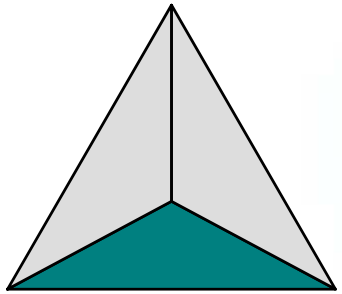
Budget balance

Resource Indicator	Reference Value	Last Year Value	Short-Term Target	Balance	Long-Term Target	Evaluation

Water

Water Consumption

- Current year´s environmental indicator values
- Illustrates whether target has been achieved (or not)



Budget balance

Indicator	Reference Value	Value 2005	Value 2006	Value 2006	Long-Term Target	Evaluation
Collection of solid waste (%)	85 (2005)	90	90	92	100 (2008)	
Water Quantity	85 (2000)	90	100	100	135 (2010)	

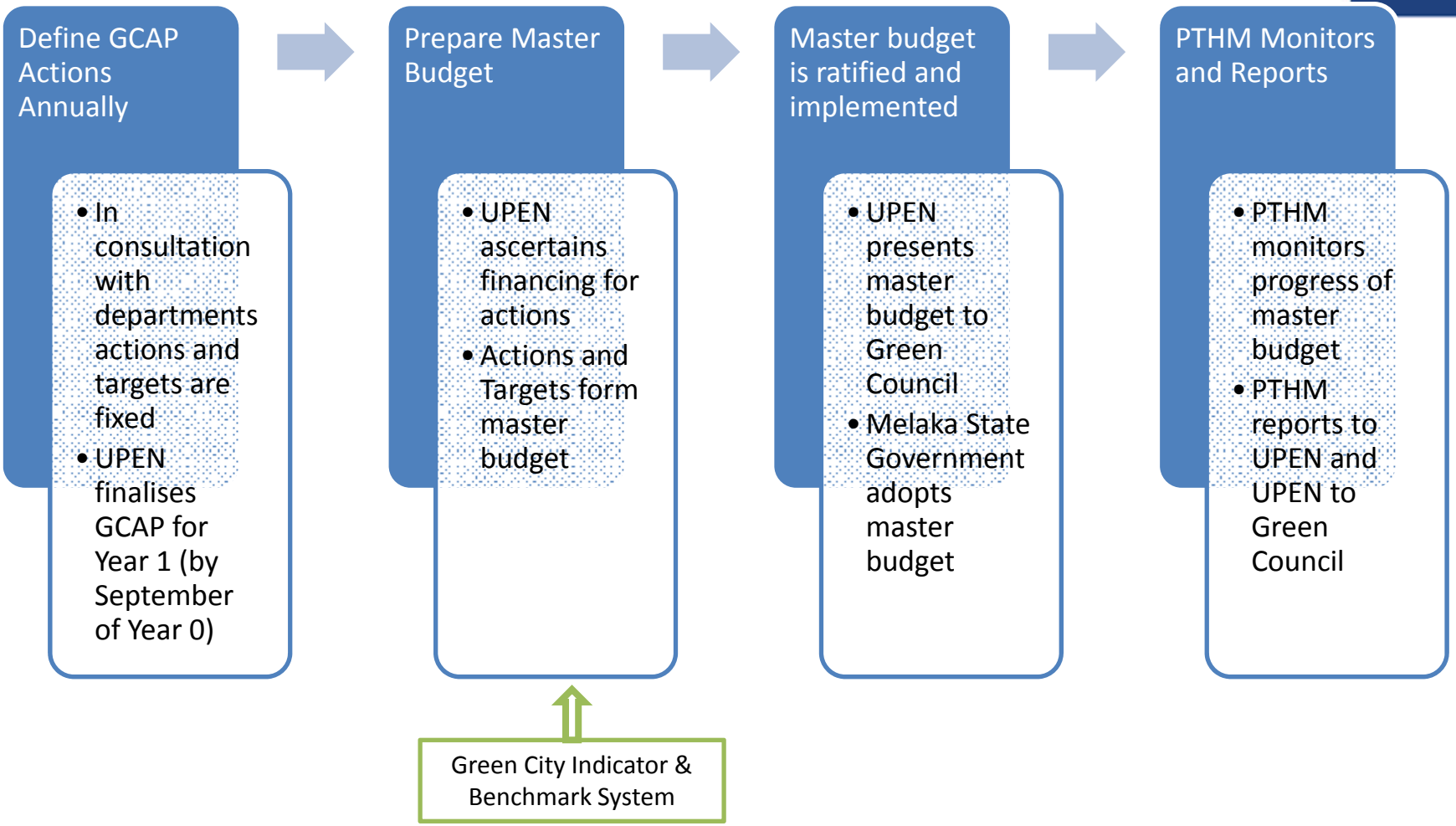
Involved actors and responsibilities

- Anchor department: UPEN (implementation team)
- Co-ordinating department: MGTC
- Co-operating departments: 13-14 state departments in Melaka & PBTs
- Melaka Green Council
- Melaka State Ex-Co Council
- Chief Minister's Office

Co-operating departments

The technical office…	1.) is e.g. responsible for…	2.) has influence on …	3.) assumes responsibility for the indicator of resource…
TNB	Power supply	CO_2-Emissions	Energy
JPBD	Planning	Regulation for open spaces, parks, green areas	Access to open spaces
PPSPPA	Solid Waste Collection and Processing	Waste Processing & Disposal	Solid waste disposal in a scientific manner
PBT	Building permission	Number of SPAH in Melaka	Ground water
PBT & Panorama	Public Transport Mobility	Congestion Air Quality	Less traffic congestion Increase in bicycle and pedestrian lanes Adoption of electric vehicles

PINTAR & GCAP Implementation



*eco*BUDGET Implementation Plan

Chair: *eco*BUDGET-coordination team: Director, UPEN

- UPEN Trials ecoBUDGET: 2016-2017
  - Baseline data points have to be finalised – September 2016
  - Indicators w.r.t. UEA are finalised – September 2016
  - Baseline data from departments secured by UPEN (2015)
- UPEN will identify green projects from departmental budgets
  - Indicators will be finalised: Seminar Melaka Maju FASA II , 2016
- These projects will form the ecoBUDGET for Melaka for 2017 – UPEN makes a master budget - submitted to the SFO and State Secretary

*eco*BUDGET Implementation Plan

- Request to State Ex-Co Council for adoption of *eco*BUDGET
- UPEN Prepares *eco*BUDGET 2018
  - Seminar Melaka Maju FASA II in August 2017; UPEN with Co-ordinating Departments to identify actions for *eco*BUDGET in the seminar
  - Reviews *eco*BUDGET 2017
- September 2017: UPEN also identifies green projects from departmental budgets
- These projects form the ecoBUDGET for Melaka for 2018 – UPEN prepares a master budget
- *eco*BUDGET 2018 will be submitted to the State Ex-CO Council along with Financial Budget in November 2017

ICLEI South Asia
http://southasia.iclei.org/
Iclei-southasia@iclei.org
soumya.chaturvedula@iclei.org

THANK YOU!