

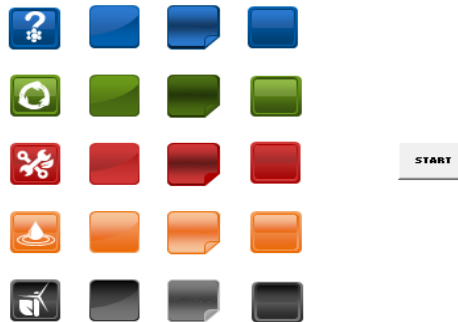
Training on CLImate ACTions Prioritization (CLIMACT Prio)

Capacity Building and Decision Support Tool

April 12, 2014



Climate Actions Prioritisation Tool CLIMACT Prio



Institute for Housing and Urban Development Studies (IHS)



CLIMACT Prio

CLIMACT Prio is a climate awareness, decision support and capacity building tool for screening and prioritizing of local climate change actions. CLIMACT Prio utilises a multi-criteria approach to assist decision makers and urban planners to identify a wide range of decision criteria and set priorities among objectives while performing an analysis and assessment of climate change (mitigation or adaptation) actions. This method does not necessarily identify an “optimal” option, but rather requires the user to draw conclusions by looking at different components of the whole picture of the assessment and prioritization process, while seeking a consensus decision between stakeholders with different needs, concerns, and priorities.

CLIMACT Prio tool provides an interactive format to help users structure and define the decisions under consideration. The tool asks the user to enter information through a guided menu of instructions and uses a menu-driven graphic representation of results for the evaluation of climate change actions. The user first identifies specific actions to be screened according to their feasibility and then selects the impact assessment criteria and objectives that will be used to assess the selected actions. While following the climate actions prioritization process, the users rate the relative importance of criteria and assign scores (qualitative and quantitative) to describe how each option meets each criterion.

The Purpose of the Training

Based on the analysis of cities existing GHG emissions profiles, participants will be able to select among many possible mitigation options by assessing actions’ feasibility at the local level and by scoring them against selected evaluation criteria. The training aims to provide knowledge on the theory and practice of CLIMACT Prio and skills to perform a multi-criteria analysis so that ICLEI Staff will be able to apply the tool for the purpose of training Local Government officials within the Urban LEDS project, and thereby contributing to their process of decision making for climate change planning.

The Structure of the Training

The agenda is outlined in the next pages. The sessions will involve a lot of group work using the tool. The process of applying a Multi-Criteria Analysis generates a lot of discussion because it entails the identification of a wide range of decision criteria and contemporarily set priorities among competing sustainability objectives. Engaging in this exercise will open a window into decision making for delivering low carbon energy futures globally.

The training is intensive as we are condensing it in one day. So try not to be too alarmed – it should be enjoyable. Keep in mind that the aim of the exercise is not to arrive at optimal climate change actions, but rather we require you to draw conclusions by looking at how each mitigation action performs against criteria that Local Governments may hold most valuable.



Prerequisites

- Number of computers: 1 laptop per group
- Internet Connection
- Software: Microsoft excel (Microsoft Windows XP or higher)
- CLIMACT Prio tool language: English
- Expected skills: Basic knowledge of Excel spreadsheets
- Material required: 1 flipchart per group, markers and pens; 1 copy of each case study material
- Background material/preparation: 2 case studies (from the EU or outside) providing GHGs emission profiles where trainees would like to prioritize actions on. The case studies should also detail background information on the respective cities. Trainees should have read the material beforehand.

Agenda – 12/04/14

	Topic	Involved
9:00 – 09:30	Introduction to the use of MCA in Urban Climate Change planning focusing on mitigation + Brief Introduction to CLIMACT PRIO tool	Instructor (IHS)
9:30 – 09:45	Q&A on Introduction	All
9:45 – 11:15	Module 1 and 2: Selection, Screening and Identification of actions	Group work
11:15 – 11:30	Break	
11:30 – 12:30	Module 3: Identification of Evaluation Criteria	Group work
12:30 – 13:30	Lunch	
13:30 – 13:50	Reflections on the work so far based on questions collected during the group work	Instructor (IHS)
13:50 – 15:50	Module 4: Impact Assessment	Group work
15:50 – 16:00	Break	
16:00 -16:45	Module 5: Weighting of Criteria	Group work
16:45 – 17:00	Module 6: Observation of Results and Reflections	Group Work
17:00 – 18:00	Discussion on the Results, Q&A, Tips for future applications	Instructor and All

Prioritization of local climate change mitigation actions

Manual of instructions

Module 0 – Re-familiarize with background material (15 minutes)

Re-familiarize with the two GHGs emission inventories provided beforehand. Based on the cities emission profiles, today we aim to work on the solid waste and waste water as priority sector in the case of Kampala and, instead, on a multi-sector approach in the case of Copenhagen. For the case of Copenhagen identify the priority sectors for mitigation by analyzing the city's GHGs Inventory.

Module 1a – Identification of alternative mitigation actions (1 hour, 15 minutes including 1b and 1c)

Based on which sectors have the largest potential for mitigating GHG emissions in each city, choose an initial list of alternative mitigation actions based on the menu of actions provided and on your own knowledge. They can be traditional mitigation actions used in the city, experience within government technical services, results of national or regional research institutes as well as on information available at the international level. Since these mitigation actions will be implemented by stakeholders, stakeholders need to be involved at all stages of the process, development and approval of the actions - which is the main argument for the use of participatory approaches. It is necessary to have a rough idea of the potential constraints (social, technical, political or other) likely to limit the implementation of mitigation actions.

- Starting from the sectors with the highest contribution to city's GHG emissions choose appropriate mitigation actions/technologies out of the menu of actions and based on your own knowledge
- Populate your initial list of mitigation actions (the number of actions can be substantial) that could contribute both to the reduction of GHG emissions and achievement of other city's development objectives.
- For each action indicate the relevant sector and a time frame for implementation.

Figure 1 Select mitigation actions out of the menu provided

STEP 1a List of Mitigation Actions					
1) Identify mitigation actions/technologies that could contribute both to the reduction of GHG emissions and achievement of other city's development objectives.					
2) Indicate the typology (structural, non-structural), the relevant sector, the scale and a time frame for implementation of the each					
N.	Mitigation actions	Type	Sector	Scale	Time frame
1	Bio-energy generation	Structural	Energy	Metropolitan Municipality	Medium term
2	Sustainable biomass use to recover energy from waste			District Municipality	
3	Decentralized systems for water-sewerage-energy infrastructure			District Municipality	
4	Recycling			District Municipality	
5	Educational Programmes			District Municipality	
6	Public Toilets			District Municipality	
7	Waste water drainage and treatment system			Metropolitan Municipality	
8	Sanitary landfill with gas capture			Metropolitan Municipality	
9	Formalised waste industry			Metropolitan Municipality	
10	Incentivise business to take up waste materials			Metropolitan Municipality	
11	Regulation of waste management			Metropolitan Municipality	



Module 1b – Screening and ranking of alternative mitigation actions

Narrow down the initial long list of alternative mitigation actions identified in Step 1a through an initial screening process. This task will screen out mitigation actions that may not be viable for implementation and will bring forward alternative mitigation actions for a more detailed assessment.

- First study the following feasibility and impact criteria – with their corresponding descriptions and scoring scale - adapted from UN Habitat (2014).

	Criteria	High	Medium	Low
Feasibility Criteria	Stakeholder acceptability: <i>Would local residents accept it?</i>	Majority of residents in area	Limited majority	Low support
	Technical feasibility: <i>Will necessary design, implementation and maintenance support be available for the option?</i>	Design available	Resources to develop design, implement and maintain	No available resources to develop, design, implement and maintain
	Ease of implementation: <i>Can it be implemented at the local government level, or does it depend upon state/provincial or national support?</i>	City can implement this without external support	City can implement this with some support	City cannot implement this without external support
	Financial viability: <i>Is it a financially realistic option? Does the city have funding or potential access to funding to cover the costs?</i>	Financially realistic with available funding	More limited funding opportunities	Expensive and limited funding opportunities
	Mainstreaming potential: <i>Could it be integrated with existing local government planning and policy development?</i>	Yes, easily and fully through many plans and strategies	Yes, partly but with more time and through more limited plans and strategies	Relatively limited potential, would require additional activities
Impact Criteria	Effectiveness: <i>How well would it work on reducing vulnerability (in relation to the other actions)?</i>	Vulnerability will be reduced to a large extent (in relation to the other actions)	Vulnerability will be reduced to a moderate extent (in relation to the other actions)	Vulnerability will be reduced to a limited extent (in relation to the other actions)
	Multi-sectoral and multi-objective: <i>Would it address objectives in other sectors?</i>	Yes, significant cross over with other sectors and objectives	Some cross over with other sectors and objectives	Little cross over with other sectors and limited impact on other objectives

- Evaluate each alternative mitigation option against each of the seven (7) feasibility and impact criteria by providing a score using the following scale: High, Very High, Medium, Very Low, and Low.
- In a real training situation, the evaluation should be based on your research related to the feasibility and impact of identified mitigation options. The research can be based on experiences from other cities, best practices, scientific studies published in academic journals, government reports, private or public institutions working in the field. For the purpose of this training, the feasibility assessment will be mostly done based on trainees existing knowledge and internet sources (such as Climate Tech WIKI). In the future the aim is to have an evolving repository of feasibility data for mitigation (and adaptation actions) that trainees can access automatically. Steps in this direction are currently undergoing.

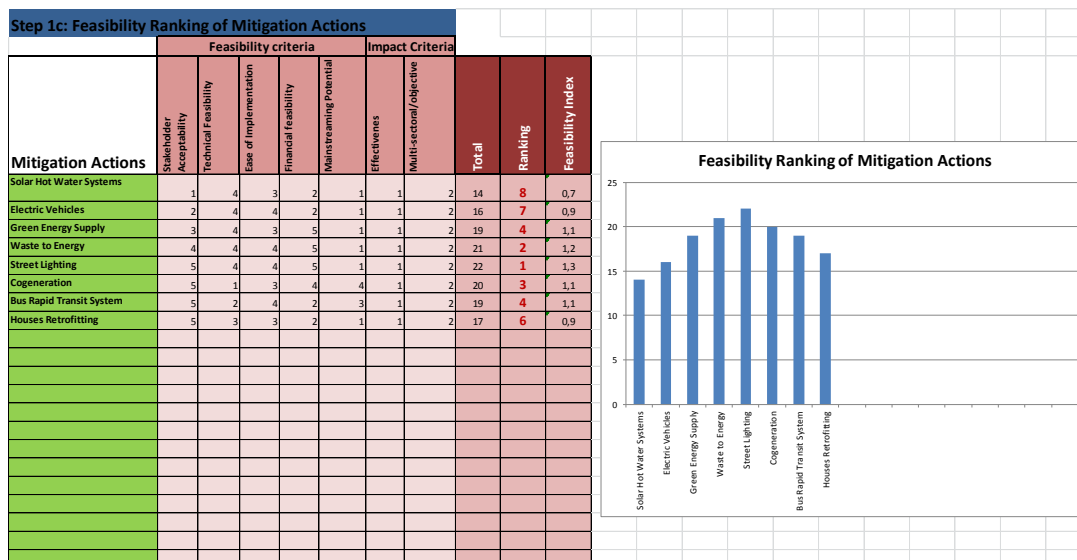
Figure 2 Example of initial screening of mitigation actions. Rank each action against both feasibility and impact criteria

Step 1b: Feasibility Assessment - Initial Screening of Mitigation Actions							
Mitigation Actions	Feasibility criteria					Impact Criteria	
	Stakeholder Acceptability	Technical Feasibility	Ease of Implementation	Financial feasibility	Mainstreaming Potential	Effectiveness	Multi-sectoral/objective
Solar Hot Water Systems							
Electric Vehicles							
Green Energy Supply							
Waste to Energy							
Street Lighting							
Cogeneration							
Bus Rapid Transit System							
Houses Retrofitting							

Module 1c: Feasibility ranking of mitigation actions

At the end of step 1b observe how all the scores for each alternative mitigation action add up, as well as the overall ranking of the mitigation actions and the feasibility index (this index captures the average score over the five feasibility criteria). You can choose to use the outcome of the feasibility index as a criterion in your impact matrix in module 4.

Figure 3 Example of feasibility ranking of mitigation actions



Module 2 Selection of mitigation actions

Based on the mitigation actions that ranked the highest in the feasibility assessment, choose a maximum of **6 to 7** mitigation actions to carry on in this exercise and copy/paste them in Step 2. In a real training situation, trainees should also fill in the feasibility part of the climate action template provided, where they will explain the outcomes of the feasibility and provide justifications for each selected action.

Figure 4 Example of mitigation actions for multiple sectors

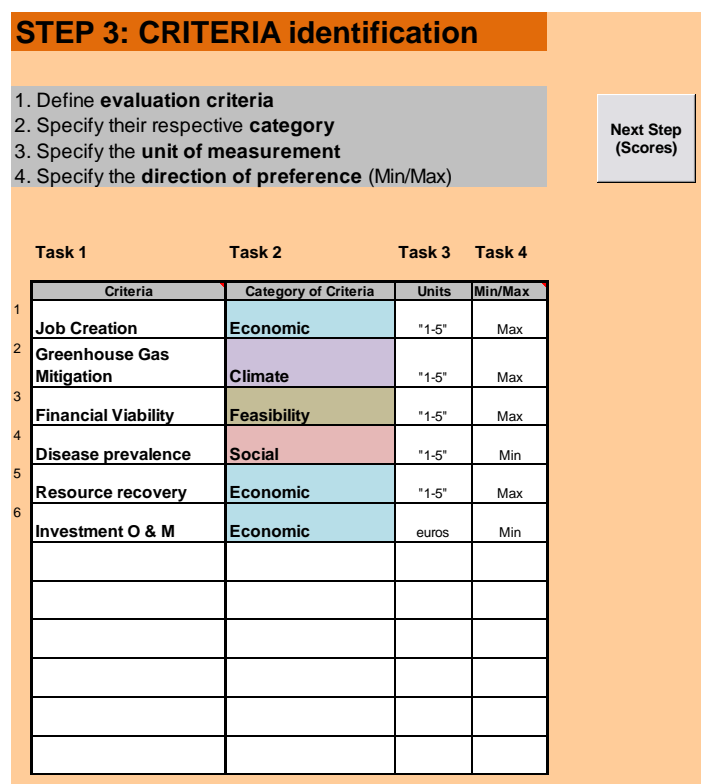
STEP 2 Mitigation Actions							
1) Check out the rankings of the mitigation actions in the feasibility assessment							
2) Choose up to 6 or 7 of the highest ranked mitigation actions for further assessment							
No	Mitigation actions	Type	Sector	Scale	Time frame	Description	Source
1	Sustainable biomass use to recover energy from waste	Non-structural	Energy	District Municipality	Medium term		
2	Municipal collection	Structural	Waste	Metropolitan Municipality	Short term		
3	Public Toilets	Structural	Health	District Municipality	Short term		
4	Educational Programmes	Non-structural	Waste	District Municipality	Short term		
5	Waste water drainage and treatment system	Structural	Water	Metropolitan Municipality	Medium term		

Module 3 – Criteria identification (1 hour)

Define the evaluation criteria to be used in the CLIMACT Prio tool to evaluate the impacts and benefits of the mitigation actions. The criteria selected can be of a diverse nature and should relate to broader local governments' priorities and objectives (the latter can be informed, among others, by the feasibility index). The criteria should be SMART: simple, measurable, available, relevant and time bound. Especially if the analysis is done in a participatory manner the criteria should be simple and understandable by all stakeholders and should be relevant across all mitigation actions. This step is important, as the final prioritization of the actions will be determined based on the evaluation criteria selected.

- Discuss within the group possible evaluation criteria for the mitigation actions you identified.
- Try to avoid overlap between criteria but also identify a comprehensive set of evaluation criteria.
- The maximum number of criteria (objectives) you can choose is **6 to 7**.
- The scale of measurement that has been defined is qualitative from “1 to 10” or “1 to 5” where 1 indicates very low performance and 10 (or 5) very high performance of the actions

Figure 5 Example of criteria identification



Module 4 – Scoring of mitigation actions (Impact Assessment Matrix) (2 hours)

One must assign scores for each mitigation action against the selected evaluation criteria. Normally this step is based either on economic, social, environmental and mitigation impact studies or on experts’ judgments and modeling exercises. In a real training situation, trainees should learn more about each of the 6 to 7 mitigation actions chosen; this involves evaluating their advantages and disadvantages, costs and benefits and financing options by researching experiences from other cities, best practices, scientific studies published in academic journals, government reports and official institutions’ blogs. IHS started to develop climate action templates for a limited set of mitigation (or adaptation) actions (with the aim to keep expanding it in time) and they will be available soon.

For the purpose of this training, the impact matrix will be mostly done based on trainees existing knowledge and internet sources (such as Climate Tech WIKI). During a real training situation, trainees should be asked to fill in knowledge gained on new mitigation actions in the template for climate actions. In the future the aim is to have an evolving repository of benefits/impacts data for mitigation (and adaptation actions) that trainees can access automatically. Steps in this direction are currently undergoing.

To minimize ambiguity and subjectivity, scoring should be done based on a clearly understood and agreed upon scale. In this regard, a smaller scoring scale is easier to use and is less subjective than a larger scale (for instance, values of 55 to 80 could denote an important impact on a scale of 0 to 100, where 2 is the only value available on a scale of 1 to 3). The importance of a smaller scale is even greater when the analysis is conducted in a participatory manner.

Figure 6 Example of Impact Assessment Matrix

STEP 4: SCORING - Impact Assessment Matrix							Next Step (Normalized Scores)
Indicate the scores for each alternative on every criterion							
Options/Criteria	GHGs emissions reduction	Local air pollution reduction	Costs	Public acceptance	Creation of jobs	MDGs achievement	
Scale units	ktonnes	ktonnes	th. euros	"1 - 5"	number of jobs	"1-5"	
	1	1	-1	1	1	1	
	Max	Max	Min	Max	Max	Max	
Solar hot water systems	50	100	-1000,0	3,9	40,0	3,6	
Electric Vehicles	40	300	-2000,0	3,7	100,0	3,0	
Green energy supply	60	400	-4000,0	4,4	150,0	3,6	
Waste to energy	50	50	-2500,0	3,0	80,0	3,3	
Street lighting	30	60	-5000,0	2,4	200,0	4,0	
Cogeneration	50	120	-3000,0	3,7	120,0	3,1	
Bus transit system	60	300	-1500,0	3,6	50,0	2,1	

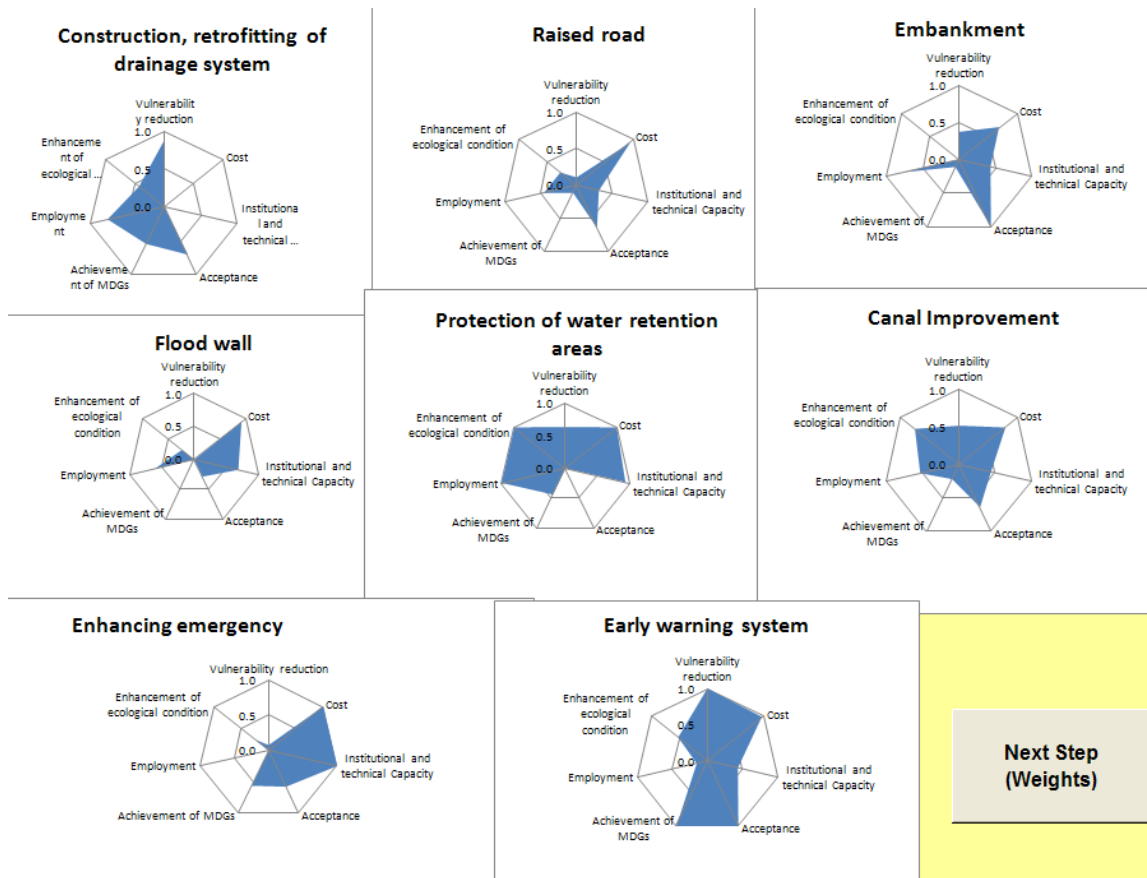
Standardization

If the selected criteria do not all use the same scoring scale, one must standardize the values in order to be able to compare the scores. Standardization can be done on a 0 to 1 or to a 0 to 100 scale. Standardization is done by linear interpolation. The standardization is being performed automatically for this exercise by the CLIMACT Prio tool.

Verify that all the criteria scores are in the same direction (i.e. that higher numbers represent a positive outcome and lower numbers represent less positive or negative outcomes or vice versa). For instance, when scoring for costs and benefits one must ensure that the action with the greatest benefits receives the highest positive score, while the option with the greatest costs receives the lowest score (as this is a negative attribute). All the scoring scales must be in the same direction (from negative to positive values).

The standardization is performed automatically by the CLIMACT Prio tool. Observe the graphs obtained based on the normalized initial results (“graphs-radar” spreadsheet)

Figure 7 Example of radar graphs of normalized scores of actions showing how each action meets selected criteria



Module 5 – Weighting of criteria (45 min)

In this step, the group undertaking the analysis, in accordance with experts and stakeholders, must decide if any of the criteria should be given a higher or lower weight with respect to the others. Weighting of criteria should be at the heart of group discussions, as it may change the ranking of mitigation actions.

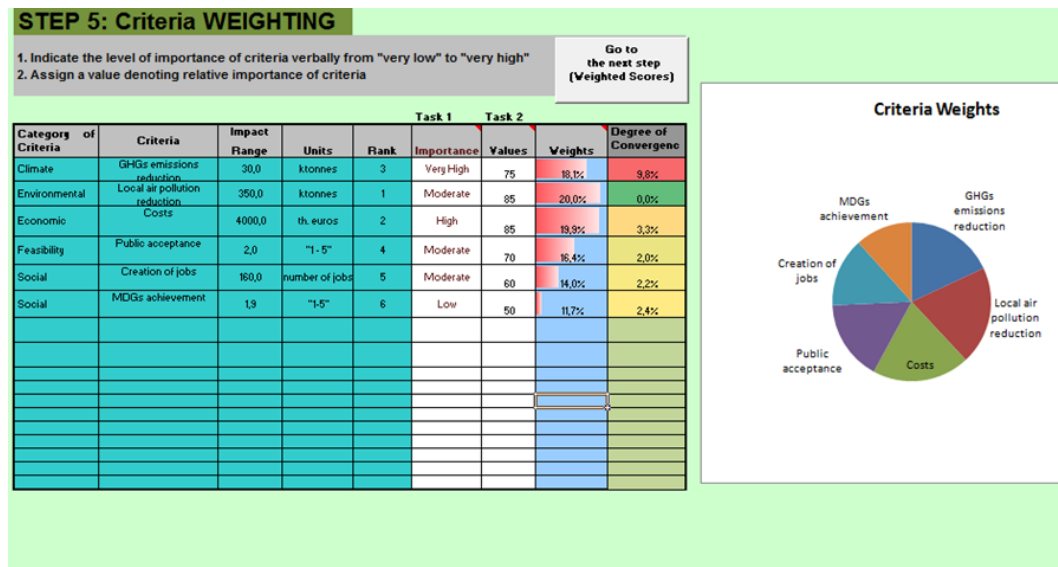
If the ranking of mitigation actions changes as a result of modifying the criteria weights, the groups should analyze and discuss the results to ensure that everyone agrees on certain weights (factors of relative importance) and the final ranking of mitigation options.

- First rank the criteria from most important to least important. The most important (first ranked) criterion will be denoted by 1, second most important criterion by 2 and so on.
- Provide your weighting (relative importance) preferences verbally by indicating the level of importance using the scale: very low, low, moderate, high, very high.
- Then provide your weighting preferences arithmetically. For each type of verbal expression of your preferences there is a short arithmetic range that is associated with (See Table 1).

Table 1: Level of importance with associated importance values

Level of Importance	Values of importance	
Very High	100	90
High	80	70
Moderate	60	50
Low	40	30
Very Low	20	10

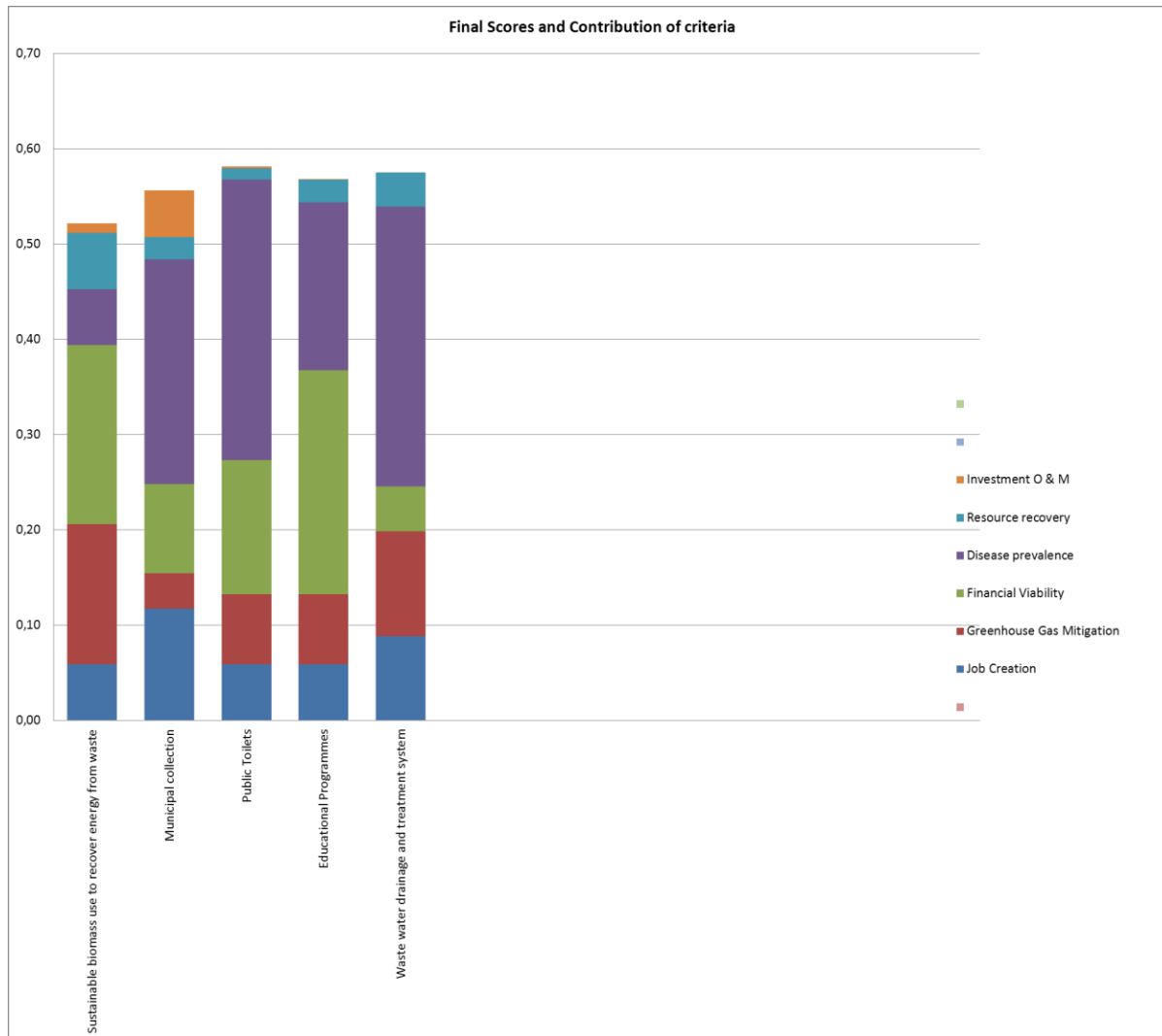
Figure 8 Example of criteria weighting



Module 6: Prioritization of actions (15 minutes)

Observe the results based on the assigned weights. How can the final ranking be explained? Which criteria contribute mostly to the highest ranked alternatives? Which criteria (objectives) will be met by the actions? What does this prioritization of mitigation actions imply for the city’s climate mitigation policy? You can also observe the graphs of the performance of every mitigation option on the last spreadsheet (graphs-options).

Figure 9 Final score and graph showing the mitigation action that best meets local governments’ criteria



Advice: For every step of the exercise, always discuss with your group mates and use graphical means (e.g. board, paper) in order to communicate your ideas and perspectives. Decide as a group how to address and answer the questions at every step of the exercise and finally fill in the relevant information to the CLIMACT Prio Tool.

Note: Please do not delete or add any rows or columns while working with the CLIMACT Prio tool.

GOOD LUCK AND ENJOY!